REGION H
Water Planning Group



2026 REGIONAL WATER PLAN
INITIALLY PREPARED PLAN
VOLUME 2

Prepared by:
Region H Water Planning Group

Prepared for:
Texas Water Development Board

With assistance from:
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March 2025

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List of Abbreviations

AMI	Automated Metering Infrastructure
AWWA	American Water Works Association
BAWA	Baytown Area Water Authority
BBASC	Basin and Bay Area Stakeholder Committee
BBEST	Basin and Bay Expert Science Team
BEG	Bureau of Economic Geology
BMP	Best Management Practice
BRA	Brazos River Authority
BWA	Brazosport Water Authority
CCI	Construction Cost Index
cfs	cubic feet per second
CHCRWA	Central Harris County Regional Water Authority
CLCND	Chambers-Liberty Counties Navigation District
CLCWA	Clear Lake City Water Authority
COA	Certificate of Adjudication
COH	City of Houston
CRP	Clean Rivers Program
CRU	Collective Reporting Unit
CWA	Coastal Water Authority
CWSRF	Clean Water State Revolving Fund
DCP	Drought Contingency Plan
DFC	Desired Future Condition
DOR	Drought of Record
DWSRF	Drinking Water State Revolving Fund
EPA	Environmental Protection Agency
FBSD	Fort Bend Subsidence District
FSA	Farm Service Agency
FWSD	Fresh Water Supply District
GAM	Groundwater Availability Model
GCD	Groundwater Conservation District
GCWA	Gulf Coast Water Authority
GMA	Groundwater Management Area
gpcd	gallons per-capita daily
GRP	Groundwater Reduction Plan
HGSD	Harris-Galveston Subsidence District
IFR	Infrastructure Finance Report
IPP	Initially Prepared Plan
IWA	International Water Association
IWRP	Integrated Water Resource Plan
iWUD	Integrated Water Utility Database
LAWA	La Porte Area Water Authority
LNVA	Lower Neches Valley Authority
LSGCD	Lone Star Groundwater Conservation District
LVGUs	Large Volume Groundwater Users
MAG	Modeled Available Groundwater
MCL	maximum contaminant level

mgd	million gallons per day
mg/l	milligrams per liter
msl	mean sea level
MUDs	Municipal Utility Districts
MWP	Major Water Provider
NCWA	North Channel Water Authority
NFBWA	North Fort Bend Water Authority
NHCRWA	North Harris County Regional Water Authority
PDSI	Palmer Drought Severity Index
PWS	Public Water Supply
Region G	Brazos G Regional Water Planning Group
Region I	East Texas Water Planning Group
RHWPG	Region H Water Planning Group
RWP	Regional Water Plan
RWPA	Regional Water Planning Area
RWPG	Regional Water Planning Group
SAM-Houston	Small Area Model Houston
SDC	State Data Center
SJRA	San Jacinto River Authority
SWIFT	State Water Implementation Fund for Texas
SWP	State Water Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TRA	Trinity River Authority
TTWP	Trans-Texas Water Program
TWC	Texas Water Code
TWDB	Texas Water Development Board
UCM	Unified Costing Model
UHCPP	University of Houston Center for Public Policy
UNESCO	United Nations Educational, Scientific and Cultural Organization
WAM	Water Availability Model
WCP	Water Conservation Plan
WHCRWA	West Harris County Regional Water Authority
WIF	Water Infrastructure Fund
WMS	Water Management Strategy
WRAP	Water Resources Analysis Package
WUD	Water Utility Database
WUG	Water User Group
WWP	Wholesale Water Provider

Water Measurements

Acre-foot (ac-ft) = 43,560 cubic feet = 325,851 gallons

Acre-foot per year (ac-ft/yr) = 325,851 gallons per year = 893 gallons per day

Gallon per minute (gpm) = 1,440 gallons per day = 1.6 ac-ft/yr

Million gallons per day (mgd) = 1,000,000 gallons per day = 1,120 ac-ft/yr

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SELECTED BIBLIOGRAPHY BY TOPIC

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Appendix 1-A – Selected Bibliography by Topic

1-A.1 WATER PLANNING REPORTS

1-A.1.1 State Water Plan

Water for Texas. 2022. Texas Water Development Board.

Water for Texas: A Consensus-Based Update to the State Plan. 1997. Texas Water Development Board.

Region H Water Plan. 2021. Freese and Nichols, Inc.

Region C Water Plan. 2021. Freese and Nichols, Inc.

Brazos G Regional Water Plan. 2021. HDR Engineering.

East Texas Regional Water Plan. 2021. Alan Plummer Associates.

Lower Colorado Regional Water Plan. 2021. AECOM.

1-A.1.2 Trans-Texas Water Program Reports

Contractual Transfers in the Southeast Area. 1998. Brown and Root.

Desalinization. 1998. Brown and Root.

Engineering Analysis of Interbasin Transfer Strategy. 1998. Freese and Nichols, Inc.

Environmental Analysis of Potential Transfer Routes. 1998. Freese and Nichols, Inc.

Galveston Bay Freshwater Inflows Study. 1998. Brown and Root.

Operation Studies and Opinions of Cost for Allens Creek Reservoir; Volumes I and II and Status of Environmental Issues for Allens Creek Reservoir. 1997. Freese and Nichols, Inc.

System Operation of Surface Water Supply Sources in the Houston Area. 1997. Freese and Nichols, Inc.

System Operation Study for Livingston / Wallisville and San Jacinto Basin for the Trans-Texas. 1997. Freese and Nichols, Inc.

Trans-Texas Water Program Southeast Area Phase I Report. 1994. Brown and Root; Freese and Nichols, Inc.

Trans-Texas Water Program Report, Planning Information Update. 1996. Brown and Root; Freese and Nichols, Inc.

Trans-Texas Water Program Southeast Area Phase II Report. April 1998. Brown and Root; Freese and Nichols, Inc.

Wastewater Reclamation. 1998. Brown and Root.

Water Conservation. 1998. Brown and Root.

Water for Texas - A Consensus-Based Update to the Texas Water Plan, Volume II, Technical Planning Appendix. 1997. Texas Water Development Board.

Water for Texas - Today and Tomorrow: A 1996 Consensus-based Update to the Texas Water Plan, Volume III, Water Use Planning Data Appendix. 1996. Water Demand/Drought Management Technical Advisory Committee of the Consensus-Based State Water Plan.

1-A.1.3 City / Agency Water Plans

2014 North Harris County Regional Water Authority Groundwater Reduction Plan Update (GRP14). 2014. AECOM.

Cinco MUD No. 1 Water Supply and Wastewater Master Plan Update. 1997. Turner Collie & Braden Inc.

Cinco Ranch Reclaimed Water Reuse Study. 1992. Turner Collie & Braden Inc.

City of Houston Groundwater Reduction Plan. 2002, last amended April 2006. Halliburton KBR; CH2M Hill.

City of Richmond Groundwater Reduction Plan 2019 Update. 2019. KIT Professionals, Inc.

City of Rosenberg Amended Groundwater Reduction Plan. 2014. Jones & Carter, Inc.

City of Sugar Land Groundwater Reduction Plan. 2008. City of Sugar Land.

City of Sugar Land Integrated Water Resource Plan. 2019. CDM Smith.

Fairfield Village Regional Facilities Master Plan. 1993. Turner Collie & Braden Inc.

Feasibility Investigation of Allens Creek Reservoir. 1997. Turner Collie & Braden Inc. for the Fort Bend County Surface Water Supply Corporation.

Feasibility Study, Interbasin Transfer, Sabine to San Jacinto. 1988. Wayne Smith and Associates.

Ground Water Reduction Plan – Central Harris County Water Users Consortium. 2003. Pate Engineers.

Groundwater Reduction Plan, prepared for Dobbin Plantersville Water Supply Corporation, Montgomery County, Texas. 2011. Jones & Carter, Inc.

Groundwater Reduction Plan – Fort Bend County MUD No. 25. 2008. CDM.

Groundwater Reduction Plan – Fort Bend County W.C. & I.D. No. 2. 2008. Jones & Carter, Inc.

Groundwater Reduction Plan – Pecan Grove Municipal Utility District. 2007. Jones & Carter, Inc.

Groundwater Reduction Plan – SR Superior, LLC. 2011. LJA Engineering & Surveying, Inc.

Harris County UD 5 - Water and Wastewater Master Plan Investigation. 1994. Turner Collie & Braden Inc.

Joint Groundwater Reduction Plan – Missouri City. 2008. Water Resources Management, L.P.

Joint Groundwater Reduction Plan – Montgomery County Municipal Utility District No. 8 and Montgomery County Utility District No. 9, as amended April 2014. Jones & Carter, Inc.

Long Range Water Supply Plan 1990 - 2050 to the City of Dallas, Texas. 1989. Turner Collie & Braden.

Montgomery County MUD 18 Groundwater Reduction Plan. 2011. Bleyl & Associates.

Montgomery County U.D. 3 & 4 The City of Montgomery Joint Groundwater Reduction Plan. 2011. Bleyl & Associates.

North Channel Water Supply Corporation Surface Water Conversion Plan. 1987. Pate Engineers, Inc.

North Fort Bend Water Authority Groundwater Reduction Plan. 2008. Brown and Gay, Inc.

Porter Special Utility District, Chateau Woods Municipal Utility District, Crystal Springs Water Company Joint Groundwater Reduction Plan, as amended 2014. Bleyl & Associates.

Preliminary Engineering Report for Modifications and Improvements to the Livingston Regional Water Supply System. 1991. Turner Collie & Braden Inc.

Regional Water Supply Plan for the Tarrant County Water Control and Improvement District Number One and the Texas Water Development Board. 1990. Freese and Nichols and Alan Plummer and Associates.

Regional Water Supply Planning Study, Fort Bend County, Texas. 1992. Turner Collie & Braden Inc. for Fort Bend Surface Water Supply Corporation.

Regional Water Planning Study for the Harris-Galveston Coastal Subsidence District. 1991, updated 1996. Turner Collie & Braden Inc.

Reservoir System Operation Plan for the City of Houston. 1996. Montgomery Watson; Georgia A. Wilson & Associates.

Review of the Water System Master Plan for the Bartonville Water Supply Corporation for Highland Shores, Inc. 1991. Turner Collie & Braden Inc.

River Plantation Municipal Utility District, East Plantation Utility District, River Plantation Country Club Joint Groundwater Reduction Plan. 2011. Bleyl & Associates, Inc.

San Jacinto River Authority GRP Program – Joint Groundwater Reduction Plan. 2011. Brown & Gay Engineers, Inc.

San Jacinto River Authority Raw Water Supply Master Plan. 2018. Freese and Nichols, Inc.

Trinity River Basin Master Plan, 2016. Trinity River Authority of Texas.

Water and Wastewater Master Plan for Wood Trace, Montgomery County. 1991. Turner Collie & Braden Inc.

West Harris County Regional Water Authority Groundwater Reduction Plan. 2014. Dannenbaum Engineering Corporation.

1-A.1.4 Groundwater Management Plans

Bluebonnet Groundwater Conservation District Groundwater Management Plan. 2022.

Brazoria County Groundwater Conservation District Groundwater Management Plan. 2022.

Fort Bend Subsidence District 2013 Regulatory Plan. Amended June 2022.

Harris-Galveston Subsidence District Regulatory Plan. Amended April 2021.

Lone Star Groundwater Conservation District Regulatory Plan Phase II (B). Amended December 2015.

Lone Star Groundwater Conservation District Groundwater Management Plan. 2023.

Mid-East Texas Groundwater Conservation District Groundwater Management Plan. 2024.

1-A.1.5 Other Studies

An Analysis of Water Loss as Reported by Public Water Suppliers in Texas. 2007. Alan Plummer Associates, Inc.

Drought Annex to the State of Texas Emergency Management Plan. 2016. Texas Division of Emergency Management.

Early Warning of Summer Drought over Texas and the South Central United States: Spring Conditions as a Harbinger of Summer Drought. 2015. Texas Water Development Board.

Emergency Drinking Water Supplement to the State of Texas Drought Preparedness Plan. 2012. Texas Drought Preparedness Council.

Feasibility of Water Reuse (prepared for City of Houston). 1992. Espey, Huston & Associates.

Goldwater Project – Region H Report. 2015. Averitt and Associates.

Guidance and Methodology for Reporting on Water Conservation and Water Use. 2012. Texas Water Development Board and Texas Commission on Environmental Quality.

Oil & Gas Water Use in Texas: Update to the 2011 Mining Water Use Report. 2012. Bureau of Economic Geology.

Preliminary Feasibility Study, Interbasin Water Transfer from the Sabine River to the San Jacinto River Authority Service Area. 1989. Freese and Nichols, Inc.

Water Conservation Best Management Practices Guide – TWDB Report 362. 2004. Texas Water Development Board.

Water Conservation by the Yard: A Statewide Analysis of Outdoor Water Savings Potential. 2018. Texas Living Waters Project.

Yield Analysis and Cost Estimate for Allens Creek Reservoir. 1989. Freese and Nichols (prepared for BRA).

1-A.2 SURFACE WATER STUDIES AND REPORTS

1-A.2.1 Water Availability Models

Brazos River Basin and San Jacinto-Brazos Coastal Basin. 2001. HDR Engineering.

Colorado / Brazos-Colorado Basin. 2001. R. J. Brandes Company, Crespo Consulting, Brown & Root, PBS&J.

Neches River Basin. 2001. Brown & Root, Freese & Nichols, Espey Consulting, and Crespo Consulting.

Sabine River Basin. 2001. Brown & Root.

San Jacinto River Basin. 1999. Espey Consulting and Padden Consultants.

Trinity River Basin and Trinity-San Jacinto and Neches-Trinity Coastal Basins. 2002. Espey Consulting.

1-A.2.2 US Geologic Survey Reports

Analysis of Minimum 7-Day Discharges and Estimation of Minimum 7-Day, 2-Year Discharges for Streamflow-Gaging Stations in the Brazos River Basin, Texas. T.H. Raines and W.H. Asquith. 1997.

Documented and Potential Extreme Peak Discharges and Relation Between Potential Extreme Peak Discharges and Probable Maximum Flood Peak Discharges in Texas. W.H. Asquith and R.M. Slade, Jr. 1995.

Floods in Central Texas, December 1991. H.R. Hejl, Jr., R.M. Slade, Jr., and M.E. Jennings. 1995.

Index of Stations-Surface-Water Data-Collection Network of Texas, September 1993; S.C. Gandara and R.E. Jones. 1995.

Index of Stations-Surface-Water Data-Collection Network of Texas, September 1995; Compiled by S.C. Gandara and R.E. Jones. 1996.

Peak Data for U.S. Geological Survey Gaging Stations, Texas Network; and Computer Program to Estimate Peak-Streamflow Frequency. R.M. Slade, Jr., and W.H. Asquith. 1996.

Regional Equations for Estimation of Peak-Streamflow Frequency for Natural Basins in Texas. William H. Asquith and Raymond M. Slade, Jr. 1996.

Stratigraphic Nomenclature and Geologic Sections of the Gulf Coastal Plain of Texas. E.T. Baker, Jr. 1994.

Streamflow to the Gulf of Mexico. L.J. Judd. 1995.

Streamflow Analysis of the Apalachicola, Pearl, Trinity, and Nueces River Basins, Southeastern United States. K.E. Greene and R.M. Slade, Jr. 1995.

Summary of Surface-Water Hydrologic Data for the Houston Metropolitan Area, Texas, Water Years 1964-89. Fred Liscum, D.W. Brown, and Mark C. Kasmarek. 1996.

Techniques to Estimate Generalized Skew Coefficients of Annual Peak Streamflow for Natural Basins in Texas. L.J. Judd, W.H. Asquith, and R.M. Slade, Jr. 1996.

Topographic Data Sets for Texas by River Basin. L.L. Tan. 1997.

Water-Quality Assessment of the Trinity River Basin, Texas-Pesticides in a Coastal Prairie Agricultural Area. 1994-95. M.F. Brown. 1996.

1-A.2.3 Other Studies

Bon Weir Project. 1990. Bureau of Reclamation.

Lake Livingston Project, Lake Livingston, Texas Area and Capacity Tables. 1991. Bureau of Reclamation.

Proposed Allens Creek Reservoir Feasibility Study. 1998. Turner Collie & Braden Inc.

Reconnaissance report: Local flood protection: Little Fossil Creek- Haltom City, Texas. 1972. U.S. Army Engineer District, Fort Worth.

Reservoir Site Protection Study. 2008. Texas Water Development Board

Trinity River & Tributaries - Wallisville Lake Non-Overflow Dam. 1985. U. S. Army Corps of Engineers.

Trinity River Yield Study, Phase I, II, & III. 1983. Espey, Huston & Associates.

1-A.3 GROUNDWATER STUDIES AND REPORTS

1-A.3.1 US Geological Survey Reports

Approximate Land-Surface Subsidence in Fort Bend County, Texas. 1943-87 and 1973-87. R.K. Gabrysch and L.S. Coplin. 1998.

Estimated Depth to the Water Table and Estimated Rate of Recharge in Outcrops of the Chicot and Evangeline Aquifers near Houston, Texas. J.E. Noble, P.W. Bush, M.C. Kasmarek, and D.L. Barbie. 1996.

Ground-Water Resources of the Houston District, Texas. W.N. White, N.A. Rose, and W.F. Guyton. 1944.

Hydrogeology, Land-Surface Subsidence, and Documentation of the Gulf Coast Land Subsidence and Groundwater-Flow (GULF) Model, Southeast Texas, 1897–2018. J.H. Ellis et al. 2023

Hydrology and Simulation of Groundwater Flow and Land-Surface Subsidence in the Northern Part of the Gulf Coast Aquifer System, Texas, 1891-2009. M.C. Kasmarek. 2012.

Water-Level Altitudes 1998, Water-Level Changes 1977-98 and 1997-98, and Compaction 1973-97 in the Chicot and Evangeline Aquifers, Houston-Galveston Region, Texas. L.S. Coplin. 1998.

Water-Level Altitudes 1998 and Water-Level Changes 1990-98 and 1997-98 in the Chicot and Evangeline Aquifers, Fort Bend County and Adjacent Areas, Texas. L.S. Coplin and Horacio X. Santos. 1998.

Water-Level Altitudes in Wells Completed in the Chicot and Evangeline Aquifers, Houston-Galveston Region, Texas, January-February 1992. 1993, and 1994. M.C. Kasmarek. 1997.

Water-Level Altitudes in Wells Completed in the Chicot and Evangeline Aquifers, Fort Bend County and Adjacent Areas, Texas, January-February 1992. 1993, and 1994. M.C. Kasmarek. 1997.

Water-Level Altitudes in Wells Completed in the Chicot and Evangeline Aquifers, Fort Bend County and Adjacent Areas, Texas, January-February 1990. M.C. Kasmarek. 1997.

Report 82-431 Ground-Water Withdrawals and Changes in Water Levels in the Houston District, Texas 1975-1979. R. K. Gabrysch. 1982.

Report 82-571 Ground-Water Withdrawals and Land-Surface Subsidence in the Houston-Galveston Region, Texas 1906-1980. R. K. Gabrysch. 1982.

Report 86-57 Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Chambers, Liberty, and Montgomery Counties, Texas. 1980-1984. James F. Williams III, L.S. Coplin, C.E. Ranzau, Jr. and W.B. Lind. 1986.

Report 88-4154 Flow Pattern in Regional Aquifers and Flow Relations Between the Lower Colorado River Valley and Regional Aquifers in Six Counties in Southeastern Texas. Dennis G. Woodward. 1989.

Report 90-4012 Ground-Water Withdrawals, Water-Level Changes, Land-Surface Subsidence, and Ground-Water Quality in Fort Bend County, Texas 1969-1987. Glenn L. Locke. 1990.

Report 90-588 Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Brazoria, Fort Bend, and Waller Counties, Texas. 1985-1989. By Glenn L. Locke. 1991.

Report 90-594 Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Chambers, Liberty, and Montgomery Counties, Texas. 1985-1989. Glenn L. Locke. 1991.

Report 90-598 Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Harris and Galveston Counties, Texas. 1984-1989. L.S. Coplin and Al Campodonico. 1991.

Report 92-4180 Ground-Water Withdrawals, Water Levels, and Ground-Water Quality in the Houston District, Texas, With Emphasis on 1985-1989. Dana L. Barbie and Glenn L. Locke. 1993.

Report 96-4018 Estimated Depth to the Water Table and Estimated Rate of Recharge in Outcrops of the Chicot and Evangeline Aquifers Near Houston, Texas. J. E. Noble, P.W. Bush, M. C. Kasmarek. and D.L. Barbie. 1996.

1-A.3.2 Texas Water Development Board Reports

Report 41 Ground Water in the Flood-Plain Alluvium of the Brazos River, Whitney Dam to Vicinity of Richmond, Texas. James G. Cronin and Clyde A. Wilson. 1967.

Report 68 Ground-Water Resources of Austin and Waller Counties, Texas. 1967. Clyde A. Wilson.

Report 72 Ground-Water Resources of Liberty County, Texas. 1968. R.B. Anders, G.D. McAdoo, and W.H. Alexander, Jr.

Report 80 Ground-Water Resources of San Jacinto County, Texas. 1968. W.M. Sandeen.

Report 123 Records of Water-Level Measurements in Wells in Galveston County, Texas. 1970. R.K. Gabrysch, Gene D. McAdoo, and C.W. Bonnett.

Report 133 Ground-Water Resources of Chambers and Jefferson Counties, Texas. 1971. Saul Aronow.

Report 136 Ground-Water Resources of Montgomery County, Texas. 1971. Barney P. Popkin.

Report 139 Records of Wells, Drillers' Logs, and Chemical Analyses of Ground Water in Galveston County, Texas. 1971. R.K. Gabrysch, Gene D. McAdoo and W. L. Naftel.

Report 152 Development of Ground Water in the Houston District, Texas. 1966-1969. 1972. R.K. Gabrysch.

Report 155 Ground-Water Resources in Fort Bend County, Texas. 1972. J. B. Wesselman.

Report 163 *Ground-Water Resources of Brazoria County, Texas*. 1973. William M. Sandeen and John B. Wesselman.

Report 178 *Ground-Water Data for Harris County, Texas Volume II, Records of Wells 1892-1972.* 1974. R.K. Gabrysch, W. L. Naftel, Gene D. McAdoo and C.W. Bonnett.

Report 201 *Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Brazoria, Fort Bend, and Waller Counties, Texas. 1966-1974*. 1976. W. L Naftel, Kenneth Vaught, and Bobbie Fleming.

Report 202 *Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Chambers, Liberty, and Montgomery Counties, Texas. 1966-1974*. 1976. W. L Naftel, Bobbie Fleming, and Kenneth Vaught.

Report 238 *Groundwater Availability in Texas, Estimates and Projections through 2030*. 1979.

LP-103 A Digital Model for Simulation of Ground-Water Hydrology in the Houston Area, Texas. 1979. Walter R. Meyer and Jerry E. Carr.

Report 241 *Development of Ground Water in the Houston District, Texas 1970-1974*. 1980. R. K. Gabrysch.

Report 277 *Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Brazoria, Fort Bend, and Waller Counties, Texas. 1975-1979*. 1983. Karl W. Ratzlaff, C.E. Ranzau, and W.B. Lind.

Report 280 *Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Chambers, Liberty, and Montgomery Counties, Texas. 1975-1979*. 1983. Karl W. Ratzlaff, C.E. Ranzau, and W.B. Lind.

Report 285 *Records of Wells, Drillers' Logs, Water-Level Measurements, and Chemical Analyses of Ground Water in Harris and Galveston Counties, Texas. 1975-1979*. 1984. Karl W. Ratzlaff, C.W. Bonnet, and L.S. Coplin.

Report 289 *Digital Models for Simulation of Ground-Water Hydrology of the Chicot and Evangeline Aquifers along the Gulf Coast of Texas*. 1985. Jerry E. Carr, Walter R. Meyer, William M. Sandeen, and Ivy R. McLane.

Report 295 *Hydrology of the Jasper Aquifer in the Southeast Texas Coastal Plain*. 1986. E. T. Baker, Jr.

Report 309 *Ground-Water Conditions in Texas. 1980-1985*. 1988. Compiled by Ground Water Unit.

Report 332 *Ground-Water Resources of the Carrizo-Wilcox Aquifer in the Central Texas Region.* 1991. David Thorkildsen and Robert D. Price.

Report 345 *Aquifers of Texas.* 1995. John B. Ashworth and Janie Hopkins.

1-A.3.3 Texas Groundwater Protection Committee Publications

Joint Groundwater Monitoring and Contamination Report - 1996; TNRCC Publication Number SFR-56. June 1997.

Activities of the Texas Groundwater Protection Committee, Report to the 75th Legislature; TNRCC Publication Number SFR-47. December 1996.

Texas Groundwater Program Directory; TNRCC Publication Number GI-226. October 1996.

Texas Ground-Water Data Dictionary; TNRCC Publication Number AS-109. August. 1996.

Joint Groundwater Monitoring and Contamination Report - 1995; TNRCC Publication Number SFR-36. April 1996.

Texas State Management Plan for the Prevention of Pesticide Contamination of Groundwater; Draft TNRCC Publication. March 1996.

Texas State Management Plan for the Prevention of Pesticide Contamination of Groundwater (Educational Brochure); TNRCC Publication Number GI-141. June 1995.

Joint Groundwater Monitoring and Contamination Report - 1994; TNRCC Publication Number SFR-20. April 1995.

Activities of the Texas Groundwater Protection Committee. Report to the 74th Legislature; TNRCC Publication Number SFR-14. December 1994.

Texas Groundwater Protection (Educational Brochure); Texas Natural Resource Conservation Commission (TNRCC) Publication Number GI-88. November 1994.

Joint Groundwater Monitoring and Contamination Report - 1993; Texas Natural Resource Conservation Commission Report SFR-6. May 1994.

Joint Groundwater Monitoring and Contamination Report - 1992; Texas Natural Resource Conservation Commission Report SFR-1. November 1993.

Activities of the Texas Groundwater Protection Committee, Report to the 73rd Legislature; Texas Water Commission Report R 93-01. January 1993.

Joint Groundwater Monitoring and Contamination Report - 1991; Texas Water Commission Report R 92-02. May 1992.

Texas Ground Water Protection Profiles; unpublished Texas Water Commission Report. June 1991.

Texas State Management Plan for Agricultural Chemicals in Ground Water; Agricultural Chemicals Subcommittee. June 1991.

Joint Groundwater Monitoring and Contamination Report - 1990; Texas Water Commission Report Z-104. April 1991.

Activities of the Texas Groundwater Protection Committee, Report to the 72nd Legislature; Texas Water Commission Report Z-96. January 1991.

Joint Groundwater Monitoring and Contamination Report; Texas Water Commission Report Z-94. April 1990.

Groundwater Protection Committee (GPC), Texas Groundwater Protection Strategy; TWC Report Z-80. January 1988.

Texas Ground Water Protection Activities - 1986; Texas Water Commission (TWC) Report Z-79. October 1986.

1-A.3.4 Texas Board of Water Engineers

Ground-Water Resources of Brazoria County, Texas. 1947. C.R. Follett.

Ground-Water Resources of Liberty County, Texas. 1950. W. H. Alexander, Jr.

Geology and Ground-Water Resources of Walker County, Texas. 1950. A. G. Winslow.

1-A.3.5 Texas Water Commission

Availability and Quality of Ground Water in Leon County, Texas; Bulletin 6513. May 1965. Richard C. Peckham.

Ground Water Protection and Management Strategies for Fort Bend County. March 1990. John Austin Williamson.

1-A.3.6 Other

Brackish Groundwater Manual for Texas Water Planning Groups. 2003. LBG-Guyton Associates.

Managing Texas' Groundwater Resources Through Groundwater Conservation Districts. 1998. Guy Fipps. Texas A&M System, Texas Agricultural Extension Service, B-1612/11-98.

Regional Groundwater Update Project, Final Report. 2013. Freese and Nichols, Inc.

1-A.4 AGRICULTURAL STUDIES AND REPORTS

Water Use and Management in the Texas Rice Belt Region. 1984. Ronal C. Griffin, Gregory M. Perry, and Garry N. McCauley.

Potential Rice Irrigation Water Conservation Measures, Water Planning Group - Region H. 2000. James A. Stansel, Texas A&M University System.

1-A.5 ENVIRONMENTAL AND WATER QUALITY REPORTS

1-A.5.1 Texas Commission on Environmental Quality Reports

1996 Regional Assessment of Water Quality; Brazos River Basin including the Oyster Creek Watershed. 1996. Brazos River Authority.

1996 Regional Assessment of Water Quality. 1996. Harris-Galveston Area Council of Governments.

1996 Regional Assessment of Water Quality. 1996. Trinity River Authority of Texas.

Assessment of Water Quality and Fish Kills in Upper Oyster Creek Segment 1245 (SR 92-05). 1992. TNRCC.

State of Texas 1996 Water Quality Assessment. 1997. Texas Natural Resources Conservation Commission.

2024 Texas Integrated Report of Surface Water Quality for the Clean Water Act Sections 305(b) and 303(d). 2024. Texas Commission on Environmental Quality.

Texas Water Quality Inventory 2000. April 2002. Texas Commission on Environmental Quality.

Waste Load Evaluation for Dissolved Oxygen in the Intracoastal Waterway in the Neches-Trinity Coastal Basin, Segment 0702. 1993. TNRCC.

1-A.5.2 Texas Parks and Wildlife Department Reports

Wildlife Habitat Appraisal for the Proposed Allens Creek Reservoir Site. 1995. Lovelace et al., University of Houston Clear Lake.

A Fisheries Inventory and Assessment of Allens Creek and the Brazos River, Austin County, Texas. 1994. Linam et al., Resource Protection Division, Texas Parks & Wildlife Department, Final Report to TWDB, Research and Planning Fund Contract No. 93-483-364.

Status of Environmental Issues for Allens Creek Reservoir. 1996. Paul Price & Associates. Trans-Texas Water Program, Southeast Area Memorandum Report to the TWDB.

Macroinvertebrate Assessment of Allens Creek and the Brazos River, Austin County, Texas. 1994. Wood et al., Department of Biology-Aquatic Station, Southwest Texas State University, San Marcos, Texas. Final Report submitted to Texas Parks & Wildlife Department, for TWDB Research and Planning Fund Contract No. 93-483-364.

Rare, Threatened, and Endangered Species of Texas. 2024. Texas Parks & Wildlife Department. https*://tpwd.texas.gov/gis/rtest/*

Utilization of Marsh and Associated Habitats along a Salinity Gradient in the Galveston Bay. 1990. Zimmerman et al., National Marine Fisheries Service, U.S. Department of Commerce. Technical Memorandum NMFS-SEFC-250.

Planning Report/Final Environmental Statement for the San Jacinto Project, Texas. 1988. U.S. Bureau of Reclamation.

Ecologically Significant River and Stream Segments of Region H, Regional Water Planning Area. October 1999. Chad W. Norris and Gordon W. Linam, TPWD.

1-A.5.3 US Geological Survey Reports

Water Resources Data - Texas Volume 3. 1998-2003. US Geological Survey.

Nutrient Loading and Selected Water-Quality and Biological Characteristics of Dickinson Bayou Near Houston, Texas. 1995-97. 1998. J.W. East, E.M. Paul, and S.D. Porter.

Water-Quality Assessment of the Trinity River Basin, Texas-Nutrients and Pesticides in the Watersheds of Richland and Chambers Creeks. 1993-95. 1997. L.F. Land.

Light Attenuation in a Shallow, Turbid Reservoir, Lake Houston, Texas. 1997. Roger W. Lee and Walter Rast.

Occurrence and Distribution of Organochlorine Compounds in Biological Tissue and Bed Sediment from Streams in the Trinity River Basin, Texas. 1992-93. 1997. J. Bruce Moring.

Water-Quality Assessment of the Trinity River Basin, Texas-Pesticides in Streams Draining an Urban and an Agricultural Area. 1993-95. 1996. L.F. Land and M.F. Brown.

Trends in Nutrient Inflows to the Gulf of Mexico from Streams Draining the Conterminous United States. 1972-93. 1996. David D. Dunn.

Water-Quality Assessment of the Trinity River Basin, Texas-Nutrients in Streams Draining an Agricultural and an Urban Area. 1993-95. 1996. L.F. Land and A.A. Shipp.

Summary Statistics and Graphical Comparisons of Specific Conductance, Temperature, and Dissolved Oxygen Data, Buffalo Bayou, Houston, Texas, April 1986-March 1991. 1995. D.W. Brown and E.M. Paul.

1-A.5.4 Reports from Other Agencies

1998 Annual Water Quality Report. 1998. Brazos River Authority.

Certified Report of Water Quality Management Study for Lower Oyster Creek. 1983. Espey, Huston & Associates.

Characterization of non-point sources and loadings to Galveston Bay. 1992. Charles J. Newell, Hanadi S. Rifai, Philip B. Bedient. Galveston Bay National Estuary Program.

Environmental impact statement: Limestone electric generating station and Jewett mine in Freestone, Limestone, and Leon counties, Texas. 1981. U.S. Environmental Protection Agency, Region 6; prepared in cooperation with U.S. Soil Conservation Service, Texas Railroad Commission, Texas Historical Commission, Texas Dept. of Water Resources, Texas Air Control Board, U.S. Fish and

Wildlife Service, U.S. Geological Survey, U.S. Army Corps of Engineers, and U.S. Dept. of Interior Office of Surface Mining.

Freshwater Inflows to Texas Bays and Estuaries: Ecological Relationships and Methods for Determination of Needs. 1994. Longley (ed.), TWDB and TPWD.

Freshwater Inflow Recommendation for the Trinity-San Jacinto Estuary. 1998. Texas Parks & Wildlife Department, Coastal Studies Program, Austin, Texas.

Guidelines for Water Resources Permitting: Nutrient Requirements for Maintenance of Galveston Bay Productivity. 1996. Brock et al. Final TWDB Report to Near Coastal Waters Program, U.S. EPA, Region 6.

Lake Livingston 1991 Sedimentation Survey. 1992. Bureau of Reclamation.

Potential Aquatic Ecological Impacts of Interbasin Water Transfers in the Southeast, West-Central, and South-Central Study Areas. 1995. Geo-Marine, Inc., Plano, Texas. Report Prepared for TWDB and U.S. Army Corps of Engineers, Fort Worth District, Contract No. DACA63-93-D-0014.

Regulatory effectiveness study for the Armand Bayou Coastal Preserve. 1991. Gary Mitchell and Duane Windsor. Galveston Bay National Estuary Program.

Regulatory effectiveness study for the Christmas Bay Coastal Preserve. 1991. Gary Mitchell. Galveston Bay National Estuary Program.

Segmentation development for Galveston Bay. 1992. Prepared by Jones and Neuse, Inc., Environmental and Engineering Services. Galveston Bay National Estuary Program.

Toxic contaminant characterization of aquatic organisms in Galveston Bay: a pilot study. 1992. Prepared by James M. Brooks, et al. Galveston Bay National Estuary Program.

Trinity River Basin Regional Assessment of Water Quality. 1996. Trinity River Authority.

Trinity River & tributaries: regional environmental impact statement. 1987. US Army Corps of Engineers, Fort Worth District.

Trinity-San Jacinto Estuary: A Study of the Influence of Freshwater Inflows. 1981. Texas Department of Water Resources (now TWDB). Report No. LP-113.

1-A.6 RECREATIONAL AND NAVIGATIONAL WATER USE REPORTS

1-A.6.1 Stream Flow Information

McKinney, Larry, et al. *Freshwater Inflow Recommendation for the Trinity - San Jacinto Estuary of Texas*. 1998. Coastal Studies Program, Resource Protection Division, Texas Parks & Wildlife Department; Austin, TX.

Brazos River Basin Water Supply and Reservoir Data, Brazos River Authority. https://www.brazos.org/About-Us/Water-Levels/Water-Supply-and-Reservoir-Data

Freshwater Inflows to Texas Bays and Estuaries-Ecological Relationships and Methods for Determination of Needs. 1998. Texas Parks & Wildlife Department.

Galveston Bay/Trinity and San Jacinto Estuary Draft Report. 1998. Texas Parks & Wildlife Department.

Freshwater Inflows to Texas Bays and Estuaries-Ecological Relationships and Methods for Determination of Needs. 1998. Texas Parks & Wildlife Department.

Reservoir Conditions for Selected River Basins in Texas. 1999. US Geological Survey.

Fort Worth District Reservoir Release Report. 1999. US Army Corps of Engineers. www.swf-wc.usace.army.mil/reports/fish.htm

Trans-Texas Water Program: Southeast Area, Technical Memoranda CD. 1997. Brown & Root, Inc.

Trans-Texas Water Program: Reports CD. 1998. Brown & Root, Inc.

1-A.6.2 River / River Basin Information

The State of Texas Water Quality Inventory: Surface Water Quality Monitoring Program. 1996. Texas Natural Resource Conservation Commission , Austin, TX; Volume 1-4.

Texas Water Quality: A Summary of River Basin Assessments. 1996. Texas Clean Rivers Program and Texas Natural Resource Conservation Commission. Austin, TX.

A Natural Resource Survey for Proposed Reservoir Sites And Selected Stream Segments In Texas. 1991. Jack Bauer, et al., Texas Parks & Wildlife Department, Austin, TX; Contract Study: Number 1; Part 1.

San Jacinto River Authority Home Page. https://www.sjra.net

Trinity River Authority of Texas, June 1999. trinityra.org/masterplan/masterplan.htm

Brazos River Authority Home Page, June 1999. www.brazos.org

Central Texas Waterways: Brazos River, Texas Parks & Wildlife Department, February 1999. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/14_c_tx_brazos.phtml

East Texas Seasonal and Restrictive Waterways, Part 2. 1999. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/12a_e_tx_seas_restrict.phtml

East Texas Seasonal and Restrictive Waterways, Part 2. 1999. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/12b_e_tx_seas_restrict.phtml

East Texas Waterways: Trinity River. 1999. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/10_e_tx_trinity.phtml

East Texas Waterways: San Jacinto River-West Fork. 1999. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/09_e_tx_san_jacinto_trinity_elm.phtml

East Texas Waterways: Pine Island Bayou. 1999. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/08_e_tx_pine_red_sabine.phtml

East Texas Waterways: Neches River. 1999. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/07_e_tx_neches.phtml

Table of Contents: Analysis of Texas Waterways. 1999. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/index.phtml

1-A.6.3 Navigation

USACE Navigation Portal. US Army Corps of Engineers. https://navigation.usace.army.mil/

Tide Predictions for Galveston, Galveston Channel, TX. NOAA/National Ocean Service. https://tidesandcurrents.noaa.gov/noaatidepredictions.html?id=8771450

Physical Oceanographic Real-Time System. NOAA. https://tidesandcurrents.noaa.gov/ports_info.html

Gulf Intracoastal Waterway. Texas Department of Transportation. https://www.txdot.gov/inside-txdot/division/transportation-planning/waterway.html

The *Texas Transportation Plan Update, Marine Transportation*. 2002. Cambridge Systematics.

The Handbook of Texas Online, Texas State Historical Association. https://tshaonline.org/handbook

1-A.6.4 Recreational Areas / Activities

Galveston Bay Recreational User's Handbook. 1992. Galveston Bay National Estuary Program.

Texas Almanac and State Industrial Guide. 1998-1999. Mary G. Ramos. The Dallas Morning News, Dallas, TX; 1997.

The Roads of Texas. Shearer Publishing, Fredericksburg, Texas; 1988.

The Great Texas Coastal Birding Trail: Upper Texas Coast. TPWD, Austin, TX; 1999. (Map)

Ducks Unlimited Texas. https://www.ducks.org/Texas

Chambers County, Texas – Attractions. https://www.co.chambers.tx.us/page/Tourism

Fort Bend County Events. https://www.fortbendcountytx.gov/your-county/events

Wallisville Lake Project. https://www.swg.usace.army.mil/Locations/Wallisville-Lake-Project-Office/Recreation/

Trinity River Basin Recreation. http://www.trinityra.org/recreation.htm

Lake Livingston State Park. https://tpwd.texas.gov/state-parks/lake-livingston

NOAA Fisheries – Estuary Habitat. 2022. https://www.fisheries.noaa.gov/estuary-habitat

USDA Forest Service. https://www.fs.usda.gov/

Galveston Bay Estuary Program. https://gbep.texas.gov/

Recreation.Gov –Anahuac National Wildlife Refuge. https://www.recreation.gov/camping/gateways/1262

Recreation.Gov –Attwater Prairie Chicken NWF. https://www.recreation.gov/camping/gateways/1281

Recreation.Gov –Brazoria NWR. https://www.recreation.gov/camping/gateways/1318

Recreation.Gov –San Bernard NWR. https://www.recreation.gov/camping/gateways/1593

Davy Crockett National Forest. https://www.fs.usda.gov/detail/texas/about-forest/districts/?cid=fswdev3_008441

U.S. Fish & Wildlife Service –Southwest Region. https://www.fws.gov/southwest/

Anahuac NWR, U.S. Fish & Wildlife Service. www.fws.gov/refuge/Anahuac/about.html

Attwater Prairie Chicken NWR, www.fws.gov/refuge/attwater_prairie_chicken/

Brazoria NWR, U.S. Fish & Wildlife Service. www.fws.gov/refuge/brazoria/

San Bernard NWR, U.S. Fish & Wildlife Service. www.fws.gov/refuge/san_bernard/

Trinity River NWR, U.S. Fish & Wildlife Service. www.fws.gov/refuge/trinity_river/

NPS units in TX, National Park Service. https://www.nps.gov/state/tx/list.htm

US Department of Agriculture, US Forest Service, Recreation Areas. https://www.fs.usda.gov/recmain/texas/recreation

Sam Houston National Forest Map. March 2010. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5209240.pdf

Alphabetical Listing of State Parks, Texas Parks & Wildlife Department. https://tpwd.texas.gov/state-parks/state-parks-list.phtml

Brazos Bend State Park, Texas Parks & Wildlife Department. https://tpwd.texas.gov/state-parks/brazos-bend

Galveston Island State Park, Texas Parks & Wildlife Department. https://tpwd.texas.gov/state-parks/galveston-island

Huntsville State Park, Texas Parks & Wildlife Department. https://tpwd.texas.gov/state-parks/huntsville

Lake Livingston State Park, Texas Parks & Wildlife Department. https://tpwd.texas.gov/state-parks/lake-livingston

San Jacinto Battleground State Historical Park, Texas Historical Commission. https://www.thc.texas.gov/historic-sites/san-jacinto-battleground-state-historic-site

Sheldon Lake State Park and Wildlife Management Area, Texas Parks & Wildlife Department. https://tpwd.texas.gov/state-parks/sheldon-lake

Stephen F. Austin State Historical Park, Texas Parks & Wildlife Department. https://tpwd.texas.gov/state-parks/stephen-f-austin

Wildlife Management Areas, Texas Parks & Wildlife Department. https://tpwd.texas.gov/huntwild/hunt/wma/

Alphabetical Listing of Wildlife Management Areas, Texas Parks & Wildlife Department. https://tpwd.texas.gov/huntwild/hunt/wma/find_a_wma/list/

Texas Fishing –The Official Page, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/

Freshwater Fish ID, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/landwater/water/aquaticspecies/inland.phtml

Alphabetical Listing of Texas Lakes, Texas Parks & Wildlife Department, December 2024 //tpwd.texas.gov/fishboat/fish/recreational/lakes/lakelist.phtml

Lake Conroe –Fishing, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/recreational/lakes/conroe/

Lake Conroe Public Access Facilities, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/recreational/lakes/conroe/access.phtml

Lake Houston –Fishing, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/recreational/lakes/houston/

Lake Houston Public Access Facilities, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/recreational/lakes/houston/access.phtml

Lake Limestone –Fishing, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/recreational/lakes/limestone/

Lake Limestone Public Access Facilities, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/recreational/lakes/limestone/access.phtml

Lake Livingston –Fishing, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/fishboat/fish/recreational/lakes/livingston/

TX GEMS, Texas Parks & Wildlife Department, December 2024 https://tpwd.texas.gov/landwater/water/conservation/txgems/

1-A.6.5 Economics

Southwick Associates. *The Economic Contributions of Bird and Waterfowl Recreation in the United States During 1991.* International Association of Fish and Wildlife Agencies and the USFWS North American Waterfowl and Wetlands Office, March 1995.

NMMA's latest statistics show 1998 marine industry market at a glance. 1998 Retail Market Review, Boat and Motor Dealer, February 1999.

Allen, Michael. *Birding Trail Takes Aim at Affluent Eco-Tourists.* The Wall Street Journal, Texas Journal, August 31, 1994.

Kerlinger, Paul. *The Economic Impact of Birding Ecotoursim On Communities Surrounding Eight National Wildlife Refuges*. 1994.

Nature Tourism in the Lone Star State: Economic Opportunities in Nature, A report from the State Task Force on Texas Nature Tourism. TPWD and Texas Department of Commerce.

Factsheet: Birding as an Economic Asset. National Fish and Wildlife Foundation.

Birds Mean Business for America. Ducks Unlimited and International Association of Fish and Wildlife Agencies.

Tveten, John and Gloria. *Birding Trail Boosts Texas' Ecotourism*. Houston Chronicle. February 4, 1996.

The Economic Importance of Sport Fishing, Recreation & Economics. 1998. TPWD.

Texas-Sea-Grant. Texas A&M University. Accessible at texasseagrant.org.

1-A.7 ECOLOGICALLY UNIQUE STREAM SEGMENTS, UNIQUE RESERVOIR SITES, AND LEGISLATIVE REFERENCES

Brazos G Regional Water Plan. 2001. HDR Engineering.

Planning Report / Final Environmental Statement, San Jacinto Project, Texas. 1988. Bureau of Reclamation, Great Plains Region.

Trinity River Yield Study Phase III: Yield Analysis. 1986. Espey, Huston, & Associates, Inc.

Memorandum Report: Updated Water Project Opinions of Cost. 1996. Freese and Nichols, Inc.

Trans-Texas Water Program Southeast Area, Operation Studies and Opinions of Cost for Allens Creek Reservoir Volumes I and II. 1997. Freese and Nichols, Inc.

Houston Water Master Plan, Appendix L. 1991. Metcalf & Eddy.

Ecologically Significant River and Stream Segments of Region H, Regional Water Planning Area. 1999. Norris, Chad W. and Gordon W. Linam, Texas Parks and Wildlife Department.

San Jacinto River Authority, Water Resources Development Plan - Water Supply Plan. 1988. Pate Engineers, Inc.

Boswell Creek Watershed, Healthy Forest Initiative, Specialist Report – Aquatics. 2003. Peterson, Dave, US Forest Service.

Boswell Creek Watershed, Healthy Forest Initiative, Wildlife Report. 2003. Quesada, Felix, US Forest Service.

Texas Water and Wildlife: A Natural Resource Survey for Proposed Reservoir Sites and Selected Stream Segments in Texas. 1990. Texas Parks and Wildlife Dept. and U.S. Fish & Wildlife Service.

Ecologically Significant River and Stream Segments Reports, updated October 2003, accessed at http://www.tpwd.state.tx.us/texaswater/sb1/rivers/unique/sigseg.phtml. Texas Parks and Wildlife Department.

Texas Gulf Ecological Management Sites, Anahuac NWR data page, accessed at www.tpwd.state.tx.us/texaswater/txgems/anahuac/anahuac.phtml. Texas Parks and Wildlife Department.

1-A.8 WATER INFRASTRUCTURE FINANCING REFERENCES

1-A.8.1 Self-Financing Information

A Handbook for Board Members of Water Districts in Texas. Fourth Edition, Sections on Taxation and Bonds only, TNRCC Regulatory Guidance RG-238, June 1996.

TNRCC Jurisdiction Over Utility Rates and Service Policies. TNRCC Regulatory Guidance RG-245, rev. July 2000.

Texas Small Towns Environment Program (STEP), Guidelines for Community Self-Help Projects. 2001. The Rensselaerville Institute.

Texas Small Towns Environment Program (STEP), Role of Government to Support Community Self-Help Projects. 2001. The Rensselaerville Institute.

Texas Small Towns Environment Program (STEP), Sparkplugs…Leading Resident Volunteers Through Community Self-Help. 2001. The Rensselaerville Institute.

1-A.8.2 Government Loan and Grant Programs

2003 Drinking Water State Revolving Fund (DWSRF) Funding Opportunities for Public Drinking Water Projects & Source Water Protection Projects, TWDB Letter, November 15, 2001, with attachments.

Agricultural Water Conservation Loan Program, summary information from the TWDB website, www.twdb.state.tx.us

Agricultural Water Conservation Program, Texas Administrative Code, Title 31, Chapter 367.

Civil Works Programs, US Army Corps of Engineers. 2001 Report, Introduction and Water Supply sections only.

Clean Water State Revolving Fund, Texas Administrative Code, Title 31, Chapter 375.

Economically Distressed Areas Program (EDAP), summary information from the TWDB website, www.twdb.state.tx.us Two eligible counties in Region H, Leon and Liberty.

EDAP Status Report, TWDB, December 31. 2001.

Funding Sources for Utilities, TNRCC Regulatory Guidance RG-220, rev. May 2001.

Financial Assistance Programs, Texas Administrative Code, Title 31, Chapter 363.

Research and Planning Funding, Texas Administrative Code, Title 31, Chapter 355.

Water and Waste Disposal Programs, Fiscal Year 2001, USDA Rural Utilities Service, July 1, 2001.

1-A.8.3 Additional Reports

Clean Safe Water for the 21st Century. April 2000. Water Infrastructure Network.

Drinking Water Infrastructure Needs Survey, Second Report to Congress, Executive Summary and Appendices B, C, and E only. February 2001. US EPA Report 814-R-01-004.

Funding America's Drinking Water Infrastructure: From Public to Private. 2001. Christina Brow, Washington Internships for Students of Engineering.

Texas Water Allocation Assessment Report. March 2002. Freese and Nichols, Inc. prepared for the Fort Worth District, USACE.

Water Infrastructure Now. February 2001. Water Infrastructure Network.

Water Conservation Plans, Drought Contingency Plans, Guidelines and Requirements, Texas Administrative Codes, Title 30, Chapter 288.

APPENDIX 2-A

WATER DEMAND FOR HYDROGEN PRODUCTION

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Appendix 2-A – Water Demand for Hydrogen Production

2-A-1. INTRODUCTION

A growing population and economy, as well as water and energy resources, make Texas an attractive location for developing emerging technologies. Over the last decade, the state has seen a rapid expansion in the technology sector as well as industry diversification. Recent interest in large volume hydrogen production and other emerging industrial product sectors have generated discussion in many areas of the state. This is particularly relevant to the area along the Gulf Coast, which is home to an industrial base of international importance and located in proximity to diverse water resources. Due to the emerging nature of this market and the potential for high associated future water demands, the Region H Water Planning Group (RHWPG) undertook a preliminary literature review of issues surrounding hydrogen production. While the timing of this emerging topic and remaining uncertainty regarding demand magnitude preclude incorporation of corresponding adjustments to demand projections for the 2026 Region H Regional Water Plan (RWP), this analysis is intended to provide context on the topic and greater clarity on potential future water demands.

2-A-2. TERMINOLOGY

Although not officially regulated, a color coding system is often used by industrial entities to indicate the pathway of hydrogen production, as explained by *Table 2-A-1*. Per the International Renewable Energy Agency (IRENA), this is often referred to as the "hydrogen rainbow".

Table 2-A-1 – Hydrogen Color Coding

Color Code	Production Pathway	Results in CO_2 Emissions?
Grey	Produced from natural gas using steam-methane reforming.	Yes
Brown	Produced from the gasification of fossil fuel feedstock, usually coal.	Yes
White	Produced as a byproduct of an industrial process.	Varies
Yellow	Produced by electrolysis using electricity from solar power.	Varies
Blue	Grey or brown hydrogen with carbon capture.	Yes
Turquoise	Produced by methane pyrolysis with solid carbon by-product.	Yes
Green	Produced by electrolysis using electricity from renewables.	No
Pink	Produced by electrolysis using electricity from nuclear power.	No

2-A-3. OVERVIEW OF CURRENT CONDITIONS

A recent study published by the Center for Energy Studies (CES), *Developing a Robust Hydrogen Market In Texas* (2023), discussed the current and potential future hydrogen market in Texas. According to the report, Texas is the largest producer of hydrogen in the nation, due to a well-established hydrogen industry with petrochemical feedstock as its primary end-use. With nearly 1,000 miles of hydrogen pipelines, Texas contains 64 percent of the nation's hydrogen distribution network. The majority of this hydrogen pipeline mileage is owned by a limited number of entities. The report further highlights the significant scale of current hydrogen activities in Texas. Nearly 30 percent of the nation's hydrogen facilities are housed in Texas, nearly all of which currently produce grey hydrogen (hydrogen colors discussed further in ***Section 2-A-2***) either via steam-methane reforming (SMR) or as an industrial byproduct. Air Liquide, Linde, and Air Products collectively operate 42 of the 43 total Texas facilities. At the time of the study, petroleum refineries in Texas annually produced approximately 2 million tons per annum (MTPA) of hydrogen.

Twenty additional hydrogen production facilities are either proposed or planned, four of which are planned to produce green hydrogen and fourteen to produce blue hydrogen. Texas offers substantial potential for Carbon Capture, Utilization and Storage (CCUS) with long-term storage possibilities in the state's offshore saline formations, as well as comparative advantages in blue hydrogen production due to its low-cost natural gas production, transportation, and delivery infrastructure. Hydrogen producers in Texas may take advantage of abundant wind energy for green hydrogen production. There is a potential for wind energy to be sent to refineries along the Gulf Coast though a connected power market given sufficient internal transmission capacity.

The report *Hydrogen Insights: A perspective on hydrogen investment, market development and cost competitiveness* (Hydrogen Council and McKinsey & Co, 2021), developed on behalf of the Center for Houston's Future, summarizes the current hydrogen landscape for the Houston area. The study estimates that the hydrogen market, largely based in refining along the Texas-Louisiana Gulf Coast, will increase from 3.6 million tonnes per annum (MTPA) to 21.4 MTPA market by 2050. According to the report, hydrogen exports could account for nearly half of all production. The remaining demand is estimated from a combination of needs due to industrial activities, transportation, and power and heating. However, as there are currently few exports, a substantial expansion of pipeline infrastructure will be required.

2-A-4. POLICY

To support the research and development of clean hydrogen and accomplish the US Department of Energy's goal of reducing the cost of hydrogen production to $1 per kilogram (kg) of hydrogen by 2031 (known as the "Hydrogen Shot"), the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, was signed into law in November 2021.

The August 2022 enactment of the Inflation Reduction Act (IRA) strengthened the objectives of the IIJA to decarbonize energy systems, according to the CES report. The IRA outlines provisions of support for nuclear power, clean vehicles and refueling infrastructure, low-carbon hydrogen production, sustainable aviation fuels, low-carbon electricity generation, energy storage, renewable electricity, environmental justice initiatives, and carbon capture and direct air capture. Along with funding resilience measures in coastal regions and other areas, the IRA also lays out provisions that encourage the deployment of carbon capture and the adoption of renewables in rural and agricultural

communities, natural carbon dioxide (CO_2) reduction, and support for loans and grants that fund affordable housing and climate change mitigation strategies.

2-A-5. HYDROGEN

2-A-5.1. Hydrogen Production

The diverse methods available for hydrogen production allow for flexibility in its development. The CES report notes that hydrogen production can be tailored to utilize different local resources as it can be produced in variety of methods, including SMR, electrolysis, or pyrolysis.

The University of Texas at Austin together with several other organizations, published *A Framework for Hydrogen in Texas* (2024), which provided further detail on current activities regarding hydrogen production. According to the study, the most common commercial process for producing hydrogen in Texas is SMR, the high-temperature, high-pressure chemical reforming of methane with steam or oxygen, often with the aid of a catalyst, to produce hydrogen. Hydrogen is released from natural gas hydrocarbons and steam in a traditional, two-reaction SMR process. The leftover carbon and oxygen atoms combine to generate carbon dioxide, which is conventionally released into the atmosphere. At the point of conversion, production systems that use electrolysis to separate hydrogen from water (yellow, pink, and green hydrogen) do not release carbon dioxide and thus have received increased attention.

2-A-5.2. Range of Water Demand for Hydrogen Production

Although hydrogen is considered a clean energy source, pathways for producing hydrogen require sustained, long-term access to large volumes of water, which may have an impact on water availability, and limit byproduct disposal options in different regions.

The International Renewable Energy Agency (IRENA) reported in *Water For Hydrogen Production* (2023) that coal gasification requires about 50 liter per kilogram (L/kg) of water and results in the consumptive use of 31 L/kg on average. This method requires approximately twice the water requirements of Proton Exchange Membrane (PEM) technology. When equipped with CCUS, the water requirements of coal gasification could increase by approximately 60 percent, reaching 80.2 L/kg and 49.4 L/kg, respectively.

Similarly, a report by the National Petroleum Council, *Harnessing Hydrogen; A Key Element of the U.S Energy Future* (2024) noted that in a SMR process water is utilized as a reactant in both the SMR reaction and the water-gas shift reaction in the form of pressurized steam. The process necessitates approximately 4.5 kg (~1.2 gallons) of deionized water to produce 1 kg of hydrogen. However, the actual water consumption for hydrogen production can significantly vary, ranging from 5.7 to 19 kg (or 1.5 to 5 gallons) per kg of hydrogen.

The study further reported that to meet the supply for the Net Zero 2050 (NZ2050) scenario in the United States, a minimum of 125 million gallons per day (MGD) of deionized water would be necessary to produce approximately 30 MTPA of hydrogen from natural gas reforming. This estimate is based on a water-to-hydrogen ratio of 1.5 gallons per kilogram (g/kg) of hydrogen (as H_2). However, if the ratio increases to 5 g/kg of hydrogen, the water requirement could potentially exceed 500 MGD.

2-A-5.3. Water for Green Hydrogen Production

There are four key technologies that form the foundation of green hydrogen production: Anion Exchange Membrane Electrolyzer (AEM), Solid Oxide Electrolyzer Cells (SOEC), Alkaline Electrolyzers (AE), and Proton Exchange Membrane Electrolyzers (PEM) These technologies operate on the fundamental principle of the electrolyzer system, which involves the use of electricity to break down water into its constituent elements of hydrogen and oxygen, as shown in *Equation 2-A-1*. However, these technologies exhibit considerable differences in terms of the technology and materials used, energy consumption, capital expenditure, and commercial scalability.

Equation 2-A-1 – : Decomposition of Water to Hydrogen

$$2H_2O \rightarrow O_2 + 2H_2$$

According to International Renewable Energy Agency (IRENA), green hydrogen uses the least amount of water compared to other forms of clean hydrogen. *Table 2-A-2*, based upon IRENA information, compares the water efficiency of green hydrogen production technologies to other methods like Steam Methane Reforming-Carbon Capture, Utilization and Storage (SMR-CCUS) and Autothermal Reforming (ATR) – CCUS.

Table 2-A-2 – Water Efficiency of Hydrogen Production Technologies

Type of Hydrogen	Production Method	Average Water Consumption (L/kg)
Brown	Coal gasification	31.0
Grey	Natural gas-SMR	17.5
Blue	Coal gasification-CCUS	49.4
	Natural gas-SMR-CCUS	32.2
	Natural gas-ATR-CCUS	24.2
Green	Alkaline Electrolysis	22.3
	PEM Electrolysis	17.5

Similar research from the National Petroleum Council reports that in theory, 8.9 kg of water is required to make one kilogram of hydrogen. This equates to 8.9 liters (or 2.4 gallons) of water consumption per kilogram of produced hydrogen. The actual water requirement, however, can vary depending on additional process losses as well as the level of water treatment (which frequently has a reject stream). The water consumption for alkaline electrolyzers ranges from 9.5 L/kg to 17 L/kg, PEM electrolyzers range from 10 L/kg to 13 L/kg, and solid oxide electrolyzers range from 9.1 L/kg to 11 L/kg, per manufacturer specifications. Considering the upper limit of the reported water consumption values (17 L/kg), the projected annual hydrogen production of approximately 52 MTPA in the NZ2050 scenario would require 640 MGD (2,400 million liters per day).

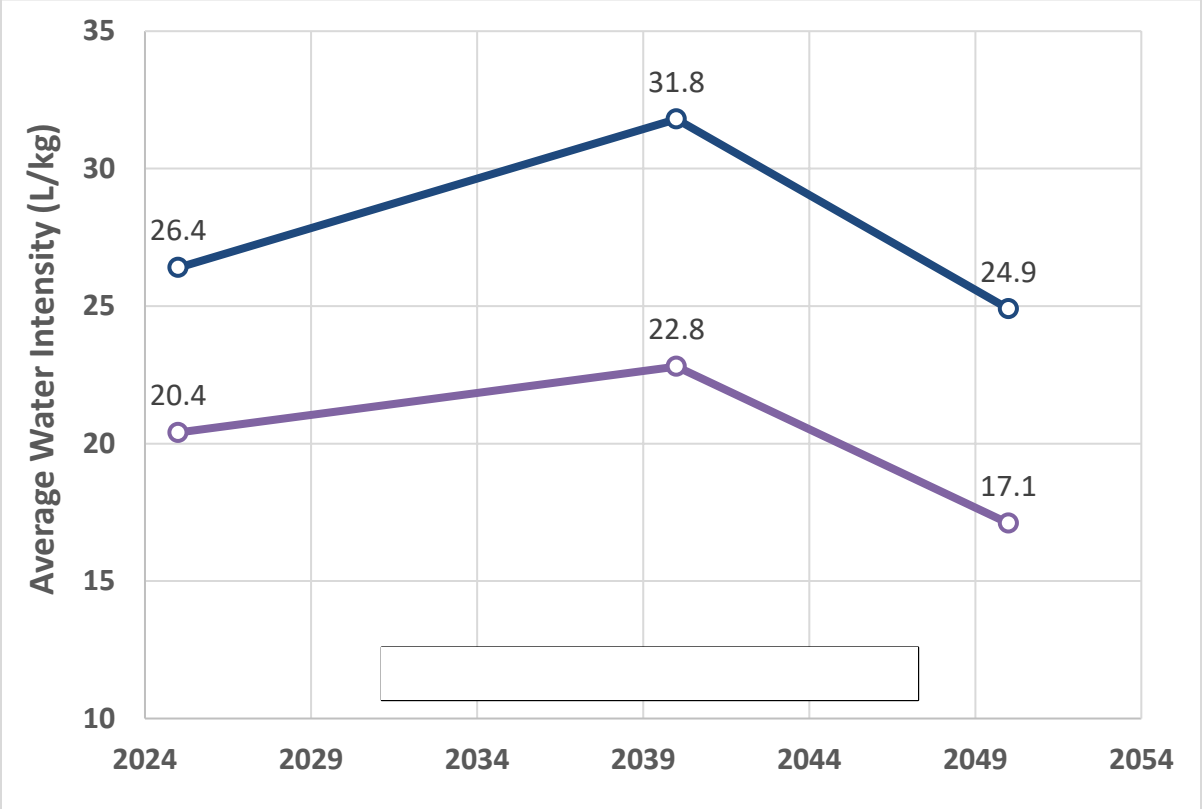
The National Renewable Energy Laboratory (NREL) released *Resource Assessment for Hydrogen Production* (2020), which indicated that water electrolysis facilities typically consume between 3 to 4 gallons of water for each kilogram of hydrogen produced. Established technologies such as SMR and coal gasification require approximately 3 and 8 gallons per kilogram of hydrogen, respectively. Based on these figures, the production of 10 million metric tons (MMT) of hydrogen through water electrolysis would necessitate the use of 29 billion gallons of water.

According to insights from the National Petroleum Council (NPC) study, water demand for hydrogen production can be significant and create struggles in certain regions without surplus supply. One potential strategy involves the utilization of brackish groundwater to address these supply constraints. However, this theoretically feasible approach presents a unique set of difficulties, such as the management of saline waste or the residual output from the process.

2-A-5.4. Projected Water Consumption

The IRENA report projected increasing water demand for hydrogen production through 2040, at which point demand is projected to decrease by 2050. Freshwater extraction intensity is predicted to rise from 26.4 L/kg to 31.8 L/kg between 2024 and 2040 and consumption intensity from 20.4 L/kg to 22.8 L/kg within the same time period, as shown in *Figure 2-A-1*.

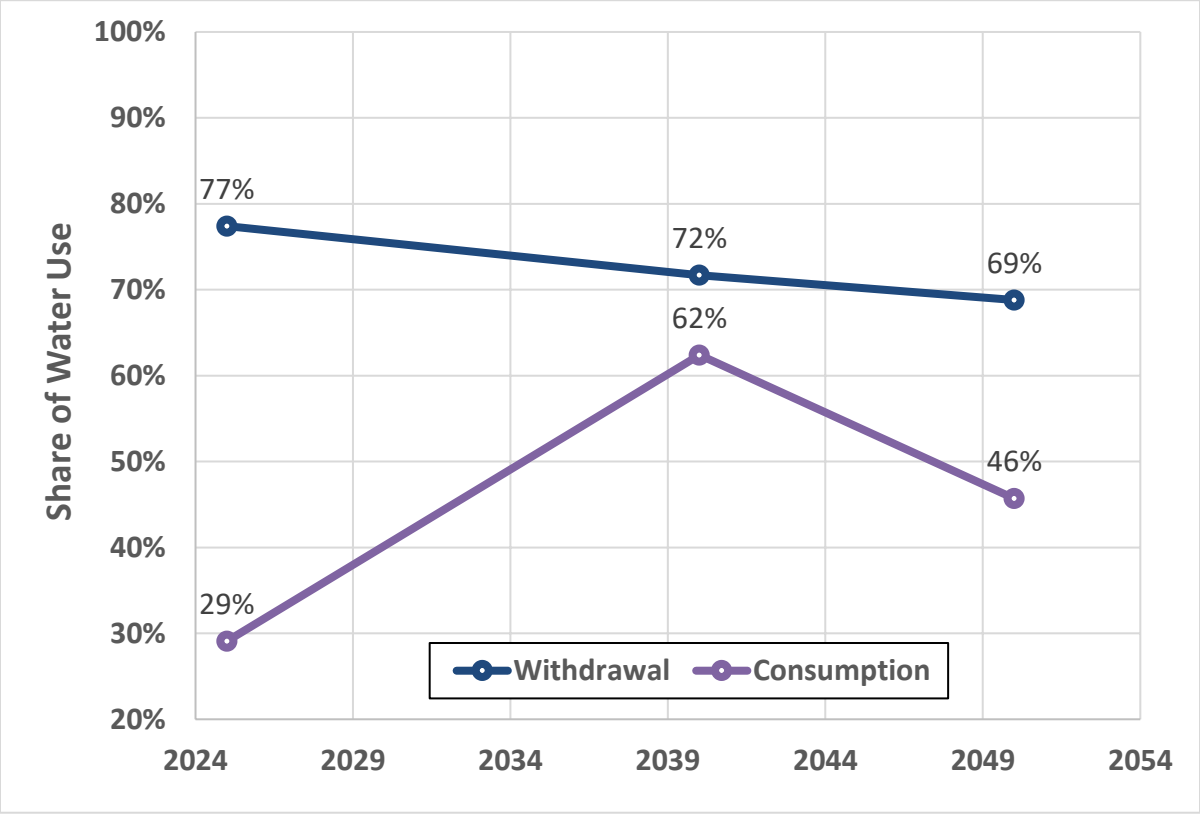
Figure 2-A-1 – Projected Freshwater Intensities



This is mainly because around 80 percent of the hydrogen produced worldwide is now produced by SMR, the hydrogen production technique with the lowest water withdrawal and consumption intensities. According to the IRENA projections, blue hydrogen will account for 33 percent of the market by 2040, with green hydrogen making up the remaining portion. Even so, by 2040, the combined withdrawal and consumption intensities of green and blue hydrogen production would still be greater than those of SMR due to the growing proportions of PEM (50 percent) and Autothermal Reforming with Carbon Capture, Utilization, and Storage (ATR-CCUS) (50 percent) in the mixture.

As shown in *Figure 2-A-2*, the percentage of water extraction used for cooling is now at 29 percent, but is expected to rise to 62 percent by 2040 due to the transition from SMR, which requires less cooling, to green and blue hydrogen production, which requires more cooling. Green hydrogen production is anticipated to gain a larger market share from blue hydrogen (which has very high cooling requirements due to CCUS) by 2050, which would decrease the cooling share to 46 percent for the global hydrogen production market. The consumptive portion of the total water withdrawal is also projected to decline. The primary cause for decline through 2040 is the movement to green and blue hydrogen production, which has a lower consumptive ratio to SMR production. The decline between 2040 and 2050 is mostly attributable to the general rise in fuel-to-hydrogen efficiency.

Figure 2-A-2 – Projected Percentage of Water Demand for Hydrogen Production



2-A-5.5. Water Demand for Texas by 2050

Based on the water consumption intensity values provided in various reports – IRENA, NPC, NREL, and Centre for Houston's Future - the potential water demand required for the projected hydrogen production of 21 MPTA in Texas by 2050 is calculated and shown in *Table 2-A-3*. To put this figure into perspective, the water demand of 401,503 acre-feet per year (ac-ft/yr) for 21 MPTA of hydrogen produced through alkaline electrolysis, represents approximately 14 percent of the total water demand for Region H by 2050.

Table 2-A-3 – Water Demand for Projected 2050 Green Hydrogen Production

Report	Type	Water consumption intensity (gal/kg)	Total Water Demand per Year (MGD)	Total Water Demand (ac ft/yr)
IRENA	Electrolysis – Alkaline	6.23	358	401,503
	Electrolysis – PEM	4.62	265	297,743
	Electrolysis – SOEC	2.85	163	183,673
NPC	Electrolysis – Alkaline	4.45	256	286,788
	Electrolysis – PEM	3.43	197	221,052
	Electrolysis – SOEC	2.9	166	186,895
NREL	Wind - LTE	2.9	166	186,895
	Nuclear - HTE	1.98	113	127,604
Center for Houston's Future	Electrolysis	2.64	151	170,139

2-A-6. IDENTIFIED PROJECTS IN TEXAS

Various references examined by the RHWPG identified potential current or future hydrogen projects within Texas, which are listed below. It should be noted that the development of future hydrogen production in Region H and the remainder of the state will be driven by complex economic and policy factors which could influence project feasibility, timing, technologies, and size.

- GHI and Energy Estate Hydrogen City Project
- Avangrid Renewables Gulf Coast Project
- MMEX Green
- Zero Parks
- HIF USA
- Port Arthur
- Road Runner
- Plug Power - Fort Worth
- Pecos County Ultra Clean Fuels Refining

- APEX-Plug Power H2 Plant
- MMEX - Pecos, Texas
- Javelina Refinery
- ExxonMobil Baytown Petrochemical Site
- New Fortress Energy Green Hydrogen US Gulf, Phase 1 & Phase 2
- Svante Capture Linde SMR Plant
- Hydrogen City
- H_2 Plant Wilbarger County
- Linde Hydrogen Plant for OCI Fertilizer Blue Ammonia Beaumont
- Carbon Capture on Air Liquide US Gulf Coast Steam Methane Reformer Using the CryocapTM FG Process
- Clean Energy Holdings - Clear Fork, Phase 1

2-A-7. REFERENCES

Accelerating the Development of a Texas and Gulf Coast Clean Hydrogen Hub. 2023. Center for Hoston's Future.

A Framework for Hydrogen in Texas. 2024. The University of Texas at Austin.

Developing a Robust Hydrogen Market In Texas. 2023. Center for Energy Studies

Harnessing Hydrogen; A Key Element of the U.S Energy Future, Chapter 2 - Production at Scale. 2024. National Petroleum Council.

Houston as the epicenter of a global clean hydrogen hub. 2022. Center for Houston's Future.

Houston's Future as a Global Center for Clean Hydrogen Manufacturing, Recycling, and Electrolysis. 2022. Center for Houston's Future.

Pathways to Commercial Liftoff: Clean Hydrogen. 2023. U.S. Department of Energy.

Resource Assessment for Hydrogen Production. 2020. National Renewable Energy Laboratory & Connelly.

U.S National Clean Hydrogen Strategy and Roadmap. 2023. US Department of Energy.

Water for the Hydrogen Economy. 2020. Water Smart Solutions.

Water For Hydrogen Production. 2023. International Renewable Energy Agency and Bluerisk.

APPENDIX 2-B

REGION H POPULATION AND POPULATION DEMAND REVISION REQUEST

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August 11, 2023

Jeff Walker
Executive Administrator
Texas Water Development Board
1700 North Congress Av.
Austin, Texas 78701

Re: Region H Population and Population Demand Revision Request

Dear Mr. Walker:

The Texas Water Development Board (TWDB) has provided the Region H Water Planning Group (RHWPG) with draft population and municipal water demand projections for the 2026 Region H Regional Water Plan (RWP). Based on the First Amended General Guidelines for Development of the 2026 Regional Water Plans (Exhibit C), regional water planning groups may request revisions to these draft projections. The draft projections have been reviewed in detail by the Region's consultant team, the Region H Population Demands Committee, and the RHWPG. Based upon this review and the recommendations of the Region H Population Demands Committee, proposed revisions to the projections have been developed by the RHWPG and approved at its regular meetings on May 3, 2023, and August 2, 2023. Revision requests include the following:

- County and WUG-level population projection changes for all WUGs within nine counties, informed by a detailed local analysis of factors influencing development and population projections;
- County-level migration scenario adjustment requests in three counties;
- Baseline per capita demand changes for multiple WUGs; and
- Individual WUG-level population and demand changes based on feedback received in response to a survey of Region H WUGs.

The proposed revisions are documented in the attached summary memorandum and companion spreadsheet file. The RHWPG appreciates this opportunity to comment on draft projections for the 2026 Region H Regional Water Plan. Please feel free to contact me with any questions regarding this submittal.

Sincerely,

Philip Taucer
Project Manager

cc: Heather Rose, TWDB
Marvin Marcell, RHWPG

MEMORANDUM

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TO: Jeff Walker

CC: Heather Rose, Marvin Marcell

FROM: Philip Taucer

SUBJECT: Region H Population and Population Demand Revision Request

DATE: 8/11/2023

PROJECT: SJR21660

Introduction

The Texas Water Development Board (TWDB) has provided the Region H Water Planning Group (RHWPG) with draft population and municipal water demand projections for the 2026 Regional Water Plan (RWP). Based on the First Amended General Guidelines for Development of the 2026 Regional Water Plans (Exhibit C), regional water planning groups may request revisions to these draft projections. Exhibit C also outlines the criteria for consideration of revisions. The draft projections have been reviewed in detail by the Region's consultant team, the Region H Population Demands Committee, and the RHWPG. Based upon this review and the recommendations of the Region H Population Demands Committee, proposed revisions to the projections have been developed by the RHWPG and approved at its regular meetings on May 3, 2023, and August 2, 2023. Revision requests include the following:

- County and Water User Group (WUG)-level population projection changes for all WUGs within nine counties, informed by a detailed local analysis of factors influencing development and population projections;
- County-level migration scenario adjustment requests in three counties;
- Baseline per capita demand changes for multiple WUGs; and
- Individual WUG-level population and demand changes based on feedback received in response to a survey of Region H WUGs.

This memorandum summarizes the requested revisions to draft data, the methodologies used to identify and implement proposed changes, and associated supporting data. The following memorandum sections are structured by revision request type. In addition to the explanatory text in this document, requested revised projection values are included in a companion spreadsheet file to this memorandum following TWDB's specified format. The RHWPG appreciates this opportunity to provide recommended adjustments to the projections. If you have any questions regarding the proposed changes or would like additional supporting data, please feel free to contact me at philip.taucer@freese.com.

Population Projections in Nine Counties from the Harris-Galveston Subsidence District and Fort Bend Subsidence District 2023 Joint Regulatory Plan Review

Background

In 2013, the Harris-Galveston Subsidence District (HGSD), Fort Bend Subsidence District (FBSD), and Lone Star Groundwater Conservation District (LSGCD) completed the Regional Groundwater Update Project (RGUP). This effort included the development of detailed population projections for use in modeling water level changes and land surface subsidence as a result of projected groundwater pumping in Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties. The 2013 RGUP was designed to not only support groundwater management within the Subsidence Districts, but also to allow the RWP process for the region to reflect local conditions and planning efforts more closely. This led to TWDB adoption of RGUP population projections for the five-county urban core of the Region H Water Planning Area (RHWPA) for the 2016 RWP, marking the first approved large-scale alternative to the TWDB municipal projection methodology for RWP development. The underlying population projections were maintained for use in the 2021 Region H RWP, with TWDB implementing relevant adjustments to account for the development of new WUGs and the evolution of the planning process to focus more directly on the active retail service areas of WUGs.

HGSD and FBSD are currently engaged in a similar projection and modeling effort in the 2023 Joint Regulatory Plan Review (JRPR). The JRPR study builds upon the methodology of the RGUP, with enhancements including a study and projection period extending to the year 2100 and an expansion of the study area to 10 counties; nine of these counties are located within the RHWPA. As with the RGUP, the JRPR has produced highly detailed population projections at a fine spatial resolution for the study area. The following memorandum subsections summarize JRPR coordination with TWDB staff and the methodology utilized to adapt the detailed JRPR projections to the WUG scale for proposed use in the 2026 Region H RWP. Details of the JRPR projection methodology are included in ***Attachment A*** to this memorandum.

Projection Benefits and Summary of RWPG Request

Key benefits of the JRPR projections to the RWP process for Region H include:

- Closer alignment of projections and processes for local and regional planning;
- Availability of detailed municipal projection information at the Census block level;
- More accurate reflection of the regulatory availability of groundwater within Subsidence District counties;
- More accurate representation of planned future infrastructure projects for the regulated community;
- Facilitation of more advanced analyses of potential future strategies, including supplies such as reuse which are influenced by population density and proximity to other infrastructure; and
- Improved perspective and understanding of potential far-term strategies through the extension of the data horizon beyond that used for the RWP.

After reviewing the methodology and results, and in light of the above benefits, the RHWPG requests the use of JRPR population projections for nine counties in Region H in the 2026 Region H RWP:

- Austin
- Brazoria
- Chambers
- Fort Bend
- Galveston
- Harris
- Liberty
- Montgomery
- Waller

The RHWPG voted to approve the JRPR population projections for use in the 2026 Region H RWP at a regular meeting of the planning group on May 3, 2023. The RHWPG does not request to use per capita demands from the JRPR study, as those demands do not represent the dry-year demands used in regional water planning. Requested revisions to per capita demands are addressed on an individual WUG basis later in this memorandum and do not apply to all WUGs in these nine counties.

Subsidence District and TWDB Coordination

Throughout the course of the JRPR project, HGSD and FBSD have coordinated with the RHWPG and with TWDB staff regarding the study in order to develop population projections in a manner compatible with, and intended to benefit, the RWP process. Members of the JRPR project team and staff from the Subsidence Districts met with TWDB to discuss the progress of the JRPR study and the potential for incorporation of JRPR population projections into the 2026 Region H RWP. Staff from the Texas Demographic Center (TDC) also attended some meetings. Key coordination meetings and calls were held on the following dates:

- July 23, 2020
- April 20, 2021
- October 19, 2021
- June 29, 2022
- January 19, 2023

In each of these meetings, the JRPR project team presented progress on the JRPR study, including the methodology that had been applied on work to-date. In June 2022, the team presented a comparison of county-level projections from the JRPR to projections in the 2021 RWP. Freese and Nichols (FNI) provided the final county-level projections from the JRPR to TWDB and TDC on August 11, 2022. After county-level projections from TDC were released by TWDB, these were compared to the JRPR projections at the January 2023 meeting. Additionally, at the January 2023 meeting, the JRPR project team explained the methodology used for developing projections for each Public Water System (PWS) from the tract-level projections developed by the University of Houston using the SAM-Houston model.

Adaptation of JRPR Population Projections for Use in Regional Water Planning

A detailed description of the development of population projections in the 2023 JRPR is included as ***Attachment A*** to this memorandum. The JRPR population projections were developed for decades 2030 to 2100 and were summarized at various spatial scales, including county, Census tract, Census block, and by water user service area. The water users assessed in the JRPR were primarily individual public water systems (PWS), but additional areas were defined outside of existing PWS boundaries to sub-divide non-PWS areas based on municipal extraterritorial jurisdictions, regional water authority jurisdictions, and planned developments.

The smallest spatial unit for which populations were forecasted is the intersection of water user service areas and Census blocks, which allows for straightforward aggregation at a split county-WUG level. Most WUGs in the RHWPA represent single PWS. However, some collective reporting units (CRU) include

multiple PWS. A few CRUs are unique in that they represent a jurisdictional area of a regional water authority, which includes most of the PWS in that jurisdiction which are not separated out as a unique WUG, as well as all the non-PWS area inside that jurisdiction. The tab *PWS_Utility_JRPR* within the companion spreadsheet to this memorandum shows which PWS were associated with which Region H WUGs, including comments where a change was made to some PWS which had been previously listed by TWDB as part of County-Other. Additionally, ***Figure 1***, ***Figure 2***, and ***Figure 3*** illustrate how three CRUs include non-PWS population that would otherwise be allocated to County-Other.

After applying the previously described generalized methodology to adapt block-level JRPR projections to WUGs for use in the Region H RWP, results were examined on a WUG-by-WUG basis to identify situations in which further adjustment could be needed to properly represent WUG population and growth. In some areas, manual adjustments were made to revise how block populations were allocated to WUGs. These adjustments were typically made in rapidly growing areas adjacent to undeveloped land or in situations where larger Census blocks were split across WUG boundaries. Need for adjustment was identified by reviewing the 2020 population estimated from the JRPR data to estimates from TWDB for each WUG. Population projections were adjusted for 14 named municipal WUGs.

Two of these are Texas Department of Criminal Justice (TDCJ) facilities, and population was adjusted based on historical counts and reported capacities of the units:

- TDCJ Jester Units: Adjusted to constant population of 1,521.
- TDCJ Ramsey Area: Adjusted to constant population of 3,300.

The draft projections of the other 12 adjusted WUGs were developed from JRPR data, and individual inspection indicated that alignment issues between 2020 Census block boundaries and WUG service area boundaries resulted in inaccurate estimates of 2020 population. Adjustments were made as follows:

- For all decades, shift 300 persons out of Clear Lake City Water Authority into Harris County Water Control and Improvement District (WCID) 161 to correct allocation of population in Block 2004 of Harris County Tract 340202.
- For all decades, increase population of Montgomery County Municipal Utility District (MUD) 137 by 748 persons based on review in GIS of assignment of population in two blocks that partially overlap the service area.
- For all decades, shift 320 persons from Harris County MUD 189 to adjacent WUG North Forest MUD. Difference determined based on TWDB and JRPR estimates of 2020 population.
- For all decades, adjust population of the following WUGs by the difference in the historical population estimate for 2020 between the TWDB and JRPR estimates so that the 2020 estimate matches that from TWDB:
    - Austin County WSC
    - Chambers County MUD 1
    - Fort Bend County MUD 5
    - Montgomery County MUD 56
    - Oak Hollow Utility
    - Harris County MUD 504
    - Montgomery County MUD 127
    - Montgomery County MUD 137

In each case, County-Other WUG populations were adjusted such that county total population in each decade remained consistent with the original county-level projections developed in the 2023 JRPR.

Figure 1 – North Fort Bend Water Authority (Collective Reporting Unit WUG)

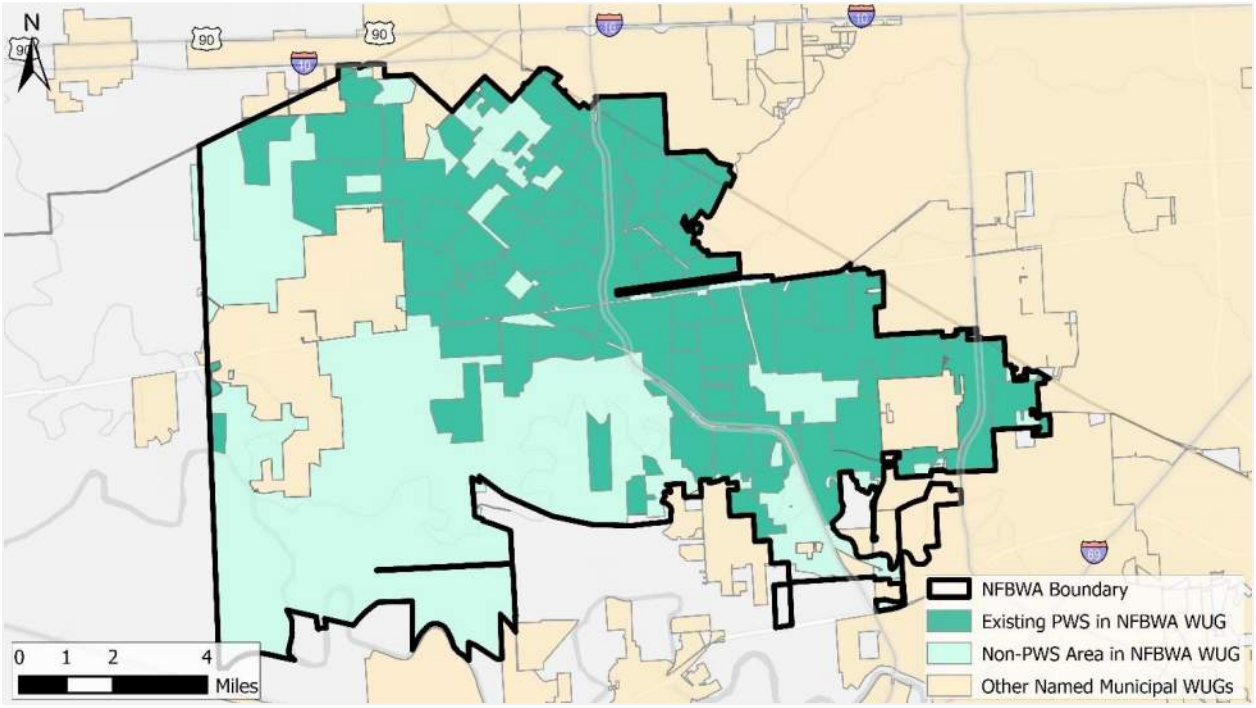


Figure 2 – North Harris County Regional Water Authority (Collective Reporting Unit WUG)

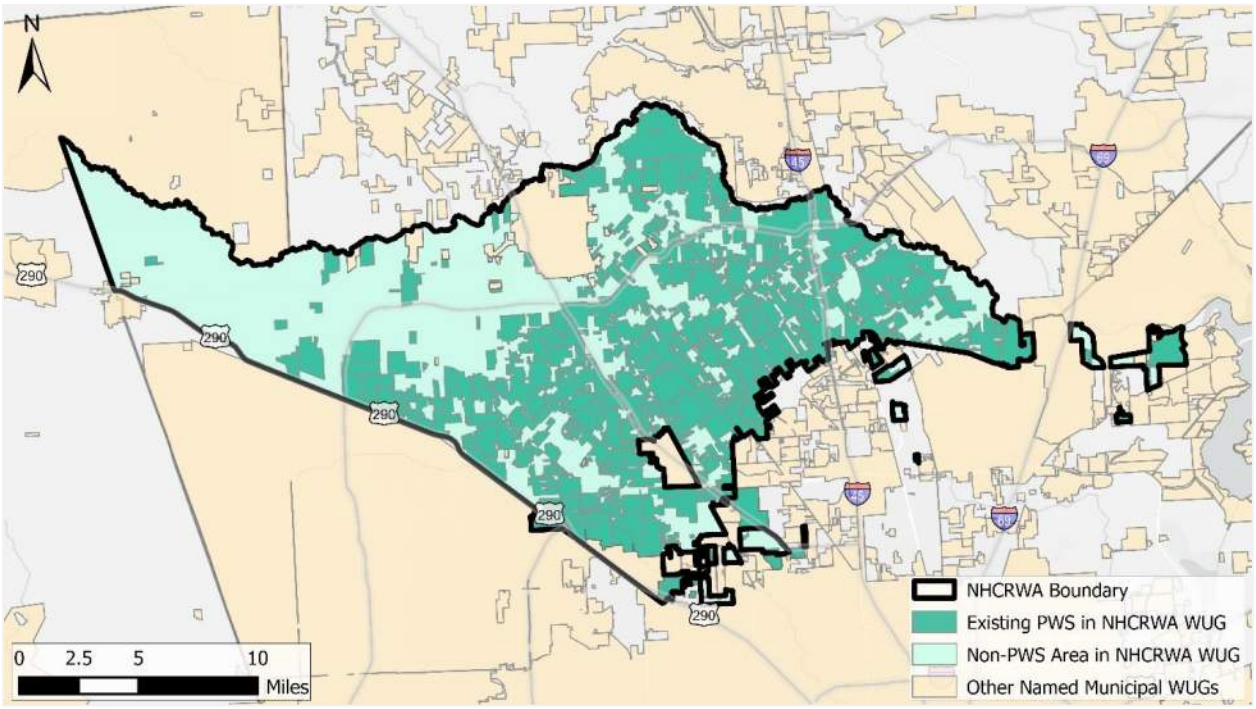
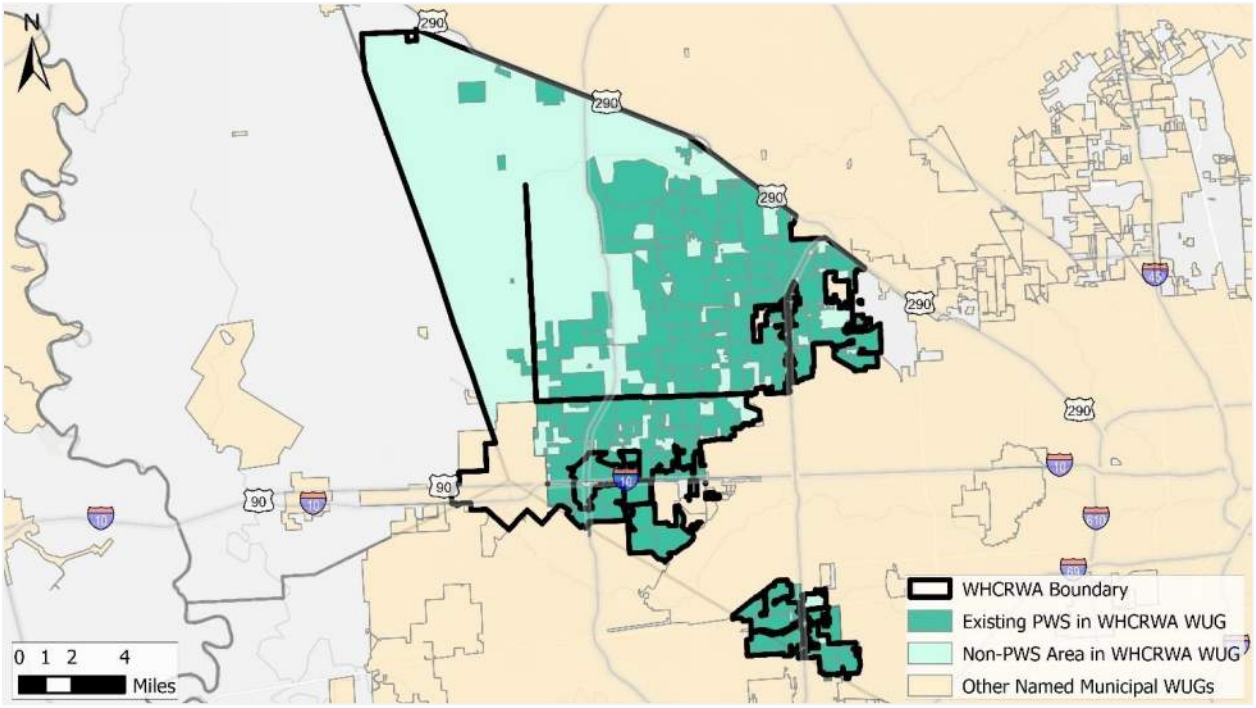


Figure 3 – West Harris County Regional Water Authority (Collective Reporting Unit WUG)



Finally, the fine spatial detail of the JRPR projections allows for aggregation at the county-basin-WUG level as well. WUG splits by county and basin were evaluated based on 2020 Census block data and based on 2050 and 2080 population projections at the highly detailed spatial resolution. For the majority of WUGs examined, basin splits of population were similar to those estimated by TWDB. In a limited number of cases, the proposed projections are expected to have more substantial growth in one basin or another. Because the percentages of population within each basin for these WUGs vary by decade in the JRPR-derived projections, the companion spreadsheet does not include a request for revised basin percentages. Once TWDB staff are ready to engage in the process of allocating 2026 RWP WUG population projections to basin splits, the RHWPG's consultant team is available to support this effort with the detailed data used to develop the proposed WUG population projections.

Impact of Requested Revisions

As with the 2016 and 2021 Region H Regional Water Plans, the revisions requested by the RHWPG for counties assessed in the JRPR include changes to the county-level projections along with individual WUGs. The requested projection revisions are compared to the 1.0 Migration Scenario Draft Projections at the county level in ***Table 1***. Individual WUG population projections and associated municipal demand projections are included in the companion spreadsheet file. In most counties, the JRPR projection falls very close to either the 0.5 or 1.0 Migration scenario or between the two. In Austin and Liberty Counties, the JRPR projection is higher than either TDC scenario, while the JRPR projection is lower than either TDC scenario in Galveston County. The total population projected for these 9 counties in each decade falls in between the two migration scenarios projected in the TWDB draft projections, being slightly closer to the 0.5 Migration scenario than the 1.0 Migration scenario.

Table 1 – Population Projections by County for JRPR Study Area

County	2026 RWP Draft Projections (1.0 Migration Scenario)						2026 RWP Revision Request					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Austin	30,659	30,815	30,704	30,341	29,943	29,506	31,300	32,379	33,366	33,805	34,125	34,449
Brazoria	420,556	469,773	516,378	551,411	589,845	632,010	403,497	431,420	451,031	462,189	471,475	477,538
Chambers	59,552	75,681	95,898	118,066	142,386	169,067	60,631	79,788	102,555	127,668	154,853	185,792
Fort Bend	1,059,889	1,340,170	1,680,523	2,051,063	2,457,572	2,903,542	1,025,010	1,239,696	1,431,122	1,584,937	1,738,819	1,879,698
Galveston	403,844	459,869	513,814	562,605	616,132	674,855	377,403	392,019	401,517	407,589	411,701	415,342
Harris	5,226,744	5,690,363	6,054,862	6,305,659	6,580,801	6,882,652	5,193,657	5,392,541	5,547,593	5,621,183	5,671,911	5,720,523
Liberty	107,321	125,681	146,794	168,484	192,279	218,384	115,074	144,265	176,682	209,923	243,006	278,364
Montgomery	785,953	987,630	1,221,834	1,469,580	1,741,375	2,039,554	759,919	913,804	1,063,722	1,187,174	1,277,864	1,355,552
Waller	68,359	82,145	97,562	115,786	135,779	157,713	71,599	85,525	101,637	119,998	139,204	158,434

Population Projections in Remaining Counties

The TWDB-provided population projections for both 1.0 Migration and 0.5 Migration scenarios were examined for the remaining six counties (Leon, Madison, Polk, San Jacinto, Trinity, and Walker) in the RHWPA outside of the JRPR study area. These counties are located in the northern portion of the RHWPA and are characterized predominantly by low population densities and rural land uses, with some small to moderate-sized towns and cities. For Walker County, population between years 2030 and 2080 is projected to increase in both TWDB scenarios. For the remaining five counties, one or both growth scenarios show a projected decline.

In examining the projections in the available migration scenarios, the Population Demands Committee and RHWPG made several key observations:

- Based upon Census data, some of the six counties are shown to have reductions in population between years 2010 and 2020.
- There have been widespread concerns regarding the 2020 Census and the potential for populations to differ from Census values. However, at this time there is not sufficient information to confirm, identify, or quantify problems with Census values for the six northern counties in Region H.
- The long-term impacts of the COVID-19 pandemic on population and migration for these counties are currently unknown.
- Due to the focus of the RWP process on taking a conservative approach to planning for the future, use of the migration scenario with the higher projected population for each county could assist in avoiding underrepresenting potential water demands.
- Due to the lower populations in these counties relative to the more urbanized regional center, and the general abundance of available water supply in these areas, a more conservative estimate of projected population is unlikely to result in recommendation of unnecessary Water Management Strategies in the RWP.

After review, the Population Demands Committee recommended that the RHWPG consider use of the 0.5 migration scenario for northern counties with projected population declines where doing so would result in a higher projection to avoid underrepresenting demands in those areas. This recommendation applies to Leon, Madison, and Trinity Counties. The RHWPG considered the committee's recommendation at the May 3, 2023 Planning Group meeting and voted at the same meeting to request the recommended revision. The RHWPG has not recommended any changes at the county level to the projections in Polk, San Jacinto, and Walker Counties and supports retaining the 1.0 migration scenario for these areas. The migration scenarios requested for use in each county are summarized in ***Table 2***, and the requested revised population projections are compared to the 1.0 Migration Scenario Draft Projections at the county level in ***Table 3***. Note that values in the table reflect only the portions of these counties and associated WUGs located within Region H.

Table 2 – Recommended Migration Scenario for Northern Region H Counties

County	0.5 Migration Scenario	1.0 Migration Scenario
Leon	✔	
Madison	✔	
Polk		✔
San Jacinto		✔
Trinity	✔	
Walker		✔

Table 3 – Population Projections by County for Northern Region H Counties

County	2026 RWP Draft Projections (1.0 Migration Scenario)						2026 RWP Revision Request					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Leon	14,601	13,329	12,032	10,979	9,824	8,557	14,943	14,118	13,293	12,738	12,162	11,564
Madison	13,451	13,493	13,387	13,262	13,125	12,975	13,618	13,805	13,876	13,996	14,121	14,251
Polk	49,128	53,052	54,988	57,102	59,421	61,965	49,128	53,052	54,988	57,102	59,421	61,965
San Jacinto	28,041	27,821	27,068	26,335	25,531	24,649	28,041	27,821	27,068	26,335	25,531	24,649
Trinity	10,265	9,629	8,919	8,316	7,654	6,928	10,118	9,471	8,857	8,449	8,026	7,587
Walker	91,068	97,641	108,926	122,073	136,496	152,319	91,068	97,641	108,926	122,073	136,496	152,319

Per Capita Demand Revisions for Individual WUGs

After making adjustments to population projections as described in the previous sections, the RHWPG also performed a review of each WUG's draft baseline per capita demand provided by TWDB along with resultant total projected municipal demand in comparison to historical estimates. Estimates were also made of hypothetical year 2010 and year 2020 demand for each WUG utilizing the estimated populations for those years and the baseline per capita water demand value. The results of the analysis indicated that, for a majority of WUGs, the baseline per capita demand rate was a reasonable representation of dry-year conditions. For approximately 30 percent of the municipal WUGs within the Region, the baseline per-capita demand was found to result in hypothetical 2010 and 2020 and/or projected near-future water demand not reflective of historical dry year demands or recent total demand characteristics. In examining available data for the WUGs for which the baseline per capita demand varied from historical observations, several potential contributing factors were identified.

- Baseline per capita values for the current planning cycle are based upon those for the 2021 RWP, with adjustment for projected plumbing code savings. In some cases, the value of estimated per capita demand for the reference dry year in more recent data provided by TWDB differs from the older values and may be more accurate.
- In some cases, actual savings from fixture replacement may differ from those estimated in the plumbing code savings incorporated into the baseline per capita demand.
- Much of Region H has experienced rapid but non-linear growth over the 2010-2020 period. This growth can present challenges in estimating the population in a given year, in turn impacting estimation of per capita demand.
- For new WUGs or older WUGs experiencing recent rapid growth, there can also be substantial challenges in determining if high per capita demands for some years are due to a dry year condition or are instead reflective of temporary high demands supporting new construction and turf establishment.

The Population Demands Committee recommended that the RHWPG consider requesting revisions to per capita demands for WUGs with identified issues. For approximately 55 percent the WUGs with potential issues with per capita values, it was determined that the reference dry year utilized for the baseline was

an appropriate and representative dry year, with proposed changes limited to utilizing the more recent TWDB-estimated per capita demand for the same year. In a small number of cases where there were potential issues with estimated historical populations, JRPR estimates of per-capita demand for the reference year were used instead. For the remaining approximately 45 percent of WUGs with potential issues with per capita values, it was determined that a different reference year was more indicative of conservative dry-year planning conditions. In most cases, these proposed changes also include utilizing the more recent TWDB-estimated per capita demand for the selected reference year. The RHWPG coordinated with the Region I WPG on WUGs which are split across both regions and agreed on the same recommendations for requested revisions to baseline per capita demand rates for split WUGs.

The RHWPG considered the committee's recommendation at the August 2, 2023 Planning Group meeting, and voted at the same meeting to request the recommended revisions. ***Attachment B*** to this memorandum includes a summary of all WUGs with requested revisions to the baseline per capita demand and descriptions of the basis for each recommendation. Revised baseline per capita demand values and associated revised associated municipal demand projections for individual WUGs are included in the companion spreadsheet file.

Population and Demand Revisions for Individual WUGs based on WUG Survey Feedback

In addition to RHWPG review of draft population and demand projections, WUGs in the RHWPA were given the opportunity to review draft projections and provide feedback. On May 31, 2023, the RHWPG sent customized survey links and supporting documents to each WUG in the RHWPA. The supporting data included, among other elements, draft population and demand projections. For the nine counties included in the JRPR study, the draft projections shown in the WUG survey supporting document were based on the population projections adapted from the JRPR data. For the remaining six counties, values were based upon TWDB draft projections.

The survey included the following questions regarding projections:

1. Do you have significant disagreement with and wish to make modifications to the projected population for the water users directly supplied by your entity?
2. Do you have significant disagreement with and wish to make modifications to the projected water demand for your direct retail service area?

Fourteen WUGs responded "yes" to one or both of these questions or reached out directly indicating potential disagreement with the draft projections. The RHWPG followed up with each of these WUGs individually. After discussing the data, context of the planning process, background information, and source of potential disagreement, seven of the WUGs requested changes to projections of either population, baseline per capita demand, or both. The Population Demands Committee recommended that the RHWPG consider requesting changes to projections based upon stakeholder requests and data. The RHWPG considered the committee's recommendation at the August 2, 2023 Planning Group meeting, and voted at the same meeting to request the recommended revisions.

The revisions requested by individual WUGs are summarized in ***Table 4*** and are described in the following subsections. Individual WUG revisions include revisions to WUGs both within JRPR counties and in other counties. Changes to population typically resulted in corresponding adjustments to County-Other population projections in the same county unless noted otherwise. Graphs of population and demand are included for each WUG; tabular data for each WUG is included in the companion spreadsheet file.

Table 4 – Summary of Requested Revisions Based on WUG Coordination

Manvel			✔			✔		
Montgomery County WCID 1			✔			✔		
North Zulch MUD	✔						✔	

(1) Changes may have been based on updated boundaries of a WUG service area or revised allocation of population in Census blocks that overlap multiple WUG service areas.

Central Harris County Regional Water Authority

Based on discussion with Central Harris County Regional Water Authority (CHCRWA), the draft baseline gallons per capita day (GPCD) was determined to potentially be too low for CHCRWA, resulting in slight under-representation of the WUG's dry year demands. The RHWPG recommends changing the reference year for the baseline GPCD value to 2018. After updating the calculated plumbing code savings assumed to accrue since the revised reference year, the revised baseline value is 91 GPCD. Proposed revisions for CHCRWA are summarized in ***Figure 4*** and ***Figure 5***.

Figure 4 – Population Projections for CHCRWA

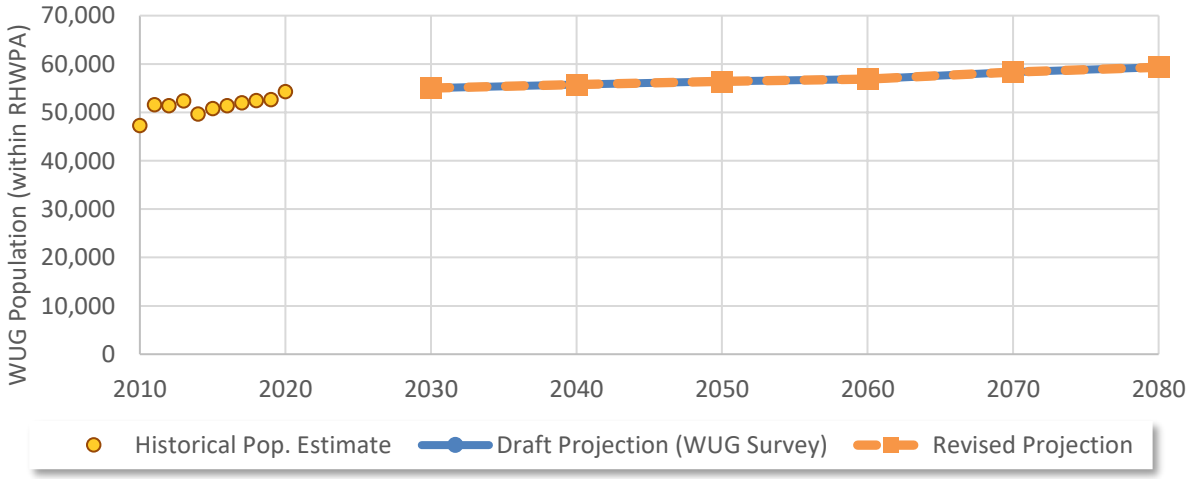
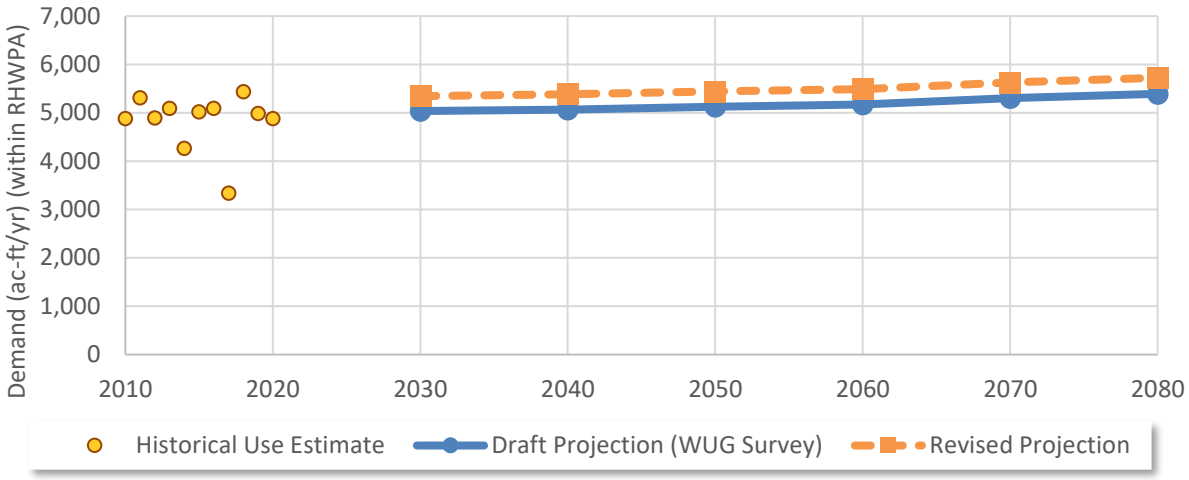


Figure 5 – Water Demand Projections for CHCRWA



Manvel

In response to the WUG survey, the City of Manvel noted that population projections appeared to not capture their full population or service area and provided an updated boundary shapefile for Manvel's retail service area. Population projections from the JRPR dataset were aggregated within this revised service area to recalculate the population projections. No other named WUGs intersect the revised service area boundary; the projected population of the County-Other WUG for Brazoria County was reduced to account for the increased population assigned to Manvel, maintaining the same overall county-scale projection as previously noted in this memorandum. Proposed revisions for Manvel are summarized in ***Figure 6*** and ***Figure 7***.

Figure 6 – Population Projections for Manvel

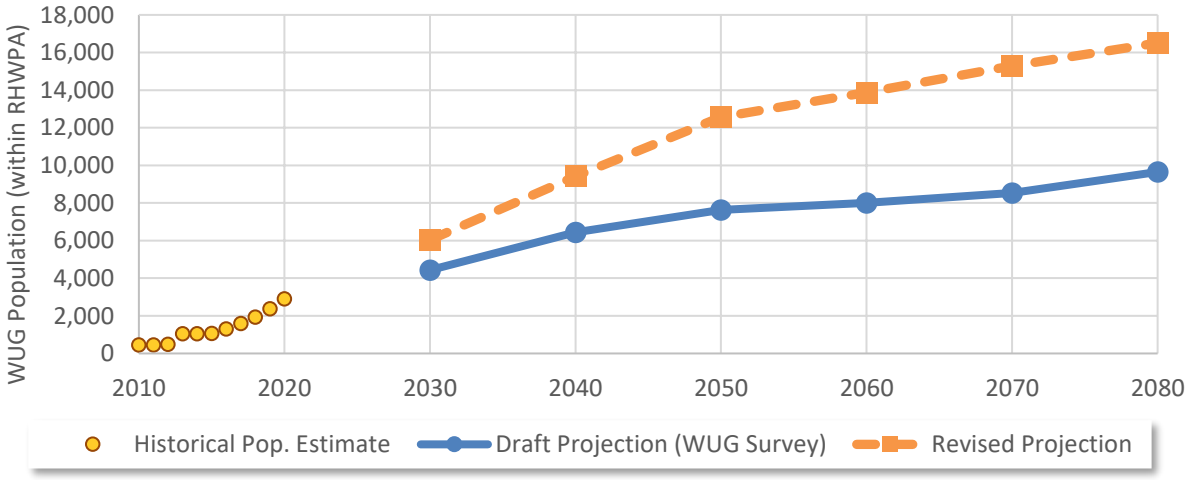
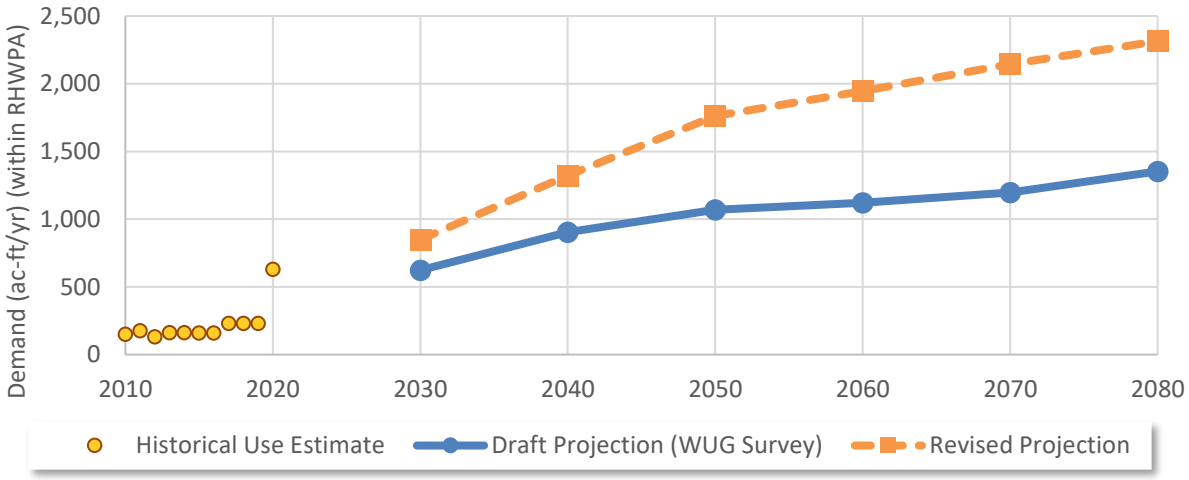


Figure 7 – Water Demand Projections for Manvel



Montgomery County MUD 139

In response to the WUG survey, Montgomery County MUD 139 noted that the corresponding draft population estimate for year 2030 was too low. The initial estimate for the 2030 population was 1,657 based on the Census population by block in 2020. The WUG currently serves 1,700 retail connections, with more expected by the end of the year. Additionally, historical Water Use Survey data confirmed that the population served was reported as 4,203 in 2021 compared to only 2,523 in 2020. Based upon data provided by the WUG regarding number of connections and household size, the projected population for year 2030 was increased to 4,390. The revised population is projected to be constant at 4,390 for the years 2030 to 2080, as the WUG reported that the undeveloped areas within the service area are unsuitable for building and would remain undeveloped. The projected population of the County-Other WUG for Montgomery County was reduced to account for the increased population assigned to Montgomery County MUD 139, maintaining the same overall county-scale projection as previously noted in this memorandum. Proposed revisions for Montgomery County MUD 139 are summarized in ***Figure 8*** and ***Figure 9***.

Figure 8 – Population Projections for Montgomery County MUD 139

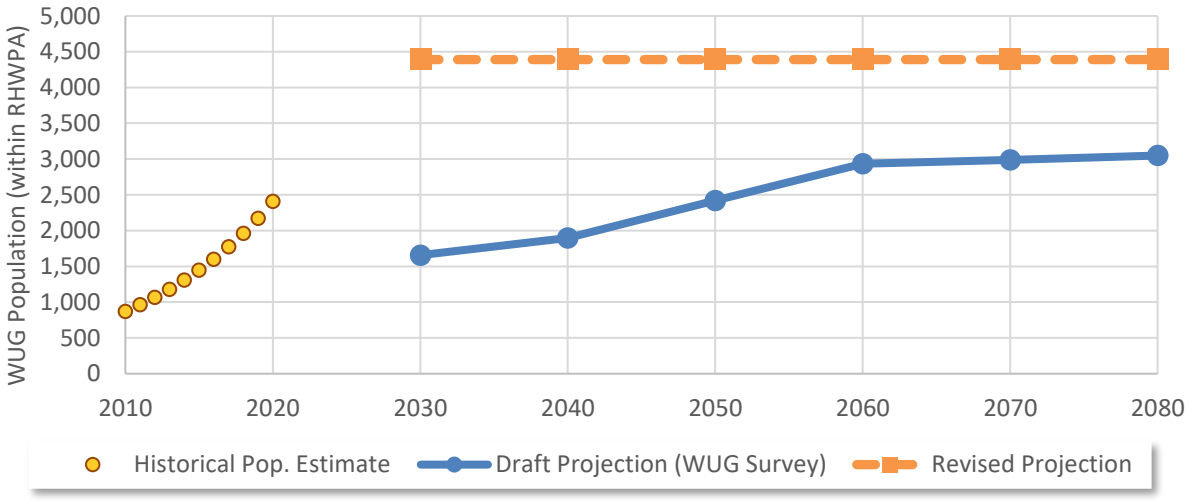
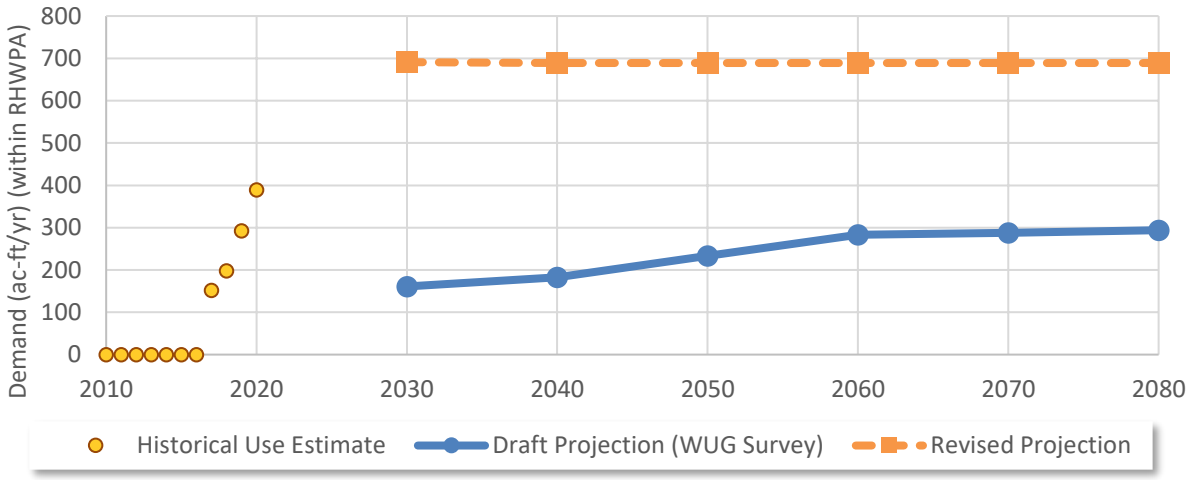


Figure 9 – Water Demand Projections for Montgomery County MUD 139



Montgomery County WCID 1

Based on discussions with Montgomery County WCID 1, the initial population estimate for year 2020 may have been low due to the poor alignment of Census block boundaries to the WUG's service area boundaries. Based on information provided by the WUG, including the WUG's recent service expansion to two new apartment complexes, as well as the historical population estimate by TWDB, the initial estimate of year 2020 population using the default allocation from JRPR Census block projections to WUGs was approximately 1,500 persons low. To adjust for this difference, the projected population was increased by 1,500 in all years. This approach maintains the growth provided by the JRPR estimates but adjusts the population upward to correct for the underestimate of 2020 population. The projected population of the County-Other WUG for Montgomery County was reduced to account for the increased population assigned to Montgomery County WCID 1, maintaining the same overall county-scale projection as previously noted in this memorandum. Proposed revisions for Montgomery County WCID 1 are summarized in ***Figure 10*** and ***Figure 11***.

Figure 10 – Population Projections for Montgomery County WCID 1

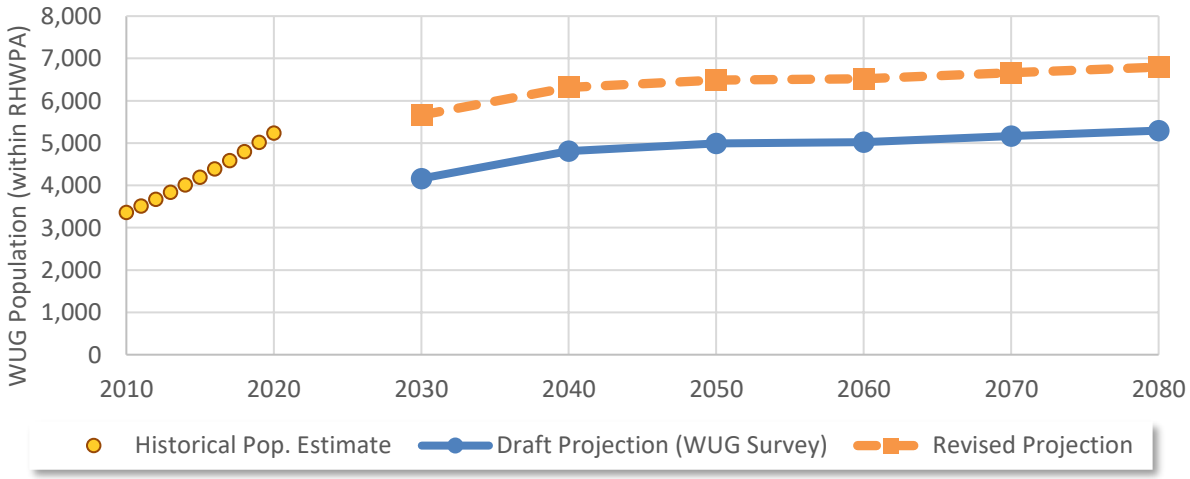
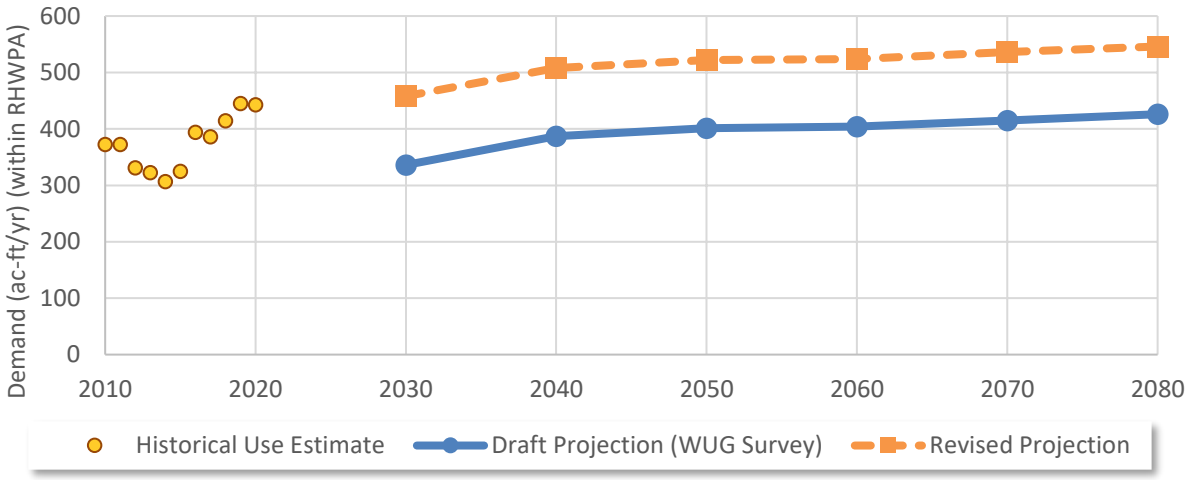


Figure 11 – Water Demand Projections for Montgomery County WCID 1



North Fort Bend Water Authority

Through discussions with North Fort Bend Water Authority (NFBWA), a need to adjust NFBWA's baseline per capita demand was identified. NFBWA provided data on year 2011 estimated population and water use, resulting in a per capita value of 186 gpcd, lower than the draft baseline of 200 gpcd. To better reflect dry year conditions based on WUG data while maintaining a conservative approach, this value of 186 gpcd is recommended as the baseline per capita demand without additional adjustment for year 2011-2020 plumbing code savings. Proposed revisions for NFBWA are summarized in ***Figure 12*** and ***Figure 13***.

Figure 12 – Population Projections for NFBWA

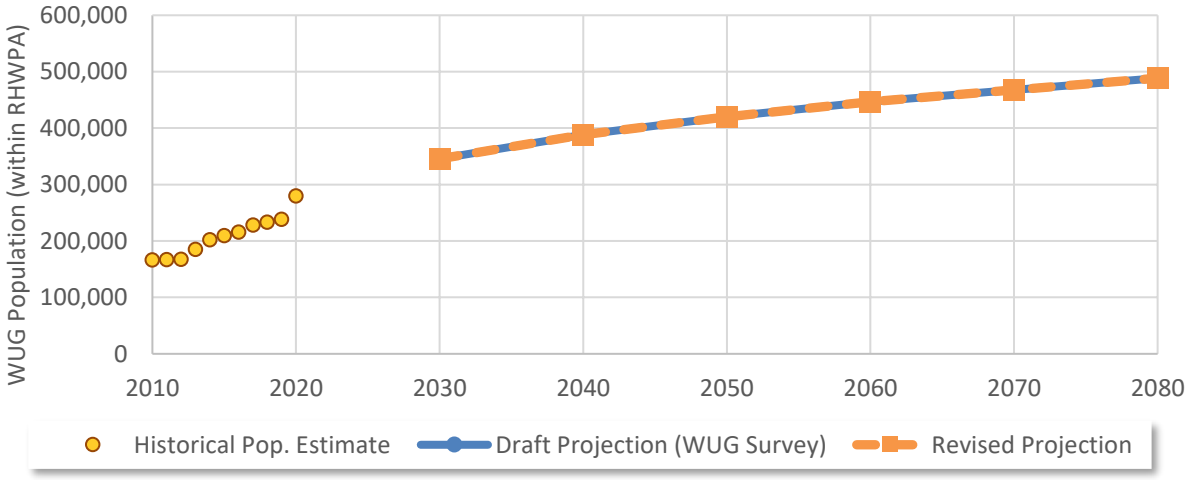
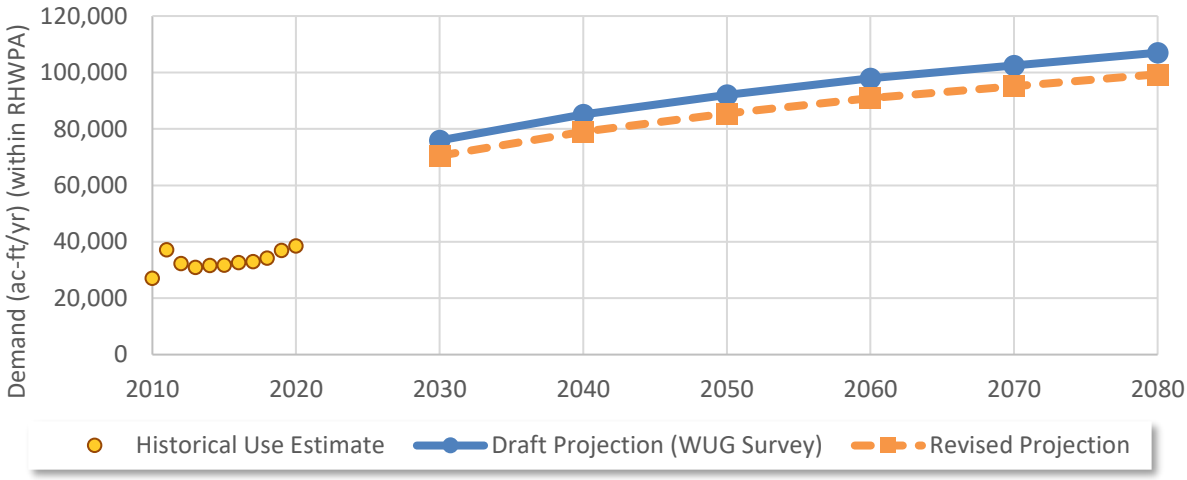


Figure 13 – Water Demand Projections for NFBWA



North Zulch MUD

North Zulch MUD indicated that substantial near-term subdivision growth is anticipated within its service area. The WUG currently serves 718 connections and may serve a new subdivision in development with 30 lots within its CCN. Based upon estimated growth provided by the WUG, the population from 2030 to 2080 was increased to 2,000 persons. The resultant water demand projection associated with this increased population also appears to be more representative of anticipated dry year conditions when compared against historical water use for recent years. No other named WUGs intersect the revised service area boundary; the projected population of the County-Other WUG for Madison County was reduced to account for the increased population assigned to North Zulch MUD, maintaining the same overall county-scale projection as previously noted in this memorandum. Proposed revisions for North Zulch MUD are summarized in ***Figure 14*** and ***Figure 15***.

Figure 14 – Population Projections for North Zulch MUD

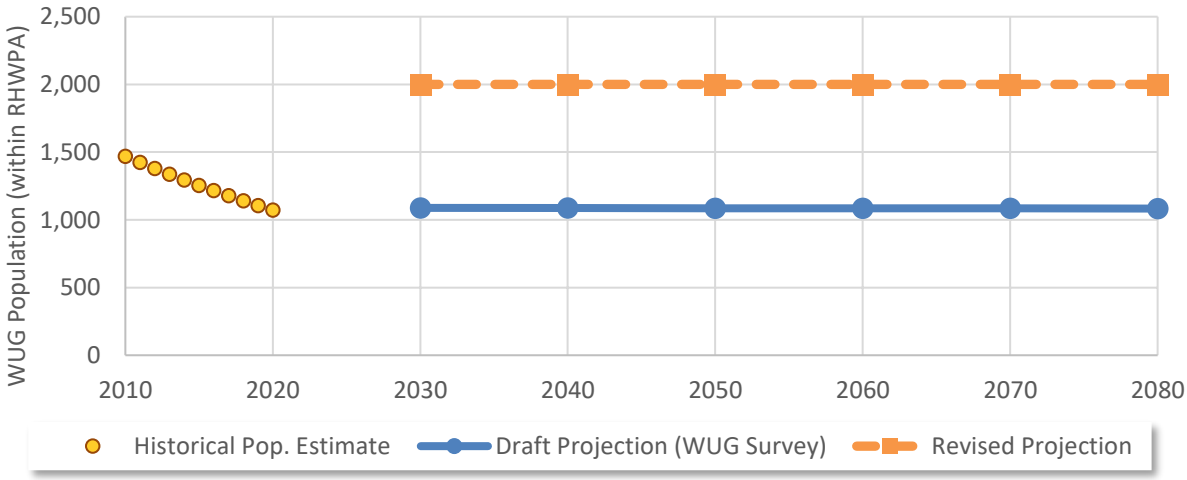
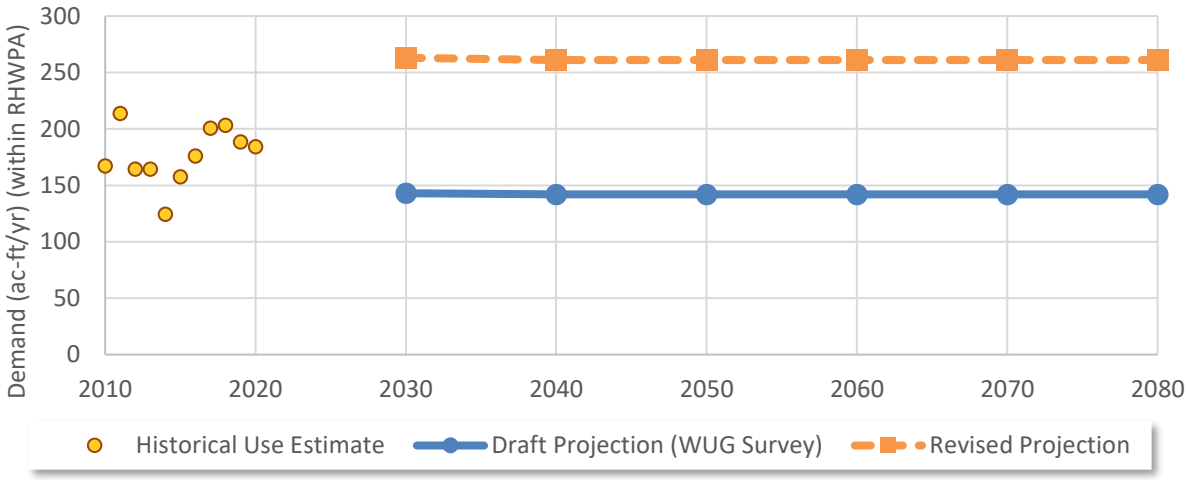


Figure 15 – Water Demand Projections for North Zulch MUD



Southern Montgomery County MUD

Based upon discussion with Southern Montgomery County MUD, potential issues with projected population were identified. It was noted that near-term projections appeared to underestimate population. Upon further inspection, it was determined that due to the manner in which the WUG intersected two Census blocks, the initial projection used in the WUG survey allocated population from these two blocks which should be associated with the WUG instead to County-Other. Population projection values were adjusted upward by 1,187 persons to address this issue. The projected population of the County-Other WUG for Montgomery County was reduced to account for the increased population assigned to Southern Montgomery County MUD, maintaining the same overall county-scale projection as previously noted in this memorandum. Proposed revisions for Southern Montgomery County MUD are summarized in ***Figure 16*** and ***Figure 17***.

Figure 16 – Population Projections for Southern Montgomery County MUD

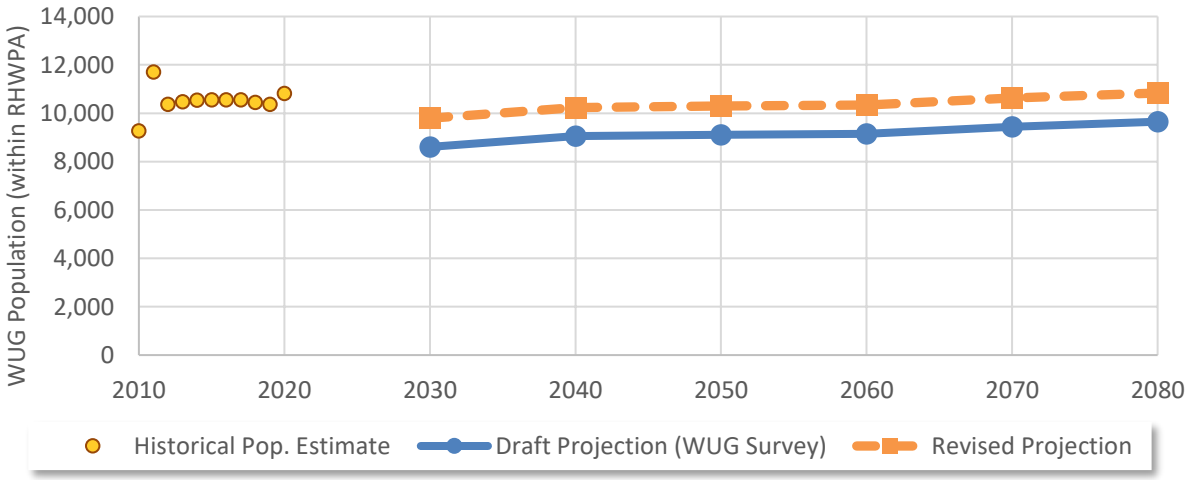
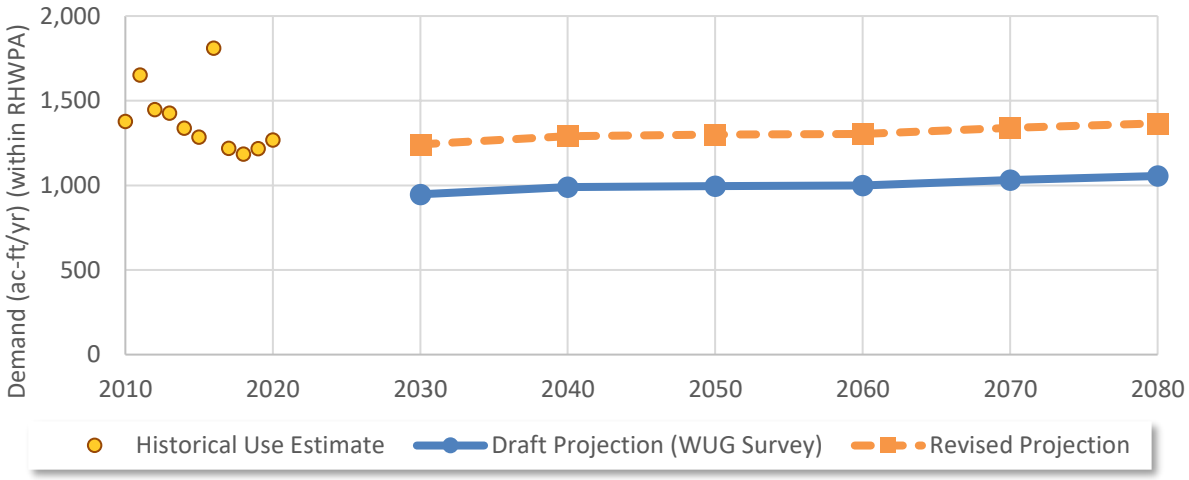


Figure 17 – Water Demand Projections for Southern Montgomery County MUD



APPENDIX 2-C

MAJOR WATER PROVIDER DEMAND SUMMARIES

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Table 2-C1 – MWP Water Demand by Use Category

Major Water Provider	Category	MWP Demand* (ac ft)					
		2030	2040	2050	2060	2070	2080
Brazos River Authority	Irrigation	140	140	137	134	131	128
	Livestock	0	0	0	0	0	0
	Manufacturing	73,026	96,409	96,194	95,983	95,822	95,682
	Mining	0	0	0	0	0	0
	Municipal	77,456	77,173	76,078	75,263	74,288	72,761
	Steam Electric Power	85,687	85,097	82,253	79,565	77,019	74,605
Brazosport Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	1,120	1,120	1,120	1,120	1,120	1,120
	Mining	0	0	0	0	0	0
	Municipal	21,442	22,143	22,844	23,088	23,010	22,667
	Steam Electric Power	0	0	0	0	0	0
Chambers-Liberty Counties Navigation District	Irrigation	41,022	41,022	41,022	41,022	41,022	41,022
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	2,205	2,205	2,205	2,205	2,205	2,205
	Steam Electric Power	0	0	0	0	0	0
Dow Inc	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	175,656	178,798	184,799	190,504	195,897	200,958
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	2,687	2,687	2,687	2,687	2,687	2,687
Gulf Coast Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	106,456	106,102	105,335	104,504	103,620	102,681
	Mining	332	396	459	526	598	675
	Municipal	150,612	150,727	150,222	149,896	149,084	148,437
	Steam Electric Power	0	0	0	0	0	0
Houston	Irrigation	26,684	26,684	26,684	26,684	26,684	26,684
	Livestock	0	0	0	0	0	0
	Manufacturing	385,549	390,695	396,225	399,525	403,313	407,200
	Mining	2,709	2,737	2,763	2,789	2,815	2,841
	Municipal	890,184	998,926	1,033,448	1,052,588	1,064,101	1,068,575
	Steam Electric Power	35,001	35,001	35,001	35,001	35,001	35,001

Major Water Provider	Category	MWP Demand* (ac ft)					
		2030	2040	2050	2060	2070	2080
Huntsville	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	12,730	13,642	15,243	17,196	19,316	21,624
	Steam Electric Power	0	0	0	0	0	0
Lower Neches Valley Authority	Irrigation	62,173	62,173	62,173	62,173	62,173	62,173
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	6,737	6,737	6,737	6,737	6,737	6,737
	Steam Electric Power	0	0	0	0	0	0
Missouri City	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	22,420	22,515	22,598	22,608	22,442	22,241
	Steam Electric Power	0	0	0	0	0	0
North Fort Bend Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	70,493	80,925	88,317	94,541	99,893	104,629
	Steam Electric Power	0	0	0	0	0	0
North Harris County Regional Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	141,617	145,084	149,579	151,701	156,864	160,155
	Steam Electric Power	0	0	0	0	0	0
NRG	Irrigation	12,000	12,000	12,000	12,000	12,000	12,000
	Livestock	0	0	0	0	0	0
	Manufacturing	22,866	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	147,678	147,088	144,244	141,556	139,010	136,596

Major Water Provider	Category	MWP Demand* (ac ft)					
		2030	2040	2050	2060	2070	2080
San Jacinto River Authority	Irrigation	1,057	1,833	2,375	2,710	2,909	3,090
	Livestock	17	96	151	185	205	223
	Manufacturing	94,400	98,770	103,503	105,317	107,140	109,002
	Mining	1	7	12	18	22	28
	Municipal	42,608	65,449	83,868	99,824	107,657	117,536
	Steam Electric Power	8,156	8,342	8,472	8,552	8,599	8,642
Trinity River Authority	Irrigation	27,600	27,600	27,600	27,600	27,600	27,600
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	217,571	217,571	217,571	217,571	217,571	217,571
	Steam Electric Power	0	0	0	0	0	0
West Harris County Regional Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	75,035	77,291	78,116	78,458	80,641	82,672
	Steam Electric Power	0	0	0	0	0	0

**For this table, MWP water demand was calculated as the sum of MWP-associated existing supply allocations and recommended WMS allocations used to meet projected WUG need. Values shown include adjustment for reassignment of MWP-WUG existing supplies to other entities as part of recommended WMS to prevent double-counting of volume. The portion of recommended WMS allocations resulting in WUG-level surplus is excluded from this table. MWP demands as presented in this table are based on supply allocations rather than contractual obligations. Values represent projected MWP demands within Region H only and do not include demands associated with other regions.*

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Table 2-C2 – MWP Water Demand Summary

Major Water Provider	MWP Demand* (ac ft)					
	2030	2040	2050	2060	2070	2080
Brazos River Authority	236,309	258,819	254,662	250,945	247,260	243,176
Brazosport Water Authority	22,562	23,263	23,964	24,208	24,130	23,787
Chambers-Liberty Counties Navigation District	43,227	43,227	43,227	43,227	43,227	43,227
Dow Inc	178,343	181,485	187,486	193,191	198,584	203,645
Gulf Coast Water Authority	257,400	257,225	256,016	254,926	253,302	251,793
Houston	1,340,127	1,454,043	1,494,121	1,516,587	1,531,914	1,540,301
Huntsville	12,730	13,642	15,243	17,196	19,316	21,624
Lower Neches Valley Authority	68,910	68,910	68,910	68,910	68,910	68,910
Missouri City	22,420	22,515	22,598	22,608	22,442	22,241
North Fort Bend Water Authority	70,493	80,925	88,317	94,541	99,893	104,629
North Harris County Regional Water Authority	141,617	145,084	149,579	151,701	156,864	160,155
NRG	182,544	159,088	156,244	153,556	151,010	148,596
San Jacinto River Authority	146,239	174,497	198,381	216,606	226,532	238,521
Trinity River Authority	245,171	245,171	245,171	245,171	245,171	245,171
West Harris County Regional Water Authority	75,035	77,291	78,116	78,458	80,641	82,672

**For this table, MWP water demand was calculated as the sum of MWP-associated existing supply allocations and recommended WMS allocations used to meet projected WUG need. Values shown include adjustment for reassignment of MWP-WUG existing supplies to other entities as part of recommended WMS to prevent double-counting of volume. The portion of recommended WMS allocations resulting in WUG-level surplus is excluded from this table. MWP demands as presented in this table are based on supply allocations rather than contractual obligations. Values represent projected MWP demands within Region H only and do not include demands associated with other regions.*

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APPENDIX 3-A

MAG PEAK FACTOR DOCUMENTATION

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APPENDIX 3-A1

MAG PEAK FACTOR REQUEST TO TWDB

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Innovative approaches
Practical results
Outstanding service

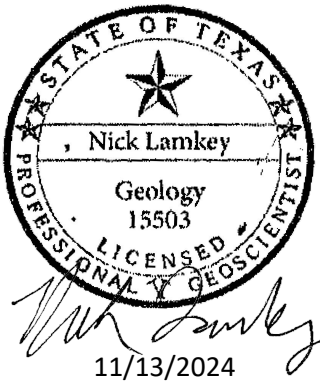
MAG Peak Factors
Region H Recommendations for 2026 RWP

Prepared for:

Region H Water Planning Group

11/13/2024

FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144



11/13/2024

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MEMORANDUM

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TO: Texas Water Development Board

FROM: Courtney Corso, P.E. and Philip Taucer, P.E.

SUBJECT: MAG Peak Factors – Region H Recommendations for 2026 RWP

DATE: November 7, 2024

PROJECT: Region H 2026 Regional Water Plan – Supply Evaluation

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1. Introduction

When developing Regional Water Plans (RWPs), planning groups consider water supply availability under drought-of-record conditions. Meanwhile, the joint planning process for groundwater in Texas considers long-term average conditions and determines Modeled Available Groundwater (MAG) supplies, which estimate a potential level of pumping that can be sustained on an average annual basis to meet a Desired Future Condition (DFC) based on the most current Groundwater Availability Model (GAM) and understanding of an aquifer. The RWP process uses MAG values as a starting basis to estimate available groundwater supplies. However, because of the disconnect between the joint planning approach and the worst-case scenario in regional planning, MAGs can underestimate the actual peak pumping that may occur during a drought-of-record year. Some Groundwater Conservation Districts (GCDs) have rules and regulatory structures which allow for short-term peak pumping while still complying with the DFC on a long-term basis. In these cases, application of the MAG to the RWP process excludes this regulatory flexibility and may place unnecessary limitations upon supplies used for planning purposes, thus underrepresenting the water supply available to meet short-term peak demands.

To address this limitation, beginning in the 5th cycle of RWP development, the Texas Water Development Board (TWDB) allowed the implementation of MAG Peak Factors, which are multipliers greater than 100% applied to MAG values to estimate dry-year availability. The intent of the MAG Peak Factor is to bridge the gap between groundwater joint planning and regional planning perspectives. Regional Water Planning Groups (RWPGs) are not required to use MAG Peak Factors but are given the option to apply them where deemed appropriate on a county-aquifer basis. The MAG Peak Factor is not intended to adjust the long-term supply as derived from the DFCs developed through the joint planning process for groundwater. Instead, the intention is to make the regional planning process consistent with regulations by local groundwater districts and patterns of permitted and exempt water use. The following sections summarize the Peak Factor development methodology applied by the Region H Water Planning Group (RHWPG), the administrative and approvals process, and the rules and processes currently applied by the applicable GCDs to monitor groundwater use and progress toward achievement of DFCs.

2. Peak Factors in Region H

The RHWPG developed a consistent methodology to determine a MAG Peak Factor for each county-aquifer unit in the Region which has an associated MAG. In order to reflect realistic peaking behavior, 16 years of historical pumping records were used to develop proposed MAG Peak Factors. Because pumping records and reporting for individual well owners or operators may vary from year to year, Peak Factors for Region H were calculated on a county-aquifer basis and are applied evenly to each river basin within those splits. The option to apply MAG Peak

Factors was discussed with staff from each GCD in the region; these districts are listed in **Table 1. Table 1** also describes which counties are included in each GCD and which aquifers have been deemed relevant for joint planning. (MAG values are only developed for relevant aquifers.) Please note that areas within the Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) are excluded as these areas have been deemed non-MAG areas for RWP purposes by TWDB.

Table 1. Groundwater Conservation Districts in Region H

GCD	Counties	Aquifers Relevant for Joint Planning
Bluebonnet GCD	Austin, Grimes[1], Walker, and Waller	Gulf Coast
Brazoria County GCD	Brazoria	Gulf Coast
Lone Star GCD	Montgomery	Gulf Coast
Lower Trinity GCD	Polk, San Jacinto	Gulf Coast
Mid-East Texas GCD	Leon, Madison, and Freestone[2]	Carrizo-Wilcox, Queen City, Sparta, and Yegua-Jackson

1. Grimes County is in Region G. *2. Freestone County is in Region C.*

After discussion with GCDs in Region H, only Brazoria County GCD (BCGCD) chose to pursue application of a MAG Peak Factor for the current (sixth) planning cycle. The results summarized in this memorandum therefore are limited to the Gulf Coast Aquifer in Brazoria County.

Subsequent to approval by BCGCD, the proposed MAG Peak Factor for the Gulf Coast Aquifer in Brazoria County was evaluated in a modeling exercise using the GAM. Modeling results indicated that applying peaking over time, consistent with the proposed MAG Peak Factor, has a negligible impact on metrics associated with the DFCs. This evaluation is described further in *Section 2.3*.

2.1. Methodology

The GCDs in Region H manage groundwater with respect to their DFC and do not restrict total annual pumping to the MAG, but instead allow pumping to fluctuate between years. While many districts do consider groundwater production relative to the MAG, they do so as one of a number of approaches to evaluating the impacts of pumpage on aquifers and progress toward long-term DFC achievement. As such, historical pumpage within many areas of Region H varies from year to year, with production typically increasing noticeably during dry years and subsequently declining upon the return of more normal or wet conditions. Timing and magnitude of peaks and reductions in pumpage vary widely among counties based upon overall demand, demand types, and aquifer.

Similar to historical patterns of groundwater use, in which dry-year pumping exceeds the long-term trend, Region H assumes that the drought-of-record years represented in the RWP would also experience pumping above the long-term trend which is represented in the RWP by the MAG. Therefore, historical pumping was assessed to determine the ratio of peak to long-term annual pumpage using TWDB Water Use Survey historical pumping data from years 2005 to 2020. The MAG Peak Factor is this ratio of historical peak pumping to long-term average pumping at the county and aquifer level. The MAG Peak Factor is then applied in the RWP as the ratio of RWP supply availability (dry-year conditions) to the corresponding MAG.

For counties in which the Gulf Coast Aquifer is the only major aquifer, all pumping categorized in the TWDB datasets as "Other Aquifer" or "Unknown Aquifer" was assumed to originate from the Gulf Coast Aquifer. TWDB Water Use Survey data was utilized for several reasons:

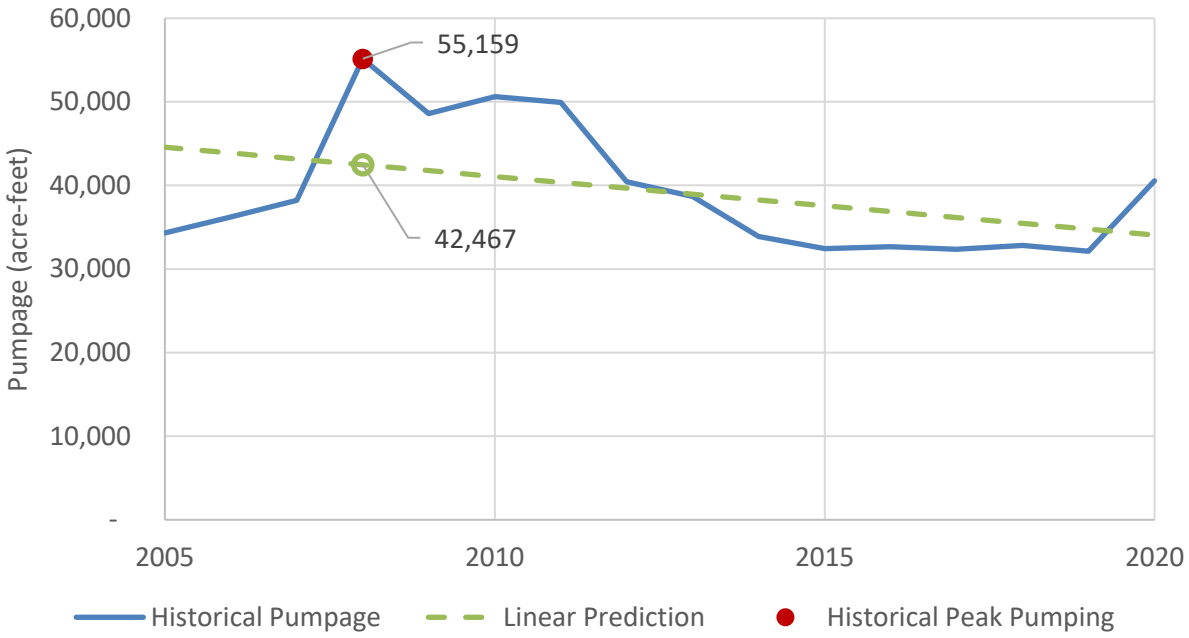
- Availability of county-level information in a consistent format;
- Representation of recent conditions, including recent growth in urbanizing portions of Region H; and
- Inclusion of a range of hydrologic conditions, including extremely dry conditions for year 2011.

The Peak Factor was estimated using the relationship:

$$Peak\ Factor = \frac{(peak\ pumpage)}{(linear\ approximation\ in\ year\ of\ peak\ pumpage)}$$

For this analysis, peak pumpage was defined as the maximum annual pumping volume from an aquifer within a given county during 2005 to 2020. The linear approximation in the denominator is the predicted pumping in the year of peak pumping, based on a linear fit of annual pumping during 2005 to 2020 to account for long-term trends in pumping. This concept is represented in **Figure 1**.

Figure 1. Historical Pumping from the Gulf Coast Aquifer in Brazoria County



2.2. Recommended MAG Peak Factor: Brazoria County – Gulf Coast Aquifer

The MAG Peak Factor developed for the Gulf Coast Aquifer in Brazoria County and approved by BCGCD and GMA 14 is summarized in **Table 2**. This Peak Factor is proposed as a constant factor for use in each planning decade in the 2026 RWP. Supporting data for MAG Peak Factor calculations in electronic format will be transmitted to TWDB

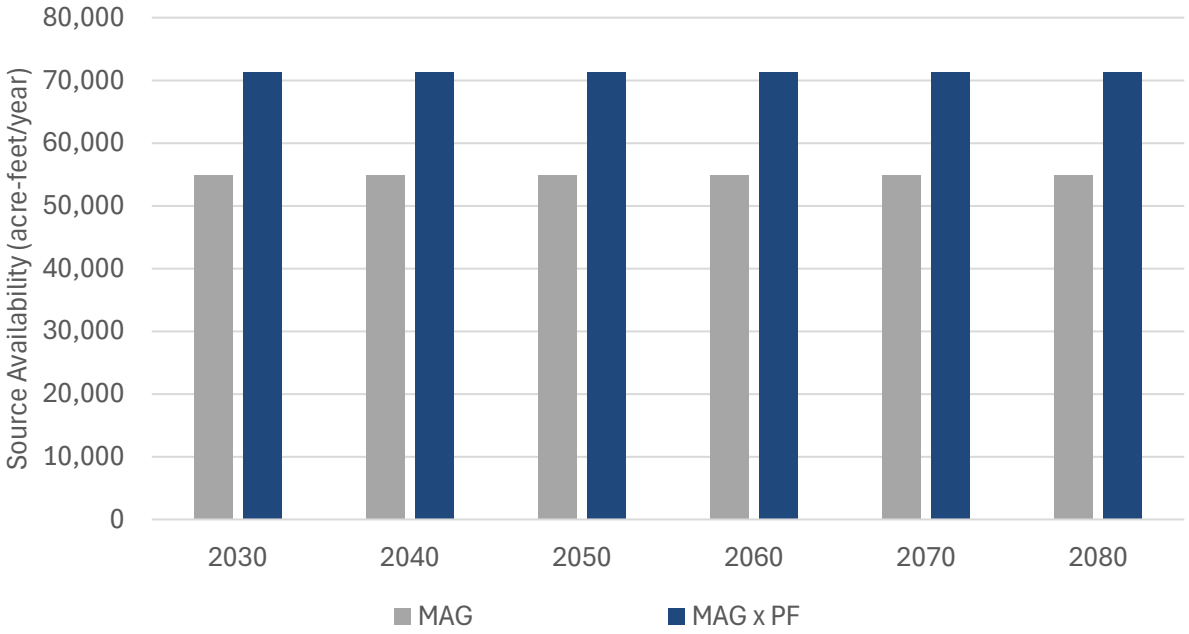
along with this memorandum. Additional information on the administrative process and GCD approvals can be found in *Section 3* of this memorandum.

Table 2. Summary of Peak Factors for Region H

County	Aquifer	GCD	GMA	Peak Factor
Brazoria	Gulf Coast	Brazoria County GCD	14	129.89%

Historical information used to calculate the Peak Factor for the Gulf Coast Aquifer in Brazoria County is illustrated in **Figure 1**, with resultant peaked MAG values for RWP purposes shown in **Figure 2**. It should be noted that the Region H RWP assumes that groundwater supply availability in Brazoria County is fully allocated as existing supply.

Figure 2. Peaked MAG for the Gulf Coast Aquifer in Brazoria County



2.3. Modeling Assessment

In order to confirm that the temporary availability increase represented by applying the MAG Peak Factor will not prevent BCGCD nor surrounding GCDs from managing groundwater resources to achieve DFCs, a modeling analysis was conducted by INTERA. This analysis used the GAM for the northern portion of the Gulf Coast Aquifer System that was approved at the time of the 2021 joint planning cycle and which was used in development of DFCs and MAGs; this model is referred to as the Houston Area Groundwater Model ("HAGM"; Kasmarek, 2012). The modeling analysis used the methods documented in Appendix R of the explanatory report for GMA 14 DFCs from the 2021 cycle of joint planning (GMA 14, 2022); this GMA 14 DFC Run was used as a baseline for evaluating the impacts of applying a MAG Peak Factor.

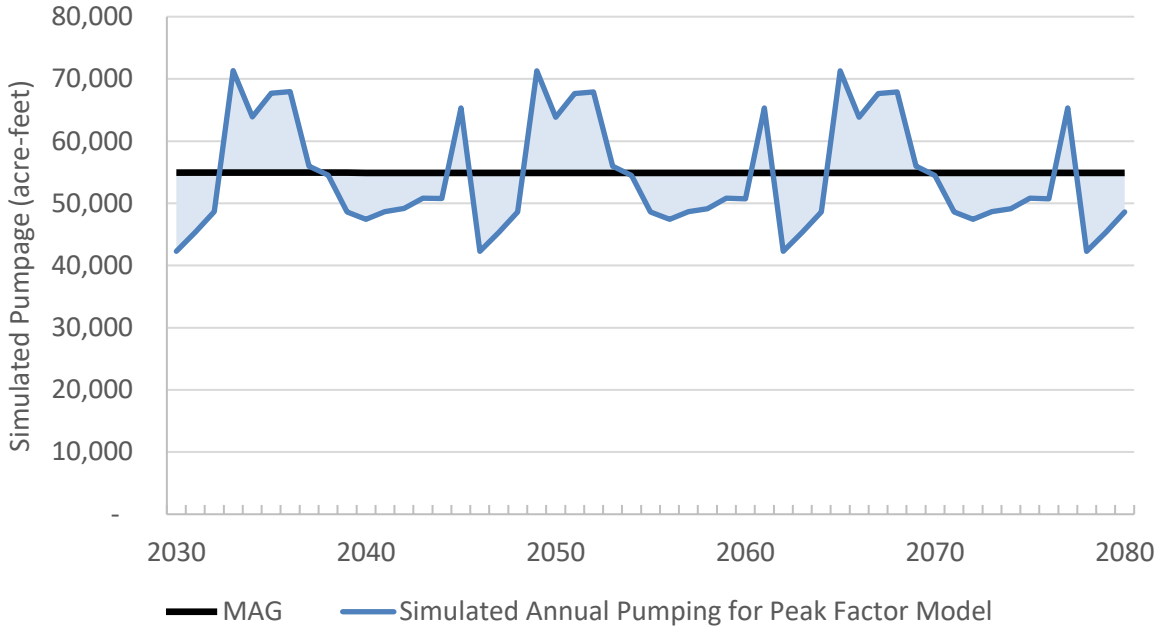
Pumping in Brazoria County was adjusted in a model run representing the application of the proposed MAG Peak Factor, hereafter referred to as the Peak Factor Run. Demands and supply availability are described in the RWPs

on a decadal basis. For further examination in a groundwater modeling analysis, annual pumping is required in order to develop inputs for each model stress period. The pumping was adjusted by applying an annual factor to each stress period from 2030 to 2080. The time series of annual factors was developed using the approach described above for the Peak Factor, but historical pumping from each year of the period 2005 to 2020 was divided by the linear approximation for that year to create a cycle of increasing and decreasing pumping with a long-term average approximately equivalent to the MAG. This process is described in detail below.

1. **Determine long-term average pumping assumed for modeling:** Long-term average pumping in Brazoria County was assumed to be equivalent to the MAG in each planning decade. This is based on groundwater demand in the county as projected for the 2026 Region H RWP, which indicates that peaked availability (MAG multiplied by the MAG Peak Factor) will be fully allocated to existing supplies with no surplus groundwater available.
2. **Describe annual average trend in pumping:** Interim annual values were interpolated between decadal MAG values.
3. **Develop annual pumping factors:** The peaking trend used by the RHWPG to determine MAG Peak Factors was studied on a basis of deviation from long-term trend rather than long-term average. This methodology was selected in order to account for the trends in overall groundwater use over the 16-year period of record. Therefore, it was necessary to normalize the entire period in a similar fashion. A linear trend line was developed based on historic pumping in Brazoria County from the Gulf Coast Aquifer from 2005 to 2020 (**Figure 1**). Individual pumpage values for each year were divided by the estimated trend line value in that year to determine a trend-normalized annual factor.
4. **Develop annual pumping volumes:** The normalized peak factor from Step 3 was then applied to the average annual pumpage from Step 2 to represent fluctuating annual demands due to year-to-year variations in climatic conditions. As it is impossible to exactly predict future trends in water use due to seasonal and annual climatic variables, this process assumes the repetition of the trends in the historic period over the entirety of the planning period. Therefore, the 2005-2020 normalized annual peaking patterns were repeated throughout the RWP planning horizon of the year 2030 through the year 2080. This allowed for continuous cycling of the high and low demand patterns, overlaid upon the annual average demands interpolated in Step 2. The results of this analysis provide a potential synthetic demand pattern in Brazoria County that is consistent with the MAG Peak Factor proposed by the RHWPG.

The time series of annual factors was applied to all pumping cells within Brazoria County in the GMA 14 DFC Run; no changes were made to the spatial distribution of pumping. The resulting annual pumping used in the model in Brazoria County, shown in **Figure 3**, demonstrates that the methodology to develop the MAG Peak Factor is based on assumed patterns of fluctuating peak demands and lower demands having a long-term average value approximately equivalent to the MAG. Supporting data for calculations of modeled annual pumping volumes will be transmitted in electronic format to TWDB along with this memorandum.

Figure 3. Simulated Annual Pumping Using Annual Factor



DFCs in GMA 14 are based on two metrics: median available drawdown (2009 to 2080) and additional subsidence (2009 to 2080). Specifically, the DFCs are defined as follows:

> *"In each county in GMA 14, no less than 70 percent median available drawdown remaining in 2080 or no more than an average of 1.0 additional foot of subsidence between 2009 and 2080."*

Results of the Peak Factor Run were compared to the GMA 14 DFC Run for each of the DFC metrics (**Table 3**). As expected, the largest changes in remaining available drawdown and subsidence are in Brazoria County, with smaller changes in adjacent counties. Changes in all counties are considered to be small enough to have no significant effect on DFC achievement with the application of the MAG Peak Factor.

Groundwater availability modeling files used for this assessment will be transmitted in electronic format to TWDB along with this memorandum. *Attachment A* contains an index of associated modeling files included in the transmittal. These include the unadjusted model well files from the GMA 14 DFC Run, the adjusted model well files from the Peak Factor Run, and other model input files. Detailed georeferenced maps of pumping assumptions are omitted from the submittal, as the spatial distribution of pumping was not revised between the GMA 14 DFC Run and the Peak Factor Run, as demonstrated in the model well files.

Table 3. Comparison of Model Results: Median Available Drawdown Remaining and Modeled Average Subsidence

County	GMA 14 DFC Model Run		Peak Factor Run		Difference	
	Available Drawdown Remaining (2009 to 2080)	2080 Modeled Average Subsidence (feet)	Available Drawdown Remaining (2009 to 2080)	2080 Modeled Average Subsidence (feet)	Available Drawdown Remaining Difference (2009 to 2080)	2080 Modeled Average Subsidence Difference (feet)
Austin	92.47%	0.4048	92.47%	0.4048	0.00%	0.0000
Brazoria	86.96%	1.0009	87.39%	0.9816	0.43%	-0.0193
Chambers	76.22%	0.9625	76.21%	0.9625	-0.01%	0.0000
Fort Bend	58.02%	2.2345	58.07%	2.2303	0.05%	-0.0042
Galveston	86.51%	1.4980	86.64%	1.4928	0.13%	-0.0052
Grimes	69.76%	0.0388	69.76%	0.0388	0.00%	0.0000
Hardin	81.04%	0.5593	81.04%	0.5593	0.00%	0.0000
Harris	82.53%	0.8211	82.53%	0.8199	0.00%	-0.0012
Jasper	69.08%	0.2675	69.08%	0.2675	0.00%	0.0000
Jefferson	68.38%	0.5885	68.38%	0.5885	0.00%	0.0000
Liberty	76.13%	1.1089	76.13%	1.1089	0.00%	0.0000
Montgomery	67.74%	0.5457	67.74%	0.5457	0.00%	0.0000
Newton	70.03%	0.1762	70.03%	0.1762	0.00%	0.0000
Orange	91.02%	1.0049	91.02%	1.0049	0.00%	0.0000
Polk	81.90%	0.0341	81.90%	0.0341	0.00%	0.0000
San Jacinto	81.96%	0.1098	81.96%	0.1098	0.00%	0.0000
Tyler	78.02%	0.0423	78.02%	0.0423	0.00%	0.0000
Walker	69.74%	0.0171	69.74%	0.0171	0.00%	0.0000
Waller	69.35%	0.6330	69.35%	0.6330	0.00%	0.0000
Washington	77.13%	0.0124	77.13%	0.0124	0.00%	0.0000

3. Administrative Process

In accordance with the *Second Amended General Guidelines for Development of the 2026 Regional Water Plans* and other TWDB guidance, the RHWPG coordinated with local groundwater regulatory entities regarding proposed Peak Factors and compatibility with GCD management goals. At its May 3, 2023 public meeting, the RHWPG considered the topic of MAG Peak Factors and authorized the Region H Consultant Team and Groundwater Supply Committee to coordinate with groundwater regulatory entities to develop MAG Peak Factors for Region H and submit an associated request to TWDB. *Attachment B* includes documentation of the RWPG decision to authorize the submission of this request.

As noted earlier, only Brazoria County GCD requested to pursue a Peak Factor; other GCDs declined to pursue the option for the 2026 RWP. Brazoria County GCD considered the option for a Peak Factor at a public meeting of its District Board and took formal action to approve the use of a MAG Peak Factor for the 2026 Region H RWP. GMA 14 subsequently approved the MAG Peak Factor proposed by Region H and approved by the BCGCD for Brazoria County. GCD and GMA approvals are summarized in **Table 4**, with documentation of these approvals included in *Attachment B*.

Table 4. GCD and GMA Peak Factor Approvals

County	Aquifer	GCD	GCD Approval Date	GMA	GMA Approval Date
Brazoria	Gulf Coast	Brazoria County GCD	1/11/2024	GMA 14	2/29/2024

4. District Methodologies for Monitoring DFC Compliance

As noted in *Section 2.1* of this memorandum, the GCDs within Region H manage groundwater within their jurisdictions in the context of their DFCs, allowing some degree of inter-annual fluctuation in production. The MAG Peak Factor option allows the RWP to better reflect this short-term peak use allowed by GCD rules and observed in historical pumpage records and does not impact the joint groundwater planning process or in any way modify established MAG values or DFCs for any district. The MAG Peak Factor proposed in this memorandum has been approved by the applicable GCD and GMA and is not anticipated to preclude or hinder achievement of DFC attainment or other GCD management goals.

The GCDs in Region H include within their Groundwater Management Plans and district rules measures to facilitate meeting their goals, including but not limited to goals for DFC achievement. As part of this process, all five of these GCDs engage in monitoring of groundwater levels, either as part of regular in-house technical evaluations of well data or through special studies and participation in long-term monitoring programs with the United States Geological Survey (USGS) or HGSD. These evaluations allow the GCDs to assess changes in water levels over time relative to levels consistent with DFC achievement. The districts also require permitted (non-exempt) wells to report groundwater pumpage on a regular basis, providing another metric to assist in evaluating progress toward long-term DFC achievement. Key processes in monitoring DFC achievement, controlling subsidence, and promoting the efficient use of groundwater for each of the applicable GCDs are summarized in **Table 5**.

Table 5. Key GCD Monitoring and Management Processes

Measure	Bluebonnet GCD	Brazoria County GCD	Lone Star GCD	Lower Trinity GCD	Mid-East Texas GCD
Water Level Analyses?	Yes - Annual analysis by GCD	Yes - Biannual analysis by GCD, work w/ USGS	Yes – annual monitoring; analysis by GCD at least once every 3 years	Yes - Annual analysis by GCD	Yes - Annual analysis by GCD
Subsidence Analyses?	Considered during permit review process	Yes - Biannual analysis by GCD, work w/ USGS et al.	Yes – regular monitoring and separate analyses	Considered during permit review process	Considered during permit review process
Well Permitting Required?	Yes	Yes	Yes	Yes	Yes
Registration of Exempt Wells Required?	Yes	Yes	Yes	Yes	Yes
Pumpage Reporting for Non-Exempt Wells	Yes	Yes	Yes	Yes	Yes
Production Fees Applied?	Yes – based on production	Yes – based on permitted volume	Yes – based on permitted volume	Yes – based on production	Yes – based on production
Consideration of Drought Monitor?	Yes	Yes	Yes	Yes	Yes

5. References

GMA 14. (2022). *Desired Future Conditions Explanatory Report*. Prepared by the Groundwater Conservation Districts in Groundwater Management Area 14.

Kasmarek, M. (2012). *Hydrogeology and simulation of groundwater flow and land-surface subsidence in the northern part of the Gulf Coast Aquifer System, Texas, 1891-2009*. U.S. Geological Survey.

Attachment A
Groundwater Availability Modeling Files
for Region H MAG Peak Factor Evaluation

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Table A-1. Modeling Input Files Used for Evaluation of Proposed MAG Peak Factor

File Name	Scenario
HAGM_BT_base_2080.sip	Both
HAGM_BT_base_2080.bas	Both
HAGM_BT_base_2080.bcf	Both
HAGM_BT_base_2080.sub	Both
HAGM_BT_base_2080.oc	Both
HAGM_BT_base_2080.dis	Both
HAGM_BT_base_2080.ghb	Both
HAGM_BT_base_2080.nam	GMA 14 DFC
HAGM_BT_base_pest_2080.wel	GMA 14 DFC
brazoria_peak_factor.wel	Peak Factor
HAGM_BT_base_2080_brazoria_peak_factor.nam	Peak Factor

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Attachment B
RWPG, GCD, and GMA Approvals

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Region H Water Planning Group
Meeting Minutes
May 3, 2023

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REGION H WATER PLANNING GROUP
MINUTES OF REGULAR MEETING
MAY 3, 2023

MEMBERS PRESENT:
David Bailey, John Bartos, Arthur Bredehoft, Brad Brunett, Carl Burch, Jun Chang, Mark Evans, Ken Kramer, Marvin Marcell, Mike O'Connell, Byron Ryder, Loyd Smith, Michael Turco, and Brandon Wade (Alisa Max was present following appointment to the Regional Planning Group).

ALTERNATES PRESENT: Samantha Reiter for Gary Ashmore, Ekaterina Fitos for Yvonne Forrest, Matthew Barrett for Jace Houston, Jason Gerrard for Glenn Lord, and Jim Sims for Kevin Ward.

MEMBERS ABSENT: W.R. Baker, James Comin, Caleb Cooper, Robert Istre, Ivan Langford, and Danny Pierce.

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1. **CALL TO ORDER**

   The meeting was called to order at 10:02 a.m.

2. **INTRODUCTIONS**

   Mr. Evans introduced Heather Rose, Texas Water Development Board's contract manager for Region H. He stated that the Department of Agriculture provided a letter naming Kristin Lambert as their representative with Manuel Martinez as alternate.

3. **REVIEW AND APPROVE MINUTES OF THE FEBRUARY 1, 2023 MEETING**.

   Mr. Bredehoft made a motion to approve the minutes of February 1, 2023, with a correction to identify Mr. James Comin and Mr. Ivan Langford as not present at the February 1, 2023, Region H Water Planning meeting. The motion was seconded by Mr. Marcell and carried unanimously.

4. **RECEIVE PUBLIC COMMENTS ON SPECIFIC ISSUES RELATED TO AGENDA ITEMS 5 THROUGH 7**.

   There were no comments.

5. **PLANNING GROUP MEMBERSHIP**

a. RECEIVE NOMINATING COMMITTEE REPORT AND CONSIDER TAKING ACTION TO APPROVE MEMBERS TO FILL VACANCIES ON THE REGION H WATER PLANNING GROUP (RHWPG)

Mr. Chang stated that the Nominating Committee met on May 3, 2023, to discuss nominations to fill the water utilities vacancy. Mr. Chang stated that the Nominating Committee recommends Alisa Max to fill the water utilities vacancy. Mr. Wade made a motion to accept the Nominating Committee's recommendation to appoint Ms. Alisa Max to the Region H Water Planning Group representing water utilities. The motion was seconded by Ken Kramer and carried with 18 ayes and 1 nay (Mike O'Connell).

6. PLAN DEVELOPMENT AND ADMINISTRATION

a. RECEIVE UPDATE FROM CONSULTANT TEAM AND NON-POPULATION DEMANDS COMMITTEE REGARDING RECOMMENDED REVISIONS TO DRAFT TEXAS WATER DEVELOPMENT BOARD (TWDB) PROJECTIONS FOR THE 2026 REGION H REGIONAL WATER PLAN (RWP) AND CONSIDER APPROVING SUBMITTAL TO TWDB.

Mr. Taucer provided information related to the various recommendations from the Non-Population Demands Committee regarding the draft Texas Water Development Board projections for the 2026 Region H Water Plan. He provided the committee's recommendations related to irrigation, manufacturing, mining, and steam electric power. Mr. Taucer stated that the proposed recommendations for this cycle are similar to the last cycle's projections. Mr. Ken Kramer asked that the Texas Water Development Board take into consideration agricultural use. Discussion ensued. Mr. Bredehoft made a motion to approve the submittal to TWDB along with Mr. Kramer's comments. The motion was seconded by Mr. Marcell and carried unanimously.

b. RECEIVE UPDATE FROM CONSULTANT TEAM AND POPULATION DEMANDS COMMITTEE REGARDING RECOMMENDED REVISIONS TO DRAFT TWDB PROJECTIONS FOR THE 2026 REGION H RWP AND CONSIDER APPROVING SUBMITTAL TO TWDB

Mr. Taucer provided information related to the various recommendations from the Population Demands Committee regarding the draft TWDB projections for the 2026 Region H Regional Water Plan. Mr. Marcell provided a brief history of the methodology used over the last several years to project population water demand. He stated that the committee recommended using the Joint Regulatory Plan Review (JRPR) populations where available, utilize TWDB projections in remaining counties, and for select counties, use 0.5 migration projection. Discussion ensued. Mr. Kramer made a motion to approve the Population Demands Committee's recommendations to submit said recommendations to TWDB. The motion was seconded by Mr. Bredehoft and carried unanimously.

c. RECEIVE PRESENTATION ON AND DISCUSS THE REGION H WUG SURVEY

Mr. Taucer explained that the WUG survey is a regular part of the planning process. He stated that the information obtained is utilized in projections, identifying existing supplies and infrastructure, interconnect facilities, future projects, and conservation and drought contingencies.

d. RECEIVE UPDATE FROM CONSULTANT TEAM REGARDING IDENTIFICATION OF MAJOR WATER PROVIDERS (MWPS) FOR REGION H AND CONSIDER TAKING ACTION DIRECTING THE CONSULTANT TEAM TO SUBMIT A LIST OF RECOMMENDED MWPS TO THE TWDB

Mr. Taucer stated that TWDB incorporated the Major Water Provider concept in the previous cycle. He stated that TWDB gave each Regional Water Planning Group the latitude in determining entities of key significance in the region's supplies. He explained that last cycle, the planning group recommended designating any entity that had more than 25,000 acre-feet per year of anticipated current or future supply to itself or others, with the Population Demands Committee recommending an additional criterion of at least 10,000 acre-feet per year of anticipated current or future supply to recipients outside of the entity's retail service area. Mr. Taucer then provided a list of the potential MWPS meeting these criteria for Region H. Mr. Bredehoft made a motion to direct the consultant team to submit a list of recommended MWPs to the TWDB. The motion was seconded by Mr. Bartos and carried unanimously.

e. RECEIVE REPORT FROM CONSULTANT TEAM REGARDING UPCOMING GROUNDWATER SUPPLY ANALYSES AND CONSIDER TAKING ACTION TO AUTHORIZE CONSULTANT TEAM AND GROUNDWATER SUPPLY COMMITTEE TO COORDINATE WITH GROUNDWATER REGULATORY ENTITIES TO DEVELOP MAG PEAK FACTORS FOR REGION H AND SUBMIT AN ASSOCIATED REQUEST TO TWDB.

Mr. Taucer provided information related to the groundwater supply analyses. He explained that MAG peak factors allow the Regional Water Plan to better reflect situations where groundwater conservation districts allow temporary production in excess of Modeled Available Groundwater. The MAG peak factors do not change the MAG or any regulatory entity's regulatory approach and are related specifically to the Regional Water Plan. He explained that MAG peak factors must be studied by any Planning Group requesting their use, approved by each of the applicable groundwater conservation districts and groundwater management areas, and by TWDB. Mr. Taucer stated that this process was utilized by the Region H Water Planning Group for the 2021 Regional Water Plan. Mr. Turco made a motion to authorize the consultant team and Groundwater Supply Committee to coordinate with groundwater regulatory entities to develop MAG peak factors for Region H and submit an associated request to TWDB. The motion was seconded by Mr. Chang and carried unanimously.

f. RECEIVE UPDATE FROM CONSULTANT TEAM REGARDING UPCOMING SURFACE WATER SUPPLY ANALYSES AND CONSIDER TAKING ACTION TO AUTHORIZE THE CONSULTANT TEAM AND SURFACE WATER SUPPLY COMMITTEE TO DEVELOP AND SUBMIT TO THE TWDB A REQUEST FOR POTENTIAL EXCEPTIONS TO SURFACE WATER MODELING REQUIREMENTS.

Mr. Taucer explained that surface water availability in the regional plan is required to be examined through TCEQ's Water Availability Model ("WAM") Run 3 which includes a very specific set of assumptions that looks at existing permanent rights in the priority system, historical hydrology, full authorized diversions, and no/limited return flows. He stated that TWDB specified utilizing WAM Run 3 due to its cautious assumptions. Mr. Taucer stated that TWDB requires any group utilizing any other model or a modified WAM to request an exception to the surface water modeling requirements. He stated that Region H is requesting the use of Region G's modified model as well as information and model elements from Region C. Mr. Sims made a motion to authorize the consultant team and Surface Water Supply Committee to develop and submit to the TWDB a request for potential exceptions to Surface Water Modeling requirements. The motion was seconded by Mr. Bredehoft and carried unanimously.

7. GENERAL UPDATES AND OUTREACH

a. RECEIVE UPDATE REGARDING SCHEDULE AND MILESTONES FOR THE DEVELOPMENT OF THE 2026 REGION H RWP.

Mr. Taucer stated that the next four to six months will be busy for various committees with a Technical Memorandum due to TWDB in March of 2024.

b. RECEIVE UPDATE FROM LIAISONS TO OTHER PLANNING GROUPS.

Mr. Wade stated that he was invited by Region G to give a presentation on the Brazos Alluvium. Ms. Rose stated that Mr. Evans was elected as Chair of the Interregional Planning Council.

c. RECEIVE REPORT REGARDING RECENT AND UPCOMING ACTIVITIES RELATED TO COMMUNICATIONS AND OUTREACH EFFORTS ON BEHALF OF THE RHWPG.

Mr. Taucer had no information at this time.

d. AGENCY COMMUNICATIONS AND GENERAL INFORMATION.

Ms. Rose provided information related to administrative logistics. Mr. Bredehoft stated that infrastructure surcharges at the retail level will be the topic of discussion in The Woodlands in the near future.

8. RECEIVE PUBLIC COMMENTS.

Mr. Sarkis provided comments related to agenda item 6a.

9. NEXT MEETING:

It was announced that the next Region H Water Planning meeting is scheduled for July 5, 2023.

10. ADJOURN.

Without objection, the meeting was adjourned at 11:32 a.m.

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Brazoria County Groundwater Conservation District
Meeting Minutes
January 11, 2024

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MINUTES OF THE MEETING OF THE BOARD OF DIRECTORS OF THE BRAZORIA COUNTY GROUNDWATER CONSERVATION DISTRICT

The Board of Directors of the Brazoria County Groundwater Conservation District met Thursday, the 11h day of January 2024, at 4:00 p.m. and in the Brazoria County Groundwater Conservation District Office, 451 N. Velasco Street, 1st Floor, Suite 140, Angleton, Texas.

The meeting was called to order by Director Davenport at 4:06 p.m.

The roll was called of the duly constituted members of the Board, to wit:

Patrick O'Day	President
Dennis Davenport	Vice President
Robby Goolsby	Secretary
Gary Moore	Assistant Secretary
Charlie Greenberg	Director

All of said Directors were present, except Director O'Day and Director Moore, thus constituting a quorum.

Also present for all or part of the meeting, were the following: Beverly Hopkins, General Manager, and Jodie Parnell, Administrative Assistant, Michael White, Field Coordinator and Philip Taucer with Freese & Nichols.

PUBLIC COMMENTS:

No public comments were received.

FORMAL PRESENTATIONS:

Freese & Nichols presented the MAG Peak Factor on behalf of Region H Water Planning Group.

APPROVE MINUTES:

Motion by Director Davenport, Second by Director Greenberg, that the Minutes from the meeting on December 14, 2023 be approved as presented. Motion approved with all present voting aye.

OPEN PUBLIC HEARING REGARDING PERMIT APPLICATIONS:

Motion by Director Goolsby, Second by Director Greenberg, to **OPEN** a public hearing regarding applications for permits. Motion approved with all present voting aye.

Type	Owner	Address	City	Allocation	Use
a.Permit New	Pomona HOA	2501-1/2 Seckel Street	Manvel	9,000,000	Lake
b.Permit Exist	Patricia Pugh	4398 CR 197	Alvin	1,000,000	Commercial
c.Permit Exist	Gul Limited Partnership	21620	Manvel	1,000,000	Commercial

CLOSE PUBLIC HEARING REGARDING PERMIT APPLICATIONS:

Following the Public Hearing, there was a Motion by Director Greenberg, Second by Director Goolsby, that the public hearing regarding applications for permits received be **CLOSED**. Motion approved with all present voting aye.

APPROVE PERMIT APPLICATIONS:

Motion by Director Davenport, Second by Director Greenberg, that items b and c be approved as presented and item a; be approved contingent upon payment of all fees due per the District's adopted Fee Schedule and resolution of any pending issues. Motion approved with all present voting aye.

EXEMPT USE WELL REGISTRATION REPORT:

The Exempt Well Registration Report for the current period was reviewed. No action was taken.

DROUGHT MONITOR REPORT:

The U.S. Drought Monitor map for the State of Texas for the current period was presented for review. No action was taken.

APPROVE USE OF MAGE PEAK FACTOR IN 2026 REGIONAL WATER PLAN:

Motion by Director Goolsby, Second by Director Davenport, to approve the use of a MAG Peak Factor in Brazoria County in the 2026 Regional Water Plan. Motion approved with all present voting aye.

APPROVE ORDER OF GENERAL ELECTION:

Motion by Director Davenport, Second by Director Greenberg to approve the Order of Election for May 4, 2024. Motion approved with all present voting aye.

SET HEARING DATE FOR PERMIT APPLICATIONS:

Motion by Director Greenberg, Second by Director Goolsby, that a public hearing to consider approval of permit applications, amendments, or cancellations be set for the next meeting of the Board of Directors on **Thursday, February 8, 2024 at 3:00 p.m.** in the District Office and that the applicants be notified. Motion approved with all present voting aye.

FINANCIAL, INVESTMENT, & BUDGET STATUS REPORT:

The December 2023 Financial, Investment, & Budget Status Report was not presented for review. No action was taken.

APPROVE INVOICES FOR PAYMENT:

Motion by Director Davenport, Second by Director Goolsby, that the invoices presented be approved for payment. Motion approved with all present voting aye.

GENERAL MANAGERS REPORT:

A. Field Coordinator's Monthly Report was reviewed.

B. 4 H Annual Report was reviewed.

ADJOURN:

With no further matters to be heard, the motion to adjourn was made by Director Greenberg, Second by Director Davenport. All present voting aye. The meeting was adjourned at 4:31 p.m.

Approved this 8th day of February, 2024

Robby Goolsby

Board of Directors

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Groundwater Management Area 14
Meeting Minutes
February 29, 2024

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UPPER GULF COAST AQUIFER PLANNING AREA
(GMA 14)

Joint Planning Group Meeting

Thursday, February 29, 2024
10:00 AM

MEETING MINUTES

A regular meeting of GMA 14 was held Thursday, February 29, 2024, at 10:00 AM, at the offices of the Lone Star Groundwater Conservation District located at 655 Conroe Park North, Conroe, Texas.

Agenda Items 1, 2 and 3

The meeting was called to order by John Martin (Southeast Texas GCD) at 10:01 AM. Mr. Martin proceeded with confirmation of receipt of posted notices from District Representatives. Districts represented included: Zach Holland, Bluebonnet GCD; Beverly Hopkins, Brazoria County GCD; Sarah Kouba, Lone Star GCD; Gary Ashmore, Lower Trinity GCD; and John Martin, Southeast Texas GCD. Participants included: Ashley Grueter, Fort Bend Subsidence District; Kirk Hannath, Washington County (joined at 10:05AM); and Mike Turco, Harris-Galveston Subsidence District. Also, in attendance at the meeting were Jennifer Badhwar, Texas Water Development Board (TWDB); Daryn Hardwick, TWDB; Philip Taucer, Region H Consultant; and members of the public. (*See* ***Attachment "A" for a list of attendees***). Mr. Martin welcomed those in attendance and introduced GMA members and Participants.

Agenda Item 4

Mr. Martin called for and opened the floor to public comment. Mr. Harry Hardmann, representing the City of Conroe as a City Council Member. Mr. Hardmann commented as the largest stakeholder in Montgomery County and one of the largest stakeholders in GMA 14, the City is in full support of the Lone Star GCD's ongoing subsidence study especially as it relates to the coring sampling currently underway. The issue of subsidence and the highest practicable use of groundwater has been a highly debated topic for several years and Lone Star GCD's commitment to devoting resources necessary to core all our aquifers across Montgomery County will allow GMA 14 to make decisions based on hardcore data not on suppositions and models of samples from 50-miles away. The City appreciates core site provided and San Jacinto River Authority for providing a second site for coring. The City has also volunteered a site in support of the study. Having quantifiable data regarding the compaction of Jasper and other aquifers in the northern portion of the GMA is critical to ensure decisions regarding fair equitable allocation

of our most precious resource are based on science and not opinion. Mr. Hardmann applauded Lone Star GCD's leadership in this initiative and urged all GCDs in GMA to support this project.

Mr. Garry Dent, Lone Star GCD Director and individual resident of Montgomery County. Mr. Dent commented on an upcoming agenda item presentation about the DFC and how it is calculated. Mr. Dent noted the current calculation uses either the lowest perforation or well screen as the depth. Mr. Dent asked the group to consider changing the metric for calculation from well depth to the bottom of the aquifer. Mr. Dent noted his support for reconsidering how the parameter is calculated.

Mr. Mark Meinrath, representing himself (*See* ***Attachment "B" for Meinrath Handout***). Mr. Meinrath commented he is a 30-year resident of the Panther Branch Fault. Mr. Meinrath asked the GMA to take over the monitoring of the route of the GRP pipeline. Mr. Meinrath believes it is in everyone's best interest to maintain more frequent monitoring as San Jacinto River Authority is planning to reduce the monitoring schedule. The handout provided includes analysis of elevation data from the eight and a half years of the GRP delivery of surface water to The Woodlands. Mr. Meinrath noted the changes in measurements over time and how the measurements and movement relate to the pipeline. Mr. Meinrath reiterated the need for frequent monitoring and encouraged the GMA to consider taking over the monitoring efforts. Ms. Kouba noted this effort may be better suited to be further discussed locally and appreciated Mr. Meinrath bringing the issue forward.

Agenda Items 5

Mr. Martin then asked for consideration of the approval of the minutes from the GMA 14 meeting on October 26, 2023. Mr. Ashmore moved to approve, seconded by Ms. Hopkins, the minutes as presented for the October 26, 2023 meeting were approved.

Agenda Item 6

Mr. Martin called for updates from the TWDB and discussion of any related items of interest to GMA 14. Mr. Hardwick introduced Ms. Jennifer Badhwar as a new member to the groundwater technical assistance team, announced the recent release of GULF23 as the approved groundwater availability model for use in joint planning, reiterated the opportunity for submitting an alternate model, updated DFC flow chart, and spring-summer timeline for posting of Chapter 356 proposed changes.

Agenda Item 7

Mr. Martin called for the presentation by Lone Star Groundwater Conservation District regarding assessment of water levels in GMA 14. (*See* ***Attachment "C" for 2023 Artesian Head Change Update***). Mr. James Beach, Lone Star GCD consultant, provided update GMA 14 stakeholders of artesian head change and water level change with first focus on Montgomery County and across

GMA 14 area. Mr. Beach noted Dr. Hutchison provided an approach at a prior meeting from a modeling perspective and this presentation provides another assessment looking at the DFC metrics. Mr. Hanath asked about the pumping levels referenced and Mr. Beach noted source data from TWDB and Lone Star GCD metered data. Mr. Ashmore asked dating back to his start in 2014 about the mission of Lone Star GCD being to lower groundwater pumping rates and the current mission changes or amendments. Ms. Reece, Lone Star GCD attorney, answered Lone Star GCD had adopted a management goal of sustainability early on in its formation around 2005 with conversion requiring all large water users to convert to no more than 70% of their 2009 total qualifying demand by District rule. The rule was legally challenged and invalidated by the court of law. Mr. Ashmore asked who challenged the rule. Ms. Reece provided several public water suppliers, municipalities, and key stakeholders in Montgomery County. Before the rule was invalidated, the DFC petition had been initiated and the old board had changed the management standard from sustainability to reasonable drawdown or something similar. Technically the rule was invalidated after the management goal was changed and it is illegal for the rule to be enforced. Mr. Ashmore clarified that groundwater reduction is no longer part of the management plan. Ms. Reece stated the management plan is following Ch. 36 which is the DFC needs to be the balance between the highest practicable level of production and conservation as the adopted management standard and achievement of the approved DFC.

Mr. Hanath asked if any GCDs are looking at the use of surface water or development of new surface water use as additional offsets to the use of available groundwater resources. Mr. Hanath asked about goals or solutions of conversion and balancing groundwater and surface water use for communities and addressing growth. Mr. Hanath noted the primary use of the two main cities in Washington County being surface water which contributed to the discussion and ultimate defeat of their local GCD consideration. Mr. Martin noted the extreme differences between areas with so many elements involved. Mr. Martin noted with the availability of surface water in his area, his communities are too small to cost effectively utilize surface water, with cost and value of water as primary factors. Ms. Hopkins noted several entities in her area who are reliant on surface water and the conversion is at the forefront of the community minds. Ms. Kouba noted the balancing of blending groundwater and surface water with the extreme costs of surface water and policy decisions. Ms. Kouba noted appreciation for the presentation just received that shows maximum available drawdown and we're still achieving our DFC to help stakeholders. Mr. Holland noted the City of Huntsville's use of surface water, blending groundwater, and the benefit of an established surface water infrastructure rather than retrofitting later which is certainly a cost issue but also a water chemistry and complete infrastructure issue. Mr. Holand added the retrofitting or adding surface water infrastructure has been a discussion and consideration on the southern end of the Bluebonnet GCD, but treatment of the source to effectively blend into the system has been a major factor. Ms. Kouba noted that this is not just a surface water discussion but other alternative sources of water as well highlighted by conferences, panels, and seminars to find cost effective balance. Mr. Ashmore noted the City of Livingston, in response to potential subsidence, fully converted from groundwater to surface

water. Mr. Ashmore added Coldspring has been working and continues to work to regain surface water rights they had allowed to lapse. Mr. Ashmore noted the significance of the political pressures of surface water rights and their allocations. Mr. Hanath noted the history and discussions of Washington County surface water rights and the original creation of Lake Somerville. Mr. Hanath added the significant need for education on water and resources in response to the new residence coming from other states with vastly different laws and approaches to water.

Agenda Item 8

Mr. Martin then called for the update from Lone Star Groundwater Conservation District regarding data from the District's Subsidence Study Phase 3. (*See* ***Attachment "D" for LSGCD Subsidence Study Update***). Ms. Kouba noted mobilization on the first site in Porter and planning stages for the second site that will be in The Woodlands. Environmental studies will be next to be completed related to the proposed SJRA site. Ms. Kouba noted weather constraints experienced but all remains on track with the timeline. Ms. Kouba noted some misconceptions about the subsidence study and provided clarification Lone Star GCD is coring at both sites with intention of retrieving coring in Jasper, Chicot, and Evangeline and noted Montgomery County has never had coring from the Jasper. Ms. Kouba noted these efforts will be helpful in proving and putting the correct data into the new model.

Mr. Martin asked about the timeline for the first site drill and data. Mr. Beach noted rigs are being mobilized now and the goal for data preparation ready for the model update to TWDB as previously discussed. Mr. Martin asked about the readiness of the second site and its data use in the model update. Ms. Kouba noted potential as more of the plan is locked in, but the Porter site will be ready for use. Mr. Beach noted this is one borehole in Montgomery County but for Montgomery County purposes and the rest of the joint planning group it is really important. GULF23 was updated with the best available interpolations up from coring in Galveston and Harris County. Mr. Beach noted the 18-cores will also include the Burkeville and the subsidence data available from surface subsidence is a great starting point for looking at this issue. Mr. Beach noted one of the things that as Ch. 36 districts, Lone Star GCD, and Ms. Reece have mentioned is the consideration of the balance of the highest practicable production versus conservation which is different from the subsidence districts who are charged to stop subsidence. Mr. Beach noted the importance of coring through every aquifer is that it helps us get better science to understand where the compaction is occurring and manage the aquifer in a more refined way. Mr. Beach noted providing the best available science is what Lone Star GCD is after and building from the 1970's work locally and into the up-dip portions of the aquifer. Mr. Beach restated the reason the Lone Star GCD Board invested the money to do this study is because we don't know what the compaction is – if the compaction is worse or better than what is interpolated – the bottom line is we want the best available science for decision-making. Mr. Turco asked, as the sites are moved further up dip into Montgomery County, will there be any investigation of the Catahoula included in the study. Mr. Beach noted GULF23 model did not

include any compaction for the Catahoula and it is to be determined based on the work in the future and a topic of conversation as you move north.

Mr. Turco asked for clarification that the cores are intended to investigate the compactive properties of the units, just how they compact and capacity to compact, not determining how much or if compaction has occurred. Mr. Beach responded that is correct and there may be correlations drawn based on the compaction information received and maybe do back calculating causality or correlation in regard to historic water level declines but more as a path forward and better calibrate the model for future conditions. Mr. Turco noted the confusion and clarification in discussions on subsidence versus compaction. Mr. Hanath noted appreciation for efforts to collect more data and being driven by data.

Agenda Item 9

Mr. Martin called for discussion and possible action regarding MAG Peak Factors including recommendations for Regional Water Planning Group H. (*See* ***Attachment "E" for Consideration of MAG Peaking Factors for the 2026 Region H Regional Water Plan***). Mr. Taucer provided an update to the schedule and the regional water planning process from the last meeting. Mr. Taucer re-capped the MAG Peak Factor analysis, considerations, approvals, and its use in the regional water planning process. Mr. Taucer noted a consideration for Brazoria County only this round of planning. Mr. Martin asked Ms. Hopkins if their board had been briefed and took action to approve the considered MAG Peak Factor. Ms. Hopkins confirmed her board had been briefed and approved the use of the MAG Peak Factor.

Mr. Ashmore made the motion to approve the MAG Peak Factor for Brazoria County contingent on its compatibility with DFC achievement, seconded by Mr. Holland. Ms. Kouba asked about a Region H comment made by Jace Houston about "fuzzy math" referring to the GMA groundwater distributed is limited to the GMA MAG – yes for regional planning strategies – but followed it up with counties are limited to MAG number – which is not the case because we are not permitting to the MAG by county. Ms. Kouba asked for confirmation we are not managing to the MAG but to the DFC. Mr. Martin and Mr. Ashmore both confirmed. The motion carried unanimously.

Agenda Item 10

Mr. Martin called for discussion and possible action regarding a resolution formally requesting the use of an alternate/updated groundwater availability model. (*See* ***Attachment "F" for Proposed Resolution Re Alternate Model***). Mr. Holland noted the requirement under TWDB guidance for the submittal of an alternate or updated model. Mr. Holland noted the resolution had been drafted and received comments from the working group and approved all comments, without question, prior to sending the final resolution to the entire group. Mr. Holland noted action is not required today but this is a requirement of the submittal to TWDB. Mr. Martin asked for a description of general modifications for the alternate model. Mr. Holland noted the

scope of work previously discussed and approved at the last meeting. Mr. Holland noted comments identifying the components of GULF23 that didn't align with historical pumping distributions, localized issues, and ultimately making the model a more useable tool for GMA 14. Ms. Kouba noted the change of adding the word "data" in the sixth "Whereas". Mr. Holland noted the group was only provided the complete version with all additions included so there are no redline changes. Mr. Holland noted that if you're not updating data, you're not updating a model and reiterated all comments and suggestions made by Ms. Reece, Mr. Beach, and the consulting conglomerate were accepted without question to provide a complete resolution.

Mr. Martin noted a grammatical issue in the "Now, Therefore" section and adding signature lines as necessary amendments. Mr. Turco noted in the fourth "Whereas" an amendment to read "the US Geological Survey has completed an updated groundwater flow model of the area in cooperation with the Harris-Galveston Subsidence District and the Fort Bend Subsidence District known as the GULF23 model".

Mr. Holland noted the need to have hard discussions now before moving forward with the resolution on the coordinated effort moving forward because we are getting to a time where we don't have any wiggle room in our schedule to get the alternative approach approved. Mr. Holland noted the options of proposing and approving our alternate model update or we work with GULF23. Mr. Holland noted the pending and vital availability of local Montgomery County data focus but that the general scope addressing the CSUB package for the regional effort is not lost, making sure to keep the GMA 14 perspective and approach. Mr. Holland noted he is not diminishing, demeaning, or minimizing the localized data efforts but we are getting into a tight time slot. Mr. Holland asked if it would streamline and be more beneficial alternative to turnover and let Lone Star GCD lead and follow and be the primary consultant for all of the work or continue on the group conglomerate of consultants. Mr. Holland noted we need finalization and commitment by everybody to try to achieve or that we will be working with GULF23. Mr. Martin asked if model update materials can be completed and ready for submission once the coring data is collected or submitted in the case the coring data is not collected timely due to weather conditions or delays. Mr. Holland noted the documentation with TWDB in the last year of issues with GULF23 for use as a regional model. Ms. Kouba noted confidence the simulations will be run with the coring data to update with the best available data and science for the new model. Ms. Kouba noted no concerns about the timeline because we don't want to get stuck with the model that we have presently. Ms. Kouba noted we can make changes and extrapolate the data into the model and confidence with the plan. Ms. Kouba noted the practical level of timelines of submissions to TWDB but just because the coring is happening only in Montgomery County doesn't affect the entire GMA is irresponsible not to add it to the model. Mr. Holland noted no disagreements with any points, but the biggest piece is having the intentional dialogue of keeping this regional –outside of the localized, individual efforts Lone Star GCD are going through – we have a regional model that has to be fixed, the options are update or work with GULF23. Mr. Beach noted his appreciation for the hard discussions on timeline and echoed

confidence the data will be collected. Mr. Beach noted identified errors in the way the delay beds and no-delay beds were implemented in some areas as part of the regional fix. Mr. Beach noted working in DFC planning around the State, there is a time to discuss the nine factors, a time for runs, and we feel because of where we ended up last time with issues, a lot of discussions that can occur of philosophies, approaches with each factor prior to any modeling. Ms. Reece asked Mr. Beach, although the coring sites are only in Montgomery County, if the data collected could be helpful for informing regional assumptions and datasets beyond Montgomery County. Mr. Beach noted the agreement is more globally applicable than just Montgomery County.

Mr. Ashmore noted he understands the lack of commitment to dates for submitting or providing things but would like to see and review our timeline for DFCs and a date schedule from Lone Star GCD that says if we pass this date we are moving forward and not holding up the process. Ms. Kouba noted the coring study is already moving forward. Mr. Ashmore clarified that he needed to see an estimated schedule of what you think you will be able to get, by when, something in writing and overlapped with the DFC timeline. Mr. Martin asked for confirmation of the proposed and final DFC dates. Ms. Reece noted May 2026 and January 2027. Ms. Reece noted discussions from previous meetings as long as the model is submitted in 2024 we would have it before model runs in 2025. Ms. Reece noted Mr. Beach's comments that there are factors and discussions to be had without simulations like in previous rounds. Ms. Reece noted Mr. Beach is suggesting that we consider looking at more than just a couple factors but all factors discussing them policy wise, conceptional wise before doing simulations but that is for you to decide.

Mr. Holland noted there are two different tracts being discussed – the simulations are one component of the overall work to be considered and the modeling update effort is separate and apart from the DFC factors. The model update must be done by the end of the year, which is his concern, and can we have the commitment to maintaining that regional perspective on the regionalized model and not get hung up in the localized pieces. Mr. Holland noted the coring samples are going to be phenomenal in in extrapolations from the existing sites across more of the up-. Models are not a simple, easy thing to tinker and mess with, much less do all the documentation required for submission to TWDB. Mr. Holland noted the time taken for GULF23 to be approved. Ms. Kouba noted it is worth considering the alternative. We are having to get this done and get this information into the simulation and get the model updated with the proper, most, and best available science that we have which is our mandate and that we are charged with and responsible for doing in our positions. Mr. Holland noted he is not to be interpreted of trying to abandon these efforts. Mr. Holland noted having the commitment and being very intentional with that across the board at this table and this GMA perspective of fixing the regionalized model. Mr. Beach noted there is no doubt the regional fixes identified have to be done and while data is being collected. If for some reason we don't get the data in time, the regional fixes will be ready to be implemented for the TWDB submittals. Mr. Beach noted the commitment to addressing the regional issues in the schedule. Ms. Reece noted as long as it is

approved prior to submitting proposed DFC and the well file associated with the proposed DFC all is fine. Mr. Holland confirmed and noted that to get the update approved for use in this cycle we have to get it in before the end of the year. Ms. Reece asked where that firm deadline is based. Mr. Holland noted the TWDB guidance document provided and the GMA timelines. Ms. Reece asked Mr. Hardwick who noted no hard deadline just time to work with it to provide proposed DFCs in 2026. Ms. Kouba asked with respect to the question whether the coring is just for Montgomery County or if it does affect the regional planning, what are individual opinions. Mr. Ashmore asked who is paying for the work. Ms. Kouba answered Lone Star GCD. Mr. Ashmore noted the opinion the information is for Lone Star GCD only and the motivation.

Mr. Ashmore noted we have a model and a process and there is a history of making exceptions and exceptions for Lone Star GCD and what they want. Mr. Ashmore noted the wasted time and money and reiterated he is asking for something in writing, this is what we're going to do and overlap with our DFC plan and make sure it works out. Mr. Ashmore noted he is 100% for Lone Star GCD gathering data and 100% for considering it and moving it into our plan – 100% don't think I'm not. Mr. Ashmore noted he wanted a commitment from Lone Star GCD that you meet your timeline. Mr. Martin asked if our consultants could get together to draw out a timeline with check off items, core samples, model updates, in a relatively quick time and meet to revisit and get the concerns addressed.

Mr. Ashmore asked if the resolution must be approved today or if we can table it until we have hard dates and commitment. Ms. Kouba noted approval actions at the last meeting, and we put together the resolution. Mr. Ashmore noted at previous meetings there was not an understanding of possible schedule conflicts. Ms. Kouba noted there have been no changes to the schedule. Mr. Ashmore noted there has not been a Lone Star GCD schedule provided. Ms. Kouba noted it has been public, talked about at every Lone Star GCD Board meeting, and I have been open about the schedule and if there is confusion it can be answered. Mr. Ashmore asked for a commitment to provide the schedule, discussed at the GMA, overlap it, and there is a hard date between what the TWDB expecting and when and what we can supply, 100% support but I don't feel comfortable at this time. Ms. Kouba noted she would love to help improve confidence today to save the trouble of having the same conversation again.

Mr. Beach noted the tricky part of local versus regional decision is that whatever Lone Star GCD needs to do locally it impacts other people and others impact us in some cases. Even though the data point and money are located in Montgomery County the votes come at the regional level and Lone Star doesn't act independently with regard to DFCs. Mr. Dent noted that it may be interesting to have Mr. Beach or Mr. Keester talk on the generality within geological systems that there is more continuity laterally in the physical parameter of the rocks than there is in the dip direction. Mr. Holland noted this is the same extrapolation process currently used, with the new data moving the point from 40-miles outside Montgomery County to within Montgomery County. Mr. Holland noted the key point now is we have GULF23 to work from whether we have an update or not – whether that is an added motivation factor to get everything in and

updated. Mr. Holland noted the goal of the update was to get GULF23 to be a usable tool from a regional perspective and that is the focus to maintain and be very intentional about.

Agenda Item 11

Mr. Martin called for the discussion and possible action regarding the DFCs and the path forward for GMA 14. Mr. Martin suggested getting the consultants together to layout a workable project timeline for discussion. Mr. Holland noted the suggestion serving Mr. Ashmore's concerns and specifics for GMA direction to achieve goals and Lone Star GCD's schedule overlaps. Mr. Martin noted the need for having a timeline set for the DFC process and model laying everything together in one visual document. Mr. Ashmore noted that he needs to see the hard dates of the DFC process and submittals.

Mr. Martin asked the consultants for their availability and thoughts about a timeline. Mr. Beach noted he believed a timeline could be completed in a month. Dr. Hutchison noted the history of discussions and development of the model, and the objective of the model update was to see how well we work together, and today's discussions show we do not work well together, being called irresponsible. Dr. Hutchison noted his willingness to work and talk and his pessimism about the group working. Ms. Kouba apologized for the word choice, and it was not meant as a technical comment, but a style and work to use better wording. Dr. Hutchison noted the focus of building science, but a huge part of science is working together.

Dr. Hutchison noted the discussion of the resolution, how it was developed, the complete obsession of this word "data" and subsidence information that are going to put in, but when a discussion came up about how that would affect the schedule that is when irresponsible was used. Dr. Hutchison noted his concern about the schedule, identified several GULF23 fixes, key answering questions like Mr. Ashmore's of "what does this mean for my district?" which the current documentation doesn't address. All those things have been lost because the discussion for the last 25-30 minutes has been about subsidence, which is important, but all the other is important too. Ms. Kouba confirmed that if we don't consider this data and don't attempt our best effort to utilize this data, this very big piece of data, that it would be irresponsible of this group, and it is not meant to be offensive. Ms. Kouba noted we need to meet the demands and different needs of our counties and to find a way for them to work on the regional level. Ms. Kouba noted the millions of dollars invested in this effort in Montgomery County that can only be for the achievement of the DFC collectively together.

Dr. Hutchison noted he still doesn't understand the obsession with subsidence, yes, it is important, but there are so many other things that are more important to making the model a useful tool. Ms. Reece noted Mr. Beach has proved how they are working on the regional update to the subsidence package in the regional model. Ms. Reece noted everyone is working on all of this and the group is having regular calls. Dr. Hutchison noted there are no regular calls. Ms. Reece noted Mr. Beach commented on the recent call and the schedule being followed. Dr.

Hutchison noted the last call a couple of weeks ago and has been waiting for a callback. Mr. Beach apologized for not responding and asked if Dr. Hutchison agreed we were working well together as a technical team. Dr. Hutchison answered no. Mr. Martin asked for Mr. Afinowicz's thoughts. Mr. Afinowicz noted willingness to work and talk through a path forward. Mr. Martin asked Dr. Hutchison if we can take a couple months to work something up tangible and at the end of two months we come back and know its not going to happen the GMA can pivot at that point. Dr. Hutchison noted he is always willing to work on this and has been pushing this for the last seven months with the extent of frustration is seeing seven months of hard work going down the drain.

Dr. Hutchison noted the subsidence data is not the issue – if it is available it is going in, if it is not there are ways to deal with that, if it comes in after we have submitted there are ways to fix that – that is not an issue and been discussed. Dr. Hutchison noted everyone is talking about this data like it is somehow a tipping point which it isn't as there are much bigger issues to the general model update. Dr. Hutchison noted the technical team met to figure out what we needed to do, the TWDB put out this guidance document last May. One of the requirements is the GMA adopt a resolution so in the discussion that we had on this GMA 14 update, the resolution requirement was mentioned. Dr. Hutchison noted he offered to take the existing example and circulate the draft with the technical team for comments to be submitted to Mr. Martin to be part of the next agenda. Dr. Hutchison noted Mr. Beach's three corrections being typos and the addition of "data" which were fine and accepted within five minutes of receipt and sent to Mr. Martin. The comments were on the level of a typo but somehow the word "data" became an issue and a big point of discussion at the last Lone Star GCD Board meeting and a big point of discussion here. Dr. Hutchison noted that is an example of how it is becoming hard to work with the people to do the science, not necessarily with Mr. Beach or Mr. Keester, or others, but this collective Lone Star GCD attitude that we have to have it our way and we are going to fight and be aggressive about absolutely everything when there was never any reason to have any kind of disagreement. Dr. Hutchison noted this is all in the last two weeks. Ms. Reece noted the Lone Star GCD Board only gave Ms. Kouba authority to approve the resolution that supported their goals and while it was discussed at the meeting, there wasn't a big deal made. Dr. Hutchison noted his disagreement and that this word "data" was extremely important to Lone Star GCD. Dr. Hutchison noted the only version of the resolution without "data" was the initial draft which was accepted immediately before sending to GMA 14. Mr. Beach noted the historical context of "data" dates back a year and Lone Star GCDs meeting with TWDB about recalibrating and updating the model.

Mr. Martin appreciated the conversation and asked about suggestions moving forward. Mr. Holland noted gathering the consultants to discuss and have a clear timeline and would volunteer to coordinate the consultant conglomerate to bring a timeline back to the group. Mr. Ashmore made the motion for Mr. Holland to coordinate with the three consultants to put a timeline

together for the next meeting including the DFC process and model update, seconded by Ms. Kouba. Motion carried unanimously.

Agenda Item 12

Mr. Martin called for discussion and possible action regarding the next meeting date, location, and agenda items. Ms. Kouba offered Lone Star GCD offices as a potential host. Mr. Martin asked if there were any objections to the Conroe location, and there were none. Mr. Martin noted Conroe as a potential location and the date and time would be determined later.

Agenda Item 13

Without further discussion or comment and there being no further business, the meeting was adjourned at 12:11 PM.

PASSED, APPROVED, AND ADOPTED THIS 14th day of May, 2024

John M Martin

Chairman

ATTEST:

Secretary

APPENDIX 3-A2

MAG PEAK FACTOR APPROVAL

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P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

January 2, 2025

Mark Evans
Region H Chair
Region H Regional Water Planning Group
c/o San Jacinto River Authority
P.O. Box 329
Conroe, Texas 77305

Dear Chairman Evans:

The Texas Water Development Board (TWDB) has reviewed Region H's request, dated November 13, 2024, for approval to utilize a MAG peak factor for the Gulf Coast Aquifer in Brazoria County, for the purpose of establishing groundwater availability for drought condition planning in the 2026 Region H Regional Water Plan (RWP). This letter confirms that the TWDB approves the request as shown in the table below:

County	Aquifer	Groundwater Conservation District (GCD)	Groundwater Management Area (GMA)	MAG Peak Factor
Brazoria	Gulf Coast	Brazoria County GCD	14	129.89%

This approval is specific to the Gulf Coast Aquifer in Brazoria County. Any additional MAG peak factor requests for use in the Region H RWP will be subject to the TWDB's review and approval.

While the TWDB authorizes these groundwater availability estimates for development of the 2026 Region H RWP, it is the responsibility of the planning group to ensure that the estimates of water availability are reasonable for drought planning purposes and will reflect conditions expected in the event of actual drought conditions; and in all other regards will be evaluated in accordance with the contract Exhibit C, *Second Amended General Guidelines for Sixth Cycle of Regional Water Plan Development.*

Please do not hesitate to contact Heather Rose of our Regional Water Planning staff at 512-475-1558 or heather.rose@twdb.texas.gov if you have any questions.

Sincerely,

Matt Nelson
Matt Nelson (Jan 2, 2025 15:12 CST)

Matt Nelson
Deputy Executive Administrator

c: Aubrey Spear, San Jacinto River Authority
Philip Taucer, Freese and Nichols, Inc.
Courtney Corso, Freese and Nichols, Inc.
Jordan Skipwith, Freese and Nichols, Inc.
John Martin, GMA 14
Beverly Hopkins, Brazoria County GCD
Temple McKinnon, TWDB
Natalie Ballew, TWDB
Sarah Lee, TWDB
Daryn Hardwick, TWDB
Heather Rose, TWDB
Shirley Wade, TWDB

APPENDIX 3-A3

ORIGINAL AND MODIFIED GROUNDWATER SOURCE AVAILABILITY

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Table 3-A1 – Original and Modified Groundwater Source Availability

Aquifer Name	County	Basin	Peak Factor	Unmodified Modeled Available Groundwater (ac ft/yr)						Modified Groundwater Availability for Planning (ac ft/yr)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Gulf Coast Aquifer System	Brazoria	Brazos	129.89%	3,641	3,578	3,510	3,454	3,407	3,407	4,729	4,647	4,559	4,486	4,425	4,425
	Brazoria	Brazos-Colorado	129.89%	10,049	9,846	9,582	9,324	9,072	9,072	13,052	12,789	12,446	12,111	11,783	11,783
	Brazoria	San Jacinto-Brazos	129.89%	41,240	41,483	41,803	42,110	42,408	42,408	53,565	53,880	54,296	54,695	55,082	55,082

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APPENDIX 3-B

DOCUMENTATION OF MODEL FILES USED IN DETERMINING SURFACE WATER AVAILABILITY

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APPENDIX 3-B1

HYDROLOGIC VARIANCE REQUEST AND APPROVAL

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MEMORANDUM

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10497 Town and Country Way, Suite 500 + Houston, Texas 77024 + 713-600-6800 + FAX 817-735-7491 www.freese.com

TO: Heather Rose

CC: Sabrina Anderson

FROM: Philip Taucer

SUBJECT: Request for Modifications to TCEQ Water Availability Models

DATE: 12/8/2023

PROJECT: SJR21660

---

1 Introduction

The Region H Water Planning Group (RHWPG) discussed required surface water supply analyses for the current cycle of Regional Water Plan (RWP) development at its May 3, 2023 regular meeting. At the same meeting, the RHWPG took formal action to authorize the Consultant Team to develop and submit to the Texas Water Development Board (TWDB) a variance request for the use of alternatives to the unmodified TCEQ WAM Run 3 models as a basis for determining firm water supplies for the 2026 RWP. After consideration of TWDB guidance and the results of review of the TCEQ WAM Run 3 models by the Region H Consultant Team, TWDB's approval is sought for exceptions to modeling requirements for the Trinity, Brazos/San Jacinto-Brazos, and Colorado/Brazos-Colorado WAMs. The proposed exceptions build upon the existing TCEQ WAM Run 3 with modifications to better reflect right-specific or basin-specific factors for Regional Planning purposes. In brief, the requested exceptions include the following.

- Trinity River Basin – Use of the modified Region C WAM as a base model to promote greater inter-regional consistency and incorporation of a limited quantity of return flows.
- Brazos River Basin / San Jacinto-Brazos Coastal Basin – Use of the modified Brazos G WAM as a base model to promote greater inter-regional consistency.
- Brazos-Colorado Coastal Basin – Adjustment of modeling procedures for multiple rights to better reflect permit conditions.

The proposed exceptions are discussed by basin in the following sections of this memorandum; corresponding documentation using TWDB's required Hydrologic Variance Request template is included as Attachment A. The RHWPG appreciates this opportunity to request modifications in order to more appropriately estimate surface water supply availability in the 2026 RWP. If you have any questions regarding the proposed changes or would like additional supporting data, please feel free to contact me at philip.taucer@freese.com.

2 Proposed Exceptions to Unmodified TCEQ WAM Run 3 Models

2.1 Trinity River Basin WAM

In order to promote inter-regional consistency, the RHWPG is seeking an exception from TWDB surface water modeling requirements to utilize the modified Region C WAM for the Trinity River Basin as a base model for analyses of surface water supply availability in Region H. This model, as noted in the August 2023 letter from Region C to TWDB, is based upon the posted TCEQ WAM Run 3, with modifications that reflect the operation of groups of reservoirs as systems, the adjustment of pool elevations where appropriate, and the adjustment of complex reservoir code to facilitate firm yield determination where applicable, as well as other changes.

The RHWPG has adopted the use of a modified Run 3 model for determining reservoir firm yield in the lower Trinity River Basin in the 2001, 2006, 2011, 2016, and 2021 RWPs. These models included a limited quantity of return flows in the upper basin expected to be available for future conditions as determined through correspondence with the Region C Planning Group. Inclusion of these flows is additionally reflective of authorization to utilize return flows in the water right for Lake Livingston, as amended. The RHWPG therefore requests an exception to conduct firm yield analysis to include a limited quantity of return flows in the Trinity River Basin.

2.2 Brazos River Basin / San Jacinto-Brazos Coastal Basin WAM

In order to promote inter-regional consistency, the RHWPG is seeking an exception from TWDB surface water modeling requirements to utilize the modified Brazos G WAM for the Brazos River Basin as a base model for analyses of surface water supply availability in Region H. The model is inclusive of the adjoining San Jacinto-Brazos Coastal Basin. This model, as noted in the October 27, 2023 letter from Carollo on behalf of the Brazos G RWPG to TWDB, is based upon the TCEQ WAM Run 3. The proposed Brazos G model, as indicated in the letter, includes changes to model certain aggregated contractual diversions in a disaggregated form, reflect existing subordination agreements, and incorporate some return flows, as well as other changes. Region H has similarly utilized the Brazos G WAM for prior RWPs.

2.3 Colorado River Basin / Brazos-Colorado Coastal Basin WAM

The Region H Water Planning Area includes the Brazos-Colorado Coastal Basin in the western portions of Austin, Fort Bend, and Brazoria Counties, with the remainder of the coastal basin within the Region K Water Planning Area. There are a number of surface water rights for various permitted uses in the basin, including multiple authorizations for irrigation diversions as well as several larger permits for industrial use. In reviewing the WAM for the basin (included within the TCEQ WAM Run 3 for the Colorado River Basin), opportunities were identified to adjust model code for two water rights to facilitate determination of firm yield and reflect annual streamflow diversion limits as specified in water right permits. Region H utilized the proposed modifications for the 2021 RWP.

2.3.1 Certificate of Adjudication 13-3421

Certificate of Adjudication (CoA) 13-3421, as amended, authorizes diversion of 20,000 ac-ft/yr of water from the San Bernard River by multiple water rights holders and storage in several off-channel reservoirs in the Region K Water Planning Area, with the various right holders granted access to differing storage volumes in the reservoirs. A portion of the diversion is also able to be taken as a run of river diversion at a downstream point within Region H if certain flow conditions are met or through releases of stored water to the downstream point. The WAM Run 3 represents this complex situation with composite reservoirs for each right holder's share of storage and an attempted downstream diversion of a portion

of the permit. The following modifications to the WAM Run 3 are proposed for RWP supply determination for Region H:

- Modeling of all diversions for the CoA occurring at the upstream reservoirs and diversion point on the San Bernard River to facilitate evaluation of reliable supply from the right.
- Applying limits to river diversions to prevent excess diversions from off-channel reservoir refilling.
- Application of a firm yield approach to determine the reliable supply from this portion of the run-of-river availability of the San Bernard River.

2.3.2 Certificate of Adjudication 13-3423

CoA 13-3423, as amended, authorizes diversion of 32,000 ac-ft/yr of water from the San Bernard River and storage in four off-channel reservoirs. The following modifications to the WAM Run 3 are proposed for RWP supply determination for Region H:

- Modeling of the off-channel reservoirs as a single composite reservoir to better reflect actual interconnectivity and use of storage by the right holder.
- Applying limits to river diversions to prevent excess diversions from off-channel reservoir refilling.
- Application of a firm yield approach to determine the reliable supply from this portion of the run-of-river availability of the San Bernard River.

Attachment A:

Hydrologic Variance Request Forms for Proposed Region H Modifications to the TCEQ WAMs

Attachment A-1:

Trinity River Basin

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] require that regional water planning groups (RWPG) use most current Water Availability Models (WAM) from the Texas Commission on Environmental Quality (TCEQ) and assume full utilization of existing water rights and no return flows for surface water supply analysis. Additionally, evaluation of existing stored surface water available during Drought of Record conditions must be based on Firm Yield using anticipated sedimentation rates. However, the TWDB rules also allow, and **we encourage**, RWPGs to use more representative, water availability modeling assumptions; better site-specific information; or justified operational procedures other than Firm Yield with written approval (via a Hydrologic Variance) from the Executive Administrator in order to better represent and therefore prepare for expected drought conditions.

RWPGs must use this checklist, which is intended to save time and reduce effort, to request a Hydrologic Variance for estimating the availability of surface water sources. For Questions 4 – 10, please indicate whether the requested variance is for determining Existing Supply, Strategy Supply, or both. Please complete a separate checklist for each river basin in which variances are being requested.

Water Planning Region: H

1. Which major river basin does the request apply to? Please specify if the request only applies part of the basin or only to certain reservoirs.

   Trinity River Basin

2. Please give a brief, bulleted, description of the requested hydrologic variances including how the alternative availability assumptions vary from rule requirements, how the modifications will affect the associated annual availability volume(s) in the regional water plan, and why the variance is necessary or provides a better basis for planning. You must provide more-detailed descriptions in the subsequent checklist questions. Attach any available documentation supporting the request.

   - Region H requests to use the modified Region C WAM, as documented in the hydrologic variance request submitted by Region C in August 2023, as a base model for analyses of surface water supply availability in the Trinity River Basin in Region H to promote greater inter-regional consistency.
   - The modified Region C WAM uses the TCEQ WAM Run 3 as its base, with modifications that reflect the operation of groups of reservoirs as systems, the adjustment of pool elevations where appropriate, and the adjustment of complex reservoir code to facilitate firm yield determination where applicable. These variances are discussed in the Region C request referenced in Question 8.
   - Additionally, Region H requests to include a limited quantity of return flows in the Trinity River Basin. These modifications are discussed in greater detail in Question 9.

[1] 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)

3. Was this request submitted in a previous planning cycle? If yes, please indicate which cycle and note how it is different, if at all, from the previous request?

   Yes

   The variance request to utilize the modified Region C WAM was implemented in the 2016 and 2021 Region H RWPs, and Region H seeks the same authorization this cycle. The 2001, 2006, 2011, 2016, and 2021 Region H RWPs implemented hydrologic variances to include a limited quantity of return flows in the upper basin that are expected to be available for future conditions as determined through correspondence with Region C. The variance request is fundamentally the same, changing only in the estimated magnitudes and locations of return flows based upon more recent data and planning.

4. Are you requesting to extend the period of record beyond the current applicable WAM hydrologic period? If yes, please describe the proposed methodology. Indicate whether you believe there is a new drought of record in the basin.

   No

5. Are you requesting to use a reservoir safe yield? If yes, please describe in detail how the safe yield would be calculated and defined, which reservoir(s) it would apply to, and why the modification is needed or preferrable for drought planning purposes.

   No

6. Are you requesting to use a reservoir yield other than firm yield or safe yield? If yes, please describe, in a bulleted list, each modification requested including how the alternative yield was calculated, which reservoir(s) it applies to, and why the modification is needed or preferrable for drought planning purposes. Examples of alternative reservoir yield analyses may include using an alternative reservoir level, conditional reliability, or other special reservoir operations.

   No

7. Are you requesting to use a different model (such as a RiverWare or Excel-based models) than RUN 3 of the applicable TCEQ WAM? If yes, please describe the model being considered including how it incorporates water rights and prior appropriation and how it is more conservative than RUN 3 of the applicable TCEQ WAM.

   No

8. Are you requesting to use a modified TCEQ WAM? If yes, please describe in a bulleted list all modifications in detail including all specific changes to the WAM and whether the modified WAM is more conservative than the TCEQ WAM RUN 3. Examples of WAM modifications may include adding subordination agreements, contracts, updated water rights, modified spring

flows, updated lake evaporation, updated sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

Yes

Existing Supply

- Region H requests to use the modified Region C WAM, as documented in detail in the hydrologic variance request submitted by Region C in August 2023.
- The modified Region C WAM uses the TCEQ WAM Run 3 with the variances to incorporate new water rights, correct issues related to usable storage for one reservoir, and model several rights as systems.
- The RHWPG has adopted the use of a modified Run 3 model for determining firm yield of Lake Livingston in the lower Trinity River Basin in the 2001, 2006, 2011, 2016, and 2021 RWPs.
- These models included a limited quantity of return flows in the upper basin expected to be available for future conditions as determined through correspondence with the Region C Planning Group.
- The RHWPG therefore requests an exception to conduct firm yield analysis of Lake Livingston to include a limited quantity of return flows in the Trinity River Basin.

9. Are you requesting to include return flows in the modeling? If yes, are you doing so to model an indirect reuse water management strategy (WMS)? Please provide complete details regarding the proposed methodology for determining reuse WMS availability.

Yes

Existing Supply

Inclusion of return flows is consistent with authorizations to divert return flows granted by Certificate of Adjudication (CoA) 08-4248, as amended. The RHWPG has used a modified WAM Run 3 model for determining the firm yield of Lake Livingston in the lower Trinity River Basin in the 2001, 2006, 2011, 2016, and 2021 RWPs as part of existing supply analyses. These models have included a limited quantity of return flows in the upper basin that are expected to be available for future conditions as determined through correspondence with Region C. This exception is made for purposes of determining existing supply availability and is not related to a direct reuse WMS. Region H requests an exception to conduct firm yield analysis to include a limited quantity of return flows in the Trinity River Basin.

10. Are any of the requested Hydrologic Variances also planned to be used by another region for the same basin? If yes, please indicate the other Region. Please indicate if unknown.

[2] Updating anticipated sedimentation rates does not require a hydrologic variance under 31 TAC § 357.10(14). The Technical Memorandum will require providing details regarding the sedimentation methodology utilized. Please consider providing that information with this request.

Yes

The RHWPG seeks use of the modified Region C WAM for the Trinity River Basin as the basis for modeling of Trinity River Basin existing supply for Region H. The additional variance request by Region H to include a limited amount of return flow is specifically for Region H analyses and is not anticipated to be utilized by Region C or other regions.

11. Please describe any other variance requests not captured on this checklist or add any other information regarding the variance requests on this checklist.

No additional variance requests.

Attachment A-2:

Brazos River Basin and San Jacinto-Brazos Coastal Basin

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] require that regional water planning groups (RWPG) use most current Water Availability Models (WAM) from the Texas Commission on Environmental Quality (TCEQ) and assume full utilization of existing water rights and no return flows for surface water supply analysis. Additionally, evaluation of existing stored surface water available during Drought of Record conditions must be based on Firm Yield using anticipated sedimentation rates. However, the TWDB rules also allow, and **we encourage**, RWPGs to use more representative, water availability modeling assumptions; better site-specific information; or justified operational procedures other than Firm Yield with written approval (via a Hydrologic Variance) from the Executive Administrator in order to better represent and therefore prepare for expected drought conditions.

RWPGs must use this checklist, which is intended to save time and reduce effort, to request a Hydrologic Variance for estimating the availability of surface water sources. For Questions 4 – 10, please indicate whether the requested variance is for determining Existing Supply, Strategy Supply, or both. Please complete a separate checklist for each river basin in which variances are being requested.

Water Planning Region: H

1. Which major river basin does the request apply to? Please specify if the request only applies part of the basin or only to certain reservoirs.

   Brazos River Basin and San Jacinto-Brazos Coastal Basin

2. Please give a brief, bulleted, description of the requested hydrologic variances including how the alternative availability assumptions vary from rule requirements, how the modifications will affect the associated annual availability volume(s) in the regional water plan, and why the variance is necessary or provides a better basis for planning. You must provide more-detailed descriptions in the subsequent checklist questions. Attach any available documentation supporting the request.

   - Region H requests to use the modified Brazos G WAM, as documented in the hydrologic variance request submitted by the Brazos G Regional Water Planning Group on October 27, 2023, as a base model for analyses of surface water supply availability in the Brazos River Basin and San Jacinto-Brazos Coastal Basin in Region H to promote greater inter-regional consistency.
   - The modified Brazos G WAM uses the TCEQ WAM Run 3 as its base. The modified Brazos G WAM includes modifications to model certain aggregated contractual diversions in a disaggregated form, reflect existing subordination agreements, and incorporate some return flows, as well as other changes.
   - These modifications are discussed in Questions 8 and 9.

[1] 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)

3. Was this request submitted in a previous planning cycle? If yes, please indicate which cycle and note how it is different, if at all, from the previous request?

   Yes

   The variance request to utilize the modified Brazos G WAM was implemented in the 2016 and 2021 Region H RWPs, and Region H seeks the same authorization this cycle. The variance request is fundamentally the same, seeking to utilize the Brazos G WAM for the corresponding RWP cycle to promote interregional consistency.

4. Are you requesting to extend the period of record beyond the current applicable WAM hydrologic period? If yes, please describe the proposed methodology. Indicate whether you believe there is a new drought of record in the basin.

   No

5. Are you requesting to use a reservoir safe yield? If yes, please describe in detail how the safe yield would be calculated and defined, which reservoir(s) it would apply to, and why the modification is needed or preferrable for drought planning purposes.

   No

6. Are you requesting to use a reservoir yield other than firm yield or safe yield? If yes, please describe, in a bulleted list, each modification requested including how the alternative yield was calculated, which reservoir(s) it applies to, and why the modification is needed or preferrable for drought planning purposes. Examples of alternative reservoir yield analyses may include using an alternative reservoir level, conditional reliability, or other special reservoir operations.

   No

7. Are you requesting to use a different model (such as a RiverWare or Excel-based models) than RUN 3 of the applicable TCEQ WAM? If yes, please describe the model being considered including how it incorporates water rights and prior appropriation and how it is more conservative than RUN 3 of the applicable TCEQ WAM.

   No

8. Are you requesting to use a modified TCEQ WAM? If yes, please describe in a bulleted list all modifications in detail including all specific changes to the WAM and whether the modified WAM is more conservative than the TCEQ WAM RUN 3. Examples of WAM modifications may include adding subordination agreements, contracts, updated water rights, modified spring flows, updated lake evaporation, updated sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

[2] Updating anticipated sedimentation rates does not require a hydrologic variance under 31 TAC § 357.10(14). The Technical Memorandum will require providing details regarding the sedimentation methodology utilized. Please consider providing that information with this request.

Yes

Existing Supply

- Region H requests to use the modified Brazos G WAM, as documented in the hydrologic variance request submitted by the Brazos G Regional Water Planning Group on October 27, 2023.
- The modified Brazos G WAM uses the TCEQ WAM Run 3 as its base. The modified Brazos G WAM includes modifications to model certain aggregated contractual diversions in a disaggregated form, reflect existing subordination agreements, and incorporate some return flows, as well as other changes.
- The RHWPG has adopted the use of the Brazos G WAM for determining existing supply availability in the lower Brazos River Basin and in the San Jacinto-Brazos Coastal Basin in the 2016 and 2021 RWPs.

9. Are you requesting to include return flows in the modeling? If yes, are you doing so to model an indirect reuse water management strategy (WMS)? Please provide complete details regarding the proposed methodology for determining reuse WMS availability.

   Yes

   Existing Supply

   Region H requests to use the modified Brazos G WAM, which includes the addition of return flows in the WAM. The hydrologic variance request submitted by Brazos G indicates that return flows will be added for wastewater treatment plants with effluent discharge in excess of 0.9 MGD, with the magnitude of the return flows based on the minimum discharge from the previous 5 years of available historical data. The RHWPG is not currently seeking variances for inclusion of return flows beyond those already requested by Brazos G.

10. Are any of the requested Hydrologic Variances also planned to be used by another region for the same basin? If yes, please indicate the other Region. Please indicate if unknown.

    Yes

    The RHWPG seeks use of the modified Brazos G WAM as the basis for modeling of Brazos River Basin and San Jacinto-Brazos Coastal Basin existing supply for Region H. Region H is not currently seeking variances for these basins beyond the use of the Brazos G model.

11. Please describe any other variance requests not captured on this checklist or add any other information regarding the variance requests on this checklist.

    No additional variance requests.

Attachment A-3:

Colorado River Basin and Brazos-Colorado Coastal Basin

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] require that regional water planning groups (RWPG) use most current Water Availability Models (WAM) from the Texas Commission on Environmental Quality (TCEQ) and assume full utilization of existing water rights and no return flows for surface water supply analysis. Additionally, evaluation of existing stored surface water available during Drought of Record conditions must be based on Firm Yield using anticipated sedimentation rates. However, the TWDB rules also allow, and **we encourage**, RWPGs to use more representative, water availability modeling assumptions; better site-specific information; or justified operational procedures other than Firm Yield with written approval (via a Hydrologic Variance) from the Executive Administrator in order to better represent and therefore prepare for expected drought conditions.

RWPGs must use this checklist, which is intended to save time and reduce effort, to request a Hydrologic Variance for estimating the availability of surface water sources. For Questions 4 – 10, please indicate whether the requested variance is for determining Existing Supply, Strategy Supply, or both. Please complete a separate checklist for each river basin in which variances are being requested.

Water Planning Region: H

1. Which major river basin does the request apply to? Please specify if the request only applies part of the basin or only to certain reservoirs.

   Brazos-Colorado Coastal Basin

2. Please give a brief, bulleted, description of the requested hydrologic variances including how the alternative availability assumptions vary from rule requirements, how the modifications will affect the associated annual availability volume(s) in the regional water plan, and why the variance is necessary or provides a better basis for planning. You must provide more-detailed descriptions in the subsequent checklist questions. Attach any available documentation supporting the request.

   - The Region H Water Planning Group (RHWPG) requests to modify TCEQ's Colorado WAM Run 3 (includes the Brazos-Colorado Coastal Basin) in order to adjust the modeling procedures for multiple water rights, including:
     - Reflecting multiple small, related impoundments as single composite impoundments
     - Incorporation of diversion limits as specified in the corresponding water rights.
   - The changes facilitate determination of modeled firm yield.
   - Requested changes would be of a comparable or slightly greater degree of conservatism regarding supply availability relative to the unmodified WAM due to application of diversion limits specified in the water rights.
   - These revisions are addressed in greater detail in Question 8.

[1] 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)

3. Was this request submitted in a previous planning cycle? If yes, please indicate which cycle and note how it is different, if at all, from the previous request?

   Yes

   The same hydrologic variance requests were implemented in the 2021 Region H Water Plan. This request does not differ from the previous request except that the requested changes are implemented in the latest version of the Colorado WAM Run 3 (last updated by TCEQ 10/1/2023).

4. Are you requesting to extend the period of record beyond the current applicable WAM hydrologic period? If yes, please describe the proposed methodology. Indicate whether you believe there is a new drought of record in the basin.

   No

5. Are you requesting to use a reservoir safe yield? If yes, please describe in detail how the safe yield would be calculated and defined, which reservoir(s) it would apply to, and why the modification is needed or preferrable for drought planning purposes.

   No

6. Are you requesting to use a reservoir yield other than firm yield or safe yield? If yes, please describe, in a bulleted list, each modification requested including how the alternative yield was calculated, which reservoir(s) it applies to, and why the modification is needed or preferrable for drought planning purposes. Examples of alternative reservoir yield analyses may include using an alternative reservoir level, conditional reliability, or other special reservoir operations.

   No

7. Are you requesting to use a different model (such as a RiverWare or Excel-based models) than RUN 3 of the applicable TCEQ WAM? If yes, please describe the model being considered including how it incorporates water rights and prior appropriation and how it is more conservative than RUN 3 of the applicable TCEQ WAM.

   No

8. Are you requesting to use a modified TCEQ WAM? If yes, please describe in a bulleted list all modifications in detail including all specific changes to the WAM and whether the modified WAM is more conservative than the TCEQ WAM RUN 3. Examples of WAM modifications may include adding subordination agreements, contracts, updated water rights, modified spring flows, updated lake evaporation, updated sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

[2] Updating anticipated sedimentation rates does not require a hydrologic variance under 31 TAC § 357.10(14). The Technical Memorandum will require providing details regarding the sedimentation methodology utilized. Please consider providing that information with this request.

Yes

Existing Supply

Requested modifications include:

- Certificate of Adjudication (CoA) 13-3421, as amended, authorizes diversion of 20,000 ac-ft/yr of water from the San Bernard River by multiple water rights holders and storage in several off-channel reservoirs in the Region K Water Planning Area, with the various right holders granted access to differing storage volumes in the reservoirs. A portion of the diversion is also able to be taken as a run of river diversion at a downstream point within Region H if certain flow conditions are met or through releases of stored water to the downstream point. The WAM Run 3 represents this complex situation with composite reservoirs for each right holder's share of storage and an attempted downstream diversion of a portion of the permit. The following modifications to the WAM Run 3 are proposed for RWP supply determination for Region H:
    - Modeling of all diversions for the right occurring at the upstream reservoirs and diversion point on the San Bernard River to facilitate evaluation of reliable supply from the right.
    - Applying limits to river diversions to prevent excess diversions from off-channel reservoir refilling.
    - Application of a firm yield approach to determine the reliable supply from this portion of the run-of-river availability of the San Bernard River.

- CoA 13-3423, as amended, authorizes diversion of 32,000 ac-ft/yr of water from the San Bernard River and storage in four off-channel reservoirs. The following modifications to the WAM Run 3 are proposed for RWP supply determination for Region H:
    - Modeling of the off-channel reservoirs as a single composite reservoir to better reflect actual interconnectivity and use of storage by the right holder.
    - Applying limits to river diversions to prevent excess diversions from off-channel reservoir refilling.
    - Application of a firm yield approach to determine the reliable supply from this portion of the run-of-river availability of the San Bernard River.

Requested changes would be of a comparable or slightly greater degree of conservatism regarding supply availability relative to the unmodified WAM due to application of diversion limits specified in the water rights.

9. Are you requesting to include return flows in the modeling? If yes, are you doing so to model an indirect reuse water management strategy (WMS)? Please provide complete details regarding the proposed methodology for determining reuse WMS availability.

   No

10. Are any of the requested Hydrologic Variances also planned to be used by another region for the same basin? If yes, please indicate the other Region. Please indicate if unknown.

    No

11. Please describe any other variance requests not captured on this checklist or add any other information regarding the variance requests on this checklist.

    No additional variance requests.

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

January 16, 2024

Mark Evans
Region H Chair
Region H Regional Water Planning Group
c/o San Jacinto River Authority
P.O. Box 329
Conroe, TX 77305

Dear Chairman Evans:

I have reviewed the Region H memorandum dated December 8, 2023, for approval of alternative water supply assumptions to be used in determining existing surface water availability. This letter confirms that the TWDB approves the following assumptions that require a variance:

1. In the Trinity River Basin, use the Trinity WAM as modified by the Region C RWPG and approved by the TWDB for existing supply analyses.
2. Include a limited quantity of return flows in the modified Trinity WAM to conduct the firm yield analysis of Lake Livingston for evaluating existing supply.
3. In the Brazos River Basin and the San Jacinto-Brazos Coastal Basin, use the Brazos G WAM as modified by the Region G RWPG and approved by the TWDB for existing supply analyses.
4. In the Brazos-Colorado Coastal Basin, modify the Colorado WAM (which includes the Brazos-Colorado Coastal Basin) to adjust the modeling procedures for multiple water rights to evaluate existing supply.

For the purpose of evaluating potentially feasible water management strategies, the TCEQ WAM Run 3 is to be used, unless a separate hydrologic variance for water management strategy availability is submitted and approved by the TWDB.

While the TWDB authorizes these modification to evaluate existing water supplies for development of the 2026 Region H RWP, it is the responsibility of the RWPG to ensure that the resulting estimates of water availability are reasonable for drought planning purposes and will reflect conditions expected in the event of actual drought conditions; and in all other regards will be evaluated in accordance with the most recent version of regional water planning contract Exhibit C, *General Guidelines for Development of the 2026 Regional Water Plans.*

Please do not hesitate to contact Heather Rose of our Regional Water Planning staff at 512-475-1558 or heather.rose@twdb.texas.gov if you have any questions.

Sincerely,

Matt Nelson Digitally signed by Matt Nelson
Date: 2024.01.16 12:09:38 -06'00'

Matt Nelson
Deputy Executive Administrator

c: Ed Shackelford, San Jacinto River Authority
Philip Taucer, Freese & Nichols, Inc.
Courtney Corso, Freese & Nichols, Inc.
Jordan Skipwith, Freese & Nichols, Inc
Heather Rose, Water Supply Planning
Sarah Lee, Water Supply Planning
Nelun Fernando, Ph.D., Surface Water
Abigail Gardner, Freese & Nichols, Inc. (Region C)
Tony Smith, Carollo Engineers (Region G)

APPENDIX 3-B2

SUMMARY OF MODEL RUNS TO DETERMINE SURFACE WATER SOURCE AVAILABILITY

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Table 3-B1 – Summary of Model Runs to Determine Surface Water Source Availability

Model Root File Name	Basin	Run 3 Version Date	Description of Modifications	EA Approval Date	DB27 Source Name	Modeler	Execution Date
C3_FNI	Colorado / Brazos-Colorado	10/1/2023	Reduced model period to 59 years (1940 - 1998) due to lack of hydrology information for Brazos-Colorado coastal basin	1/16/2024	Brazos-Colorado Run-of-River (portion of availability associated with water rights 13-3433 and 13-5331)	FNI	12/23/2023
C3_FNI3421	Colorado / Brazos-Colorado	10/1/2023	Reduced model period to 59 years (1940 - 1998) due to lack of hydrology information for Brazos-Colorado coastal basin; Modified CoA 3421 and CoA 3423 to take all diversions at composite reservoirs; Run to determine firm yield of composite reservoir associated with CoA 3421	1/16/2024	Brazos-Colorado Run-of-River (portion of availability associated with the portion of water right 13-3421 in Region H)	FNI	12/23/2023
C3_FNI3423	Colorado / Brazos-Colorado	10/1/2023	Reduced model period to 59 years (1940 - 1998) due to lack of hydrology information for Brazos-Colorado coastal basin; Modified CoA 3421 and CoA 3423 to take all diversions at composite reservoirs; Run to determine firm yield of composite reservoir associated with CoA 3423	1/16/2024	Brazos-Colorado Run-of-River (portion of availability associated with water right 13-3423)	FNI	12/23/2023
BrazosG_2030	Brazos	10/1/2023	Modifications by Region G RWPG, including extension of hydrology and simulation period through 2018	1/16/2024	Brazos Run-of-River	FNI	10/8/2024
BrazosG_2080	Brazos	10/1/2023	Modifications by Region G RWPG, including extension of hydrology and simulation period through 2018	1/16/2024	Brazos Run-of-River	FNI	10/8/2024
BrazosG_2030	San Jacinto-Brazos	10/1/2023	Modifications by Region G RWPG, limited analysis to simulated years 1940-1997 (hydrology not extended in San Jacinto-Brazos basin)	1/16/2024	San Jacinto-Brazos Run-of-River	FNI	10/8/2024
BrazosG_2080	San Jacinto-Brazos	10/1/2023	Modifications by Region G RWPG, limited analysis to simulated years 1940-1997 (hydrology not extended in San Jacinto-Brazos basin)	1/16/2024	San Jacinto-Brazos Run-of-River	FNI	10/8/2024
sjarun3_ROR	San Jacinto	10/1/2023	n/a	n/a	San Jacinto Run-of-River	FNI	12/5/2023

Model Root File Name	Basin	Run 3 Version Date	Description of Modifications	EA Approval Date	DB27 Source Name	Modeler	Execution Date
sjarun3_30_con	San Jacinto	10/1/2023	2030 sedimentation of major reservoirs	n/a	Conroe Lake/Reservoir	FNI	12/26/2023
sjarun3_40_con	San Jacinto	10/1/2023	2040 sedimentation of major reservoirs	n/a	Conroe Lake/Reservoir	FNI	12/26/2023
sjarun3_50_con	San Jacinto	10/1/2023	2050 sedimentation of major reservoirs	n/a	Conroe Lake/Reservoir	FNI	12/28/2023
sjarun3_60_con	San Jacinto	10/1/2023	2060 sedimentation of major reservoirs	n/a	Conroe Lake/Reservoir	FNI	12/26/2023
sjarun3_70_con	San Jacinto	10/1/2023	2070 sedimentation of major reservoirs	n/a	Conroe Lake/Reservoir	FNI	12/26/2023
sjarun3_80_con	San Jacinto	10/1/2023	2080 sedimentation of major reservoirs	n/a	Conroe Lake/Reservoir	FNI	12/26/2023
sjarun3_30_hou	San Jacinto	10/1/2023	2030 sedimentation of major reservoirs	n/a	Houston Lake/Reservoir	FNI	12/14/2023
sjarun3_40_hou	San Jacinto	10/1/2023	2040 sedimentation of major reservoirs	n/a	Houston Lake/Reservoir	FNI	12/21/2023
sjarun3_50_hou	San Jacinto	10/1/2023	2050 sedimentation of major reservoirs	n/a	Houston Lake/Reservoir	FNI	12/21/2023
sjarun3_60_hou	San Jacinto	10/1/2023	2060 sedimentation of major reservoirs	n/a	Houston Lake/Reservoir	FNI	12/21/2023
sjarun3_70_hou	San Jacinto	10/1/2023	2070 sedimentation of major reservoirs	n/a	Houston Lake/Reservoir	FNI	12/26/2023
sjarun3_80_hou	San Jacinto	10/1/2023	2080 sedimentation of major reservoirs	n/a	Houston Lake/Reservoir	FNI	12/26/2023
TSJ3	Trinity-San Jacinto	10/1/2023	n/a	n/a	Trinity-San Jacinto Run-of-River	FNI	11/9/2023
Trin3_NoSed	Trinity	10/1/2023	Modifications by Region C RWPG	1/16/2024	Trinity Run-of-River	FNI	6/10/2024
t3_2030_man	Trinity	10/1/2023	Modifications by Region C RWPG, including 2030 sedimentation of major reservoirs. Inclusion of limited return flows.	1/16/2024	Livingston-Wallisville Lake/Reservoir System	FNI	7/9/2024
t3_2050_man	Trinity	10/1/2023	Modifications by Region C RWPG, including 2050 sedimentation of major reservoirs. Inclusion of limited return flows.	1/16/2024	Livingston-Wallisville Lake/Reservoir System	FNI	7/10/2024

Model Root File Name	Basin	Run 3 Version Date	Description of Modifications	EA Approval Date	DB27 Source Name	Modeler	Execution Date
t3_2080_man	Trinity	10/1/2023	Modifications by Region C RWPG, including 2080 sedimentation of major reservoirs. Inclusion of limited return flows.	1/16/2024	Livingston-Wallisville Lake/Reservoir System	FNI	7/10/2024
NT3	Neches-Trinity	10/1/2023	n/a	n/a	Neches-Trinity Run-of-River	FNI	11/10/2023
Neches3	Neches	10/1/2023	n/a	n/a	Neches Run-of-River	FNI	11/30/2023

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APPENDIX 3-C

LIST OF WATER RIGHTS USED AS BASIS OF SUPPLY

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Table 3-C1 – Water Rights Used in Development of Surface Water Source Availability

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
2046	Brazos Run-of-River	Brazos	Waller	C4009	John F Ammons	N/A	136	0
429	Brazos Run-of-River	Brazos	Fort Bend	C5168	Gulf Coast Water Authority	Gulf Coast Water Authority	99,932	7,308
2979	Gulf Coast Water Authority Lake/Reservoir	San Jacinto-Brazos	Reservoir	C5168	Gulf Coast Water Authority	Gulf Coast Water Authority	99,932	7,308
429	Brazos Run-of-River	Brazos	Fort Bend	C5171	Gulf Coast Water Authority	N/A	125,000	0
2046	Brazos Run-of-River	Brazos	Waller	C5319	Dorine Laas; Harvey S. Laas; Weldon S. Laas	N/A	117	41
429	Brazos Run-of-River	Brazos	Fort Bend	C5320	NRG Texas Power LLC	N/A	40,000	0
429	Brazos Run-of-River	Brazos	Fort Bend	C5322	Gulf Coast Water Authority	N/A	155,000	864
325	Brazos Run-of-River	Brazos	Brazoria	C5323	Virginia Turner Brooks; Beverly T. McDonald	N/A	112	550
429	Brazos Run-of-River	Brazos	Fort Bend	C5325	NRG Texas Power LLC	NRG Texas Power LLC	28,711	18,750
2988	Smithers Lake/Reservoir	Brazos	Reservoir	C5325	NRG Texas Power LLC	NRG Texas Power LLC	28,711	18,750
325	Brazos Run-of-River	Brazos	Brazoria	C5327	Texas Department of Criminal Justice	N/A	746	0
2971	Brazoria Lake/Reservoir	Brazos	Reservoir	C5328	The Dow Chemical Company	The Dow Chemical Company	305,656	89,563
325	Brazos Run-of-River	Brazos	Brazoria	C5328	The Dow Chemical Company	The Dow Chemical Company	305,656	89,563
325	Brazos Run-of-River	Brazos	Brazoria	C5329	Billy J. Terry	N/A	500	2,000
325	Brazos Run-of-River	Brazos	Brazoria	C5366	Brazosport Water Authority	N/A	45,000	0
325	Brazos Run-of-River	Brazos	Brazoria	C5492	U.S. Department of the Interior Fish and Wildlife Service	U.S. Department of the Interior Fish and Wildlife Service	1,800	11,315
2993	Eagle Nest Lake/Reservoir	Brazos	Reservoir	C5492	U.S. Department of the Interior Fish and Wildlife Service	U.S. Department of the Interior Fish and Wildlife Service	1,800	11,315
429	Brazos Run-of-River	Brazos	Fort Bend	P5552	Campbell Concrete & Materials, L.P.	N/A	2,300	11
429	Brazos Run-of-River	Brazos	Fort Bend	P5567	Campbell Concrete & Materials, L.P.	N/A	2,100	2,000

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	C3421	Phillips 66 Company Et Al	N/A	17,400	16,118
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	C3422	Phillips 66 Company	N/A	2,625	2,625
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	C3423	Phillips 66 Company	Phillips 66 Company	32,000	9,327
2994	Phillips Petroleum off-channel Lake/Reservoir	Brazos-Colorado	Reservoir	C3423	Phillips 66 Company	Phillips 66 Company	32,000	9,327
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	C3424	Irving M. Pittman, III	N/A	54	0
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	C3425	Chevron Phillips Chemical Co Lp	N/A	5,350	0
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	C3433	Hilcorp Energy I, L.P.; Mobil Producing Texas & New Mexico Inc.	N/A	2,000	300
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	C5331	Texas Department of Criminal Justice	N/A	1,076	966
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	P3810	George and Anastacia McInnis Living Trust 1999	N/A	180	0
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	P3955	Benny Wleczyk; Paul Wleczyk	N/A	1,752	0
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	P4006	Easy Reach Investments LLC	N/A	260	0
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Fort Bend	P4162	John R Coultter; Ruth Coulter	N/A	72	0
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	P5244	Texas Parks And Wildlife Department	N/A	0	84
326	Brazos-Colorado Run-of-River	Brazos-Colorado	Brazoria	P5446	U.S. Department of the Interior Fish and Wildlife Service	N/A	1,086	1,086
2522	Neches Run-of-River	Neches	Liberty	C4431	Jim Best	N/A	354	180
2522	Neches Run-of-River	Neches	Liberty	P5508	Henderson Partners Ltd.	N/A	1,250	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4287	W E Jenkins Jr Et Al	N/A	4,900	589
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4288	Alecia Turner; Jimmy Turner	N/A	204	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4289	Southeast Bar Ranch, LLC	N/A	535	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4290	Thomas Lloyd Fahring Jr. Family Trusts	N/A	535	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4291	D. Mayes Middleton II Non-Exempt Trust	N/A	43	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4292	Donald G Nelson et al	N/A	250	0

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4293	Edmonds Brothers Farms	N/A	1,780	530
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4294	1951 Interests, LP	N/A	674	2,669
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4295	Stephen Temple Fitzgerald; Tyler Stephen Fitzgerald	N/A	1,400	773
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4296	U.S. Department of the Interior Fish and Wildlife Service	N/A	21,000	1,025
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4297	Chambers County	N/A	675	675
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4298	Brown Brothers Farm, Inc.	N/A	891	120
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4299	Ocie R Jackson	N/A	1,834	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4300	Bobby Jack Enloe Et Ux	N/A	875	252
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4301	Barrow Ranches	N/A	2,000	604
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4302	U.S. Department of the Interior Fish and Wildlife Service	N/A	5,932	952
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4303	Dave Wilcox	N/A	68	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4304	Bay Prairie Farms Llc	N/A	7,560	485
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4305	William S Edwards	N/A	1,200	2,139
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4306	W.S. Edwards Family Limited Partnership	N/A	2,100	353
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4308	Ann Austin; Jerry Devillier; Samuel Devillier	N/A	1,109	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4309	Spindle Top Bayou Farm, Inc.	N/A	2,118	480
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4310	May Youmans Trust	N/A	413	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4311	D. Mayes Middleton II Non-Exempt Trust	N/A	2,700	649
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	C4312	Jess Matthews Jr Et Al	N/A	2,223	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P3944	May Youmans Trust	N/A	1,123	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P3945	May Youmans Trust	N/A	403	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P3951	Don Wesley Lagow Et Al	N/A	1,220	187

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P3952	Solmon Wesley Barrow Et Al	N/A	1,220	800
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P3953	Wayne Morris Et Ux	N/A	880	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P3954	Louise Barrow Gorton	N/A	880	0
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P5016	John M Blackwell	N/A	1,250	411
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P5059	Jere Ruff	N/A	30	3
328	Neches-Trinity Run-of-River	Neches-Trinity	Chambers	P5467	Randy G Price ET UX	N/A	150	64
375	San Jacinto Run-of-River	San Jacinto	Harris	C3964	Coastal Prairie Conservancy	N/A	200	640
375	San Jacinto Run-of-River	San Jacinto	Harris	C3966	Bridgeland Development Lp	N/A	25	0
2523	San Jacinto Run-of-River	San Jacinto	Liberty	C3970	Jacqueline H G Albrecht Et Al	N/A	15	0
2048	San Jacinto Run-of-River	San Jacinto	Montgomery	C3974	The Jerry Nicholas Family Trust	N/A	40	0
375	San Jacinto Run-of-River	San Jacinto	Harris	C3980	Seaberg et al	N/A	1,600	400
375	San Jacinto Run-of-River	San Jacinto	Harris	C3982	Cinco Ranch East	N/A	45	0
375	San Jacinto Run-of-River	San Jacinto	Harris	C3983	Harold and Jesse Freeman	N/A	800	150
375	San Jacinto Run-of-River	San Jacinto	Harris	C3984	LMJCO, Inc.	N/A	26	0
375	San Jacinto Run-of-River	San Jacinto	Harris	C3985	River Oaks Country Club	N/A	460	75
375	San Jacinto Run-of-River	San Jacinto	Harris	C3986	The Museum of Fine Arts	N/A	19	0
2987	Sheldon Lake/Reservoir	San Jacinto	Reservoir	C3995	Texas Parks & Wildlife Dept	Texas Parks & Wildlife Dept	2,688	5,354
847	Conroe Lake/Reservoir	San Jacinto	Reservoir	C4963	City of Houston; San Jacinto River Authority	San Jacinto River Authority	100,000	430,260
375	San Jacinto Run-of-River	San Jacinto	Harris	C4964	San Jacinto River Authority	N/A	55,000	3,800
848	Houston Lake/Reservoir	San Jacinto	Reservoir	C4965	City of Houston; San Jacinto River Authority	Coastal Water Authority	168,000	160,000
2981	Lewis Creek Lake/Reservoir	San Jacinto	Reservoir	C4966	Entergy Texas, Inc.	Entergy Texas, Inc.	0	17,000
2048	San Jacinto Run-of-River	San Jacinto	Montgomery	P3752	Conroe Country Club	N/A	66	65

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
375	San Jacinto Run-of-River	San Jacinto	Harris	P3779	Marian W. Fleming	N/A	45	9
2048	San Jacinto Run-of-River	San Jacinto	Montgomery	P3882	San Jacinto River Authority; Woodlands Dev. Corp.	N/A	500	600
375	San Jacinto Run-of-River	San Jacinto	Harris	P4038	Kocide Chemical Corporation	N/A	230	0
375	San Jacinto Run-of-River	San Jacinto	Harris	P5209	Inwood Forest Golf And Country Club, Inc.	N/A	230	16
375	San Jacinto Run-of-River	San Jacinto	Harris	P5257	Lakeside Country Club	N/A	350	75
375	San Jacinto Run-of-River	San Jacinto	Harris	P5311	Brae-Burn Country Club	N/A	220	13
375	San Jacinto Run-of-River	San Jacinto	Harris	P5332	Pine Forest Country Club	N/A	378	35
375	San Jacinto Run-of-River	San Jacinto	Harris	P5336	Houston Country Club	N/A	175	20
375	San Jacinto Run-of-River	San Jacinto	Harris	P5363	Cove Creek Corporation	N/A	967	0
375	San Jacinto Run-of-River	San Jacinto	Harris	P5522	City of Deer Park	N/A	109	119
375	San Jacinto Run-of-River	San Jacinto	Harris	P5565	Our Savior Lutheran Church	N/A	62	4
375	San Jacinto Run-of-River	San Jacinto	Harris	P5711	Westwood Country Club, Inc.	N/A	250	18
375	San Jacinto Run-of-River	San Jacinto	Harris	P5762	Memorial Park Golf Course	N/A	184	17
848	Houston Lake/Reservoir	San Jacinto	Reservoir	P5807	City of Houston; San Jacinto River Authority	Coastal Water Authority	28,200	160,000
375	San Jacinto Run-of-River	San Jacinto	Harris	P5826	City of Houston	N/A	130,000	0
364	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Fort Bend	C5170	City of Sugar Land	N/A	18,159	8,925
364	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Fort Bend	C5335	Larry J. Schulgen, Trustee	N/A	1,316	379
364	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Fort Bend	C5336	The Lakes Limited	N/A	542	442
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5338	Texas Department of Criminal Justice	N/A	300	90
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5341	Tom Tigner Trust	N/A	600	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5343	Tigner Irrigation Company	N/A	6,871	750
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5344	Vrazel Trust	N/A	1,482	414

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5345	Kenneth L Zwahr Et Ux; Kmz Limited Partnership; Leona Zwahr; Austin Bayou Lp	N/A	1,901	2,565
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5346	Donald Joe Bulanek Et Al; Rodney A Kuchar Jr Et Ux	N/A	2,813	783
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5347	Albert Kuchar	N/A	683	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5348	Cleveland Davis III Et Al	N/A	454	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5349	Bieri Farm Inc	N/A	1,500	1,292
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5351	A Farrer Et Al	N/A	1,500	550
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5352	The Randolph Co Et Al	N/A	4,818	4,541
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5354	R T Marshall Trustee	N/A	187	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5356	Edith Agatha Isaacs Cotrustee; John Russell Isaacs Cotrustee	N/A	560	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5357	Gulf Coast Water Authority	N/A	57,500	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5359	Alvin Golf & Country Club	N/A	54	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5360	James Scopel	N/A	160	0
2049	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Galveston	C5362	Chaparral Recreation Assn	N/A	46	15
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	C5364	Robert L Alexander; Martha A Crouch	N/A	968	0
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	P4010	J V 3 Inc	N/A	360	73
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	P4132	Michael H Bonini	N/A	657	120
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	P4201	Garrett Ranch Inc	N/A	2,000	31
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	P4216	Raymond Le Compte Et Al	N/A	2,925	1,455
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	P4221	Anna Kolacny; Gladys Kolacny Viktorin	N/A	425	250
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	P5023	Rex C Bailey Jr Et Al	N/A	2,600	270
2050	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Harris	P5230	Baywood Country Club	N/A	150	6
327	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Brazoria	P5256	John D Vieman Et Al	N/A	1,231	162

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
2050	San Jacinto-Brazos Run-of-River	San Jacinto-Brazos	Harris	P5686	Coastal Bend Prop Dev Llc	N/A	460	47
2051	Trinity Run-of-River	Trinity	Leon	C4238	Ray Simpson Et Ux	N/A	6	3
2052	Trinity Run-of-River	Trinity	Madison	C4240	Texas Dept Of Criminal Justice	N/A	701	830
40	Livingston-Wallisville Lake/Reservoir System	Trinity	Reservoir	C4248	City of Houston; Trinity River Authority	Trinity River Authority	1,344,000	1,806,300
2053	Trinity Run-of-River	Trinity	Walker	C4249	Texas Dept Of Criminal Justice	N/A	179	280
2053	Trinity Run-of-River	Trinity	Walker	C4250	Texas Parks & Wildlife Dept Et Al	N/A	1,200	51
2053	Trinity Run-of-River	Trinity	Walker	C4253	Thomas G Jameson	N/A	20	0
2592	Trinity Run-of-River	Trinity	Trinity	C4256	Westwood Shores Property Owners Assn	N/A	150	387
411	Trinity Run-of-River	Trinity	Polk	C4261	City Of Houston	N/A	45,000	0
432	Trinity Run-of-River	Trinity	Liberty	C4277	City Of Houston	N/A	38,000	65
2967	Anahuac Lake/Reservoir	Trinity	Reservoir	C4279	Chambers Liberty Counties Navigation District	Chambers Liberty Counties Navigation District	112,947	35,300
427	Trinity Run-of-River	Trinity	Chambers	C4279	Chambers Liberty Counties Navigation District	Chambers Liberty Counties Navigation District	112,947	35,300
427	Trinity Run-of-River	Trinity	Chambers	C4279	San Jacinto River Authority	N/A	30,000	0
2051	Trinity Run-of-River	Trinity	Leon	C5083	Mrs A P Van Winkle Et Al	N/A	50	15
2051	Trinity Run-of-River	Trinity	Leon	C5085	Charles W Kennedy Iii Et Al	N/A	175	216
432	Trinity Run-of-River	Trinity	Liberty	P5271	Devers Canal Rice Pro Assn Inc	N/A	2,500	1,195
432	Trinity Run-of-River	Trinity	Liberty	P5271	San Jacinto River Authority	N/A	56,000	0
432	Trinity Run-of-River	Trinity	Liberty	P5739	Mitigation Management Ltd et al	N/A	1,550	408
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3909	Liberty Grand Partners, LP	N/A	1,402	480
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3910	Roy A Seaberg	N/A	327	50
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3911	Stoesser Farms Inc.	N/A	525	42

DB27 Source ID	DB27 Source Name	Basin	County	Water Right Permit Number[1,2]	Water Right Owner Name	Reservoir Operator3	Permitted Annual Diversion Volume (ac ft/yr)	Permitted Storage Capacity (ac ft/yr)
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3912	Stoesser Farms Inc.	N/A	4	0
431	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Harris	C3913	Gin City Land Company Inc	N/A	1,542	605
431	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Harris	C3914	Riceland Properties Inc	N/A	900	416
431	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Harris	C3915	Roy A Seaberg Et Al	N/A	308	0
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3917	Charles A. Bates; Meredith D. Bates	N/A	0	142
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3918	Gin City Land Company Inc	N/A	2,500	570
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3919	FPL Farming, Ltd.	N/A	1,152	472
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3920	Raw Acres, Llc	N/A	100	184
431	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Harris	C3921	Richard L Shuman	N/A	60	20
431	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Harris	C3922	Cedar Bayou, Ltd.	N/A	1,500	0
431	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Harris	C3923	Murff Turf Holdings, L.L.C.	N/A	954	365
428	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Chambers	C3924	FVL Ltd A Texas Limited Partnership	N/A	2,133	1,057
433	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Liberty	C3925	FPL Farming, Ltd.	N/A	1,067	480
2973	Cedar Bayou Generating Pond Lake/Reservoir	Trinity-San Jacinto	Reservoir	C3926	NRG Texas Power LLC	NRG Texas Power LLC	30,000	13,750
428	Trinity-San Jacinto Run-of-River	Trinity-San Jacinto	Chambers	C3926	NRG Texas Power LLC	NRG Texas Power LLC	30,000	13,750

1. Repeat entries reflect water rights with substantial storage volumes which are utilized primarily for operational purposes. Supplies for these rights are reflected in DB27 under the corresponding run-of-river source.
2. Right identifiers beginning with "C" indicate rights granted under a Certificate of Adjudication. Those beginning with "P" are granted under water right permits.
3. Operators are listed only for reservoirs included in DB27 as separate reservoir sources. For all other impoundments, the operator is listed as "N/A" and assumed to be the same as the water right owner.

APPENDIX 3-D

MAJOR WATER PROVIDER SUPPLY SUMMARIES

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Table 3-D1 – MWP Water Supplies by Use Category

Major Water Provider	Category	MWP Supply (ac ft)*					
		2030	2040	2050	2060	2070	2080
Brazos River Authority	Irrigation	140	140	137	134	131	128
	Livestock	0	0	0	0	0	0
	Manufacturing	73,026	72,378	70,777	69,034	67,158	65,159
	Mining	0	0	0	0	0	0
	Municipal	77,456	76,997	75,354	73,559	71,627	69,569
	Steam Electric Power	85,687	85,097	82,253	79,565	77,019	74,605
Brazosport Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	1,120	1,120	1,120	1,120	1,120	1,120
	Mining	0	0	0	0	0	0
	Municipal	17,889	17,889	17,889	17,889	17,540	17,148
	Steam Electric Power	0	0	0	0	0	0
Chambers-Liberty Counties Navigation District	Irrigation	41,022	41,022	41,022	41,022	41,022	41,022
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	2,205	2,205	2,205	2,205	2,205	2,205
	Steam Electric Power	0	0	0	0	0	0
Dow Inc	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	175,656	174,418	172,731	170,977	169,158	167,282
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	2,687	2,687	2,687	2,687	2,687	2,687
Gulf Coast Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	104,967	104,574	103,767	102,898	101,972	100,993
	Mining	0	0	0	0	0	0
	Municipal	145,287	144,702	143,516	142,233	140,867	139,424
	Steam Electric Power	0	0	0	0	0	0

Major Water Provider	Category	MWP Supply (ac ft)*					
		2030	2040	2050	2060	2070	2080
Houston	Irrigation	26,684	26,684	26,684	26,684	26,684	26,684
	Livestock	0	0	0	0	0	0
	Manufacturing	353,791	353,791	353,791	353,791	353,791	353,791
	Mining	0	0	0	0	0	0
	Municipal	747,533	714,218	716,608	717,932	718,474	719,048
	Steam Electric Power	20,166	20,166	20,166	20,166	20,166	20,166
Huntsville	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	12,730	13,642	15,243	17,081	17,422	17,793
	Steam Electric Power	0	0	0	0	0	0
Lower Neches Valley Authority	Irrigation	62,173	62,173	62,173	62,173	62,173	62,173
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	6,737	6,737	6,737	6,737	6,737	6,737
	Steam Electric Power	0	0	0	0	0	0
Missouri City	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	22,408	22,514	22,566	22,558	22,338	22,084
	Steam Electric Power	0	0	0	0	0	0
North Fort Bend Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	48,271	51,336	53,901	56,070	57,750	59,421
	Steam Electric Power	0	0	0	0	0	0

Major Water Provider	Category	MWP Supply (ac ft)*					
		2030	2040	2050	2060	2070	2080
North Harris County Regional Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	89,388	62,036	62,862	63,264	64,236	64,881
	Steam Electric Power	0	0	0	0	0	0
NRG	Irrigation	12,000	12,000	12,000	12,000	12,000	12,000
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	132,843	132,253	129,409	126,721	124,175	121,761
San Jacinto River Authority	Irrigation	890	890	890	890	890	890
	Livestock	0	0	0	0	0	0
	Manufacturing	67,062	66,343	65,668	64,998	64,339	63,664
	Mining	0	0	0	0	0	0
	Municipal	34,439	33,093	31,824	30,901	30,839	31,743
	Steam Electric Power	7,841	7,841	7,841	7,841	7,841	7,841
Trinity River Authority	Irrigation	27,600	27,600	27,600	27,600	27,600	27,600
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	217,571	217,571	217,571	217,571	217,571	217,571
	Steam Electric Power	0	0	0	0	0	0
West Harris County Regional Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	55,957	39,500	39,434	39,421	39,589	39,851
	Steam Electric Power	0	0	0	0	0	0

** The values in this table reflect the sum of MWP municipal self-supply as well as transfers to other entities. Existing but currently unutilized volumes are therefore not shown in the table. Values represent MWP supplies to entities within Region H only and do not include supplies for other regions.*

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Table 3-D2 – MWP Water Supply Summary

Major Water Provider	MWP Supply (ac ft)*					
	2030	2040	2050	2060	2070	2080
Brazos River Authority	236,309	234,612	228,521	222,292	215,935	209,461
Brazosport Water Authority	19,009	19,009	19,009	19,009	18,660	18,268
Chambers-Liberty Counties Navigation District	43,227	43,227	43,227	43,227	43,227	43,227
Dow Inc	178,343	177,105	175,418	173,664	171,845	169,969
Gulf Coast Water Authority	250,254	249,276	247,283	245,131	242,839	240,417
Houston	1,148,174	1,114,859	1,117,249	1,118,573	1,119,115	1,119,689
Huntsville	12,730	13,642	15,243	17,081	17,422	17,793
Lower Neches Valley Authority	68,910	68,910	68,910	68,910	68,910	68,910
Missouri City	22,408	22,514	22,566	22,558	22,338	22,084
North Fort Bend Water Authority	48,271	51,336	53,901	56,070	57,750	59,421
North Harris County Regional Water Authority	89,388	62,036	62,862	63,264	64,236	64,881
NRG	144,843	144,253	141,409	138,721	136,175	133,761
San Jacinto River Authority	110,232	108,167	106,223	104,630	103,909	104,138
Trinity River Authority	245,171	245,171	245,171	245,171	245,171	245,171
West Harris County Regional Water Authority	55,957	39,500	39,434	39,421	39,589	39,851

** The values in this table reflect the sum of MWP municipal self-supply as well as transfers to other entities. Existing but currently unutilized volumes are therefore not shown in the table. Values represent MWP supplies to entities within Region H only and do not include supplies for other regions.*

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APPENDIX 3-E

EXISTING SUPPLY FROM RUN-OF-RIVER DIVERSIONS

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Table 3-E1– Existing Supplies from Run-of-River Diversions

Basin	County	WUG Use Category	Existing Supply Allocations (acre feet per year)					
			2030	2040	2050	2060	2070	2080
Brazos	Brazoria	Irrigation	2,663	2,663	2,663	2,663	2,663	2,663
		Manufacturing	143,570	142,434	141,296	140,160	139,022	137,885
		Municipal	14,865	14,865	14,865	14,865	14,516	14,124
	Fort Bend	Irrigation	12,000	12,000	12,000	12,000	12,000	12,000
		Manufacturing	59,332	59,029	58,729	58,429	58,127	57,826
		Mining	378	378	378	378	378	378
		Municipal	65,724	65,429	65,134	64,839	64,543	64,246
		Steam Electric Power	41,719	41,719	41,719	41,719	41,719	41,719
	Waller	Irrigation	44	44	44	44	44	44
Brazos-Colorado	Brazoria	Manufacturing	11,730	11,730	11,730	11,730	11,730	11,730
Neches	Liberty	Irrigation	161	161	161	161	161	161
Neches-Trinity	Chambers	Irrigation	37,475	37,475	37,475	37,475	37,475	37,475
San Jacinto	Harris	Irrigation	2,112	2,112	2,112	2,112	2,112	2,112
		Manufacturing	1,022	1,022	1,022	1,022	1,022	1,022
		Municipal	8,783	8,783	8,783	8,783	8,783	8,783
	Liberty	Irrigation	9	9	9	9	9	9
	Montgomery	Irrigation	25	25	25	25	25	25
		Municipal	116	116	116	116	116	116
San Jacinto-Brazos	Brazoria	Irrigation	15,011	15,011	15,011	15,011	15,011	15,011
		Manufacturing	15,070	15,070	15,070	15,070	15,070	15,070
	Fort Bend	Irrigation	165	165	165	165	165	165
		Municipal	3,660	3,660	3,660	3,660	3,660	3,660
	Galveston	Irrigation	36	36	36	36	36	36
	Harris	Irrigation	311	311	311	311	311	311

Basin	County	WUG Use Category	Existing Supply Allocations (acre feet per year)					
			2030	2040	2050	2060	2070	2080
Trinity	Chambers	Irrigation	41,022	41,022	41,022	41,022	41,022	41,022
		Manufacturing	17,610	17,610	17,610	17,610	17,610	17,610
		Municipal	2,178	2,180	2,182	2,183	2,185	2,186
	Leon	Irrigation	156	156	156	156	156	156
	Liberty	Irrigation	16,682	16,682	16,682	16,682	16,682	16,682
		Manufacturing	31,546	31,546	31,546	31,546	31,546	31,546
	Madison	Municipal	169	169	169	169	169	169
	Polk	Manufacturing	26,510	26,510	26,510	26,510	26,510	26,510
	Walker	Irrigation	123	123	123	123	123	123
		Manufacturing	337	337	337	337	337	337
Trinity-San Jacinto	Chambers	Irrigation	1,213	1,213	1,213	1,213	1,213	1,213
	Harris	Irrigation	2,421	2,421	2,421	2,421	2,421	2,421
	Liberty	Irrigation	1,905	1,905	1,905	1,905	1,905	1,905

APPENDIX 4-A

MAJOR WATER PROVIDER NEEDS SUMMARIES

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Table 4-A1 – MWP Water Needs by Use Category

Major Water Provider	Category	MWP Need (ac ft)*					
		2030	2040	2050	2060	2070	2080
Brazos River Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	24,031	25,417	26,949	28,664	30,523
	Mining	0	0	0	0	0	0
	Municipal	0	176	724	1,704	2,661	3,192
	Steam Electric Power	0	0	0	0	0	0
Brazosport Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	3,553	4,254	4,955	5,199	5,470	5,519
	Steam Electric Power	0	0	0	0	0	0
Chambers-Liberty Counties Navigation District	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	0	0	0	0	0	0
Dow Inc	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	4,380	12,068	19,527	26,739	33,676
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	0	0	0	0	0	0
Gulf Coast Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	1,489	1,528	1,568	1,606	1,648	1,688
	Mining	332	396	459	526	598	675
	Municipal	5,325	6,025	6,706	7,663	8,217	9,013
	Steam Electric Power	0	0	0	0	0	0
Houston	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	31,758	36,904	42,434	45,734	49,522	53,409
	Mining	2,709	2,737	2,763	2,789	2,815	2,841
	Municipal	144,165	298,715	331,529	349,568	360,743	364,625
	Steam Electric Power	14,835	14,835	14,835	14,835	14,835	14,835

Major Water Provider	Category	MWP Need (ac ft)*					
		2030	2040	2050	2060	2070	2080
Huntsville	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	115	1,894	3,831
	Steam Electric Power	0	0	0	0	0	0
Lower Neches Valley Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	0	0	0	0	0	0
Missouri City	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	12	110	238	379	537	706
	Steam Electric Power	0	0	0	0	0	0
North Fort Bend Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	22,222	30,393	36,323	41,250	46,029	49,663
	Steam Electric Power	0	0	0	0	0	0
North Harris County Regional Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	52,229	83,110	86,779	88,495	92,690	95,332
	Steam Electric Power	0	0	0	0	0	0

Major Water Provider	Category	MWP Need (ac ft)*					
		2030	2040	2050	2060	2070	2080
NRG	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	22,866	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	14,835	14,835	14,835	14,835	14,835	14,835
San Jacinto River Authority	Irrigation	167	943	1,485	1,820	2,019	2,200
	Livestock	17	96	151	185	205	223
	Manufacturing	27,338	32,427	37,835	40,319	42,801	45,338
	Mining	1	7	12	18	22	28
	Municipal	8,169	32,356	52,044	68,923	76,818	85,793
	Steam Electric Power	315	501	631	711	758	801
Trinity River Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	0	0	0	0	0	0
	Steam Electric Power	0	0	0	0	0	0
West Harris County Regional Water Authority	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Municipal	19,879	38,918	39,990	40,338	42,479	44,350
	Steam Electric Power	0	0	0	0	0	0

** For this table, values indicate a water need; no surpluses are shown. The values in this table reflect WUG needs met through recommended WMS (see Chapter 5 for additional information), excluding any portion of WMS allocations which are in excess of WUG need and result in a net surplus at the WUG level. Existing but currently unutilized contractual transfers are reflected as part of the existing supply analysis for the RWP and are therefore not shown as part of the needs estimated for the MWP of origin. Values represent projected MWP need within Region H only and do not include MWP needs for other regions.*

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Table 4-A2 – MWP Water Need Summary

Major Water Provider	MWP Need (ac ft)*					
	2030	2040	2050	2060	2070	2080
Brazos River Authority	0	24,207	26,141	28,653	31,325	33,715
Brazosport Water Authority	3,553	4,254	4,955	5,199	5,470	5,519
Chambers-Liberty Counties Navigation District	0	0	0	0	0	0
Dow Inc	0	4,380	12,068	19,527	26,739	33,676
Gulf Coast Water Authority	7,146	7,949	8,733	9,795	10,463	11,376
Houston	193,467	353,191	391,561	412,926	427,915	435,710
Huntsville	0	0	0	115	1,894	3,831
Lower Neches Valley Authority	0	0	0	0	0	0
Missouri City	12	110	238	379	537	706
North Fort Bend Water Authority	22,222	30,393	36,323	41,250	46,029	49,663
North Harris County Regional Water Authority	52,229	83,110	86,779	88,495	92,690	95,332
NRG	37,701	14,835	14,835	14,835	14,835	14,835
San Jacinto River Authority	36,007	66,330	92,158	111,976	122,623	134,383
Trinity River Authority	0	0	0	0	0	0
West Harris County Regional Water Authority	19,879	38,918	39,990	40,338	42,479	44,350

** For this table, values indicate a water need; no surpluses are shown. The values in this table reflect WUG needs met through recommended WMS (see Chapter 5 for additional information), excluding any portion of WMS allocations which are in excess of WUG need and result in a net surplus at the WUG level. Existing but currently unutilized contractual transfers are reflected as part of the existing supply analysis for the RWP and are therefore not shown as part of the needs estimated for the MWP of origin. Values represent projected MWP need within Region H only and do not include MWP needs for other regions.*

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APPENDIX 5-A

WATER MANAGEMENT STRATEGY TABLES

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Table 5-A1 – Considered and Potential WMS Type by WUG

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Alvin	519	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Baker Road MUD	78	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Blaketree MUD 1 of Montgomery County	85	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Blue Bell Manor Utility	99	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Blue Ridge West MUD	57	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Brazoria County FWSD 1	56	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Brazoria County MUD 2	593	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Brazoria County MUD 21	294	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Brazoria County MUD 25	60	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Brazoria County MUD 29	164	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Brazoria County MUD 31	115	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Brazoria County MUD 39	485	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Brazoria County MUD 55	57	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bunker Hill Village	1	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
C C Water Works	843	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Central Harris County Regional Water Authority	2,204	●	○	●	●	○	●	●	●	○	○	●	○	○	○	○	○	○	○	○	○
Chateau Woods MUD	219	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Conroe	10,364	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Conroe Resort Utilities	85	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Corinthian Point MUD 2	53	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
County-Other, Brazoria	9,095	●	○	●	●	○	●	●	●	●	○	●	○	○	●	●	●	○	○	○	○
County-Other, Chambers	6,820	●	○	●	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
County-Other, Fort Bend	38,783	●	○	●	●	○	●	●	●	○	○	●	○	○	●	●	○	○	○	○	○
County-Other, Galveston	3,158	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
County-Other, Harris	19,267	●	○	●	●	○	●	●	●	○	○	●	○	○	○	○	○	○	○	○	○
County-Other, Leon	1	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
County-Other, Madison	18	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
County-Other, Montgomery	24,835	●	○	●	●	○	●	●	●	●	○	●	○	○	○	○	●	○	○	○	○
County-Other, San Jacinto	4	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
County-Other, Walker	184	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
County-Other, Waller	8,273	●	○	●	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
Crosby MUD	213	●	○	●	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Cut & Shoot	1,459	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Danbury	22	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Deer Park	1	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Dobbin Plantersville WSC	1,256	●	○	○	●	○	○	●	○	●	○	○	○	○	○	○	●	○	○	○	○
Dodge Oakhurst WSC	367	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Domestic Water	71	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Douglas Utility	66	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
East Montgomery County MUD 6	205	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
East Plantation UD	180	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
El Dorado UD	141	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Far Hills UD	159	●	○	○	○	○	○	●	○	●	○	○	○	○	○	○	●	○	○	○	○
First Colony MUD 9	168	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Forest Hills MUD	100	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Fort Bend County FWSD 1	435	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County FWSD 2	422	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 115	80	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Fort Bend County MUD 116	125	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 121	274	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Fort Bend County MUD 128	330	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 129	86	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Fort Bend County MUD 131	55	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 149	52	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Fort Bend County MUD 152	41	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 155	365	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 158	162	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Fort Bend County MUD 162	97	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 23	52	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 24	19	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 25	1,015	●	○	●	●	○	●	●	●	○	○	●	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 26	71	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 42	69	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County MUD 48	37	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Fort Bend County MUD 49	18	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Fort Bend County MUD 5	73	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fort Bend County WCID 2	4,538	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Fort Bend County WCID 3	29	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Fulshear	1,933	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Galveston	1,133	●	○	○	●	○	●	●	●	○	●	●	○	○	●	●	○	○	○	○	○
Grand Oaks MUD	83	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Green Trails MUD	150	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County FWSD 27	168	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Harris County FWSD 58	68	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 11	28	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County MUD 119	172	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County MUD 153	416	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Harris County MUD 154	340	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County MUD 189	175	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County MUD 216	107	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 221	134	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County MUD 261	245	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Harris County MUD 342	352	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 345	238	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 36	433	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County MUD 361	179	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 494	125	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 50	407	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 58	52	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County MUD 6	63	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Harris County UD 14	46	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County UD 15	122	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County WCID 1	294	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Harris County WCID 133	161	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Harris County WCID 70	45	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Harris County WCID 74	156	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
High Prairie WSC	73	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Hillcrest Village	14	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
HMW SUD	761	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Houston	127,212	●	○	●	●	○	●	○	●	○	○	●	○	●	○	○	○	○	○	○	○
Huntsville	3,831	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Irrigation, Brazoria	60,522	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Irrigation, Chambers	12,572	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Irrigation, Galveston	7,818	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Irrigation, Leon	2	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Irrigation, Liberty	9,218	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Irrigation, Madison	115	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Irrigation, Montgomery	2,200	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Johnston Water Utility	2,049	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Katy	1,806	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Keenan WSC	122	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Kings Manor MUD	320	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
La Marque	667	●	○	○	○	○	○	●	●	○	●	●	○	○	○	●	○	○	○	○	○
Lake Bonanza WSC	188	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Lake Conroe Hills MUD	116	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Lake Jackson	346	●	○	○	○	○	○	●	●	○	○	●	○	○	●	●	○	○	○	○	○
Lazy River Improvement District	143	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Livestock, Brazoria	343	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Livestock, Galveston	196	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Livestock, Harris	849	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Livestock, Leon	76	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Livestock, Liberty	523	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Livestock, Madison	971	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Livestock, Montgomery	223	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Livingston	141	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Longhorn Town UD	92	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Luce Bayou PUD	78	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Madisonville	170	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Magnolia	663	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Manufacturing, Brazoria	71,127	●	○	○	●	○	●	●	●	○	○	●	○	○	●	●	○	○	○	○	○
Manufacturing, Chambers	7,678	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Manufacturing, Fort Bend	1,890	●	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Manufacturing, Harris	57,677	●	○	●	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Manufacturing, Leon	187	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Manufacturing, Montgomery	1,861	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Manvel	1,543	●	○	○	●	○	●	●	●	○	○	●	○	○	●	●	○	○	○	○	○
Mason Creek UD	338	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Meadowcreek MUD	12	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Meadows Place	80	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Memorial Villages Water Authority	3,203	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Mining, Austin	91	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Mining, Brazoria	675	○	○	○	●	○	●	○	●	○	○	●	○	○	●	○	○	○	○	○	○
Mining, Harris	2,841	○	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Mining, Liberty	165	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Mining, Madison	710	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Mining, Montgomery	28	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Mining, Polk	30	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Mining, San Jacinto	25	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Mont Belvieu	6,330	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Montgomery	318	●	○	○	○	○	○	●	○	●	○	○	○	○	○	○	●	○	○	○	○
Montgomery County MUD 105	118	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 112	570	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Montgomery County MUD 115	432	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 119	834	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Montgomery County MUD 127	139	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 137	196	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 139	311	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

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○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Montgomery County MUD 15	410	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 18	519	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 19	334	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Montgomery County MUD 24	8	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 56	56	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 8	352	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 83	213	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 88	321	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Montgomery County MUD 89	496	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Montgomery County MUD 9	1,339	●	○	●	●	○	○	●	○	●	○	○	○	○	○	○	●	○	○	○	○
Montgomery County MUD 94	445	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County MUD 98	43	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Montgomery County MUD 99	3	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County UD 2	305	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County UD 3	196	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County UD 4	358	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Montgomery County WCID 1	246	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Mount Houston Road MUD	164	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
MSEC Enterprises	3,469	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
New Caney MUD	1,439	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

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○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Nitsch and Son Utility	44	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
North Belt UD	313	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
North Channel Water Authority	2,505	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
North Forest MUD	46	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
North Fort Bend Water Authority	39,926	●	○	●	●	○	●	●	●	○	○	●	○	○	○	○	○	○	○	○	○
North Green MUD	102	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
North Harris County Regional Water Authority	91,168	●	○	●	●	○	●	●	●	○	○	●	○	○	○	○	○	○	○	○	○
North Zulch MUD	63	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Northeast Harris County MUD 1	110	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Northwest Harris County MUD 16	138	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Oak Ridge North	263	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Oyster Creek	9	●	○	○	○	○	○	●	●	○	○	●	○	○	●	●	○	○	○	○	○
Palmer Plantation MUD 1	15	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Panorama Village	115	●	○	○	○	○	○	●	○	●	○	○	○	○	○	○	●	○	○	○	○
Patton Village	60	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Pearland	580	●	○	●	●	○	●	●	●	○	○	●	○	○	●	○	○	○	○	○	○
Pinehurst Decker Prairie WSC	135	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Pinewood Community	25	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Plantation MUD	26	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Point Aquarius MUD	155	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Porter SUD	3,522	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Quadvest	5,790	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Ranch Crest Water	109	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Rayford Road MUD	634	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Richmond	1,195	●	○	○	●	○	○	●	●	○	○	●	○	○	●	●	○	○	○	○	○
Richwood	27	●	○	○	○	○	○	●	●	○	○	●	○	○	●	●	○	○	○	○	○
River Plantation MUD	392	●	○	●	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Rolling Fork PUD	142	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Roman Forest Consolidated MUD	246	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Rosenberg	4,162	●	○	○	●	○	○	●	●	○	○	●	○	○	●	●	○	○	○	○	○
Royal Valley Utilities	220	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Sedona Lakes MUD 1	48	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Sequoia Improvement District	27	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Shenandoah	1,321	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
South Cleveland WSC	835	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Southern Montgomery County MUD	274	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Southern Water	130	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Splendora	2,090	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Spring Creek UD	634	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Spring Meadows MUD	1	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
Stanley Lake MUD	192	●	○	○	○	○	○	●	○	●	○	○	○	○	○	○	●	○	○	○	○
Steam-Electric Power, Austin	888	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Steam-Electric Power, Harris	14,835	○	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Steam-Electric Power, Montgomery	801	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Suburban Utility	230	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Sugar Land	7,325	●	○	●	●	○	●	●	●	○	○	●	○	○	●	●	○	○	○	○	○
Sweeny	85	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
T & W Water Service	1,282	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
TDCJ Darrington Unit	107	●	○	○	○	○	○	●	●	○	○	●	○	○	●	●	○	○	○	○	○
TDCJ Ferguson Unit	195	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TDCJ Ramsey Area	246	●	○	○	○	○	○	●	●	○	○	●	○	○	●	●	○	○	○	○	○
The Commons Water Supply	102	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
The Woodlands	8,964	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Thunderbird UD	86	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Tomball	2,203	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Trinity Bay Conservation District	207	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Valley Ranch MUD 1	39	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Varner Creek UD	149	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Walker County SUD	47	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Waller	182	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

WUG Name	Max. Need (Ac Ft/Yr)	Conservation	Drought Management	Reuse	Mgmt. of Existing Supplies	Conjunctive Use	Acquisition of Existing Supplies	Development of New Supplies	Dev. of Regional Water Supply	Brackish Desal/ Blending	Seawater Desalination	Voluntary Transfer of Water	Emergency Transfers	Interbasin Transfers	System Optimization*	New Surface Water Supply	New Groundwater Supply	Brush Ctrl / Enhance Precip.	Aquifer Storage and Recovery	Cancellation of Rights	Rainwater Harvesting
○ = Considered but determined "not potentially feasible"								● = Considered "potentially feasible" and evaluated													
West Columbia	211	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
West Harris County MUD 6	80	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
West Harris County Regional Water Authority	41,882	●	○	●	●	○	●	●	●	○	○	●	○	○	○	○	○	○	○	○	○
Westfield Garden Park	70	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Westwood North WSC	383	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
White Oak WSC	126	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Windfern Forest Utility District	675	●	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
Wood Branch Village	188	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Wood Trace MUD 1	112	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Woodcreek MUD	99	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Woodland Oaks Utility	227	●	○	○	●	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○
Woodridge MUD	19	●	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

**Includes reservoir storage and supply reallocation, quality-based usable supply enhancements, and other yield enhancements.*

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Table 5-A2 – Region H Supply Source Increases

Source	Yield Type	New or Increased Source Supply (ac ft)					
		2030	2040	2050	2060	2070	2080
Conservation[1]							
Industrial Conservation	New	3,320	10,414	18,171	26,242	34,806	43,892
Irrigation Conservation	New	103,799	103,799	103,799	103,799	103,799	103,799
Municipal Conservation[2]	New	42,812	80,533	94,526	111,279	119,907	140,580
Water Loss Reduction	New	8,388	25,724	43,576	60,824	75,737	89,634
Groundwater							
Gulf Coast Aquifer System, Montgomery (Catahoula Formation)	Increased	745	1,322	1,744	1,979	2,237	12,976
Surface Water							
Allens Creek Lake/Reservoir	New	0	99,650	99,650	99,650	99,650	99,650
Brazos Run-of-River, Brazoria	Increased	10,000	10,000	10,000	10,000	10,000	10,000
Harris Reservoir	New	80,000	80,000	80,000	80,000	80,000	80,000
Gulf of Mexico Saline	New	0	22,400	22,400	22,400	22,400	22,400
Reuse							
Direct Reuse, County-Other, Montgomery	Increased	215	838	1,465	1,952	2,320	2,570
Direct Reuse, Fort Bend County MUD 25	Increased	68	68	68	68	68	68
Direct Reuse, Galveston County Industries	New	0	11,200	11,200	11,200	11,200	11,200
Direct Reuse, League City	Increased	5,600	6,720	7,840	8,960	10,080	11,200
Direct Reuse, Master Planned Communities, Brazoria County	New	42	110	192	228	269	313
Direct Reuse, Master Planned Communities, Chambers County	New	22	126	281	429	589	771
Direct Reuse, Master Planned Communities, Fort Bend County	New	517	1,817	3,189	4,326	5,472	6,517
Direct Reuse, Master Planned Communities, Harris County	New	852	1,616	2,119	2,393	2,893	3,252
Direct Reuse, Master Planned Communities, Liberty County	New	66	232	434	653	866	1,097
Direct Reuse, Master Planned Communities, Waller County	New	36	92	196	327	468	619
Direct Reuse, Missouri City	New	579	678	725	747	786	804
Direct Reuse, North Fort Bend Water Authority	Increased	4,280	4,280	4,280	4,280	4,280	4,280
Direct Reuse, North Harris County Regional Water Authority	Increased	300	300	300	300	300	300
Direct Reuse, Pearland	New	0	314	1,154	1,154	1,154	1,154
Direct Reuse, Quail Valley UD	Increased	59	84	94	140	164	188
Direct Reuse, River Plantation MUD	Increased	25	25	25	25	25	25
Direct Reuse, Sienna Plantation	Increased	2,706	2,785	2,903	2,955	3,013	3,092
Direct Reuse, Sugar Land	Existing	1,232	1,680	2,912	2,912	2,912	2,912
Direct Reuse, Westwood Shores MUD	New	150	150	150	150	150	150
Indirect Reuse, Houston	New	0	159,855	163,963	165,839	165,168	165,705
San Jacinto Regional Return Flows	New	75,463	77,888	93,415	96,281	99,677	100,445

1. *Values in this table exclude a limited portion of potential conservation and loss reduction savings estimated by Region H associated with municipal WUGs split between Regions H and I and associated primarily with Region I in TWDB's DB27 database.*
2. *Includes savings volumes for Sugar Land Advanced Demand Management.*

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Table 5-A3 – Scoring for Key Projects

WMS Project		Cost	Location	Water Quality	Environmental Land & Habitat	Impacts on Environmental Flows	Local Preference	Institutional Constraints / Risk of Implementability	Development Timeline	Sponsorship	Vulnerability	Regionalization	Impacts on Other WMS
Conservation													
CNSV-001	Adv. Municipal Conservation and Water Loss Reduction	1	5	3	5	3	4	5	5	3	5	1	2
CNSV-002	Industrial Conservation	4	5	3	5	2	4	3	5	2	5	1	3
CNSV-003	Irrigation Conservation	5	5	4	4	3	3	5	5	3	5	1	3
Conveyance													
CONV-001	BWA Transmission and Storage Expansion	4	4	3	5	3	4	3	4	4	5	4	5
CONV-002	CHCRWA Transmission and Internal Distribution	4	4	3	3	3	4	3	4	5	5	4	3
CONV-003	City of Houston GRP Transmission	4	4	3	3	3	4	3	4	5	5	4	3
CONV-004	City of Houston Transmission Expansion	5	4	3	3	3	4	3	4	5	5	4	3
CONV-005	CWA Transmission Expansion	5	4	3	3	3	3	3	4	4	5	5	4
CONV-006	East Texas Transfer	5	1	3	2	2	3	1	3	3	2	5	4
CONV-007	LNVA Neches-Trinity Basin Interconnect	5	3	3	3	2	3	3	4	5	5	3	3
CONV-008	Manvel Supply Expansion	3	5	3	4	2	4	4	4	4	5	2	3
CONV-009	NFBWA Phase 2 Distribution Segments	5	4	3	3	3	4	3	5	5	5	4	3
CONV-010	NHCRWA Distribution Expansion	4	4	3	3	3	4	3	4	5	5	4	3
CONV-011	NHCRWA Transmission Lines	4	4	3	3	3	4	3	5	5	5	4	3
CONV-012	Southeast Transmission Line Improvements	5	4	3	5	3	5	3	5	5	5	3	5
CONV-013	WHCRWA Distribution Expansion	4	4	3	3	3	4	3	4	5	5	4	3
CONV-014	WHCRWA/NFBWA Transmission Line	5	4	3	3	3	4	3	4	5	5	4	5
Groundwater Development													
GWDV-001	Aquifer Storage and Recovery	1	5	3	3	2	3	2	3	4	4	3	3

WMS Project		Cost	Location	Water Quality	Environmental Land & Habitat	Impacts on Environmental Flows	Local Preference	Institutional Constraints / Risk of Implementability	Development Timeline	Sponsorship	Vulnerability	Regionalization	Impacts on Other WMS
GWDV-002	Brackish GW Development and GW Blending	3	5	3	4	4	3	3	5	3	4	1	4
GWDV-003	BWA Brackish Groundwater Development	3	3	3	3	4	4	4	5	5	4	4	5
GWDV-004	City of Houston Area 2 Groundwater Infrastructure	4	5	3	3	4	4	3	5	5	4	3	3
GWDV-005	City of Houston Repump and GW Plant Improvements	5	5	3	4	3	3	3	5	3	5	3	3
GWDV-006	Expanded Use of Groundwater	1	5	3	4	4	4	3	5	3	5	1	3
GWDV-007	Fairchilds Supply Infrastructure	1	4	3	3	4	4	3	5	4	4	3	3
GWDV-008	GCWA Groundwater Well Development	5	4	3	3	4	3	2	5	4	4	3	3
GWDV-009	SJRA Catahoula Aquifer Supplies	4	5	2	5	4	3	3	5	3	3	4	5
Groundwater Reduction Plans													
GWRP-001	CHCRWA GRP	5	3	3	3	3	4	3	5	5	5	4	3
GWRP-002	City of Houston GRP	5	3	3	3	3	5	3	5	5	5	4	3
GWRP-003	City of Missouri City GRP	3	4	3	4	2	4	3	5	4	5	4	3
GWRP-004	City of Richmond GRP	1	4	3	4	2	4	3	5	5	5	4	3
GWRP-005	City of Rosenberg GRP	4	3	3	3	2	4	3	5	5	5	4	3
GWRP-006	City of Sugar Land IWRP	1	4	3	4	2	4	3	5	5	5	4	3
GWRP-007	Fort Bend County MUD 25 GRP	3	4	3	5	2	4	3	5	4	5	2	3
GWRP-008	Fort Bend County WCID 2 GRP	2	5	3	4	2	4	3	5	5	5	2	3
GWRP-009	Montgomery County MUDs 8 and 9 Supply Expansion	1	4	3	4	2	3	5	5	4	5	2	3
GWRP-010	Montgomery County Supply Expansion	3	4	3	4	2	3	3	5	3	5	4	3
GWRP-011	NFBWA GRP	5	3	3	3	3	4	3	5	5	5	4	3
GWRP-012	NHCRWA GRP	5	3	3	3	3	4	3	5	5	5	4	3
GWRP-013	WHCRWA GRP	5	3	3	3	3	4	3	5	5	5	4	3

WMS Project		Cost	Location	Water Quality	Environmental Land & Habitat	Impacts on Environmental Flows	Local Preference	Institutional Constraints / Risk of Implementability	Development Timeline	Sponsorship	Vulnerability	Regionalization	Impacts on Other WMS
Reuse													
REUS-001	City of Houston Reuse	1	4	3	4	2	4	3	4	4	4	4	3
REUS-002	City of Pearland Reuse	1	4	3	4	2	4	5	5	4	5	1	3
REUS-003	League City Effluent Reuse	5	5	3	4	2	3	3	5	4	5	3	3
REUS-004	NFBWA Member District Reuse	1	5	3	4	2	3	3	5	5	5	2	3
REUS-005	NHCRWA Member District Reuse	1	5	3	4	2	3	3	5	3	5	2	3
REUS-006	River Plantation Reuse	5	5	3	5	2	4	3	5	4	5	2	3
REUS-007	San Jacinto Basin Regional Return Flows	5	4	3	5	2	3	3	5	3	5	5	5
REUS-008	Texas City Industrial Complex Reuse	4	4	3	4	2	3	3	5	4	5	3	3
REUS-009	Wastewater Reclamation for Industry	1	4	4	4	2	3	3	4	3	4	3	2
REUS-010	Wastewater Reclamation for Municipal Irrigation	1	5	3	5	2	3	3	5	3	5	3	3
REUS-011	Westwood Shores MUD Reuse	1	5	3	4	3	3	3	5	5	5	1	3
Surface Water Development													
SWDV-001	Allens Creek Reservoir	5	4	3	4	3	4	4	4	4	2	4	5
SWDV-002	BWSC Reservoir and Pump Station Expansion	4	5	4	4	2	5	4	5	5	3	4	4
SWDV-003	GCWA Coastal Desalination	1	3	3	3	4	3	2	4	3	3	4	4
SWDV-004	Lake Somerville Augmentation	1	4	3	3	2	3	3	4	3	4	4	4
Treatment													
TRET-001	BAWA East SWTP Expansion	3	5	3	4	3	4	5	5	5	4	2	3
TRET-002	BWA Conventional Treatment Expansion	4	3	3	5	3	4	3	5	5	4	4	5
TRET-003	City of Houston EWPP Enhancement	1	5	3	4	3	4	5	4	5	4	4	5
TRET-004	Harris County MUD 50 Surface Water Treatment Plant	1	4	3	5	2	4	3	5	2	4	1	3

WMS Project		Cost	Location	Water Quality	Environmental Land & Habitat	Impacts on Environmental Flows	Local Preference	Institutional Constraints / Risk of Implementability	Development Timeline	Sponsorship	Vulnerability	Regionalization	Impacts on Other WMS
TRET-005	Northeast Water Purification Plant Expansion	3	3	3	4	3	5	5	5	5	4	4	5
TRET-006	Pearland Surface Water Treatment Plant	2	4	3	4	3	4	3	5	4	5	2	3
TRET-007	SEWPP Expansion	2	3	3	4	3	3	5	5	5	4	4	5
Other													
OTHR-001	Brazos Saltwater Barrier	4	5	5	2	2	4	2	4	3	3	4	5
OTHR-002	GCWA Canal Lining and Loss Mitigation	5	5	3	3	3	3	5	5	5	5	4	4
OTHR-003	GCWA Shannon Pump Station Expansion	5	5	3	3	2	3	5	5	5	3	4	5
OTHR-004	LNVA Devers Pump Station Relocation	5	5	3	3	3	3	5	5	5	3	3	5
OTHR-005	Municipal Drought Management	1	5	3	5	3	2	5	5	3	5	1	2
OTHR-005	New and Expanded Contracts	5	4	3	5	2	3	5	5	3	5	5	5

Table 5-A4 – Water Management Strategy and Project Relationships

Project	Project Type	Associated WMS
Allens Creek Reservoir	WMS	Additional Supply from BRA
		Additional Supply from GCWA
		New / Expanded Contract with GCWA
		Richmond GRP
BAWA East SWTP Expansion - Phase 1	WMS	BAWA East SWTP Expansion
BAWA East SWTP Expansion - Phase 2	WMS	BAWA East SWTP Expansion
Brazos Saltwater Barrier	WMS	Brazos Saltwater Barrier
BWA Brackish Groundwater Development	WMS	New / Expanded Contract with BWA - Brackish Groundwater
BWA Conventional Treatment Expansion	WMS	BWSC Reservoir and Pump Station Expansion
		Rosenberg GRP
BWA Transmission and Storage Expansion	WMS	BWSC Reservoir and Pump Station Expansion
		New / Expanded Contract with BWA - Brackish Groundwater
BWSC Reservoir and Pump Station Expansion	WMS	BWSC Reservoir and Pump Station Expansion
CHCRWA Transmission and Internal Distribution	WMS	CHCRWA GRP
City of Houston Area 2 Groundwater Infrastructure	WMS	City of Houston Area 2 Groundwater Development
City of Houston EWPP Enhancement	WMS	City of Houston GRP
		New / Expanded Contract with City of Houston
City of Houston GRP Transmission - 2025 Phase	WMS	City of Houston GRP
City of Houston GRP Transmission - 2035 Phase	WMS	City of Houston GRP
City of Houston Repump Expansion - Phase 1	WMS	City of Houston GRP
		New / Expanded Contract with City of Houston
City of Houston Repump Expansion - Phase 2	WMS	City of Houston GRP
		New / Expanded Contract with City of Houston
City Of Houston Reuse Infrastructure	WMS	City of Houston Reuse
		New / Expanded Contract with City of Houston
		NFBWA GRP
		NHCRWA GRP
		WHCRWA GRP

Project	Project Type	Associated WMS
City of Houston SEWPP Expansion - Phase 1	WMS	City of Houston GRP
		Southeast Transmission Line Expansion
City of Houston SEWPP Expansion - Phase 2	WMS	City of Houston GRP
		Southeast Transmission Line Expansion
City of Houston Transmission and Distribution Expansion - Phase 1	WMS	City of Houston GRP
City of Houston Transmission and Distribution Expansion - Phase 2	WMS	City of Houston GRP
COH Northeast Water Purification Plant Expansion - Phase 2	WMS	CHCRWA GRP
		City of Houston GRP
		New / Expanded Contract with City of Houston
		NFBWA GRP
		NHCRWA GRP
		WHCRWA GRP
COH Northeast Water Purification Plant Expansion - Phase 3	WMS	CHCRWA GRP
		City of Houston GRP
		New / Expanded Contract with City of Houston
		NFBWA GRP
		NHCRWA GRP
		WHCRWA GRP
CWA Transmission Expansion	WMS	City of Houston GRP
East Texas Transfer	WMS	East Texas Transfer
Fairchilds Supply Infrastructure - Phase 1	WMS	Fairchilds Supply Infrastructure
Fairchilds Supply Infrastructure - Phase 2	WMS	Fairchilds Supply Infrastructure
Fort Bend MUD 25 GRP Infrastructure	WMS	Fort Bend MUD 25 GRP
Fort Bend WCID 2 GRP Infrastructure - Phase 1	WMS	Fort Bend WCID 2 GRP
Fort Bend WCID 2 GRP Infrastructure - Phase 2	WMS	Fort Bend WCID 2 GRP
GCWA Canal Lining and Loss Mitigation	WMS	Additional Supply from GCWA
		New / Expanded Contract with GCWA
GCWA Coastal Desalination	WMS	GCWA Coastal Desalination

Project	Project Type	Associated WMS
GCWA Groundwater Well Development	WMS	GCWA Groundwater Well Development
GCWA Shannon Pump Station Expansion	WMS	Additional Supply from GCWA
		GCWA Coastal Desalination
		New / Expanded Contract with GCWA
Harris County MUD 50 SWTP	WMS	Harris County MUD 50 SWTP
Industrial Conservation, Austin County	WUG	Industrial Conservation
Industrial Conservation, Brazoria County	WUG	Industrial Conservation
Industrial Conservation, Chambers County	WUG	Industrial Conservation
Industrial Conservation, Fort Bend County	WUG	Industrial Conservation
Industrial Conservation, Galveston County	WUG	Industrial Conservation
Industrial Conservation, Harris County	WUG	Industrial Conservation
Industrial Conservation, Leon County	WUG	Industrial Conservation
Industrial Conservation, Liberty County	WUG	Industrial Conservation
Industrial Conservation, Montgomery County	WUG	Industrial Conservation
Industrial Conservation, Walker County	WUG	Industrial Conservation
Industrial Conservation, Waller County	WUG	Industrial Conservation
Irrigation Conservation, Austin County	WUG	Irrigation Conservation
Irrigation Conservation, Brazoria County	WUG	Irrigation Conservation
Irrigation Conservation, Chambers County	WUG	Irrigation Conservation
Irrigation Conservation, Fort Bend County	WUG	Irrigation Conservation
Irrigation Conservation, Galveston County	WUG	Irrigation Conservation
Irrigation Conservation, Harris County	WUG	Irrigation Conservation
Irrigation Conservation, Liberty County	WUG	Irrigation Conservation
Irrigation Conservation, Waller County	WUG	Irrigation Conservation
League City Effluent	WMS	League City Effluent
LNVA Devers Pump Station Relocation	WMS	LNVA Devers Pump Station Relocation
LNVA Neches-Trinity Basin Interconnect	WMS	LNVA Neches-Trinity Basin Interconnect
Manvel Supply Expansion - Phase 1	WMS	Manvel Supply Expansion

Project	Project Type	Associated WMS
Manvel Supply Expansion - Phase 2	WMS	Manvel Supply Expansion
Missouri City GRP Infrastructure	WMS	Missouri City GRP
Montgomery County MUDs 8 and 9 Supply Expansion	WMS	Montgomery County MUDs 8 and 9 Supply Expansion
Montgomery County Supply Expansion - 2040 Phase	WMS	Montgomery County Supply Expansion
Montgomery County Supply Expansion - 2050 Phase	WMS	Montgomery County Supply Expansion
Montgomery County Supply Expansion - 2060 Phase	WMS	Montgomery County Supply Expansion
Montgomery County WCID 1 Water Plant 3	WUG	Montgomery County Supply Expansion
Municipal Conservation, Alvin	WUG	Municipal Conservation
Municipal Conservation, Ames Minglewood WSC	WUG	Municipal Conservation
Municipal Conservation, Anahuac	WUG	Municipal Conservation
Municipal Conservation, Angleton	WUG	Municipal Conservation
Municipal Conservation, Austin County WSC	WUG	Municipal Conservation
Municipal Conservation, Bacliff MUD	WUG	Municipal Conservation
Municipal Conservation, Baker Road MUD	WUG	Municipal Conservation
Municipal Conservation, Baybrook MUD 1	WUG	Municipal Conservation
Municipal Conservation, Baytown	WUG	Municipal Conservation
Municipal Conservation, Bayview MUD	WUG	Municipal Conservation
Municipal Conservation, Bellaire	WUG	Municipal Conservation
Municipal Conservation, Bellville	WUG	Municipal Conservation
Municipal Conservation, Blaketree MUD 1 of Montgomery County	WUG	Municipal Conservation
Municipal Conservation, Blue Bell Manor Utility	WUG	Municipal Conservation
Municipal Conservation, Blue Ridge West MUD	WUG	Municipal Conservation
Municipal Conservation, Bolivar Peninsula SUD	WUG	Municipal Conservation
Municipal Conservation, Brazoria	WUG	Municipal Conservation
Municipal Conservation, Brazoria County FWSD 1	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 2	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 21	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 22	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Brazoria County MUD 25	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 29	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 3	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 31	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 39	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 55	WUG	Municipal Conservation
Municipal Conservation, Brazoria County MUD 6	WUG	Municipal Conservation
Municipal Conservation, Brookshire MWD	WUG	Municipal Conservation
Municipal Conservation, Buffalo	WUG	Municipal Conservation
Municipal Conservation, Bunker Hill Village	WUG	Municipal Conservation
Municipal Conservation, C C Water Works	WUG	Municipal Conservation
Municipal Conservation, Cape Royale UD	WUG	Municipal Conservation
Municipal Conservation, Centerville	WUG	Municipal Conservation
Municipal Conservation, Central Harris County Regional Water Authority	WUG	Municipal Conservation
Municipal Conservation, Chambers County MUD 1	WUG	Municipal Conservation
Municipal Conservation, Chateau Woods MUD	WUG	Municipal Conservation
Municipal Conservation, Chimney Hill MUD	WUG	Municipal Conservation
Municipal Conservation, Clear Brook City MUD	WUG	Municipal Conservation
Municipal Conservation, Clear Lake City Water Authority	WUG	Municipal Conservation
Municipal Conservation, Cleveland	WUG	Municipal Conservation
Municipal Conservation, Clute	WUG	Municipal Conservation
Municipal Conservation, Concord-Robbins WSC	WUG	Municipal Conservation
Municipal Conservation, Conroe	WUG	Municipal Conservation
Municipal Conservation, Conroe Resort Utilities	WUG	Municipal Conservation
Municipal Conservation, Corinthian Point MUD 2	WUG	Municipal Conservation
Municipal Conservation, Country Terrace Water	WUG	Municipal Conservation
Municipal Conservation, County-Other, Austin	WUG	Municipal Conservation
Municipal Conservation, County-Other, Brazoria	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, County-Other, Chambers	WUG	Municipal Conservation
Municipal Conservation, County-Other, Fort Bend	WUG	Municipal Conservation
Municipal Conservation, County-Other, Galveston	WUG	Municipal Conservation
Municipal Conservation, County-Other, Harris	WUG	Municipal Conservation
Municipal Conservation, County-Other, Leon	WUG	Municipal Conservation
Municipal Conservation, County-Other, Liberty	WUG	Municipal Conservation
Municipal Conservation, County-Other, Madison	WUG	Municipal Conservation
Municipal Conservation, County-Other, Montgomery	WUG	Municipal Conservation
Municipal Conservation, County-Other, Polk	WUG	Municipal Conservation
Municipal Conservation, County-Other, San Jacinto	WUG	Municipal Conservation
Municipal Conservation, County-Other, Walker	WUG	Municipal Conservation
Municipal Conservation, County-Other, Waller	WUG	Municipal Conservation
Municipal Conservation, Crosby MUD	WUG	Municipal Conservation
Municipal Conservation, Cut and Shoot	WUG	Municipal Conservation
Municipal Conservation, Daisetta	WUG	Municipal Conservation
Municipal Conservation, Danbury	WUG	Municipal Conservation
Municipal Conservation, Dayton	WUG	Municipal Conservation
Municipal Conservation, Deer Park	WUG	Municipal Conservation
Municipal Conservation, Devers	WUG	Municipal Conservation
Municipal Conservation, Dobbin Plantersville WSC	WUG	Municipal Conservation
Municipal Conservation, Dodge Oakhurst WSC	WUG	Municipal Conservation
Municipal Conservation, Domestic Water	WUG	Municipal Conservation
Municipal Conservation, Douglas Utility	WUG	Municipal Conservation
Municipal Conservation, East Montgomery County MUD 6	WUG	Municipal Conservation
Municipal Conservation, East Plantation UD	WUG	Municipal Conservation
Municipal Conservation, El Dorado UD	WUG	Municipal Conservation
Municipal Conservation, Far Hills UD	WUG	Municipal Conservation
Municipal Conservation, First Colony MUD 9	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Flo Community WSC	WUG	Municipal Conservation
Municipal Conservation, Forest Hills MUD	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County FWSD 2	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 115	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 116	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 121	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 128	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 129	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 131	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 140	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 149	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 152	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 155	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 158	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 162	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 23	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 24	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 25	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 26	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 42	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 46	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 47	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 48	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 49	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 5	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County MUD 81	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County WCID 2	WUG	Municipal Conservation
Municipal Conservation, Fort Bend County WCID 3	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Freeport	WUG	Municipal Conservation
Municipal Conservation, Friendswood	WUG	Municipal Conservation
Municipal Conservation, Fulshear	WUG	Municipal Conservation
Municipal Conservation, Galena Park	WUG	Municipal Conservation
Municipal Conservation, Galveston	WUG	Municipal Conservation
Municipal Conservation, Galveston County FWSD 6	WUG	Municipal Conservation
Municipal Conservation, Galveston County MUD 12	WUG	Municipal Conservation
Municipal Conservation, Galveston County WCID 1	WUG	Municipal Conservation
Municipal Conservation, Galveston County WCID 12	WUG	Municipal Conservation
Municipal Conservation, Galveston County WCID 8	WUG	Municipal Conservation
Municipal Conservation, Glendale WSC	WUG	Municipal Conservation
Municipal Conservation, Grand Oaks MUD	WUG	Municipal Conservation
Municipal Conservation, Green Trails MUD	WUG	Municipal Conservation
Municipal Conservation, Greenwood UD	WUG	Municipal Conservation
Municipal Conservation, Groveton	WUG	Municipal Conservation
Municipal Conservation, Hardin WSC	WUG	Municipal Conservation
Municipal Conservation, Harris County FWSD 1-A	WUG	Municipal Conservation
Municipal Conservation, Harris County FWSD 27	WUG	Municipal Conservation
Municipal Conservation, Harris County FWSD 58	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 106	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 11	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 119	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 122	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 132	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 148	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 151	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 152	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 153	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Harris County MUD 154	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 180	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 189	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 216	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 221	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 23	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 261	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 278	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 290	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 321	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 342	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 344	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 345	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 36	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 361	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 372	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 400	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 412	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 420	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 46	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 49	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 494	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 5	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 50	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 504	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 55	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 58	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 6	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Harris County MUD 8	WUG	Municipal Conservation
Municipal Conservation, Harris County MUD 96	WUG	Municipal Conservation
Municipal Conservation, Harris County UD 15	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 1	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 133	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 156	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 161	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 50	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 70	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 74	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 89	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID 96	WUG	Municipal Conservation
Municipal Conservation, Harris County WCID-Fondren Road	WUG	Municipal Conservation
Municipal Conservation, Harris-Montgomery Counties MUD 386	WUG	Municipal Conservation
Municipal Conservation, Hempstead	WUG	Municipal Conservation
Municipal Conservation, High Prairie WSC	WUG	Municipal Conservation
Municipal Conservation, Hillcrest Village	WUG	Municipal Conservation
Municipal Conservation, Hilltop Lakes WSC	WUG	Municipal Conservation
Municipal Conservation, Hilshire Village	WUG	Municipal Conservation
Municipal Conservation, Hitchcock	WUG	Municipal Conservation
Municipal Conservation, HMW SUD	WUG	Municipal Conservation
Municipal Conservation, Houston	WUG	Municipal Conservation
Municipal Conservation, Humble	WUG	Municipal Conservation
Municipal Conservation, Huntsville	WUG	Municipal Conservation
Municipal Conservation, Jacinto City	WUG	Municipal Conservation
Municipal Conservation, Jamaica Beach	WUG	Municipal Conservation
Municipal Conservation, Jersey Village	WUG	Municipal Conservation
Municipal Conservation, Jewett	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Johnston Water Utility	WUG	Municipal Conservation
Municipal Conservation, Katy	WUG	Municipal Conservation
Municipal Conservation, Keenan WSC	WUG	Municipal Conservation
Municipal Conservation, Kendleton	WUG	Municipal Conservation
Municipal Conservation, Kings Manor MUD	WUG	Municipal Conservation
Municipal Conservation, Kirkmont MUD	WUG	Municipal Conservation
Municipal Conservation, La Marque	WUG	Municipal Conservation
Municipal Conservation, La Porte	WUG	Municipal Conservation
Municipal Conservation, Lake Bonanza WSC	WUG	Municipal Conservation
Municipal Conservation, Lake Conroe Hills MUD	WUG	Municipal Conservation
Municipal Conservation, Lake Jackson	WUG	Municipal Conservation
Municipal Conservation, Lake MUD	WUG	Municipal Conservation
Municipal Conservation, Lazy River Improvement District	WUG	Municipal Conservation
Municipal Conservation, League City	WUG	Municipal Conservation
Municipal Conservation, Leggett WSC	WUG	Municipal Conservation
Municipal Conservation, Liberty	WUG	Municipal Conservation
Municipal Conservation, Liberty County FWSD 1 Hull	WUG	Municipal Conservation
Municipal Conservation, Livingston	WUG	Municipal Conservation
Municipal Conservation, Longhorn Town UD	WUG	Municipal Conservation
Municipal Conservation, Luce Bayou PUD	WUG	Municipal Conservation
Municipal Conservation, Madisonville	WUG	Municipal Conservation
Municipal Conservation, Magnolia	WUG	Municipal Conservation
Municipal Conservation, Manvel	WUG	Municipal Conservation
Municipal Conservation, Mason Creek UD	WUG	Municipal Conservation
Municipal Conservation, Meadowcreek MUD	WUG	Municipal Conservation
Municipal Conservation, Meadows Place	WUG	Municipal Conservation
Municipal Conservation, Memorial Point UD	WUG	Municipal Conservation
Municipal Conservation, Memorial Villages Water Authority	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Mercy WSC	WUG	Municipal Conservation
Municipal Conservation, Missouri City	WUG	Municipal Conservation
Municipal Conservation, Mont Belvieu	WUG	Municipal Conservation
Municipal Conservation, Montgomery	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 105	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 112	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 115	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 119	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 126	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 137	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 139	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 15	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 18	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 19	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 24	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 56	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 8	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 83	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 84	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 88	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 89	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 9	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 94	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 95	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 98	WUG	Municipal Conservation
Municipal Conservation, Montgomery County MUD 99	WUG	Municipal Conservation
Municipal Conservation, Montgomery County UD 2	WUG	Municipal Conservation
Municipal Conservation, Montgomery County UD 3	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Montgomery County UD 4	WUG	Municipal Conservation
Municipal Conservation, Montgomery County WCID 1	WUG	Municipal Conservation
Municipal Conservation, Morgans Point	WUG	Municipal Conservation
Municipal Conservation, Mount Houston Road MUD	WUG	Municipal Conservation
Municipal Conservation, MSEC Enterprises	WUG	Municipal Conservation
Municipal Conservation, Nassau Bay	WUG	Municipal Conservation
Municipal Conservation, Needville	WUG	Municipal Conservation
Municipal Conservation, New Caney MUD	WUG	Municipal Conservation
Municipal Conservation, New Waverly	WUG	Municipal Conservation
Municipal Conservation, Newport MUD	WUG	Municipal Conservation
Municipal Conservation, Nitsch and Son Utility	WUG	Municipal Conservation
Municipal Conservation, Normangee	WUG	Municipal Conservation
Municipal Conservation, North Belt UD	WUG	Municipal Conservation
Municipal Conservation, North Channel Water Authority	WUG	Municipal Conservation
Municipal Conservation, North Forest MUD	WUG	Municipal Conservation
Municipal Conservation, North Fort Bend Water Authority	WUG	Municipal Conservation
Municipal Conservation, North Green MUD	WUG	Municipal Conservation
Municipal Conservation, North Harris County Regional Water Authority	WUG	Municipal Conservation
Municipal Conservation, North Zulch MUD	WUG	Municipal Conservation
Municipal Conservation, Northeast Harris County MUD 1	WUG	Municipal Conservation
Municipal Conservation, Northwest Harris County MUD 16	WUG	Municipal Conservation
Municipal Conservation, Oak Hollow Utility	WUG	Municipal Conservation
Municipal Conservation, Oak Ridge North	WUG	Municipal Conservation
Municipal Conservation, Onalaska WSC	WUG	Municipal Conservation
Municipal Conservation, One Five O WSC	WUG	Municipal Conservation
Municipal Conservation, Oyster Creek	WUG	Municipal Conservation
Municipal Conservation, P B & S C WSC	WUG	Municipal Conservation
Municipal Conservation, Palmer Plantation MUD 1	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Palmer Plantation MUD 2	WUG	Municipal Conservation
Municipal Conservation, Panorama Village	WUG	Municipal Conservation
Municipal Conservation, Parkway MUD	WUG	Municipal Conservation
Municipal Conservation, Pasadena	WUG	Municipal Conservation
Municipal Conservation, Pattison WSC	WUG	Municipal Conservation
Municipal Conservation, Patton Village	WUG	Municipal Conservation
Municipal Conservation, Pearland	WUG	Municipal Conservation
Municipal Conservation, Pecan Grove MUD 1	WUG	Municipal Conservation
Municipal Conservation, Phelps SUD	WUG	Municipal Conservation
Municipal Conservation, Pine Village PUD	WUG	Municipal Conservation
Municipal Conservation, Pinehurst Decker Prairie WSC	WUG	Municipal Conservation
Municipal Conservation, Pinewood Community	WUG	Municipal Conservation
Municipal Conservation, Plantation MUD	WUG	Municipal Conservation
Municipal Conservation, Point Aquarius MUD	WUG	Municipal Conservation
Municipal Conservation, Porter SUD	WUG	Municipal Conservation
Municipal Conservation, Prairie View	WUG	Municipal Conservation
Municipal Conservation, Prairie View A&M University	WUG	Municipal Conservation
Municipal Conservation, Providence WSC	WUG	Municipal Conservation
Municipal Conservation, Quadvest	WUG	Municipal Conservation
Municipal Conservation, Quail Valley UD	WUG	Municipal Conservation
Municipal Conservation, Ranch Crest Water	WUG	Municipal Conservation
Municipal Conservation, Rayford Road MUD	WUG	Municipal Conservation
Municipal Conservation, Raywood WSC	WUG	Municipal Conservation
Municipal Conservation, Richmond	WUG	Municipal Conservation
Municipal Conservation, Richwood	WUG	Municipal Conservation
Municipal Conservation, River Plantation MUD	WUG	Municipal Conservation
Municipal Conservation, Riverside SUD	WUG	Municipal Conservation
Municipal Conservation, Rolling Fork PUD	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Roman Forest Consolidated MUD	WUG	Municipal Conservation
Municipal Conservation, Rosenberg	WUG	Municipal Conservation
Municipal Conservation, Royal Valley Utilities	WUG	Municipal Conservation
Municipal Conservation, Sagemeadow UD	WUG	Municipal Conservation
Municipal Conservation, San Jacinto SUD	WUG	Municipal Conservation
Municipal Conservation, San Leon MUD	WUG	Municipal Conservation
Municipal Conservation, Seabrook	WUG	Municipal Conservation
Municipal Conservation, Sealy	WUG	Municipal Conservation
Municipal Conservation, Sedona Lakes MUD 1	WUG	Municipal Conservation
Municipal Conservation, Sequoia Improvement District	WUG	Municipal Conservation
Municipal Conservation, Shenandoah	WUG	Municipal Conservation
Municipal Conservation, Shepherd	WUG	Municipal Conservation
Municipal Conservation, Shoreacres	WUG	Municipal Conservation
Municipal Conservation, Sienna Plantation	WUG	Municipal Conservation
Municipal Conservation, Soda WSC	WUG	Municipal Conservation
Municipal Conservation, South Cleveland WSC	WUG	Municipal Conservation
Municipal Conservation, South Houston	WUG	Municipal Conservation
Municipal Conservation, Southeast WSC	WUG	Municipal Conservation
Municipal Conservation, Southern Montgomery County MUD	WUG	Municipal Conservation
Municipal Conservation, Southern Water	WUG	Municipal Conservation
Municipal Conservation, Southside Place	WUG	Municipal Conservation
Municipal Conservation, Southwest Harris County MUD 1	WUG	Municipal Conservation
Municipal Conservation, Splendora	WUG	Municipal Conservation
Municipal Conservation, Spring Creek UD	WUG	Municipal Conservation
Municipal Conservation, Spring Meadows MUD	WUG	Municipal Conservation
Municipal Conservation, Spring Valley	WUG	Municipal Conservation
Municipal Conservation, Stanley Lake MUD	WUG	Municipal Conservation
Municipal Conservation, Suburban Utility	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, Sugar Land	WUG	Municipal Conservation
Municipal Conservation, Sunbelt FWSD	WUG	Municipal Conservation
Municipal Conservation, Surfside Beach	WUG	Municipal Conservation
Municipal Conservation, Sweeny	WUG	Municipal Conservation
Municipal Conservation, T & W Water Service	WUG	Municipal Conservation
Municipal Conservation, Tarkington SUD	WUG	Municipal Conservation
Municipal Conservation, TDCJ Darrington Unit	WUG	Municipal Conservation
Municipal Conservation, TDCJ Ferguson Unit	WUG	Municipal Conservation
Municipal Conservation, TDCJ Jester Units	WUG	Municipal Conservation
Municipal Conservation, TDCJ Ramsey Area	WUG	Municipal Conservation
Municipal Conservation, Tempe WSC 1	WUG	Municipal Conservation
Municipal Conservation, Texas City	WUG	Municipal Conservation
Municipal Conservation, The Commons Water Supply	WUG	Municipal Conservation
Municipal Conservation, The Woodlands	WUG	Municipal Conservation
Municipal Conservation, Thunderbird UD	WUG	Municipal Conservation
Municipal Conservation, Tomball	WUG	Municipal Conservation
Municipal Conservation, Trail of the Lakes MUD	WUG	Municipal Conservation
Municipal Conservation, Trinity	WUG	Municipal Conservation
Municipal Conservation, Trinity Bay Conservation District	WUG	Municipal Conservation
Municipal Conservation, Trinity Rural WSC	WUG	Municipal Conservation
Municipal Conservation, Valley Ranch MUD 1	WUG	Municipal Conservation
Municipal Conservation, Varner Creek UD	WUG	Municipal Conservation
Municipal Conservation, Walker County SUD	WUG	Municipal Conservation
Municipal Conservation, Waller	WUG	Municipal Conservation
Municipal Conservation, Wallis	WUG	Municipal Conservation
Municipal Conservation, Waterwood MUD 1	WUG	Municipal Conservation
Municipal Conservation, Webster	WUG	Municipal Conservation
Municipal Conservation, West Columbia	WUG	Municipal Conservation

Project	Project Type	Associated WMS
Municipal Conservation, West End WSC	WUG	Municipal Conservation
Municipal Conservation, West Harris County MUD 6	WUG	Municipal Conservation
Municipal Conservation, West Harris County Regional Water Authority	WUG	Municipal Conservation
Municipal Conservation, West University Place	WUG	Municipal Conservation
Municipal Conservation, Westfield Garden Park	WUG	Municipal Conservation
Municipal Conservation, Westwood North WSC	WUG	Municipal Conservation
Municipal Conservation, Westwood Shores MUD	WUG	Municipal Conservation
Municipal Conservation, White Oak WSC	WUG	Municipal Conservation
Municipal Conservation, Willis	WUG	Municipal Conservation
Municipal Conservation, Willow Creek Farms MUD	WUG	Municipal Conservation
Municipal Conservation, Windfern Forest Utility District	WUG	Municipal Conservation
Municipal Conservation, Wood Branch Village	WUG	Municipal Conservation
Municipal Conservation, Wood Trace MUD 1	WUG	Municipal Conservation
Municipal Conservation, Woodcreek MUD	WUG	Municipal Conservation
Municipal Conservation, Woodland Oaks Utility	WUG	Municipal Conservation
Municipal Conservation, Woodridge MUD	WUG	Municipal Conservation
Municipal Irrigation Reuse Development, Brazoria County	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, Chambers County	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, CHCRWA	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, Fort Bend County	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, Harris County	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, Liberty County	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, Montgomery County	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, NFBWA	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, NHCRWA	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, Waller County	WUG	Wastewater Reclamation for Municipal Irrigation
Municipal Irrigation Reuse Development, WHCRWA	WUG	Wastewater Reclamation for Municipal Irrigation
NFBWA Member District Reuse Infrastructure	WMS	NFBWA Member District Reuse

Project	Project Type	Associated WMS
NFBWA Phase 2 Distribution Segments	WMS	NFBWA GRP
NHCRWA Distribution Expansion - 2025 Phase	WMS	NHCRWA GRP
NHCRWA Distribution Expansion - 2035 Phase	WMS	NHCRWA GRP
NHCRWA Distribution Expansion - 2045 Phase	WMS	NHCRWA GRP
NHCRWA Member District Reuse Infrastructure	WMS	NHCRWA Member District Reuse
NHCRWA Transmission Lines	WMS	NHCRWA GRP
Pearland Reuse Infrastructure	WMS	City of Pearland Reuse
Pearland Surface Water Treatment Plant Development	WMS	Pearland SWTP
Richmond GRP Infrastructure	WMS	Richmond GRP
Rosenberg GRP Infrastructure	WMS	Rosenberg GRP
SJRA Catahoula Aquifer Supplies	WMS	Montgomery County Supply Expansion
Southeast Transmission Line Improvements	WMS	Southeast Transmission Line Expansion
Sugar Land Advanced Loss Reduction	WMS	Municipal Conservation
Sugar Land AMI	WMS	Municipal Conservation
Sugar Land Groundwater Plant Conversion	WMS	Sugar Land IWRP
Sugar Land IWRP Reuse Infrastructure - Phase 1	WMS	Sugar Land IWRP
Sugar Land IWRP Reuse Infrastructure - Phase 2	WMS	Sugar Land IWRP
Sugar Land IWRP Reuse Infrastructure - Phase 3	WMS	Sugar Land IWRP
Sugar Land Surface Water Expansion - Phase 1	WMS	Sugar Land IWRP
Sugar Land Surface Water Expansion - Phase 2	WMS	Sugar Land IWRP
Texas City Industrial Complex Reuse	WMS	Texas City Industrial Complex Reuse
Water Loss Reduction, Alvin	WUG	Water Loss Reduction
Water Loss Reduction, Ames Minglewood WSC	WUG	Water Loss Reduction
Water Loss Reduction, Anahuac	WUG	Water Loss Reduction
Water Loss Reduction, Angleton	WUG	Water Loss Reduction
Water Loss Reduction, Austin County WSC	WUG	Water Loss Reduction
Water Loss Reduction, Baytown	WUG	Water Loss Reduction
Water Loss Reduction, Blaketree MUD 1 of Montgomery County	WUG	Water Loss Reduction

Project	Project Type	Associated WMS
Water Loss Reduction, Bolivar Peninsula SUD	WUG	Water Loss Reduction
Water Loss Reduction, Brazoria County FWSD 1	WUG	Water Loss Reduction
Water Loss Reduction, Brazoria County MUD 2	WUG	Water Loss Reduction
Water Loss Reduction, Brazoria County MUD 21	WUG	Water Loss Reduction
Water Loss Reduction, Brazoria County MUD 22	WUG	Water Loss Reduction
Water Loss Reduction, Brazoria County MUD 31	WUG	Water Loss Reduction
Water Loss Reduction, Brookshire MWD	WUG	Water Loss Reduction
Water Loss Reduction, Buffalo	WUG	Water Loss Reduction
Water Loss Reduction, Centerville	WUG	Water Loss Reduction
Water Loss Reduction, Cleveland	WUG	Water Loss Reduction
Water Loss Reduction, Conroe Resort Utilities	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Brazoria	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Chambers	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Fort Bend	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Galveston	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Leon	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Liberty	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Madison	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Montgomery	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Polk	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, San Jacinto	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Walker	WUG	Water Loss Reduction
Water Loss Reduction, County-Other, Waller	WUG	Water Loss Reduction
Water Loss Reduction, Crosby MUD	WUG	Water Loss Reduction
Water Loss Reduction, Daisetta	WUG	Water Loss Reduction
Water Loss Reduction, Dayton	WUG	Water Loss Reduction
Water Loss Reduction, Deer Park	WUG	Water Loss Reduction
Water Loss Reduction, Fort Bend County FWSD 1	WUG	Water Loss Reduction

Project	Project Type	Associated WMS
Water Loss Reduction, Fort Bend County MUD 116	WUG	Water Loss Reduction
Water Loss Reduction, Fort Bend County MUD 25	WUG	Water Loss Reduction
Water Loss Reduction, Fort Bend County WCID 2	WUG	Water Loss Reduction
Water Loss Reduction, Freeport	WUG	Water Loss Reduction
Water Loss Reduction, Friendswood	WUG	Water Loss Reduction
Water Loss Reduction, Galena Park	WUG	Water Loss Reduction
Water Loss Reduction, Galveston	WUG	Water Loss Reduction
Water Loss Reduction, Galveston County WCID 1	WUG	Water Loss Reduction
Water Loss Reduction, Galveston County WCID 12	WUG	Water Loss Reduction
Water Loss Reduction, Galveston County WCID 8	WUG	Water Loss Reduction
Water Loss Reduction, Groveton	WUG	Water Loss Reduction
Water Loss Reduction, Hardin WSC	WUG	Water Loss Reduction
Water Loss Reduction, Harris County FWSD 1-A	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 132	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 154	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 189	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 221	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 23	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 345	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 5	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 50	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 55	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 58	WUG	Water Loss Reduction
Water Loss Reduction, Harris County MUD 6	WUG	Water Loss Reduction
Water Loss Reduction, Harris County UD 14	WUG	Water Loss Reduction
Water Loss Reduction, Harris County UD 15	WUG	Water Loss Reduction
Water Loss Reduction, Harris County WCID 1	WUG	Water Loss Reduction
Water Loss Reduction, Harris County WCID 70	WUG	Water Loss Reduction

Project	Project Type	Associated WMS
Water Loss Reduction, Harris County WCID 89	WUG	Water Loss Reduction
Water Loss Reduction, Harris County WCID-Fondren Road	WUG	Water Loss Reduction
Water Loss Reduction, Harris-Montgomery Counties MUD 386	WUG	Water Loss Reduction
Water Loss Reduction, Hillcrest Village	WUG	Water Loss Reduction
Water Loss Reduction, Hitchcock	WUG	Water Loss Reduction
Water Loss Reduction, Houston	WUG	Water Loss Reduction
Water Loss Reduction, Humble	WUG	Water Loss Reduction
Water Loss Reduction, Jacinto City	WUG	Water Loss Reduction
Water Loss Reduction, La Marque	WUG	Water Loss Reduction
Water Loss Reduction, Lake Conroe Hills MUD	WUG	Water Loss Reduction
Water Loss Reduction, Lake Jackson	WUG	Water Loss Reduction
Water Loss Reduction, Lake Livingston WSC	WUG	Water Loss Reduction
Water Loss Reduction, Liberty	WUG	Water Loss Reduction
Water Loss Reduction, Livingston	WUG	Water Loss Reduction
Water Loss Reduction, Luce Bayou PUD	WUG	Water Loss Reduction
Water Loss Reduction, Madisonville	WUG	Water Loss Reduction
Water Loss Reduction, Mercy WSC	WUG	Water Loss Reduction
Water Loss Reduction, Mont Belvieu	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery County MUD 18	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery County MUD 8	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery County MUD 83	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery County MUD 9	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery County MUD 99	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery County UD 3	WUG	Water Loss Reduction
Water Loss Reduction, Montgomery County UD 4	WUG	Water Loss Reduction
Water Loss Reduction, Nassau Bay	WUG	Water Loss Reduction
Water Loss Reduction, New Caney MUD	WUG	Water Loss Reduction

Project	Project Type	Associated WMS
Water Loss Reduction, North Channel Water Authority	WUG	Water Loss Reduction
Water Loss Reduction, North Fort Bend Water Authority	WUG	Water Loss Reduction
Water Loss Reduction, North Zulch MUD	WUG	Water Loss Reduction
Water Loss Reduction, Northeast Harris County MUD 1	WUG	Water Loss Reduction
Water Loss Reduction, Oak Ridge North	WUG	Water Loss Reduction
Water Loss Reduction, One Five O WSC	WUG	Water Loss Reduction
Water Loss Reduction, Oyster Creek	WUG	Water Loss Reduction
Water Loss Reduction, Palmer Plantation MUD 1	WUG	Water Loss Reduction
Water Loss Reduction, Palmer Plantation MUD 2	WUG	Water Loss Reduction
Water Loss Reduction, Panorama Village	WUG	Water Loss Reduction
Water Loss Reduction, Pattison WSC	WUG	Water Loss Reduction
Water Loss Reduction, Pearland	WUG	Water Loss Reduction
Water Loss Reduction, Pecan Grove MUD 1	WUG	Water Loss Reduction
Water Loss Reduction, Pinehurst Decker Prairie WSC	WUG	Water Loss Reduction
Water Loss Reduction, Plantation MUD	WUG	Water Loss Reduction
Water Loss Reduction, Quail Valley UD	WUG	Water Loss Reduction
Water Loss Reduction, Raywood WSC	WUG	Water Loss Reduction
Water Loss Reduction, Riverside SUD	WUG	Water Loss Reduction
Water Loss Reduction, Roman Forest Consolidated MUD	WUG	Water Loss Reduction
Water Loss Reduction, Rosenberg	WUG	Water Loss Reduction
Water Loss Reduction, Sequoia Improvement District	WUG	Water Loss Reduction
Water Loss Reduction, Shenandoah	WUG	Water Loss Reduction
Water Loss Reduction, Shoreacres	WUG	Water Loss Reduction
Water Loss Reduction, Soda WSC	WUG	Water Loss Reduction
Water Loss Reduction, South Cleveland WSC	WUG	Water Loss Reduction
Water Loss Reduction, Southern Water	WUG	Water Loss Reduction
Water Loss Reduction, Southside Place	WUG	Water Loss Reduction
Water Loss Reduction, Splendora	WUG	Water Loss Reduction

Project	Project Type	Associated WMS
Water Loss Reduction, Spring Valley	WUG	Water Loss Reduction
Water Loss Reduction, Suburban Utility	WUG	Water Loss Reduction
Water Loss Reduction, Sunbelt FWSD	WUG	Water Loss Reduction
Water Loss Reduction, Tarkington SUD	WUG	Water Loss Reduction
Water Loss Reduction, Texas City	WUG	Water Loss Reduction
Water Loss Reduction, The Commons Water Supply	WUG	Water Loss Reduction
Water Loss Reduction, The Woodlands	WUG	Water Loss Reduction
Water Loss Reduction, Tomball	WUG	Water Loss Reduction
Water Loss Reduction, Trinity Bay Conservation District	WUG	Water Loss Reduction
Water Loss Reduction, Webster	WUG	Water Loss Reduction
Water Loss Reduction, West Columbia	WUG	Water Loss Reduction
Water Loss Reduction, West End WSC	WUG	Water Loss Reduction
Water Loss Reduction, West University Place	WUG	Water Loss Reduction
Water Loss Reduction, Westwood Shores MUD	WUG	Water Loss Reduction
Water Loss Reduction, Willis	WUG	Water Loss Reduction
Water Loss Reduction, Willow Creek Farms MUD	WUG	Water Loss Reduction
Westwood Shores Reuse Infrastructure	WMS	Westwood Shores MUD Reuse
WHCRWA 2025 Distribution Expansion	WMS	WHCRWA GRP
WHCRWA 2035 Distribution Expansion	WMS	WHCRWA GRP
WHCRWA/NFBWA Transmission Line	WMS	NFBWA GRP
		WHCRWA GRP
WUG Infrastructure Expansion - Angleton	WUG	BWSC Reservoir and Pump Station Expansion
WUG Infrastructure Expansion - Brazoria County MUD 25	WUG	Manvel Supply Expansion
WUG Infrastructure Expansion - Brazoria County MUD 29	WUG	Manvel Supply Expansion
WUG Infrastructure Expansion - Brazoria County MUD 39	WUG	Manvel Supply Expansion
WUG Infrastructure Expansion - CHCRWA Districts	WUG	CHCRWA GRP
WUG Infrastructure Expansion - Conroe - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Conroe - Phase 2	WUG	Montgomery County Supply Expansion

Project	Project Type	Associated WMS
WUG Infrastructure Expansion - Conroe - Phase 3	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Conroe Resort Utilities	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - County-Other, Brazoria (B) - Phase 1	WUG	BWSC Reservoir and Pump Station Expansion
WUG Infrastructure Expansion - County-Other, Brazoria (B) - Phase 2	WUG	BWSC Reservoir and Pump Station Expansion
WUG Infrastructure Expansion - County-Other, Brazoria (BC)	WUG	BWSC Reservoir and Pump Station Expansion
WUG Infrastructure Expansion - County-Other, Brazoria (SJB)	WUG	BWSC Reservoir and Pump Station Expansion
		Manvel Supply Expansion
WUG Infrastructure Expansion - County-Other, Fort Bend (SJ)	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 1	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 2	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 3	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 1	WUG	Richmond GRP
WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 2	WUG	Richmond GRP
WUG Infrastructure Expansion - County-Other, Galveston (SJB)	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - County-Other, Harris (COH GRP Participants)	WUG	City of Houston GRP
WUG Infrastructure Expansion - County-Other, Harris (SJ)	WUG	New / Expanded Contract with City of Houston
		New / Expanded Contract with Regional Providers
WUG Infrastructure Expansion - County-Other, Harris (SJB)	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - County-Other, Harris (TSJ)	WUG	New / Expanded Contract with City of Houston
		New / Expanded Contract with Regional Providers
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 3	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - El Dorado UD	WUG	City of Houston GRP
WUG Infrastructure Expansion - Forest Hills MUD	WUG	City of Houston GRP
WUG Infrastructure Expansion - Fort Bend County MUD 115	WUG	Missouri City GRP
WUG Infrastructure Expansion - Fort Bend County MUD 121	WUG	Richmond GRP
WUG Infrastructure Expansion - Fort Bend County MUD 128	WUG	Sugar Land IWRP

Project	Project Type	Associated WMS
WUG Infrastructure Expansion - Fort Bend County MUD 129	WUG	Missouri City GRP
WUG Infrastructure Expansion - Fort Bend County MUD 149	WUG	Missouri City GRP
WUG Infrastructure Expansion - Fort Bend County MUD 152	WUG	Rosenberg GRP
WUG Infrastructure Expansion - Fort Bend County MUD 155	WUG	Rosenberg GRP
WUG Infrastructure Expansion - Fort Bend County MUD 158	WUG	Rosenberg GRP
WUG Infrastructure Expansion - Fort Bend County MUD 48	WUG	Missouri City GRP
WUG Infrastructure Expansion - Fort Bend County MUD 49	WUG	Missouri City GRP
WUG Infrastructure Expansion - Fulshear	WUG	NFBWA GRP
WUG Infrastructure Expansion - Harris County FWSD 27	WUG	BAWA East SWTP Expansion
WUG Infrastructure Expansion - Harris County MUD 106	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Harris County MUD 11	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County MUD 119	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County MUD 132	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Harris County MUD 151	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Harris County MUD 152	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Harris County MUD 154	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County MUD 189	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County MUD 221	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County MUD 261	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Harris County MUD 278	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County MUD 290	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Harris County MUD 36	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County MUD 46	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Harris County MUD 6	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Harris County UD 14	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County UD 15	WUG	City of Houston GRP
WUG Infrastructure Expansion - Harris County WCID 1	WUG	BAWA East SWTP Expansion
WUG Infrastructure Expansion - Harris County WCID 133	WUG	City of Houston GRP

Project	Project Type	Associated WMS
WUG Infrastructure Expansion - Harris County WCID 74	WUG	City of Houston GRP
WUG Infrastructure Expansion - HMW SUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Kings Manor MUD	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Lake Bonanza WSC	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Lake Jackson	WUG	BWSC Reservoir and Pump Station Expansion
WUG Infrastructure Expansion - Manufacturing, Fort Bend (B)	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - Manufacturing, Fort Bend (SJ)	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - Memorial Villages Water Authority	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Mining, Brazoria (SJB)	WUG	New / Expanded Contract with GCWA
WUG Infrastructure Expansion - Mining, Harris (SJ)	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Mining, Harris (SJB)	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Mont Belvieu	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Montgomery County MUD 112	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Montgomery County MUD 119	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Montgomery County MUD 19	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Montgomery County MUD 88	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Montgomery County MUD 89	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Montgomery County MUD 95	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Montgomery County MUD 98	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Mount Houston Road MUD	WUG	City of Houston GRP
WUG Infrastructure Expansion - MSEC Enterprises - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - MSEC Enterprises - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - NFBWA Districts	WUG	NFBWA GRP
WUG Infrastructure Expansion - NHCRWA Districts 2025	WUG	NHCRWA GRP
WUG Infrastructure Expansion - NHCRWA Districts 2035	WUG	NHCRWA GRP
WUG Infrastructure Expansion - North Belt UD	WUG	City of Houston GRP
WUG Infrastructure Expansion - North Channel Water Authority	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - North Forest MUD	WUG	City of Houston GRP

Project	Project Type	Associated WMS
WUG Infrastructure Expansion - North Green MUD	WUG	City of Houston GRP
WUG Infrastructure Expansion - Northeast Harris County MUD 1	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Oak Ridge North	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Pine Village PUD	WUG	City of Houston GRP
WUG Infrastructure Expansion - Rayford Road MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Richwood	WUG	BWSC Reservoir and Pump Station Expansion
WUG Infrastructure Expansion - Rolling Fork PUD	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Sedona Lakes MUD 1	WUG	Manvel Supply Expansion
WUG Infrastructure Expansion - Southern Montgomery County MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Spring Creek UD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Steam-Electric Power, Harris (SJ)	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Steam-Electric Power, Harris (SJB)	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Sunbelt FWSD	WUG	City of Houston GRP
WUG Infrastructure Expansion - T & W Water Service	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - The Woodlands - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - The Woodlands - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - Tomball	WUG	NHCRWA GRP
WUG Infrastructure Expansion - Trail of the Lakes MUD	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Westfield Garden Park	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Westwood North WSC	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion - WHCRWA Districts	WUG	WHCRWA GRP
WUG Infrastructure Expansion - Windfern Forest Utility District	WUG	New / Expanded Contract with City of Houston
WUG Infrastructure Expansion - Woodcreek MUD	WUG	City of Houston GRP
WUG Infrastructure Expansion - Woodland Oaks Utility	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 1	WUG	Brackish Groundwater Supplies
WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 2	WUG	Brackish Groundwater Supplies
WUG Infrastructure Expansion (Brackish Groundwater) - Far Hills UD	WUG	Brackish Groundwater Supplies
WUG Infrastructure Expansion (Brackish Groundwater) - Montgomery	WUG	Brackish Groundwater Supplies

Project	Project Type	Associated WMS
WUG Infrastructure Expansion (Brackish Groundwater) - Panorama Village	WUG	Brackish Groundwater Supplies
WUG Infrastructure Expansion (Brackish Groundwater) - Stanley Lake MUD	WUG	Brackish Groundwater Supplies
WUG Infrastructure Expansion (Groundwater) - Baker Road MUD	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Blaketree MUD 1 of Montgomery County	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Blue Bell Manor Utility	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Blue Ridge West MUD	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - C C Water Works - Phase 1	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - C C Water Works - Phase 2	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - Chateau Woods MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Corinthian Point MUD 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (T)	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 1	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 2	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 3	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 1	WUG	Expanded Use of Groundwater, Fort Bend County
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 2	WUG	Expanded Use of Groundwater, Fort Bend County
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 3	WUG	Expanded Use of Groundwater, Fort Bend County
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (SJB) - Phase 1	WUG	NFBWA GRP
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (SJB) - Phase 2	WUG	NFBWA GRP
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (Sugar Land IWRP)	WUG	Sugar Land IWRP
WUG Infrastructure Expansion (Groundwater) - County-Other, Harris (COH GRP Participants)	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - County-Other, Madison (B)	WUG	Expanded Use of Groundwater, Madison County
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 3	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - County-Other, Walker (T)	WUG	Expanded Use of Groundwater, Walker County
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 1	WUG	Expanded Use of Groundwater, Waller County
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 2	WUG	Expanded Use of Groundwater, Waller County

Project	Project Type	Associated WMS
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 3	WUG	Expanded Use of Groundwater, Waller County
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 1	WUG	Expanded Use of Groundwater, Waller County
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 2	WUG	Expanded Use of Groundwater, Waller County
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 3	WUG	Expanded Use of Groundwater, Waller County
WUG Infrastructure Expansion (Groundwater) - Cut and Shoot - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Cut and Shoot - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Dodge Oakhurst WSC - Phase 1	WUG	Expanded Use of Groundwater, Walker County
WUG Infrastructure Expansion (Groundwater) - Dodge Oakhurst WSC - Phase 2	WUG	Expanded Use of Groundwater, Walker County
WUG Infrastructure Expansion (Groundwater) - Domestic Water	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Douglas Utility	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - East Montgomery County MUD 6	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - East Plantation UD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - First Colony MUD 9	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 1	WUG	NFBWA GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 2	WUG	Rosenberg GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 116	WUG	Richmond GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 131	WUG	NFBWA GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 162	WUG	Rosenberg GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 23	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 24	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 26	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 42	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 5	WUG	Rosenberg GRP
WUG Infrastructure Expansion (Groundwater) - Fort Bend County WCID 3	WUG	Richmond GRP
WUG Infrastructure Expansion (Groundwater) - Grand Oaks MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Green Trails MUD	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County FWSD 58	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 153	WUG	City of Houston GRP

Project	Project Type	Associated WMS
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 216	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 342	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 345	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 361	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 494	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 58	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Harris County WCID 70	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - High Prairie WSC	WUG	Expanded Use of Groundwater, Leon County
WUG Infrastructure Expansion (Groundwater) - HMW SUD	WUG	NHCRWA GRP
WUG Infrastructure Expansion (Groundwater) - Huntsville	WUG	Expanded Use of Groundwater, Walker County
WUG Infrastructure Expansion (Groundwater) - Irrigation, Leon (T)	WUG	Expanded Use of Groundwater, Leon County
WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty (N)	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty (SJ)	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Irrigation, Montgomery (SJ) - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Irrigation, Montgomery (SJ) - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Katy	WUG	WHCRWA GRP
WUG Infrastructure Expansion (Groundwater) - Keenan WSC	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Kings Manor MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Lake Conroe Hills MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Lazy River Improvement District	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Livestock, Leon (B)	WUG	Expanded Use of Groundwater, Leon County
WUG Infrastructure Expansion (Groundwater) - Livestock, Leon (T)	WUG	Expanded Use of Groundwater, Leon County
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (NT)	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (SJ)	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (T)	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (TSJ)	WUG	Expanded Use of Groundwater, Liberty County

Project	Project Type	Associated WMS
WUG Infrastructure Expansion (Groundwater) - Livestock, Montgomery (SJ)	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Longhorn Town UD	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Luce Bayou PUD	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Leon (T)	WUG	Expanded Use of Groundwater, Leon County
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Montgomery - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Montgomery - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Mason Creek UD	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Meadowcreek MUD	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Mining, Austin (B)	WUG	Expanded Use of Groundwater, Austin County
WUG Infrastructure Expansion (Groundwater) - Mining, Liberty (SJ)	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Mining, Liberty (T)	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Mining, Montgomery	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Mining, Polk (T)	WUG	Expanded Use of Groundwater, Polk County
WUG Infrastructure Expansion (Groundwater) - Mining, San Jacinto (T)	WUG	Expanded Use of Groundwater, San Jacinto County
WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 1	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 2	WUG	Expanded Use of Groundwater, Chambers County
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 105	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 115	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 126	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 127	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 137	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 139	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 15	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 18	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 56	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 83	WUG	Montgomery County Supply Expansion

Project	Project Type	Associated WMS
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 94	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 3	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 4	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - New Caney MUD - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - New Caney MUD - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Nitsch and Son Utility	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Northwest Harris County MUD 16	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Palmer Plantation MUD 1	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Patton Village	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Pinehurst Decker Prairie WSC	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Pinewood Community	WUG	NHCRWA GRP
WUG Infrastructure Expansion (Groundwater) - Plantation MUD	WUG	Sugar Land IWRP
WUG Infrastructure Expansion (Groundwater) - Point Aquarius MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Porter SUD - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Porter SUD - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Quadvest (Rosenberg GRP)	WUG	Rosenberg GRP
WUG Infrastructure Expansion (Groundwater) - Quadvest, Fort Bend (B)	WUG	NFBWA GRP
WUG Infrastructure Expansion (Groundwater) - Quadvest, Harris (SJ)	WUG	NHCRWA GRP
WUG Infrastructure Expansion (Groundwater) - Quadvest, Liberty (SJ) - Phase 1	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Quadvest, Liberty (SJ) - Phase 2	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Quadvest, Montgomery (SJ) - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Quadvest, Montgomery (SJ) - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Ranch Crest Water	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - River Plantation MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Roman Forest Consolidated MUD	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (NFBWA GRP Participant)	WUG	NFBWA GRP
WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (Sugar Land IWRP)	WUG	Sugar Land IWRP

Project	Project Type	Associated WMS
WUG Infrastructure Expansion (Groundwater) - Sequoia Improvement District	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Shenandoah - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Shenandoah - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - South Cleveland WSC	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Southern Water	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Splendora - Phase 1	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Splendora - Phase 2	WUG	Expanded Use of Groundwater, Liberty County
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Austin (B)	WUG	Expanded Use of Groundwater, Austin County
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Montgomery - Phase 1	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Montgomery - Phase 2	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Suburban Utility	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - The Commons Water Supply	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - Thunderbird UD	WUG	Missouri City GRP
WUG Infrastructure Expansion (Groundwater) - Walker County SUD	WUG	Expanded Use of Groundwater, Walker County
WUG Infrastructure Expansion (Groundwater) - Waller	WUG	Expanded Use of Groundwater, Waller County
WUG Infrastructure Expansion (Groundwater) - West Harris County MUD 6	WUG	City of Houston GRP
WUG Infrastructure Expansion (Groundwater) - White Oak WSC	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Wood Branch Village	WUG	Montgomery County Supply Expansion
WUG Infrastructure Expansion (Groundwater) - Wood Trace MUD 1	WUG	Montgomery County Supply Expansion

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Table 5-A5 – Second-Tier Identified Water Need[1]

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Alvin	Brazoria	San Jacinto-Brazos	Municipal	30	29	143	153	118	84
Ames Minglewood WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0
Anahuac	Chambers	Neches-Trinity	Municipal	0	0	0	0	0	0
Anahuac	Chambers	Trinity	Municipal	0	0	0	0	0	0
Angleton	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Austin County WSC	Austin	Brazos	Municipal	0	0	0	0	0	0
Austin County WSC	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
Bacliff MUD	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Baker Road MUD	Harris	San Jacinto	Municipal	0	46	45	44	59	65
Baybrook MUD 1	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Baytown	Chambers	Trinity	Municipal	0	0	0	0	0	0
Baytown	Chambers	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Baytown	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Baytown	Harris	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Bayview MUD	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Bellaire	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Bellville	Austin	Brazos	Municipal	0	0	0	0	0	0
Blaketree MUD 1 of Montgomery County	Montgomery	San Jacinto	Municipal	2	11	35	45	50	54
Blue Bell Manor Utility	Harris	San Jacinto	Municipal	0	65	73	75	68	64
Blue Ridge West MUD	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Bolivar Peninsula SUD	Galveston	Neches-Trinity	Municipal	0	0	0	0	0	0
Brazoria	Brazoria	Brazos	Municipal	0	0	0	0	0	0
Brazoria	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
Brazoria County FWSD 1	Brazoria	Brazos	Municipal	33	36	35	34	34	31

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Brazoria County FWSD 1	Brazoria	Brazos-Colorado	Municipal	7	8	8	8	9	8
Brazoria County MUD 2	Brazoria	San Jacinto-Brazos	Municipal	226	351	371	395	392	380
Brazoria County MUD 21	Brazoria	San Jacinto-Brazos	Municipal	132	175	179	190	220	230
Brazoria County MUD 22	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 25	Brazoria	San Jacinto-Brazos	Municipal	19	29	32	35	35	32
Brazoria County MUD 29	Brazoria	San Jacinto-Brazos	Municipal	104	113	116	117	122	119
Brazoria County MUD 3	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 31	Brazoria	San Jacinto-Brazos	Municipal	28	29	18	5	0	0
Brazoria County MUD 39	Brazoria	San Jacinto-Brazos	Municipal	291	362	365	415	445	454
Brazoria County MUD 55	Brazoria	San Jacinto-Brazos	Municipal	22	29	30	31	30	27
Brazoria County MUD 6	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brookshire MWD	Waller	Brazos	Municipal	0	0	0	0	0	0
Buffalo	Leon	Trinity	Municipal	0	0	0	0	0	0
Bunker Hill Village	Harris	San Jacinto	Municipal	0	0	0	0	0	0
C C Water Works	Chambers	Trinity	Municipal	69	169	294	414	542	686
C C Water Works	Chambers	Trinity-San Jacinto	Municipal	10	24	42	59	78	98
Cape Royale UD	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Centerville	Leon	Trinity	Municipal	0	0	0	0	0	0
Central Harris County Regional Water Authority	Harris	San Jacinto	Municipal	649	1,586	1,591	1,562	1,608	1,563
Chambers County MUD 1	Chambers	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Chateau Woods MUD	Montgomery	San Jacinto	Municipal	0	64	111	142	161	177
Chimney Hill MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Clear Brook City MUD	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Clear Lake City Water Authority	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Cleveland	Liberty	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Clute	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Concord-Robbins WSC	Leon	Brazos	Municipal	0	0	0	0	0	0
Concord-Robbins WSC	Leon	Trinity	Municipal	0	0	0	0	0	0
Conroe	Montgomery	San Jacinto	Municipal	2,216	2,917	3,693	4,874	6,282	7,400
Conroe Resort Utilities	Montgomery	San Jacinto	Municipal	0	13	27	37	47	54
Corinthian Point MUD 2	Montgomery	San Jacinto	Municipal	0	3	17	26	33	40
Country Terrace Water	Harris	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Austin	Austin	Brazos	Municipal	0	0	0	0	0	0
County-Other, Austin	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
County-Other, Austin	Austin	Colorado	Municipal	0	0	0	0	0	0
County-Other, Brazoria	Brazoria	Brazos	Municipal	333	336	354	354	358	343
County-Other, Brazoria	Brazoria	Brazos-Colorado	Municipal	33	24	117	208	314	328
County-Other, Brazoria	Brazoria	San Jacinto-Brazos	Municipal	3,204	3,823	4,501	4,674	4,870	4,958
County-Other, Chambers	Chambers	Neches-Trinity	Municipal	0	0	0	0	0	0
County-Other, Chambers	Chambers	Trinity	Municipal	0	0	0	0	248	876
County-Other, Chambers	Chambers	Trinity-San Jacinto	Municipal	0	263	988	1,644	2,324	3,053
County-Other, Fort Bend	Fort Bend	Brazos	Municipal	1,905	3,021	2,622	2,582	1,948	778
County-Other, Fort Bend	Fort Bend	Brazos-Colorado	Municipal	0	2,183	4,945	7,008	9,161	10,837
County-Other, Fort Bend	Fort Bend	San Jacinto	Municipal	8	26	46	56	61	68
County-Other, Fort Bend	Fort Bend	San Jacinto-Brazos	Municipal	133	1,027	2,202	3,175	4,195	4,977
County-Other, Galveston	Galveston	San Jacinto-Brazos	Municipal	2,608	2,671	2,709	2,720	2,703	2,685
County-Other, Harris	Harris	San Jacinto	Municipal	1,903	8,745	10,592	11,656	12,206	12,196
County-Other, Harris	Harris	San Jacinto-Brazos	Municipal	442	531	591	624	639	640
County-Other, Harris	Harris	Trinity-San Jacinto	Municipal	2,214	2,560	2,859	2,978	3,034	3,063
County-Other, Leon	Leon	Brazos	Municipal	0	0	0	0	0	0
County-Other, Leon	Leon	Trinity	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
County-Other, Liberty	Liberty	Neches	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	Neches-Trinity	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	Trinity	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Madison	Madison	Brazos	Municipal	11	10	8	7	5	4
County-Other, Madison	Madison	Trinity	Municipal	0	0	0	0	0	0
County-Other, Montgomery	Montgomery	San Jacinto	Municipal	0	2,758	7,070	10,408	12,686	14,617
County-Other, Polk	Polk	Trinity	Municipal	0	0	0	0	0	0
County-Other, Polk	*Polk*	*Neches*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
County-Other, San Jacinto	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, San Jacinto	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
County-Other, Trinity	Trinity	Trinity	Municipal	0	0	0	0	0	0
County-Other, Walker	Walker	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Walker	Walker	Trinity	Municipal	137	55	0	0	0	0
County-Other, Waller	Waller	Brazos	Municipal	124	397	949	1,618	2,309	3,004
County-Other, Waller	Waller	San Jacinto	Municipal	261	521	1,049	1,692	2,353	3,018
Crosby MUD	Harris	San Jacinto	Municipal	0	1	0	2	54	45
Cut & Shoot	Montgomery	San Jacinto	Municipal	436	569	792	1,020	1,197	1,219
Daisetta	Liberty	Neches	Municipal	0	0	0	0	0	0
Danbury	Brazoria	San Jacinto-Brazos	Municipal	6	9	10	10	9	7
Dayton	Liberty	Trinity	Municipal	0	0	0	0	0	0
Dayton	Liberty	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Deer Park	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Deer Park	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Devers	Liberty	Neches	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Devers	Liberty	Trinity	Municipal	0	0	0	0	0	0
Dobbin Plantersville WSC	*Grimes*	*Brazos*	*Municipal*	*0*	*0*	*4*	*9*	*14*	*20*
Dobbin Plantersville WSC	*Grimes*	*San Jacinto*	*Municipal*	*63*	*90*	*114*	*134*	*158*	*184*
Dobbin Plantersville WSC	Montgomery	San Jacinto	Municipal	0	140	338	519	726	905
Dodge Oakhurst WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
Dodge Oakhurst WSC	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Dodge Oakhurst WSC	Walker	San Jacinto	Municipal	0	0	6	35	78	136
Dodge Oakhurst WSC	Walker	Trinity	Municipal	0	0	9	47	104	179
Domestic Water	Montgomery	San Jacinto	Municipal	0	16	29	41	50	54
Douglas Utility	Harris	San Jacinto	Municipal	0	50	54	57	52	52
East Montgomery County MUD 6	Montgomery	San Jacinto	Municipal	1	43	85	129	164	172
East Plantation UD	Montgomery	San Jacinto	Municipal	1	35	87	141	146	159
El Dorado UD	Harris	San Jacinto	Municipal	0	76	102	107	111	111
Far Hills UD	Montgomery	San Jacinto	Municipal	0	21	55	84	106	125
First Colony MUD 9	Fort Bend	Brazos	Municipal	0	0	0	16	34	46
First Colony MUD 9	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	1	19	32
Flo Community WSC	*Freestone*	*Trinity*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Flo Community WSC	Leon	Trinity	Municipal	0	0	0	0	0	0
Forest Hills MUD	Harris	San Jacinto	Municipal	0	4	3	1	83	0
Fort Bend County FWSD 1	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County FWSD 1	Fort Bend	San Jacinto-Brazos	Municipal	0	221	291	297	313	326
Fort Bend County FWSD 2	Fort Bend	Brazos	Municipal	0	0	0	0	1	2
Fort Bend County FWSD 2	Fort Bend	San Jacinto	Municipal	52	51	53	53	55	57
Fort Bend County FWSD 2	Fort Bend	San Jacinto-Brazos	Municipal	261	262	280	293	307	316
Fort Bend County MUD 115	Fort Bend	Brazos	Municipal	0	0	21	28	44	53
Fort Bend County MUD 116	Fort Bend	Brazos	Municipal	0	32	18	25	30	37

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Fort Bend County MUD 121	Fort Bend	Brazos	Municipal	260	252	250	248	246	242
Fort Bend County MUD 128	Fort Bend	Brazos	Municipal	102	99	107	92	121	157
Fort Bend County MUD 129	Fort Bend	Brazos	Municipal	0	0	0	0	0	26
Fort Bend County MUD 131	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	14	19
Fort Bend County MUD 140	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 149	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 152	Fort Bend	Brazos	Municipal	0	0	0	0	3	0
Fort Bend County MUD 155	Fort Bend	Brazos	Municipal	0	51	141	208	267	295
Fort Bend County MUD 158	Fort Bend	Brazos	Municipal	0	15	56	87	114	127
Fort Bend County MUD 162	Fort Bend	Brazos	Municipal	0	0	0	8	51	63
Fort Bend County MUD 23	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 24	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 25	Fort Bend	Brazos	Municipal	207	186	182	174	166	164
Fort Bend County MUD 25	Fort Bend	San Jacinto-Brazos	Municipal	553	529	505	468	444	430
Fort Bend County MUD 26	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Fort Bend County MUD 26	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	16	21	25
Fort Bend County MUD 42	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	6	15	24
Fort Bend County MUD 46	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 46	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 47	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 48	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 49	Fort Bend	Brazos	Municipal	12	13	13	13	13	13
Fort Bend County MUD 49	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 5	Fort Bend	Brazos	Municipal	0	6	29	37	37	32
Fort Bend County MUD 81	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County WCID 2	Fort Bend	San Jacinto	Municipal	1,606	1,595	1,623	1,637	1,707	1,784

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Fort Bend County WCID 2	Fort Bend	San Jacinto-Brazos	Municipal	1,018	1,186	1,245	1,267	1,326	1,396
Fort Bend County WCID 2	Harris	San Jacinto	Municipal	78	138	138	138	141	145
Fort Bend County WCID 3	Fort Bend	Brazos	Municipal	0	0	0	0	7	17
Freeport	Brazoria	Brazos	Municipal	0	0	0	0	0	0
Freeport	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
Freeport	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Friendswood	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Friendswood	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fulshear	Fort Bend	Brazos	Municipal	0	252	239	250	257	252
Fulshear	Fort Bend	San Jacinto	Municipal	0	9	8	10	11	12
Fulshear	Fort Bend	San Jacinto-Brazos	Municipal	0	924	886	887	936	919
G & W WSC	*Grimes*	*Brazos*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
G & W WSC	*Grimes*	*San Jacinto*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
G & W WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
G & W WSC	Waller	Brazos	Municipal	0	0	0	0	0	0
G & W WSC	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Galena Park	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Galveston	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County FWSD 6	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County MUD 12	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County WCID 1	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County WCID 12	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County WCID 8	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Glendale WSC	Trinity	Trinity	Municipal	0	0	0	0	0	0
Grand Oaks MUD	Montgomery	San Jacinto	Municipal	0	27	50	59	65	69
Green Trails MUD	Harris	San Jacinto	Municipal	0	108	107	106	117	123

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Greenwood UD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Groveton	Trinity	Trinity	Municipal	0	0	0	0	0	0
Groveton	*Trinity*	*Neches*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Hardin WSC	Liberty	Neches	Municipal	0	0	0	0	0	0
Hardin WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0
Harris County FWSD 1-A	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County FWSD 27	Harris	San Jacinto	Municipal	27	69	86	93	144	122
Harris County FWSD 58	Harris	San Jacinto	Municipal	0	52	50	49	47	45
Harris County MUD 106	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 11	Harris	San Jacinto	Municipal	0	9	8	5	2	0
Harris County MUD 119	Harris	San Jacinto	Municipal	0	140	137	135	127	120
Harris County MUD 122	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 132	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 148	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 151	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 152	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 153	Harris	San Jacinto	Municipal	0	245	267	276	314	320
Harris County MUD 154	Harris	San Jacinto	Municipal	0	170	173	159	176	166
Harris County MUD 180	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 189	Harris	San Jacinto	Municipal	0	106	111	114	128	148
Harris County MUD 216	Harris	San Jacinto	Municipal	0	94	92	89	92	93
Harris County MUD 221	Harris	San Jacinto	Municipal	0	75	79	79	86	84
Harris County MUD 23	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 261	Harris	San Jacinto	Municipal	162	224	230	231	229	230
Harris County MUD 278	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 290	Harris	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County MUD 321	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 342	Harris	San Jacinto	Municipal	0	126	245	298	297	307
Harris County MUD 344	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 345	Harris	San Jacinto	Municipal	0	134	122	108	122	109
Harris County MUD 36	Harris	San Jacinto	Municipal	0	117	290	362	370	397
Harris County MUD 361	Harris	San Jacinto	Municipal	0	88	111	118	129	127
Harris County MUD 372	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 400	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 412	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 420	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 46	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 49	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 494	Harris	San Jacinto	Municipal	0	59	76	81	88	86
Harris County MUD 5	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 50	Harris	San Jacinto	Municipal	331	321	325	318	323	318
Harris County MUD 504	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 55	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County MUD 58	Harris	San Jacinto	Municipal	0	40	37	36	36	35
Harris County MUD 6	Harris	San Jacinto	Municipal	0	36	35	32	28	22
Harris County MUD 8	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 96	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County UD 14	Harris	San Jacinto	Municipal	0	39	40	40	40	42
Harris County UD 15	Harris	San Jacinto	Municipal	0	74	66	61	69	73
Harris County WCID 1	Harris	San Jacinto	Municipal	84	48	63	52	88	68
Harris County WCID 133	Harris	San Jacinto	Municipal	0	130	129	126	120	113
Harris County WCID 156	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County WCID 161	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County WCID 50	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County WCID 70	Harris	San Jacinto	Municipal	0	30	29	28	27	25
Harris County WCID 74	Harris	San Jacinto	Municipal	0	112	126	124	115	110
Harris County WCID 89	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County WCID 96	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County WCID-Fondren Road	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris-Montgomery Counties MUD 386	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Hempstead	Waller	Brazos	Municipal	0	0	0	0	0	0
High Prairie WSC	Leon	Brazos	Municipal	8	9	12	14	16	19
High Prairie WSC	Madison	Brazos	Municipal	20	17	16	15	15	15
High Prairie WSC	Madison	Trinity	Municipal	37	8	0	0	0	0
Hillcrest Village	Brazoria	San Jacinto-Brazos	Municipal	3	3	1	0	0	0
Hilltop Lakes WSC	Leon	Brazos	Municipal	0	0	0	0	0	0
Hilshire Village	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Hitchcock	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
HMW SUD	Harris	San Jacinto	Municipal	0	44	39	34	36	34
HMW SUD	Montgomery	San Jacinto	Municipal	0	149	280	369	432	468
Houston	Fort Bend	San Jacinto	Municipal	441	219	116	0	0	0
Houston	Fort Bend	San Jacinto-Brazos	Municipal	31	20	14	0	0	0
Houston	Harris	San Jacinto	Municipal	37,487	67,248	66,852	60,828	51,917	43,970
Houston	Harris	San Jacinto-Brazos	Municipal	5,975	5,589	5,528	5,230	4,803	4,426
Houston	Montgomery	San Jacinto	Municipal	260	461	641	755	835	898
Humble	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Huntsville	Walker	San Jacinto	Municipal	0	0	0	0	773	2,144
Huntsville	Walker	Trinity	Municipal	0	0	0	0	148	410

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Irrigation, Austin	Austin	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Austin	Austin	Brazos-Colorado	Irrigation	0	0	0	0	0	0
Irrigation, Brazoria	Brazoria	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Brazoria	Brazoria	Brazos-Colorado	Irrigation	0	0	0	0	0	0
Irrigation, Brazoria	Brazoria	San Jacinto-Brazos	Irrigation	31,996	32,310	32,402	32,480	32,508	32,526
Irrigation, Chambers	Chambers	Neches-Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Chambers	Chambers	Trinity	Irrigation	2,904	2,904	2,904	2,904	2,904	2,904
Irrigation, Chambers	Chambers	Trinity-San Jacinto	Irrigation	1,016	1,016	1,016	1,016	1,016	1,016
Irrigation, Fort Bend	Fort Bend	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Fort Bend	Fort Bend	Brazos-Colorado	Irrigation	0	0	0	0	0	0
Irrigation, Fort Bend	Fort Bend	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Fort Bend	Fort Bend	San Jacinto-Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Galveston	Galveston	Neches-Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Galveston	Galveston	San Jacinto-Brazos	Irrigation	5,376	5,376	5,376	5,376	5,376	5,376
Irrigation, Harris	Harris	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Harris	Harris	Trinity-San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Leon	Leon	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Leon	Leon	Trinity	Irrigation	2	2	2	2	2	2
Irrigation, Liberty	Liberty	Neches	Irrigation	4,839	4,839	4,839	4,839	4,839	4,839
Irrigation, Liberty	Liberty	Neches-Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Liberty	Liberty	San Jacinto	Irrigation	1,110	1,110	1,110	1,110	1,110	1,110
Irrigation, Liberty	Liberty	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Liberty	Liberty	Trinity-San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Madison	Madison	Brazos	Irrigation	45	45	45	45	45	45
Irrigation, Madison	Madison	Trinity	Irrigation	70	70	70	70	70	70
Irrigation, Montgomery	Montgomery	San Jacinto	Irrigation	167	943	1,485	1,820	2,019	2,200

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Irrigation, Polk	Polk	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Polk	*Polk*	*Neches*	*Irrigation*	*0*	*0*	*0*	*0*	*0*	*0*
Irrigation, San Jacinto	San Jacinto	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, San Jacinto	San Jacinto	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Trinity	Trinity	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Walker	Walker	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Walker	Walker	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Waller	Waller	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Waller	Waller	San Jacinto	Irrigation	0	0	0	0	0	0
Jacinto City	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Jamaica Beach	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Jersey Village	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Jewett	Leon	Brazos	Municipal	0	0	0	0	0	0
Jewett	Leon	Trinity	Municipal	0	0	0	0	0	0
Johnston Water Utility	Montgomery	San Jacinto	Municipal	378	986	1,367	1,619	1,816	1,970
Katy	Fort Bend	San Jacinto	Municipal	801	1,127	1,308	1,301	1,427	1,529
Katy	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Katy	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Keenan WSC	Montgomery	San Jacinto	Municipal	0	21	52	72	86	97
Kendleton	Fort Bend	Brazos-Colorado	Municipal	0	0	0	0	0	0
Kings Manor MUD	Harris	San Jacinto	Municipal	22	44	55	62	65	68
Kings Manor MUD	Montgomery	San Jacinto	Municipal	61	126	161	184	202	215
Kirkmont MUD	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
La Marque	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
La Porte	Harris	San Jacinto	Municipal	0	0	0	0	0	0
La Porte	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Lake Bonanza WSC	Montgomery	San Jacinto	Municipal	0	38	81	111	134	149
Lake Conroe Hills MUD	Montgomery	San Jacinto	Municipal	0	25	47	60	68	76
Lake Jackson	Brazoria	Brazos	Municipal	1	0	0	0	0	0
Lake Jackson	Brazoria	San Jacinto-Brazos	Municipal	6	0	0	0	0	0
Lake Livingston WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	Walker	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	*Hardin*	*Trinity*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Lake Livingston WSC	*Polk*	*Neches*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Lake MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Lake MUD	Harris	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Lazy River Improvement District	Montgomery	San Jacinto	Municipal	1	40	71	95	111	127
League City	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
League City	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Leggett WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Leggett WSC	*Polk*	*Neches*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Liberty	Liberty	Trinity	Municipal	0	0	0	0	0	0
Liberty County FWSD 1 Hull	Liberty	Neches	Municipal	0	0	0	0	0	0
Livestock, Austin	Austin	Brazos	Livestock	0	0	0	0	0	0
Livestock, Austin	Austin	Brazos-Colorado	Livestock	0	0	0	0	0	0
Livestock, Austin	Austin	Colorado	Livestock	0	0	0	0	0	0
Livestock, Brazoria	Brazoria	Brazos	Livestock	135	140	145	149	152	152
Livestock, Brazoria	Brazoria	Brazos-Colorado	Livestock	21	33	47	55	63	62
Livestock, Brazoria	Brazoria	San Jacinto-Brazos	Livestock	69	105	115	124	127	129
Livestock, Chambers	Chambers	Neches-Trinity	Livestock	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Livestock, Chambers	Chambers	Trinity	Livestock	0	0	0	0	0	0
Livestock, Chambers	Chambers	Trinity-San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	Brazos	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	Brazos-Colorado	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	San Jacinto-Brazos	Livestock	0	0	0	0	0	0
Livestock, Galveston	Galveston	Neches-Trinity	Livestock	12	12	12	12	12	12
Livestock, Galveston	Galveston	San Jacinto-Brazos	Livestock	184	184	184	184	184	184
Livestock, Harris	Harris	San Jacinto	Livestock	499	665	665	665	665	665
Livestock, Harris	Harris	San Jacinto-Brazos	Livestock	51	51	51	51	51	51
Livestock, Harris	Harris	Trinity-San Jacinto	Livestock	133	133	133	133	133	133
Livestock, Leon	Leon	Brazos	Livestock	2	2	2	2	2	2
Livestock, Leon	Leon	Trinity	Livestock	74	74	74	74	74	74
Livestock, Liberty	Liberty	Neches	Livestock	0	0	0	0	0	0
Livestock, Liberty	Liberty	Neches-Trinity	Livestock	116	116	116	116	116	116
Livestock, Liberty	Liberty	San Jacinto	Livestock	32	32	32	32	32	32
Livestock, Liberty	Liberty	Trinity	Livestock	319	319	319	319	319	319
Livestock, Liberty	Liberty	Trinity-San Jacinto	Livestock	56	56	56	56	56	56
Livestock, Madison	Madison	Brazos	Livestock	111	111	111	111	111	111
Livestock, Madison	Madison	Trinity	Livestock	860	860	860	860	860	860
Livestock, Montgomery	Montgomery	San Jacinto	Livestock	17	96	151	185	205	223
Livestock, Polk	Polk	Trinity	Livestock	0	0	0	0	0	0
Livestock, Polk	*Polk*	*Neches*	*Livestock*	*0*	*0*	*0*	*0*	*0*	*0*
Livestock, San Jacinto	San Jacinto	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, San Jacinto	San Jacinto	Trinity	Livestock	0	0	0	0	0	0
Livestock, Trinity	Trinity	Trinity	Livestock	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Livestock, Walker	Walker	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Walker	Walker	Trinity	Livestock	0	0	0	0	0	0
Livestock, Waller	Waller	Brazos	Livestock	0	0	0	0	0	0
Livestock, Waller	Waller	San Jacinto	Livestock	0	0	0	0	0	0
Livingston	Polk	Trinity	Municipal	0	0	0	0	0	0
Longhorn Town UD	Harris	San Jacinto	Municipal	0	69	68	65	66	74
Luce Bayou PUD	Harris	San Jacinto	Municipal	0	65	63	62	59	58
Madisonville	Madison	Trinity	Municipal	131	0	0	0	0	0
Magnolia	Montgomery	San Jacinto	Municipal	4	193	393	484	544	602
Manufacturing, Austin	Austin	Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Brazoria	Brazoria	Brazos	Manufacturing	0	2,118	8,793	15,633	22,649	29,826
Manufacturing, Brazoria	Brazoria	Brazos-Colorado	Manufacturing	22,866	23,927	25,017	26,102	27,209	28,293
Manufacturing, Brazoria	Brazoria	San Jacinto-Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Chambers	Chambers	Neches-Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, Chambers	Chambers	Trinity	Manufacturing	5,334	5,645	5,963	6,288	6,621	6,962
Manufacturing, Chambers	Chambers	Trinity-San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Fort Bend	Fort Bend	Brazos	Manufacturing	317	332	348	363	379	395
Manufacturing, Fort Bend	Fort Bend	San Jacinto	Manufacturing	1,172	1,196	1,220	1,243	1,269	1,293
Manufacturing, Fort Bend	Fort Bend	San Jacinto-Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Galveston	Galveston	San Jacinto-Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Harris	Harris	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Harris	Harris	San Jacinto-Brazos	Manufacturing	0	0	0	629	1,720	2,838
Manufacturing, Harris	Harris	Trinity-San Jacinto	Manufacturing	26,424	31,259	36,471	38,811	41,181	43,609
Manufacturing, Leon	Leon	Trinity	Manufacturing	0	21	47	73	101	128
Manufacturing, Liberty	Liberty	Neches	Manufacturing	0	0	0	0	0	0
Manufacturing, Liberty	Liberty	Trinity	Manufacturing	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Manufacturing, Montgomery	Montgomery	San Jacinto	Manufacturing	914	1,168	1,364	1,508	1,620	1,729
Manufacturing, Polk	Polk	Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, San Jacinto	San Jacinto	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Walker	Walker	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Walker	Walker	Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, Waller	Waller	Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Waller	Waller	San Jacinto	Manufacturing	0	0	0	0	0	0
Manvel	Brazoria	San Jacinto-Brazos	Municipal	31	453	854	965	1,117	1,223
Mason Creek UD	Harris	San Jacinto	Municipal	0	235	232	228	247	263
Meadowcreek MUD	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Meadows Place	Fort Bend	San Jacinto	Municipal	0	0	0	0	12	24
Meadows Place	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Memorial Point UD	Polk	Trinity	Municipal	0	0	0	0	0	0
Memorial Villages Water Authority	Harris	San Jacinto	Municipal	2,450	2,445	2,815	2,958	2,868	2,843
Mercy WSC	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
Mercy WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
Mining, Austin	Austin	Brazos	Mining	38	46	56	67	78	91
Mining, Brazoria	Brazoria	San Jacinto-Brazos	Mining	332	396	459	526	598	675
Mining, Chambers	Chambers	Trinity-San Jacinto	Mining	0	0	0	0	0	0
Mining, Fort Bend	Fort Bend	Brazos	Mining	0	0	0	0	0	0
Mining, Harris	Harris	San Jacinto	Mining	2,701	2,729	2,755	2,781	2,807	2,833
Mining, Harris	Harris	San Jacinto-Brazos	Mining	8	8	8	8	8	8
Mining, Leon	Leon	Trinity	Mining	0	0	0	0	0	0
Mining, Liberty	Liberty	San Jacinto	Mining	0	2	3	5	6	7
Mining, Liberty	Liberty	Trinity	Mining	79	95	112	128	143	158
Mining, Madison	Madison	Brazos	Mining	443	443	443	443	443	443

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Mining, Madison	Madison	Trinity	Mining	267	267	267	267	267	267
Mining, Montgomery	Montgomery	San Jacinto	Mining	1	7	12	18	22	28
Mining, Polk	Polk	Trinity	Mining	26	27	28	29	30	30
Mining, Polk	*Polk*	*Neches*	*Mining*	*0*	*0*	*0*	*0*	*0*	*0*
Mining, San Jacinto	San Jacinto	San Jacinto	Mining	0	0	0	0	0	0
Mining, San Jacinto	San Jacinto	Trinity	Mining	25	25	25	25	25	25
Mining, Trinity	Trinity	Trinity	Mining	0	0	0	0	0	0
Mining, Walker	Walker	Trinity	Mining	0	0	0	0	0	0
Mining, Waller	Waller	Brazos	Mining	0	0	0	0	0	0
Missouri City	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Mont Belvieu	Chambers	Trinity	Municipal	639	1,290	1,351	2,097	2,898	3,784
Mont Belvieu	Chambers	Trinity-San Jacinto	Municipal	182	366	384	596	824	1,076
Montgomery	Montgomery	San Jacinto	Municipal	0	61	120	157	193	219
Montgomery County MUD 105	Montgomery	San Jacinto	Municipal	1	33	60	79	92	104
Montgomery County MUD 112	Montgomery	San Jacinto	Municipal	5	142	256	320	368	510
Montgomery County MUD 115	Montgomery	San Jacinto	Municipal	107	194	255	308	336	378
Montgomery County MUD 119	Montgomery	San Jacinto	Municipal	6	221	383	499	587	661
Montgomery County MUD 126	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 127	Montgomery	San Jacinto	Municipal	46	79	98	115	124	139
Montgomery County MUD 137	Montgomery	San Jacinto	Municipal	0	59	111	140	157	166
Montgomery County MUD 139	Montgomery	San Jacinto	Municipal	2	92	161	206	239	264
Montgomery County MUD 15	Montgomery	San Jacinto	Municipal	173	245	293	317	337	351
Montgomery County MUD 18	Montgomery	San Jacinto	Municipal	0	50	135	205	268	330
Montgomery County MUD 19	Montgomery	San Jacinto	Municipal	9	121	203	254	285	314
Montgomery County MUD 24	Montgomery	San Jacinto	Municipal	2	0	0	0	0	0
Montgomery County MUD 56	Montgomery	San Jacinto	Municipal	1	15	29	36	41	46

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Montgomery County MUD 8	Montgomery	San Jacinto	Municipal	0	20	73	105	131	161
Montgomery County MUD 83	Montgomery	San Jacinto	Municipal	0	51	93	118	135	147
Montgomery County MUD 84	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 88	Montgomery	San Jacinto	Municipal	4	99	171	215	249	281
Montgomery County MUD 89	Montgomery	San Jacinto	Municipal	5	146	257	331	386	437
Montgomery County MUD 9	Montgomery	San Jacinto	Municipal	295	525	723	858	965	1,079
Montgomery County MUD 94	Montgomery	San Jacinto	Municipal	2	127	227	292	338	381
Montgomery County MUD 95	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 98	Montgomery	San Jacinto	Municipal	0	0	1	7	14	18
Montgomery County MUD 99	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County UD 2	Montgomery	San Jacinto	Municipal	6	124	179	217	246	271
Montgomery County UD 3	Montgomery	San Jacinto	Municipal	0	0	0	27	57	82
Montgomery County UD 4	Montgomery	San Jacinto	Municipal	0	0	32	118	177	231
Montgomery County WCID 1	Montgomery	San Jacinto	Municipal	0	69	125	155	178	193
Morgans Point	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Morgans Point	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Moscow WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Mount Houston Road MUD	Harris	San Jacinto	Municipal	0	129	128	124	116	108
MSEC Enterprises	*Grimes*	*San Jacinto*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
MSEC Enterprises	Montgomery	San Jacinto	Municipal	28	705	1,483	2,068	2,413	2,850
Nassau Bay	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Needville	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Needville	Fort Bend	Brazos-Colorado	Municipal	0	0	0	0	0	0
New Caney MUD	Montgomery	San Jacinto	Municipal	0	247	512	700	855	931
New Waverly	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Newport MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Nitsch and Son Utility	Harris	San Jacinto	Municipal	0	33	32	30	29	27
Normangee	Leon	Brazos	Municipal	0	0	0	0	0	0
Normangee	Leon	Trinity	Municipal	0	0	0	0	0	0
Normangee	Madison	Trinity	Municipal	0	0	0	0	0	0
North Belt UD	Harris	San Jacinto	Municipal	0	129	221	260	264	273
North Channel Water Authority	Harris	San Jacinto	Municipal	1,955	1,229	845	437	153	0
North Forest MUD	Harris	San Jacinto	Municipal	0	30	31	30	29	32
North Fort Bend Water Authority	Fort Bend	Brazos	Municipal	3,122	2,873	2,857	2,709	2,557	2,267
North Fort Bend Water Authority	Fort Bend	San Jacinto	Municipal	6,444	12,297	13,955	14,944	16,131	16,960
North Fort Bend Water Authority	Fort Bend	San Jacinto-Brazos	Municipal	4,324	0	0	0	0	59
North Fort Bend Water Authority	Harris	San Jacinto	Municipal	1,094	1,456	1,428	1,388	1,427	1,454
North Fort Bend Water Authority	Waller	San Jacinto	Municipal	15	23	61	66	69	68
North Green MUD	Harris	San Jacinto	Municipal	0	54	67	71	79	81
North Harris County Regional Water Authority	Harris	San Jacinto	Municipal	44,569	69,207	70,935	70,426	73,206	73,194
North Harris County Regional Water Authority	Montgomery	San Jacinto	Municipal	0	1	2	2	3	4
North Zulch MUD	Madison	Brazos	Municipal	20	3	0	0	0	0
North Zulch MUD	Madison	Trinity	Municipal	30	0	0	0	0	0
Northeast Harris County MUD 1	Harris	San Jacinto	Municipal	97	87	81	75	71	68
Northwest Harris County MUD 16	Harris	San Jacinto	Municipal	0	80	79	81	94	101
Oak Hollow Utility	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Oak Ridge North	Montgomery	San Jacinto	Municipal	0	25	56	87	90	92
Onalaska WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
One Five O WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
One Five O WSC	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Oyster Creek	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
P B & S C WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
P B & S C WSC	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Palmer Plantation MUD 1	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Palmer Plantation MUD 2	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Panorama Village	Montgomery	San Jacinto	Municipal	0	0	12	28	41	52
Parkway MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Pasadena	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Pasadena	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pattison WSC	Waller	Brazos	Municipal	0	0	0	0	0	0
Patton Village	Montgomery	San Jacinto	Municipal	0	7	19	31	35	36
Pearland	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pearland	Fort Bend	San Jacinto-Brazos	Municipal	109	182	196	198	208	203
Pearland	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pecan Grove MUD 1	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Pecan Grove MUD 1	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pennington WSC	Trinity	Trinity	Municipal	0	0	0	0	0	0
Phelps SUD	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Phelps SUD	Walker	Trinity	Municipal	0	0	0	0	0	0
Pine Village PUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Pinehurst Decker Prairie WSC	Montgomery	San Jacinto	Municipal	0	19	40	58	66	72
Pinewood Community	Harris	San Jacinto	Municipal	0	14	14	15	18	16
Plantation MUD	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Point Aquarius MUD	Montgomery	San Jacinto	Municipal	0	0	29	60	80	99
Porter SUD	Montgomery	San Jacinto	Municipal	315	1,182	1,891	2,373	2,734	3,062
Prairie View	Waller	Brazos	Municipal	0	0	0	0	0	0
Prairie View	Waller	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Prairie View A&M University	Waller	Brazos	Municipal	0	0	0	0	0	0
Prairie View A&M University	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Providence WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Quadvest	Brazoria	San Jacinto-Brazos	Municipal	22	24	23	24	23	21
Quadvest	Fort Bend	Brazos	Municipal	0	144	331	485	596	648
Quadvest	Harris	San Jacinto	Municipal	0	4	9	9	8	8
Quadvest	Liberty	San Jacinto	Municipal	0	98	327	427	563	703
Quadvest	Montgomery	San Jacinto	Municipal	2	902	1,832	2,441	2,809	3,189
Quadvest	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Quadvest	Waller	Brazos	Municipal	0	0	0	0	0	0
Quadvest	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Quadvest	*Matagorda*	*Colorado-Lavaca*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Quadvest	*Jackson*	*Colorado-Lavaca*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Quail Valley UD	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Ranch Crest Water	Montgomery	San Jacinto	Municipal	1	34	60	75	85	95
Rayford Road MUD	Montgomery	San Jacinto	Municipal	0	154	294	382	453	515
Raywood WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0
Richmond	Fort Bend	Brazos	Municipal	1,190	1,252	1,318	1,309	1,347	1,399
Richwood	Brazoria	San Jacinto-Brazos	Municipal	6	3	4	0	0	0
River Plantation MUD	Montgomery	San Jacinto	Municipal	0	45	135	256	281	307
Riverside SUD	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Riverside SUD	Walker	Trinity	Municipal	0	0	0	0	0	0
Rolling Fork PUD	Harris	San Jacinto	Municipal	25	109	117	120	116	114
Roman Forest Consolidated MUD	Montgomery	San Jacinto	Municipal	0	36	79	125	151	159
Rosenberg	Fort Bend	Brazos	Municipal	1,249	1,671	2,105	2,277	2,357	2,293
Royal Valley Utilities	Fort Bend	Brazos	Municipal	0	27	50	129	143	172

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Sagemeadow UD	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
San Jacinto SUD	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
San Jacinto SUD	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
San Leon MUD	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Seabrook	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sealy	Austin	Brazos	Municipal	0	0	0	0	0	0
Sealy	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
Sedona Lakes MUD 1	Brazoria	San Jacinto-Brazos	Municipal	12	20	25	27	27	26
Sequoia Improvement District	Harris	San Jacinto	Municipal	0	16	13	10	7	4
Shenandoah	Montgomery	San Jacinto	Municipal	9	382	661	878	1,016	1,133
Shepherd	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Shoreacres	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sienna Plantation	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Sienna Plantation	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Soda WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Soda WSC	*Polk*	*Neches*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
South Cleveland WSC	Liberty	San Jacinto	Municipal	0	0	0	32	320	601
South Houston	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Southeast WSC	Leon	Brazos	Municipal	0	0	0	0	0	0
Southeast WSC	Leon	Trinity	Municipal	0	0	0	0	0	0
Southern Montgomery County MUD	Montgomery	San Jacinto	Municipal	0	52	89	109	142	155
Southern Water	Harris	San Jacinto	Municipal	0	66	82	89	78	72
Southside Place	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Southwest Harris County MUD 1	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Splendora	Liberty	San Jacinto	Municipal	19	60	105	152	184	200

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Splendora	Montgomery	San Jacinto	Municipal	112	354	690	1,049	1,307	1,240
Spring Creek UD	Montgomery	San Jacinto	Municipal	0	150	287	370	424	458
Spring Meadows MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Spring Meadows MUD	Harris	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Spring Valley	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Stanley Lake MUD	Montgomery	San Jacinto	Municipal	0	27	65	96	119	143
Steam-Electric Power, Austin	Austin	Brazos	Steam Electric Power	888	888	888	888	888	888
Steam-Electric Power, Chambers	Chambers	Trinity-San Jacinto	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Fort Bend	Fort Bend	Brazos	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Galveston	Galveston	San Jacinto-Brazos	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Harris	Harris	San Jacinto	Steam Electric Power	14,695	14,695	14,695	14,695	14,695	14,695
Steam-Electric Power, Harris	Harris	San Jacinto-Brazos	Steam Electric Power	140	140	140	140	140	140
Steam-Electric Power, Montgomery	Montgomery	San Jacinto	Steam Electric Power	315	501	631	711	758	801
Suburban Utility	Harris	San Jacinto	Municipal	0	0	105	115	105	89
Sugar Land	Fort Bend	Brazos	Municipal	1,435	1,402	1,523	1,586	1,792	1,895
Sugar Land	Fort Bend	San Jacinto	Municipal	165	160	172	184	207	218
Sugar Land	Fort Bend	San Jacinto-Brazos	Municipal	100	0	0	0	0	0
Sunbelt FWSD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Surfside Beach	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sweeny	Brazoria	Brazos-Colorado	Municipal	12	19	35	44	53	48
T & W Water Service	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
T & W Water Service	Liberty	Trinity	Municipal	0	0	0	0	0	0
T & W Water Service	Montgomery	San Jacinto	Municipal	0	223	447	600	698	729
Tarkington SUD	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
Tarkington SUD	Liberty	Trinity	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
TDCJ Darrington Unit	Brazoria	San Jacinto-Brazos	Municipal	41	68	75	80	82	80
TDCJ Ferguson Unit	Madison	Trinity	Municipal	168	29	0	0	0	0
TDCJ Jester Units	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
TDCJ Jester Units	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
TDCJ Ramsey Area	Brazoria	San Jacinto-Brazos	Municipal	62	113	128	139	140	135
Tempe WSC 1	Polk	Trinity	Municipal	0	0	0	0	0	0
Texas City	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
The Commons Water Supply	Harris	San Jacinto	Municipal	0	69	59	51	44	37
The Woodlands	Montgomery	San Jacinto	Municipal	23	1,145	2,422	3,095	4,197	5,649
Thunderbird UD	Fort Bend	Brazos	Municipal	0	10	9	11	15	15
Thunderbird UD	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	9
Tomball	Harris	San Jacinto	Municipal	0	731	1,098	1,214	1,508	1,577
Trail of the Lakes MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Trinity	Trinity	Trinity	Municipal	0	0	0	0	0	0
Trinity Bay Conservation District	Chambers	Neches-Trinity	Municipal	0	0	0	0	0	0
Trinity Bay Conservation District	Chambers	Trinity	Municipal	0	0	0	0	0	0
Trinity Bay Conservation District	*Jefferson*	*Neches-Trinity*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
Trinity Rural WSC	Trinity	Trinity	Municipal	0	0	0	0	0	0
Trinity Rural WSC	Walker	Trinity	Municipal	0	0	0	0	0	0
Valley Ranch MUD 1	Montgomery	San Jacinto	Municipal	27	0	0	0	0	0
Varner Creek UD	Brazoria	Brazos	Municipal	126	124	125	126	127	122
Walker County SUD	Walker	San Jacinto	Municipal	22	15	5	0	0	0
Walker County SUD	Walker	Trinity	Municipal	0	0	0	0	0	0
Waller	Harris	San Jacinto	Municipal	102	171	169	168	168	167
Waller	Waller	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Wallis	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
Waterwood MUD 1	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Webster	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
West Columbia	Brazoria	Brazos	Municipal	113	110	112	112	112	104
West Columbia	Brazoria	Brazos-Colorado	Municipal	65	63	64	64	63	59
West End WSC	*Washington*	*Brazos*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
West End WSC	Austin	Brazos	Municipal	0	0	0	0	0	0
West End WSC	Austin	Colorado	Municipal	0	0	0	0	0	0
West End WSC	*Fayette*	*Colorado*	*Municipal*	*0*	*0*	*0*	*0*	*0*	*0*
West Hardin WSC	Liberty	Neches	Municipal	0	0	0	0	0	0
West Harris County MUD 6	Harris	San Jacinto	Municipal	0	67	65	63	64	65
West Harris County Regional Water Authority	Fort Bend	San Jacinto	Municipal	1,319	1,274	1,288	1,300	1,314	1,310
West Harris County Regional Water Authority	Harris	San Jacinto	Municipal	14,204	29,620	29,526	28,954	30,117	30,325
West University Place	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Westfield Garden Park	Harris	San Jacinto	Municipal	50	66	66	66	65	65
Westwood North WSC	Montgomery	San Jacinto	Municipal	3	95	185	234	263	339
Westwood Shores MUD	Trinity	Trinity	Municipal	0	0	0	0	0	0
White Oak WSC	Montgomery	San Jacinto	Municipal	0	27	51	74	87	102
Willis	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Willow Creek Farms MUD	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Willow Creek Farms MUD	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Windfern Forest Utility District	Harris	San Jacinto	Municipal	471	626	636	638	628	623
Wood Branch Village	Montgomery	San Jacinto	Municipal	0	33	74	123	140	153
Wood Trace MUD 1	Montgomery	San Jacinto	Municipal	0	20	48	69	78	89

Water User Group	County	Basin	Type	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
				2030	2040	2050	2060	2070	2080
Woodcreek MUD	Harris	San Jacinto	Municipal	0	79	78	76	75	73
Woodcreek Water Of Liberty	Liberty	Trinity	Municipal	0	0	0	0	0	0
Woodland Oaks Utility	Montgomery	San Jacinto	Municipal	0	55	107	141	164	182
Woodridge MUD	Montgomery	San Jacinto	Municipal	13	0	0	0	0	0

1. *Positive values shown in this table represent second-tier needs. Values of 0 indicate either no need or a surplus after allocation of conservation and direct reuse.*
2. *Entries in italics represent portions of split WUGs located outside of Region H.*

Table 5-A6 – Second-Tier Identified Water Need Summary*

Water User Group Category	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
	2030	2040	2050	2060	2070	2080
Municipal (Named WUG)	142,021	231,426	247,215	250,177	256,516	258,645
Municipal (County-Other)	13,316	28,951	41,602	51,404	59,414	65,445
Manufacturing	57,027	65,666	79,223	90,650	102,749	115,073
Mining	3,920	4,045	4,168	4,297	4,427	4,565
Steam Electric Power	16,038	16,224	16,354	16,434	16,481	16,524
Livestock	2,691	2,989	3,073	3,128	3,162	3,181
Irrigation	47,525	48,615	49,249	49,662	49,889	50,088

**Positive values shown in this table represent second-tier needs.*

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Table 5-A7 – MWP Second-Tier Identified Water Need*

Major Water Provider	Second Tier Needs Remaining After Conservation and Direct Reuse (ac ft)					
	2030	2040	2050	2060	2070	2080
Brazos River Authority	0	24,207	26,141	28,653	31,325	33,715
Brazosport Water Authority	3,553	4,254	4,955	5,199	5,470	5,519
Chambers-Liberty Counties Navigation District	0	0	0	0	0	0
Dow Inc	0	4,380	12,068	19,527	26,739	33,676
Gulf Coast Water Authority	7,146	7,949	8,733	9,795	10,463	11,376
Houston	176,767	317,560	343,729	354,018	362,378	360,968
Huntsville	0	0	0	0	1,329	2,569
Lower Neches Valley Authority	0	0	0	0	0	0
Missouri City	12	97	211	336	480	633
North Fort Bend Water Authority	18,069	24,843	29,137	31,742	35,059	36,781
North Harris County Regional Water Authority	48,689	77,454	80,340	80,676	83,567	83,973
NRG	37,701	14,835	14,835	14,835	14,835	14,835
San Jacinto River Authority	36,007	66,330	92,158	111,976	122,623	134,383
Trinity River Authority	0	0	0	0	0	0
West Harris County Regional Water Authority	18,043	36,560	37,406	37,264	38,766	39,531

**Positive values shown in this table represent second-tier needs. Values of 0 indicate either no need or a surplus after allocation of conservation and direct reuse. Values are based on projected needs and may not be indicative of any MWP-to-WUG contract in excess of existing supply. Values represent projected MWP need within Region H only and do not include MWP needs for other regions.*

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Table 5-A8 – Water Management Strategy Supply Allocations

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Alvin	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	30	29	143	153	118	84
	Municipal Conservation	N/A	Municipal Conservation	104	203	239	279	300	355
	Water Loss Reduction	N/A	Water Loss Reduction	19	56	80	80	80	80
Ames Minglewood WSC	Municipal Conservation	N/A	Municipal Conservation	5	8	8	10	11	13
	Water Loss Reduction	N/A	Water Loss Reduction	1	3	5	7	8	9
Anahuac	Municipal Conservation	N/A	Municipal Conservation	8	12	13	15	17	20
	Water Loss Reduction	N/A	Water Loss Reduction	4	12	18	24	31	37
Angleton	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	3,955	3,318	2,540	2,271	1,967	1,867
	Municipal Conservation	N/A	Municipal Conservation	70	146	165	187	197	231
	Water Loss Reduction	N/A	Water Loss Reduction	32	91	142	186	222	250
Austin County WSC	Municipal Conservation	N/A	Municipal Conservation	11	18	21	25	27	31
	Water Loss Reduction	N/A	Water Loss Reduction	4	14	25	34	42	51
Bacliff MUD	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	246	256	269	281	295
	Municipal Conservation	N/A	Municipal Conservation	27	48	54	62	68	82
Baker Road MUD	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	46	45	44	59	65
	Municipal Conservation	N/A	Municipal Conservation	7	9	10	10	11	13
Baybrook MUD 1	Municipal Conservation	N/A	Municipal Conservation	7	11	13	14	12	13
Baytown	BAWA East SWTP Expansion	Baytown Area Water Authority	Livingston-Wallisville Lake/Reservoir System	6,549	9,481	9,413	9,383	9,259	9,266
	Municipal Conservation	N/A	Municipal Conservation	429	984	1,219	1,444	1,547	1,773
	Water Loss Reduction	N/A	Water Loss Reduction	97	324	548	755	791	794
Bayview MUD	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	80	84	87	92	96
	Municipal Conservation	N/A	Municipal Conservation	5	9	11	13	14	17
Bellaire	Municipal Conservation	N/A	Municipal Conservation	116	195	215	242	264	298
Bellville	Municipal Conservation	N/A	Municipal Conservation	33	54	64	67	64	66

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Blaketree MUD 1 of Montgomery County	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	2	11	35	45	50	54
	Municipal Conservation	N/A	Municipal Conservation	0	6	11	16	17	18
	Water Loss Reduction	N/A	Water Loss Reduction	0	2	6	9	11	13
Blue Bell Manor Utility	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	65	73	75	68	64
	Municipal Conservation	N/A	Municipal Conservation	13	19	21	24	25	29
Blue Ridge West MUD	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	0	2	33	45	57
	Municipal Conservation	N/A	Municipal Conservation	29	43	47	55	60	71
Bolivar Peninsula SUD	Municipal Conservation	N/A	Municipal Conservation	52	90	102	114	119	134
	Water Loss Reduction	N/A	Water Loss Reduction	12	36	57	76	94	109
Brazoria	Municipal Conservation	N/A	Municipal Conservation	13	21	23	26	27	32
Brazoria County FWSD 1	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	40	44	43	42	43	39
	Municipal Conservation	N/A	Municipal Conservation	3	5	5	6	6	8
	Water Loss Reduction	N/A	Water Loss Reduction	1	3	5	6	7	9
Brazoria County MUD 2	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	226	351	371	395	392	380
	Municipal Conservation	N/A	Municipal Conservation	37	46	50	54	57	61
	Water Loss Reduction	N/A	Water Loss Reduction	15	46	75	105	131	152
Brazoria County MUD 21	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	132	175	179	190	220	230
	Municipal Conservation	N/A	Municipal Conservation	22	33	36	40	42	46
	Water Loss Reduction	N/A	Water Loss Reduction	4	12	18	18	18	18
Brazoria County MUD 22	Municipal Conservation	N/A	Municipal Conservation	15	30	36	37	34	36
	Water Loss Reduction	N/A	Water Loss Reduction	3	8	8	8	9	9
Brazoria County MUD 25	Manvel Supply Expansion	Pearland	Brazos Run-of-River, Fort Bend	50	50	50	50	50	50
	Municipal Conservation	N/A	Municipal Conservation	12	18	20	22	24	28
Brazoria County MUD 29	Manvel Supply Expansion	Pearland	Brazos Run-of-River, Fort Bend	150	150	150	150	150	150
	Municipal Conservation	N/A	Municipal Conservation	15	26	30	34	37	45
Brazoria County MUD 3	Municipal Conservation	N/A	Municipal Conservation	20	28	31	35	38	44

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Brazoria County MUD 31	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	28	29	18	5	0	0
	Municipal Conservation	N/A	Municipal Conservation	25	34	36	39	41	45
	Water Loss Reduction	N/A	Water Loss Reduction	11	33	51	69	84	96
Brazoria County MUD 39	Manvel Supply Expansion	Pearland	Brazos Run-of-River, Fort Bend	500	500	500	500	500	500
	Municipal Conservation	N/A	Municipal Conservation	17	22	23	26	28	31
Brazoria County MUD 55	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	22	29	30	31	30	27
	Municipal Conservation	N/A	Municipal Conservation	14	22	24	26	27	30
Brazoria County MUD 6	Municipal Conservation	N/A	Municipal Conservation	38	50	55	59	62	68
Brookshire MWD	Municipal Conservation	N/A	Municipal Conservation	26	44	50	54	55	63
	Water Loss Reduction	N/A	Water Loss Reduction	15	45	72	97	129	162
Buffalo	Municipal Conservation	N/A	Municipal Conservation	12	20	22	22	20	21
	Water Loss Reduction	N/A	Water Loss Reduction	2	6	7	7	6	6
Bunker Hill Village	Municipal Conservation	N/A	Municipal Conservation	40	50	53	56	58	61
C C Water Works	Expanded Use of Groundwater, Chambers County	N/A	Gulf Coast Aquifer System, Chambers	350	350	350	800	800	800
	Municipal Conservation	N/A	Municipal Conservation	8	15	23	32	43	59
Cape Royale UD	Municipal Conservation	N/A	Municipal Conservation	7	11	12	13	14	15
Centerville	Municipal Conservation	N/A	Municipal Conservation	6	13	15	15	14	14
	Water Loss Reduction	N/A	Water Loss Reduction	1	3	5	5	5	5
Central Harris County Regional Water Authority	CHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	5,466	5,466	5,466	5,466	5,466	5,466
	Municipal Conservation	N/A	Municipal Conservation	175	329	368	430	482	594
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Harris County	8	15	21	24	38	47
Chambers County MUD 1	Municipal Conservation	N/A	Municipal Conservation	13	20	23	28	33	41
Chateau Woods MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	64	111	142	161	177
	Municipal Conservation	N/A	Municipal Conservation	12	23	27	32	35	42
Chimney Hill MUD	Municipal Conservation	N/A	Municipal Conservation	18	28	30	34	36	43
Clear Brook City MUD	Municipal Conservation	N/A	Municipal Conservation	70	133	147	170	188	229

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Clear Lake City Water Authority	Municipal Conservation	N/A	Municipal Conservation	340	549	607	691	770	883
Cleveland	Municipal Conservation	N/A	Municipal Conservation	43	74	100	140	161	196
	Water Loss Reduction	N/A	Water Loss Reduction	18	57	102	150	201	254
Clute	Municipal Conservation	N/A	Municipal Conservation	50	84	79	79	75	77
Concord-Robbins WSC	Municipal Conservation	N/A	Municipal Conservation	10	16	15	14	13	13
Conroe	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	2,216	4,028	6,065	10,687	12,301	13,624
	Municipal Conservation	N/A	Municipal Conservation	476	962	1,584	2,146	2,420	2,964
Conroe Resort Utilities	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	102	123	132	138
			Gulf Coast Aquifer System, Montgomery	0	13	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	5	9	12	14	13	15
	Water Loss Reduction	N/A	Water Loss Reduction	1	4	7	9	12	16
Corinthian Point MUD 2	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	3	17	26	33	40
	Municipal Conservation	N/A	Municipal Conservation	5	7	9	11	12	13
Country Terrace Water	Municipal Conservation	N/A	Municipal Conservation	6	10	11	13	14	17
County-Other, Austin	Municipal Conservation	N/A	Municipal Conservation	70	122	137	160	175	209
County-Other, Brazoria	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	3,597	4,207	4,978	5,242	5,544	5,646
	Manvel Supply Expansion	Pearland	Brazos Run-of-River, Fort Bend	400	400	2,900	2,900	2,900	2,900
	Municipal Conservation	N/A	Municipal Conservation	473	762	893	1,050	1,174	1,418
	New / Expanded Contract with BWA - Brackish Groundwater	Brazosport Water Authority	Gulf Coast Aquifer System, Brazoria	0	0	0	0	0	0
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Brazoria County	42	110	192	228	269	313
	Water Loss Reduction	N/A	Water Loss Reduction	154	473	813	1,125	1,433	1,735
County-Other, Chambers	Expanded Use of Groundwater, Chambers County	N/A	Gulf Coast Aquifer System, Chambers	0	1,250	1,250	2,750	4,000	4,700
	Municipal Conservation	N/A	Municipal Conservation	77	142	224	329	440	617
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Chambers County	22	126	281	429	589	771
	Water Loss Reduction	N/A	Water Loss Reduction	43	182	425	744	1,144	1,645

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
County-Other, Fort Bend	Expanded Use of Groundwater, Fort Bend County	N/A	Gulf Coast Aquifer System, Fort Bend	0	2,183	4,945	7,008	9,161	10,837
	Fairchilds Supply Infrastructure	N/A	Gulf Coast Aquifer System, Fort Bend	448	2,108	2,128	2,124	2,123	2,123
	Municipal Conservation	N/A	Municipal Conservation	559	1,377	2,345	3,525	4,762	6,630
	New / Expanded Contract with GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	426	641	1,013	1,363	1,436	1,755
	NFBWA GRP	North Fort Bend Water Authority	Gulf Coast Aquifer System, Fort Bend	0	412	1,235	1,868	2,820	3,290
	Richmond GRP	Brazos River Authority	Allens Creek Lake/Reservoir	0	0	13	722	1,463	1,714
		Richmond	BRA System Operations Permit Supply	712	1,157	1,552	1,421	1,234	1,003
	Sugar Land IWRP	Sugar Land	Direct Reuse, County-Other, Fort Bend	0	0	1,232	1,232	1,232	1,232
			Gulf Coast Aquifer System, Fort Bend	460	786	786	786	786	786
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Fort Bend County	300	1,220	2,308	3,203	4,163	5,023
	Water Loss Reduction	N/A	Water Loss Reduction	207	1,069	2,596	4,448	6,754	9,238
County-Other, Galveston	Municipal Conservation	N/A	Municipal Conservation	95	149	168	194	212	249
	New / Expanded Contract with GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	2,608	2,671	2,709	2,720	2,703	2,685
	Water Loss Reduction	N/A	Water Loss Reduction	25	74	122	168	208	224
County-Other, Harris	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	1,514	1,664	1,757	1,841	1,847	1,887
			Livingston-Wallisville Lake/Reservoir System	0	840	844	845	845	846
	Municipal Conservation	N/A	Municipal Conservation	788	1,250	1,484	1,732	1,905	2,212
	New / Expanded Contract with City of Houston	Houston	Indirect Reuse, Houston	0	0	0	0	1,633	3,448
			Livingston-Wallisville Lake/Reservoir System	3,045	7,963	9,601	8,934	7,449	5,594
	New / Expanded Contract with Regional Providers	SJRA, Houston	San Jacinto Regional Return Flows	1,533	2,854	4,092	4,642	4,941	4,960
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Harris County	291	688	915	1,053	1,125	1,156
County-Other, Leon	Municipal Conservation	N/A	Municipal Conservation	11	17	15	13	12	10
	Water Loss Reduction	N/A	Water Loss Reduction	5	12	16	18	16	12

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
County-Other, Liberty	Municipal Conservation	N/A	Municipal Conservation	242	488	699	1,001	1,320	1,838
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Liberty County	66	232	434	653	866	1,097
	Water Loss Reduction	N/A	Water Loss Reduction	77	298	619	1,036	1,522	2,094
County-Other, Madison	Expanded Use of Groundwater, Madison County	N/A	Queen City Aquifer, Madison	11	11	11	11	11	11
	Municipal Conservation	N/A	Municipal Conservation	15	22	25	28	31	37
	Water Loss Reduction	N/A	Water Loss Reduction	8	25	41	55	71	86
County-Other, Montgomery	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	1,429	2,460	7,710	3,776
			Gulf Coast Aquifer System (Catahoula Formation), Montgomery	0	0	0	0	0	10,500
			Gulf Coast Aquifer System, Montgomery	0	2,758	5,641	7,948	4,976	3,476
	Municipal Conservation	N/A	Municipal Conservation	791	1,480	2,023	2,662	3,202	4,007
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Montgomery County	215	838	1,465	1,952	2,320	2,570
	Water Loss Reduction	N/A	Water Loss Reduction	203	767	1,523	2,349	3,175	3,641
County-Other, Polk	Municipal Conservation	N/A	Municipal Conservation	46	70	78	89	99	117
	Water Loss Reduction	N/A	Water Loss Reduction	17	53	85	118	151	182
County-Other, San Jacinto	Municipal Conservation	N/A	Municipal Conservation	33	46	48	51	53	58
	Water Loss Reduction	N/A	Water Loss Reduction	14	41	63	81	97	109
County-Other, Walker	Expanded Use of Groundwater, Walker County	N/A	Gulf Coast Aquifer System, Walker	150	150	150	150	150	150
	Municipal Conservation	N/A	Municipal Conservation	62	81	82	81	75	73
	Water Loss Reduction	N/A	Water Loss Reduction	19	52	78	92	98	90
County-Other, Waller	Expanded Use of Groundwater, Waller County	N/A	Gulf Coast Aquifer System, Waller	1,200	1,200	3,950	3,950	6,700	6,700
	Municipal Conservation	N/A	Municipal Conservation	94	170	248	373	519	747
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Waller County	36	92	196	327	468	619
	Water Loss Reduction	N/A	Water Loss Reduction	28	100	218	392	615	885

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Crosby MUD	Municipal Conservation	N/A	Municipal Conservation	33	57	67	72	72	76
	New / Expanded Contract with SJRA	San Jacinto River Authority	San Jacinto Regional Return Flows	0	1	0	2	54	45
	Water Loss Reduction	N/A	Water Loss Reduction	9	30	48	67	87	91
Cut & Shoot	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	436	569	792	1,020	1,197	1,219
	Municipal Conservation	N/A	Municipal Conservation	35	83	112	150	185	240
Daisetta	Municipal Conservation	N/A	Municipal Conservation	4	6	6	7	8	9
	Water Loss Reduction	N/A	Water Loss Reduction	1	2	4	5	6	7
Danbury	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	6	9	10	10	9	7
	Municipal Conservation	N/A	Municipal Conservation	6	10	11	12	13	15
Dayton	Municipal Conservation	N/A	Municipal Conservation	80	149	191	242	288	353
	Water Loss Reduction	N/A	Water Loss Reduction	30	109	199	300	402	509
Deer Park	Municipal Conservation	N/A	Municipal Conservation	179	320	359	409	453	522
	Water Loss Reduction	N/A	Water Loss Reduction	44	127	203	271	335	372
Devers	Municipal Conservation	N/A	Municipal Conservation	4	5	5	6	6	7
Dobbin Plantersville WSC	Brackish Groundwater Supplies	N/A	Gulf Coast Aquifer System (Catahoula Formation), Montgomery	63	230	456	662	898	1,109
	Municipal Conservation	N/A	Municipal Conservation	22	50	91	124	140	147
Dodge Oakhurst WSC	Expanded Use of Groundwater, Walker County	N/A	Gulf Coast Aquifer System, Walker	0	0	100	100	325	325
	Municipal Conservation	N/A	Municipal Conservation	10	17	23	31	40	55
Domestic Water	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	16	29	41	50	54
	Municipal Conservation	N/A	Municipal Conservation	5	8	10	12	14	17
Douglas Utility	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	50	54	57	52	52
	Municipal Conservation	N/A	Municipal Conservation	7	8	8	9	9	10
East Montgomery County MUD 6	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1	43	85	129	164	172
	Municipal Conservation	N/A	Municipal Conservation	9	14	16	22	27	33

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
East Plantation UD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1	35	87	141	146	159
	Municipal Conservation	N/A	Municipal Conservation	7	9	13	17	19	21
El Dorado UD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	327	353	358	362	362
	Municipal Conservation	N/A	Municipal Conservation	12	18	20	23	26	30
Far Hills UD	Brackish Groundwater Supplies	N/A	Gulf Coast Aquifer System (Catahoula Formation), Montgomery	0	97	207	205	204	204
	Municipal Conservation	N/A	Municipal Conservation	9	16	21	25	29	34
First Colony MUD 9	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	8	51	90	132	168
	Municipal Conservation	N/A	Municipal Conservation	39	57	64	73	79	90
Flo Community WSC	Municipal Conservation	N/A	Municipal Conservation	14	21	23	25	26	30
Forest Hills MUD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	162	161	159	241	158
	Municipal Conservation	N/A	Municipal Conservation	9	13	14	16	17	20
Fort Bend County FWSD 1	NFBWA GRP	North Fort Bend Water Authority	Gulf Coast Aquifer System, Fort Bend	0	221	291	297	313	326
	Water Loss Reduction	N/A	Water Loss Reduction	6	28	51	70	89	109
Fort Bend County FWSD 2	Municipal Conservation	N/A	Municipal Conservation	16	24	27	32	36	47
	Rosenberg GRP	Rosenberg	Gulf Coast Aquifer System, Fort Bend	328	336	359	378	399	422
Fort Bend County MUD 115	Missouri City GRP	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	0	0	0	73	97	113
		Missouri City	BRA System Operations Permit Supply	0	6	58	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	16	20	24	25	26	27
Fort Bend County MUD 116	Municipal Conservation	N/A	Municipal Conservation	26	40	44	49	51	57
	Richmond GRP	Richmond	Gulf Coast Aquifer System, Fort Bend	0	92	92	104	112	125
	Water Loss Reduction	N/A	Water Loss Reduction	6	20	30	30	31	31
Fort Bend County MUD 121	Municipal Conservation	N/A	Municipal Conservation	14	20	22	24	26	30
	Richmond GRP	Richmond	Brazos River Authority Main Stem Lake/Reservoir System	274	282	280	280	280	281
Fort Bend County MUD 128	Municipal Conservation	N/A	Municipal Conservation	71	108	117	132	149	173
	Sugar Land IWRP	Sugar Land	Brazos Run-of-River, Fort Bend	102	99	107	92	121	157

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Fort Bend County MUD 129	Missouri City GRP	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	0	0	0	49	72	122
		Missouri City	BRA System Operations Permit Supply	0	21	31	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	33	43	46	50	53	60
Fort Bend County MUD 131	Municipal Conservation	N/A	Municipal Conservation	10	18	21	24	29	36
	NFBWA GRP	North Fort Bend Water Authority	Gulf Coast Aquifer System, Fort Bend	0	0	0	0	14	19
Fort Bend County MUD 140	Municipal Conservation	N/A	Municipal Conservation	12	17	18	20	23	28
Fort Bend County MUD 149	Missouri City GRP	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	0	0	0	44	50	75
		Missouri City	BRA System Operations Permit Supply	0	3	37	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	39	47	51	54	57	62
Fort Bend County MUD 152	Municipal Conservation	N/A	Municipal Conservation	20	28	30	34	37	42
	Rosenberg GRP	Rosenberg	Brazos Run-of-River, Brazoria	0	0	1	21	40	41
Fort Bend County MUD 155	Municipal Conservation	N/A	Municipal Conservation	19	30	39	50	59	70
	Rosenberg GRP	Rosenberg	Brazos Run-of-River, Brazoria	0	81	180	258	326	365
Fort Bend County MUD 158	Municipal Conservation	N/A	Municipal Conservation	12	18	22	26	30	35
	Rosenberg GRP	Rosenberg	Brazos Run-of-River, Brazoria	0	33	78	113	144	162
Fort Bend County MUD 162	Municipal Conservation	N/A	Municipal Conservation	9	14	16	20	25	34
	Rosenberg GRP	Rosenberg	Gulf Coast Aquifer System, Fort Bend	0	0	12	28	76	97
Fort Bend County MUD 23	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	27	27	36	45	52
	Municipal Conservation	N/A	Municipal Conservation	57	112	125	147	165	202
Fort Bend County MUD 24	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	17	17	17	18	19
	Municipal Conservation	N/A	Municipal Conservation	10	17	19	21	23	27
Fort Bend County MUD 25	Fort Bend MUD 25 GRP	N/A	Direct Reuse, Fort Bend County MUD 25	68	68	68	68	68	68
		Sugar Land	Brazos River Authority Main Stem Lake/Reservoir System	1,120	1,120	1,120	1,120	1,120	1,120
	Municipal Conservation	N/A	Municipal Conservation	73	122	136	155	174	202
	Water Loss Reduction	N/A	Water Loss Reduction	19	55	88	118	147	151

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Fort Bend County MUD 26	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	18	27	49	60	71
	Municipal Conservation	N/A	Municipal Conservation	20	31	35	41	46	55
Fort Bend County MUD 42	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	19	31	43	55	69
	Municipal Conservation	N/A	Municipal Conservation	20	30	34	37	40	45
Fort Bend County MUD 46	Municipal Conservation	N/A	Municipal Conservation	17	25	29	32	32	34
Fort Bend County MUD 47	Municipal Conservation	N/A	Municipal Conservation	10	17	18	21	22	27
Fort Bend County MUD 48	Missouri City GRP	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	0	0	0	33	46	52
		Missouri City	BRA System Operations Permit Supply	0	5	9	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	16	24	27	31	35	42
Fort Bend County MUD 49	Missouri City GRP	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	0	0	0	15	26	27
		Missouri City	BRA System Operations Permit Supply	13	14	14	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	5	7	8	9	10	12
Fort Bend County MUD 5	Municipal Conservation	N/A	Municipal Conservation	12	21	26	31	34	41
	Rosenberg GRP	Rosenberg	Gulf Coast Aquifer System, Fort Bend	0	27	55	68	71	73
Fort Bend County MUD 81	Municipal Conservation	N/A	Municipal Conservation	37	44	64	84	98	112
Fort Bend County WCID 2	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	1,414	1,465	1,570	1,682	1,803	1,930
	Fort Bend WCID 2 GRP	N/A	Brazos River Authority Main Stem Lake/Reservoir System	0	103	443	745	1,027	1,340
			Brazos Run-of-River, Fort Bend	3,020	3,433	3,393	3,354	3,315	3,278
	Municipal Conservation	N/A	Municipal Conservation	249	405	466	528	571	658
	Water Loss Reduction	N/A	Water Loss Reduction	69	212	352	487	536	555
Fort Bend County WCID 3	Municipal Conservation	N/A	Municipal Conservation	8	10	10	10	11	12
	Richmond GRP	Richmond	Gulf Coast Aquifer System, Fort Bend	0	0	0	0	18	29
Freeport	Municipal Conservation	N/A	Municipal Conservation	49	94	102	89	81	83
	Water Loss Reduction	N/A	Water Loss Reduction	18	50	79	102	122	136
Friendswood	Municipal Conservation	N/A	Municipal Conservation	242	425	479	551	617	717
	Water Loss Reduction	N/A	Water Loss Reduction	84	246	397	536	665	784

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Fulshear	Municipal Conservation	N/A	Municipal Conservation	138	346	453	544	628	750
	NFBWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	1,185	1,133	1,147	1,204	1,183
Galena Park	Municipal Conservation	N/A	Municipal Conservation	31	61	62	63	63	61
	Water Loss Reduction	N/A	Water Loss Reduction	10	29	47	64	79	89
Galveston	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	6,944	6,944	6,944	6,944	6,944	6,944
	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	4,332	4,527	4,737	4,961	5,198
	GCWA Groundwater Well Development	Gulf Coast Water Authority	Gulf Coast Aquifer System, Galveston	0	1,839	1,865	1,881	1,893	1,905
	Municipal Conservation	N/A	Municipal Conservation	531	909	1,008	1,094	1,086	1,209
	Water Loss Reduction	N/A	Water Loss Reduction	313	897	1,444	1,943	2,400	2,819
Galveston County FWSD 6	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	167	175	183	191	200
	Municipal Conservation	N/A	Municipal Conservation	9	15	17	19	20	23
Galveston County MUD 12	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	93	97	101	106	111
	Municipal Conservation	N/A	Municipal Conservation	14	23	25	28	31	35
Galveston County WCID 1	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	859	898	940	985	1,032
	Municipal Conservation	N/A	Municipal Conservation	99	201	232	271	296	360
	Water Loss Reduction	N/A	Water Loss Reduction	48	140	226	305	378	444
Galveston County WCID 12	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	637	666	697	730	764
	Municipal Conservation	N/A	Municipal Conservation	23	36	42	44	42	44
	Water Loss Reduction	N/A	Water Loss Reduction	10	30	48	65	80	94
Galveston County WCID 8	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	343	357	375	392	411
	Municipal Conservation	N/A	Municipal Conservation	18	31	35	40	44	52
	Water Loss Reduction	N/A	Water Loss Reduction	3	9	11	11	11	11
Glendale WSC	Municipal Conservation	N/A	Municipal Conservation	4	6	6	7	7	7
Grand Oaks MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	27	50	59	65	69
	Municipal Conservation	N/A	Municipal Conservation	5	8	9	10	12	14

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Green Trails MUD	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	108	107	106	117	123
	Municipal Conservation	N/A	Municipal Conservation	15	21	23	24	25	27
Greenwood UD	Municipal Conservation	N/A	Municipal Conservation	27	47	47	47	46	46
Groveton	Municipal Conservation	N/A	Municipal Conservation	3	5	6	6	5	6
	Water Loss Reduction	N/A	Water Loss Reduction	2	5	6	8	9	9
Hardin WSC	Municipal Conservation	N/A	Municipal Conservation	18	29	32	37	41	50
	Water Loss Reduction	N/A	Water Loss Reduction	0	1	1	1	1	1
Harris County FWSD 1-A	Municipal Conservation	N/A	Municipal Conservation	8	13	14	16	17	20
	Water Loss Reduction	N/A	Water Loss Reduction	3	8	13	17	21	24
Harris County FWSD 27	BAWA East SWTP Expansion	Baytown Area Water Authority	Livingston-Wallisville Lake/Reservoir System	36	84	103	113	168	150
	Municipal Conservation	N/A	Municipal Conservation	9	15	17	20	24	28
Harris County FWSD 58	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	52	50	49	47	45
	Municipal Conservation	N/A	Municipal Conservation	11	16	18	19	21	23
Harris County MUD 106	Municipal Conservation	N/A	Municipal Conservation	19	28	31	35	39	44
	WHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	621	643	654	679	688
Harris County MUD 11	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	232	231	228	225	223
	Municipal Conservation	N/A	Municipal Conservation	12	19	20	23	24	28
Harris County MUD 119	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	610	607	605	597	590
	Municipal Conservation	N/A	Municipal Conservation	22	31	34	37	40	45
Harris County MUD 122	Municipal Conservation	N/A	Municipal Conservation	4	7	8	9	9	11
Harris County MUD 132	Municipal Conservation	N/A	Municipal Conservation	47	64	71	76	79	85
	Water Loss Reduction	N/A	Water Loss Reduction	12	35	54	54	56	57
	WHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	1,951	2,016	2,041	2,101	2,132
Harris County MUD 148	Municipal Conservation	N/A	Municipal Conservation	20	33	39	46	51	60
Harris County MUD 151	Municipal Conservation	N/A	Municipal Conservation	33	47	51	57	62	70
	WHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	1,121	1,144	1,157	1,206	1,216

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County MUD 152	Municipal Conservation	N/A	Municipal Conservation	31	46	52	58	65	76
	WHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	1,024	1,059	1,072	1,109	1,122
Harris County MUD 153	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	245	267	276	314	320
	Municipal Conservation	N/A	Municipal Conservation	44	70	80	86	88	96
Harris County MUD 154	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	946	949	935	952	942
	Municipal Conservation	N/A	Municipal Conservation	40	70	78	91	102	124
	Water Loss Reduction	N/A	Water Loss Reduction	9	25	40	48	50	50
Harris County MUD 180	Municipal Conservation	N/A	Municipal Conservation	17	27	30	34	37	44
Harris County MUD 189	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	443	448	451	465	485
	Municipal Conservation	N/A	Municipal Conservation	12	16	17	18	19	21
	Water Loss Reduction	N/A	Water Loss Reduction	3	5	5	5	6	6
Harris County MUD 216	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	94	92	89	92	93
	Municipal Conservation	N/A	Municipal Conservation	10	13	13	14	13	14
Harris County MUD 221	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	394	398	398	405	403
	Municipal Conservation	N/A	Municipal Conservation	16	23	25	28	31	36
	Water Loss Reduction	N/A	Water Loss Reduction	3	9	13	13	13	14
Harris County MUD 23	Municipal Conservation	N/A	Municipal Conservation	13	20	21	24	26	30
	Water Loss Reduction	N/A	Water Loss Reduction	3	9	14	19	23	23
Harris County MUD 261	Municipal Conservation	N/A	Municipal Conservation	8	11	12	13	14	15
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	162	224	230	231	229	230
Harris County MUD 278	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	563	563	563	563	563
	Municipal Conservation	N/A	Municipal Conservation	33	53	65	102	119	147
Harris County MUD 290	Municipal Conservation	N/A	Municipal Conservation	35	54	66	100	116	142
	WHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	1,173	1,242	1,271	1,312	1,327
Harris County MUD 321	Municipal Conservation	N/A	Municipal Conservation	5	7	9	9	8	7

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County MUD 342	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	126	245	298	297	307
	Municipal Conservation	N/A	Municipal Conservation	19	26	32	38	41	45
Harris County MUD 344	Municipal Conservation	N/A	Municipal Conservation	28	42	46	49	51	55
Harris County MUD 345	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	134	122	108	122	109
	Municipal Conservation	N/A	Municipal Conservation	25	33	35	38	42	46
	Water Loss Reduction	N/A	Water Loss Reduction	9	26	41	56	71	83
Harris County MUD 36	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	481	654	726	734	761
	Municipal Conservation	N/A	Municipal Conservation	15	25	36	41	38	36
Harris County MUD 361	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	88	111	118	129	127
	Municipal Conservation	N/A	Municipal Conservation	20	31	35	40	44	52
Harris County MUD 372	Municipal Conservation	N/A	Municipal Conservation	19	25	27	29	31	34
Harris County MUD 400	Municipal Conservation	N/A	Municipal Conservation	56	124	167	219	226	254
Harris County MUD 412	Municipal Conservation	N/A	Municipal Conservation	25	36	43	49	52	58
Harris County MUD 420	Municipal Conservation	N/A	Municipal Conservation	5	8	9	10	11	13
Harris County MUD 46	Municipal Conservation	N/A	Municipal Conservation	19	26	28	30	31	34
	WHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	654	656	658	658	658
Harris County MUD 49	Municipal Conservation	N/A	Municipal Conservation	28	45	51	59	65	77
Harris County MUD 494	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	59	76	81	88	86
	Municipal Conservation	N/A	Municipal Conservation	13	22	25	29	33	39
Harris County MUD 5	Municipal Conservation	N/A	Municipal Conservation	18	28	32	36	40	48
	Water Loss Reduction	N/A	Water Loss Reduction	7	20	32	43	54	65
Harris County MUD 50	Harris County MUD 50 SWTP	San Jacinto River Authority	San Jacinto Run-of-River, Harris	560	560	560	560	560	560
	Municipal Conservation	N/A	Municipal Conservation	15	23	26	30	34	41
	Water Loss Reduction	N/A	Water Loss Reduction	5	14	23	31	40	48
Harris County MUD 504	Municipal Conservation	N/A	Municipal Conservation	13	19	21	23	25	29

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County MUD 55	Municipal Conservation	N/A	Municipal Conservation	53	102	113	131	145	177
	Water Loss Reduction	N/A	Water Loss Reduction	16	47	74	98	121	142
Harris County MUD 58	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	40	37	36	36	35
	Municipal Conservation	N/A	Municipal Conservation	6	8	9	10	10	11
	Water Loss Reduction	N/A	Water Loss Reduction	2	4	6	6	6	6
Harris County MUD 6	Municipal Conservation	N/A	Municipal Conservation	13	20	22	25	26	31
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	0	36	35	32	28	22
	Water Loss Reduction	N/A	Water Loss Reduction	2	6	6	6	6	6
Harris County MUD 8	Municipal Conservation	N/A	Municipal Conservation	13	18	21	23	25	28
Harris County MUD 96	Municipal Conservation	N/A	Municipal Conservation	24	38	44	51	56	66
Harris County UD 14	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	165	166	166	166	168
	Water Loss Reduction	N/A	Water Loss Reduction	1	4	4	4	4	4
Harris County UD 15	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	391	383	378	386	390
	Municipal Conservation	N/A	Municipal Conservation	15	21	23	25	26	29
	Water Loss Reduction	N/A	Water Loss Reduction	4	10	16	19	19	20
Harris County WCID 1	BAWA East SWTP Expansion	Baytown Area Water Authority	Livingston-Wallisville Lake/Reservoir System	135	145	194	214	283	294
	Municipal Conservation	N/A	Municipal Conservation	37	56	64	71	76	86
	Water Loss Reduction	N/A	Water Loss Reduction	14	41	67	91	119	140
Harris County WCID 133	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	575	574	571	565	558
	Municipal Conservation	N/A	Municipal Conservation	20	29	31	35	37	42
Harris County WCID 156	Municipal Conservation	N/A	Municipal Conservation	5	6	7	7	8	8
Harris County WCID 161	Municipal Conservation	N/A	Municipal Conservation	6	8	9	10	10	12
Harris County WCID 50	Municipal Conservation	N/A	Municipal Conservation	11	17	18	20	22	25
Harris County WCID 70	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	30	29	28	27	25
	Municipal Conservation	N/A	Municipal Conservation	8	13	14	15	16	18
	Water Loss Reduction	N/A	Water Loss Reduction	1	2	2	2	2	2

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County WCID 74	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	515	529	527	518	513
	Municipal Conservation	N/A	Municipal Conservation	19	26	29	32	34	39
Harris County WCID 89	Municipal Conservation	N/A	Municipal Conservation	28	45	49	55	58	66
	Water Loss Reduction	N/A	Water Loss Reduction	6	17	27	36	41	41
Harris County WCID 96	Municipal Conservation	N/A	Municipal Conservation	40	54	63	72	75	82
Harris County WCID-Fondren Road	Municipal Conservation	N/A	Municipal Conservation	9	14	16	18	19	23
	Water Loss Reduction	N/A	Water Loss Reduction	1	4	4	4	4	4
Harris-Montgomery Counties MUD 386	Municipal Conservation	N/A	Municipal Conservation	12	19	20	23	24	29
	Water Loss Reduction	N/A	Water Loss Reduction	9	27	43	58	72	89
Hempstead	Municipal Conservation	N/A	Municipal Conservation	36	56	63	67	67	71
High Prairie WSC	Expanded Use of Groundwater, Leon County	N/A	Carrizo-Wilcox Aquifer, Leon	100	100	100	100	100	100
	Municipal Conservation	N/A	Municipal Conservation	8	11	11	13	15	16
Hillcrest Village	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	3	3	1	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	3	5	5	5	6	6
	Water Loss Reduction	N/A	Water Loss Reduction	2	4	7	9	11	12
Hilltop Lakes WSC	Municipal Conservation	N/A	Municipal Conservation	9	17	22	28	32	38
Hilshire Village	Municipal Conservation	N/A	Municipal Conservation	6	8	8	9	9	10
Hitchcock	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	413	431	452	473	496
	Municipal Conservation	N/A	Municipal Conservation	26	41	45	50	55	65
	Water Loss Reduction	N/A	Water Loss Reduction	11	32	51	68	85	99
HMW SUD	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	924	1,092	1,137	1,147
			Gulf Coast Aquifer System, Montgomery	0	149	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	44	84	133	175	204	259
	NHCRWA GRP	North Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	44	39	34	36	34

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Houston	City of Houston Area 2 Groundwater Development	N/A	Gulf Coast Aquifer System, Harris	36,804	38,253	39,766	40,382	39,609	39,529
	City of Houston GRP	N/A	Gulf Coast Aquifer System, Harris	0	9,030	9,030	9,029	8,996	9,029
			Livingston-Wallisville Lake/Reservoir System	3,397	27,453	26,727	18,518	10,667	5,131
			San Jacinto Regional Return Flows	1,569	10,276	11,789	9,923	7,135	4,238
	City of Houston Reuse	N/A	Indirect Reuse, Houston	0	0	0	0	2,358	2,947
	East Texas Transfer	Sabine River Authority	Toledo Bend Lake/Reservoir	0	0	250,000	250,000	250,000	250,000
	Municipal Conservation	N/A	Municipal Conservation	12,751	23,031	25,883	29,184	29,275	32,421
	Southeast Transmission Line Expansion	N/A	Livingston-Wallisville Lake/Reservoir System	15,758	15,758	15,758	15,758	15,758	15,758
	Water Loss Reduction	N/A	Water Loss Reduction	4,843	14,216	23,155	31,263	38,198	44,730
Humble	Municipal Conservation	N/A	Municipal Conservation	132	237	296	346	367	414
	Water Loss Reduction	N/A	Water Loss Reduction	30	89	162	187	193	196
Huntsville	Expanded Use of Groundwater, Walker County	N/A	Gulf Coast Aquifer System, Walker	0	0	0	0	2,500	2,600
	Municipal Conservation	N/A	Municipal Conservation	297	520	647	811	973	1,277
Irrigation, Austin	Irrigation Conservation	N/A	Irrigation Conservation	2,662	2,662	2,662	2,662	2,662	2,662
Irrigation, Brazoria	Irrigation Conservation	N/A	Irrigation Conservation	29,303	29,303	29,303	29,303	29,303	29,303
Irrigation, Chambers	Irrigation Conservation	N/A	Irrigation Conservation	43,258	43,258	43,258	43,258	43,258	43,258
	LNVA Devers Pump Station Relocation	Lower Neches Valley Authority	Livingston-Wallisville Lake/Reservoir System	5,052	5,052	5,052	5,052	5,052	5,052
	LNVA Neches-Trinity Basin Interconnect	Lower Neches Valley Authority	Sam Rayburn-Steinhagen Lake/Reservoir System	0	33,500	33,500	33,500	33,500	33,500
Irrigation, Fort Bend	Irrigation Conservation	N/A	Irrigation Conservation	4,770	4,770	4,770	4,770	4,770	4,770
Irrigation, Galveston	Irrigation Conservation	N/A	Irrigation Conservation	2,459	2,459	2,459	2,459	2,459	2,459
Irrigation, Harris	Irrigation Conservation	N/A	Irrigation Conservation	125	125	125	125	125	125
Irrigation, Leon	Expanded Use of Groundwater, Leon County	N/A	Carrizo-Wilcox Aquifer, Leon	100	100	100	100	100	100

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Irrigation, Liberty	Expanded Use of Groundwater, Liberty County	N/A	Gulf Coast Aquifer System, Liberty	6,110	6,110	6,110	6,110	6,110	6,110
	Irrigation Conservation	N/A	Irrigation Conservation	14,702	14,702	14,702	14,702	14,702	14,702
	LNVA Devers Pump Station Relocation	Lower Neches Valley Authority	Livingston-Wallisville Lake/Reservoir System	3,369	3,369	3,369	3,369	3,369	3,369
			Trinity Run-of-River, Liberty	665	665	665	665	665	665
	LNVA Neches-Trinity Basin Interconnect	Lower Neches Valley Authority	Sam Rayburn-Steinhagen Lake/Reservoir System	0	33,500	33,500	33,500	33,500	33,500
Irrigation, Montgomery	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	167	943	1,485	1,820	2,019	2,200
Irrigation, Waller	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	0	3	6	9	12
	Irrigation Conservation	N/A	Irrigation Conservation	6,520	6,520	6,520	6,520	6,520	6,520
Jacinto City	Municipal Conservation	N/A	Municipal Conservation	15	9	9	10	10	9
	Water Loss Reduction	N/A	Water Loss Reduction	1	1	1	1	1	1
Jamaica Beach	Municipal Conservation	N/A	Municipal Conservation	12	19	21	23	25	29
Jersey Village	Municipal Conservation	N/A	Municipal Conservation	51	78	88	95	107	163
Jewett	Municipal Conservation	N/A	Municipal Conservation	3	5	4	3	0	0
Johnston Water Utility	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	378	986	1,367	1,619	1,816	1,970
	Municipal Conservation	N/A	Municipal Conservation	26	42	53	62	70	79
Katy	Municipal Conservation	N/A	Municipal Conservation	188	381	495	597	676	798
	WHCRWA GRP	West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	801	1,127	1,308	1,301	1,427	1,529
Keenan WSC	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	21	52	72	86	97
	Municipal Conservation	N/A	Municipal Conservation	4	8	12	16	20	25
Kendleton	Municipal Conservation	N/A	Municipal Conservation	3	18	25	29	32	37
Kings Manor MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	61	126	161	184	202	215
	Municipal Conservation	N/A	Municipal Conservation	17	24	27	30	32	37
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	22	44	55	62	65	68
Kirkmont MUD	Municipal Conservation	N/A	Municipal Conservation	12	17	18	19	21	23

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
La Marque	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	831	868	909	952	997
	Municipal Conservation	N/A	Municipal Conservation	113	194	222	255	281	322
	Water Loss Reduction	N/A	Water Loss Reduction	43	129	212	288	358	422
La Porte	Municipal Conservation	N/A	Municipal Conservation	174	350	409	469	503	578
Lake Bonanza WSC	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	250	307	327	335
			Gulf Coast Aquifer System, Montgomery	0	38	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	8	16	21	27	31	39
Lake Conroe Hills MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	25	47	60	68	76
	Municipal Conservation	N/A	Municipal Conservation	7	14	16	19	21	26
	Water Loss Reduction	N/A	Water Loss Reduction	1	5	8	11	14	14
Lake Jackson	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	560	560	560	560	560	560
	Municipal Conservation	N/A	Municipal Conservation	156	257	280	310	333	371
	Water Loss Reduction	N/A	Water Loss Reduction	53	148	233	304	365	410
Lake Livingston WSC	Water Loss Reduction	N/A	Water Loss Reduction	36	110	182	249	316	384
Lake MUD	Municipal Conservation	N/A	Municipal Conservation	25	40	45	51	57	69
Lazy River Improvement District	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1	40	71	95	111	127
	Municipal Conservation	N/A	Municipal Conservation	7	11	12	13	14	16
League City	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	1,144	1,196	1,251	1,310	1,373
	League City Effluent	N/A	Direct Reuse, League City	5,600	6,720	7,840	8,960	10,080	11,200
	Municipal Conservation	N/A	Municipal Conservation	535	1,195	1,379	1,590	1,706	1,956
	Southeast Transmission Line Expansion	Houston	Livingston-Wallisville Lake/Reservoir System	24,080	24,080	24,080	24,080	24,080	24,080
Leggett WSC	Municipal Conservation	N/A	Municipal Conservation	8	14	16	18	18	21
Liberty	Municipal Conservation	N/A	Municipal Conservation	43	70	82	87	84	88
	Water Loss Reduction	N/A	Water Loss Reduction	18	51	83	113	140	165
Liberty County FWSD 1 Hull	Municipal Conservation	N/A	Municipal Conservation	3	5	5	6	6	7
Livestock, Leon	Expanded Use of Groundwater, Leon County	N/A	Carrizo-Wilcox Aquifer, Leon	200	200	200	200	200	200

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Livestock, Liberty	Expanded Use of Groundwater, Liberty County	N/A	Gulf Coast Aquifer System, Liberty	900	900	900	900	832	832
Livestock, Montgomery	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	17	96	151	185	205	223
Livingston	Municipal Conservation	N/A	Municipal Conservation	67	99	115	123	120	127
	Water Loss Reduction	N/A	Water Loss Reduction	42	130	214	298	380	464
Longhorn Town UD	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	69	68	65	66	74
	Municipal Conservation	N/A	Municipal Conservation	11	15	16	17	17	18
Luce Bayou PUD	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	65	63	62	59	58
	Municipal Conservation	N/A	Municipal Conservation	0	5	7	7	8	9
	Water Loss Reduction	N/A	Water Loss Reduction	1	4	6	8	10	11
Madisonville	Expanded Use of Groundwater, Madison County	N/A	Yegua-Jackson Aquifer, Madison	131	0	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	25	41	47	49	47	49
	Water Loss Reduction	N/A	Water Loss Reduction	14	40	64	85	105	122
Magnolia	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	4	193	393	484	544	602
	Municipal Conservation	N/A	Municipal Conservation	20	38	50	57	57	61
Manufacturing, Austin	Industrial Conservation	N/A	Industrial Conservation	0	0	0	1	1	1
Manufacturing, Brazoria	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	1,857	2,586	3,384	4,245	5,164
	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	5,058	5,137	5,306	5,485	5,676	5,878
	Brazos Saltwater Barrier	Dow Inc	Brazos Run-of-River, Brazoria	10,000	10,000	10,000	10,000	10,000	10,000
	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	3,360	3,360	3,360	3,360	3,360	3,360
		Dow Inc	Harris Reservoir	68,000	68,000	68,000	68,000	68,000	68,000
	GCWA Groundwater Well Development	Gulf Coast Water Authority	Gulf Coast Aquifer System, Galveston	0	0	0	0	0	0
	Industrial Conservation	N/A	Industrial Conservation	1,127	3,506	6,059	8,797	11,730	14,866
	Industrial Supply Reallocation	NRG	Brazos River Authority Main Stem Lake/Reservoir System	22,866	0	0	0	0	0
	New / Expanded Contract with GCWA	Brazos River Authority	Allens Creek Lake/Reservoir	0	23,927	25,017	26,102	27,209	28,293

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Manufacturing, Chambers	Industrial Conservation	N/A	Industrial Conservation	170	528	913	1,325	1,767	2,240
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	5,334	5,645	5,963	6,288	6,621	6,962
Manufacturing, Fort Bend	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	215	223	239	256	275	294
	Industrial Conservation	N/A	Industrial Conservation	19	62	106	155	205	261
	New / Expanded Contract with GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	1,489	1,528	1,568	1,606	1,648	1,688
Manufacturing, Galveston	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	2,587	2,852	3,117	3,382	3,647
	Additional Supply from GCWA	Brazos River Authority	Allens Creek Lake/Reservoir	0	3,148	5,120	7,373	9,297	11,586
		Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	11,477	10,688	9,338	7,758	6,550	5,019
	Industrial Conservation	N/A	Industrial Conservation	219	681	1,178	1,710	2,280	2,889
	Texas City Industrial Complex Reuse	Gulf Coast Water Authority	Direct Reuse, Galveston County Industries	0	11,200	11,200	11,200	11,200	11,200
Manufacturing, Harris	Industrial Conservation	N/A	Industrial Conservation	1,767	5,582	9,820	14,116	18,639	23,402
	New / Expanded Contract with City of Houston	Houston	Indirect Reuse, Houston	0	0	0	0	210	733
			Livingston-Wallisville Lake/Reservoir System	0	0	0	409	875	1,052
			San Jacinto Regional Return Flows	0	0	0	228	635	1,053
	New / Expanded Contract with Regional Providers	San Jacinto River Authority	San Jacinto Regional Return Flows	26,424	31,259	36,471	38,811	41,181	43,609
Manufacturing, Leon	Expanded Use of Groundwater, Leon County	N/A	Carrizo-Wilcox Aquifer, Leon	0	150	150	150	150	150
	Industrial Conservation	N/A	Industrial Conservation	4	14	24	35	46	59
Manufacturing, Liberty	Industrial Conservation	N/A	Industrial Conservation	1	4	6	9	12	15
Manufacturing, Montgomery	Industrial Conservation	N/A	Industrial Conservation	10	31	54	78	104	132
	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	914	1,168	1,364	1,508	1,620	1,729
Manufacturing, Walker	Industrial Conservation	N/A	Industrial Conservation	2	4	7	10	14	17
Manufacturing, Waller	Industrial Conservation	N/A	Industrial Conservation	1	2	4	6	8	10
Manvel	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	1,693	1,867	2,040	2,214	2,387
	Manvel Supply Expansion	Pearland	Brazos Run-of-River, Fort Bend	3,330	6,690	4,190	4,190	4,190	4,190
	Municipal Conservation	N/A	Municipal Conservation	32	74	123	204	254	320

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Mason Creek UD	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	235	232	228	247	263
	Municipal Conservation	N/A	Municipal Conservation	39	55	59	64	68	75
Meadowcreek MUD	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	0	4	7	10	12
	Municipal Conservation	N/A	Municipal Conservation	9	14	16	18	20	22
Meadows Place	Fort Bend WCID 2 GRP	Fort Bend County WCID 2	Gulf Coast Aquifer System, Fort Bend	0	0	12	42	61	80
	Municipal Conservation	N/A	Municipal Conservation	24	35	39	45	49	56
Memorial Point UD	Municipal Conservation	N/A	Municipal Conservation	5	7	8	10	10	12
Memorial Villages Water Authority	Municipal Conservation	N/A	Municipal Conservation	148	196	220	245	254	278
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	2,450	2,445	2,815	2,958	2,868	2,843
Mercy WSC	Municipal Conservation	N/A	Municipal Conservation	12	17	18	19	20	22
	Water Loss Reduction	N/A	Water Loss Reduction	5	12	19	25	29	34
Mining, Austin	Expanded Use of Groundwater, Austin County	N/A	Gulf Coast Aquifer System, Austin	100	100	100	100	100	100
Mining, Brazoria	New / Expanded Contract with GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	332	396	459	526	598	675
Mining, Harris	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	2,709	2,737	2,763	2,789	2,815	2,841
Mining, Liberty	Expanded Use of Groundwater, Liberty County	N/A	Gulf Coast Aquifer System, Liberty	175	185	185	185	185	185
Mining, Montgomery	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1	7	12	18	22	28
Mining, Polk	Expanded Use of Groundwater, Polk County	N/A	Gulf Coast Aquifer System, Polk	100	100	100	100	100	100
Mining, San Jacinto	Expanded Use of Groundwater, San Jacinto County	N/A	Gulf Coast Aquifer System, San Jacinto	100	100	100	100	100	100
Missouri City	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	5,045	5,159	5,391	5,642	5,909	6,192
	Missouri City GRP	N/A	Direct Reuse, Missouri City	579	678	725	747	786	804
	Municipal Conservation	N/A	Municipal Conservation	47	82	117	144	169	202
Mont Belvieu	Expanded Use of Groundwater, Chambers County	N/A	Gulf Coast Aquifer System, Chambers	2,000	2,000	2,000	2,693	3,722	3,036
	Municipal Conservation	N/A	Municipal Conservation	126	220	259	326	395	517
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	0	0	0	0	0	1,824
	Water Loss Reduction	N/A	Water Loss Reduction	46	167	278	459	681	953

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Montgomery	Brackish Groundwater Supplies	N/A	Gulf Coast Aquifer System (Catahoula Formation), Montgomery	0	286	286	286	286	286
	Municipal Conservation	N/A	Municipal Conservation	21	42	52	58	58	62
	Water Loss Reduction	N/A	Water Loss Reduction	5	16	27	36	36	37
Montgomery County MUD 105	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1	33	60	79	92	104
	Municipal Conservation	N/A	Municipal Conservation	6	9	10	11	13	14
Montgomery County MUD 112	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	749	836	855	1,078
			Gulf Coast Aquifer System, Montgomery	5	142	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	24	35	41	45	47	60
Montgomery County MUD 115	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	107	194	255	308	336	378
	Municipal Conservation	N/A	Municipal Conservation	24	35	40	44	48	54
Montgomery County MUD 119	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	1,211	1,399	1,451	1,491
			Gulf Coast Aquifer System, Montgomery	6	221	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	43	82	116	137	148	173
Montgomery County MUD 126	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	138	155	199	256	304	298
	Municipal Conservation	N/A	Municipal Conservation	4	8	11	14	16	17
Montgomery County MUD 127	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	46	79	98	115	124	139
Montgomery County MUD 137	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	59	111	140	157	166
	Municipal Conservation	N/A	Municipal Conservation	8	15	19	23	26	30
Montgomery County MUD 139	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	2	92	161	206	239	264
	Municipal Conservation	N/A	Municipal Conservation	22	41	49	51	46	47
Montgomery County MUD 15	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	173	245	293	317	337	351
	Municipal Conservation	N/A	Municipal Conservation	20	34	38	44	49	59
Montgomery County MUD 18	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	50	135	205	268	330
	Municipal Conservation	N/A	Municipal Conservation	53	72	79	88	94	105
	Water Loss Reduction	N/A	Water Loss Reduction	13	41	67	79	82	84

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Montgomery County MUD 19	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	572	642	643	647
			Gulf Coast Aquifer System, Montgomery	9	121	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	15	19	20	21	20	20
Montgomery County MUD 24	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	2	0	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	6	12	15	17	17	19
Montgomery County MUD 56	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1	15	29	36	41	46
	Municipal Conservation	N/A	Municipal Conservation	3	6	7	8	9	10
Montgomery County MUD 8	Montgomery County MUDs 8 and 9 Supply Expansion	N/A	Indirect Reuse, Huntsville	541	506	474	467	450	450
			Indirect Reuse, Montgomery County MUDs 8 and 9	210	233	256	261	276	295
	Municipal Conservation	N/A	Municipal Conservation	44	69	78	90	98	114
	Water Loss Reduction	N/A	Water Loss Reduction	9	27	45	62	74	77
Montgomery County MUD 83	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	51	93	118	135	147
	Municipal Conservation	N/A	Municipal Conservation	12	18	20	22	24	28
	Water Loss Reduction	N/A	Water Loss Reduction	4	11	18	25	31	38
Montgomery County MUD 84	Municipal Conservation	N/A	Municipal Conservation	16	23	26	30	33	38
Montgomery County MUD 88	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	507	566	583	601
			Gulf Coast Aquifer System, Montgomery	4	99	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	19	29	32	34	36	40
Montgomery County MUD 89	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	757	870	902	931
			Gulf Coast Aquifer System, Montgomery	5	146	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	27	39	44	49	52	59
Montgomery County MUD 9	Montgomery County MUDs 8 and 9 Supply Expansion	N/A	Gulf Coast Aquifer System (Catahoula Formation), Montgomery	682	682	682	682	682	682
			Indirect Reuse, Huntsville	608	585	559	553	533	533
			Indirect Reuse, Montgomery County MUDs 8 and 9	209	232	255	261	275	294
	Municipal Conservation	N/A	Municipal Conservation	60	86	95	107	117	133

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
	Water Loss Reduction	N/A	Water Loss Reduction	15	45	74	103	123	127
Montgomery County MUD 94	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	2	127	227	292	338	381
	Municipal Conservation	N/A	Municipal Conservation	25	39	44	51	56	64
Montgomery County MUD 95	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	2,128	2,097	2,131	2,118	2,103
	Municipal Conservation	N/A	Municipal Conservation	18	38	50	55	52	55
Montgomery County MUD 98	Municipal Conservation	N/A	Municipal Conservation	9	14	16	18	20	25
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	0	0	1	7	14	18
Montgomery County MUD 99	Municipal Conservation	N/A	Municipal Conservation	10	18	23	26	27	29
	Water Loss Reduction	N/A	Water Loss Reduction	2	8	14	20	25	25
Montgomery County UD 2	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	6	124	179	217	246	271
	Municipal Conservation	N/A	Municipal Conservation	13	21	24	28	30	34
Montgomery County UD 3	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	0	27	57	82
	Municipal Conservation	N/A	Municipal Conservation	32	52	60	69	76	88
	Water Loss Reduction	N/A	Water Loss Reduction	5	16	24	25	25	26
Montgomery County UD 4	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	32	118	177	231
	Municipal Conservation	N/A	Municipal Conservation	37	58	66	75	82	94
	Water Loss Reduction	N/A	Water Loss Reduction	7	20	29	30	32	33
Montgomery County WCID 1	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	69	125	155	178	193
	Municipal Conservation	N/A	Municipal Conservation	16	29	34	40	44	53
Morgans Point	Municipal Conservation	N/A	Municipal Conservation	4	6	7	7	7	7
Mount Houston Road MUD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	585	584	580	572	564
	Municipal Conservation	N/A	Municipal Conservation	22	33	36	40	42	48
MSEC Enterprises	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	1,207	3,357	4,181	5,294	5,474	5,825
	Municipal Conservation	N/A	Municipal Conservation	132	260	342	438	517	619
Nassau Bay	Municipal Conservation	N/A	Municipal Conservation	35	47	52	55	54	57
	Water Loss Reduction	N/A	Water Loss Reduction	11	31	49	65	80	80

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Needville	Municipal Conservation	N/A	Municipal Conservation	12	27	38	47	52	62
New Caney MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	247	512	700	855	931
	Municipal Conservation	N/A	Municipal Conservation	65	147	192	249	297	381
	Water Loss Reduction	N/A	Water Loss Reduction	13	44	80	113	122	127
New Waverly	Municipal Conservation	N/A	Municipal Conservation	5	8	9	8	7	6
Newport MUD	Municipal Conservation	N/A	Municipal Conservation	55	105	121	148	171	212
Nitsch and Son Utility	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	33	32	30	29	27
	Municipal Conservation	N/A	Municipal Conservation	7	11	12	14	15	17
Normangee	Municipal Conservation	N/A	Municipal Conservation	3	4	4	4	2	0
North Belt UD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	598	690	729	733	742
	Municipal Conservation	N/A	Municipal Conservation	20	27	33	37	38	40
North Channel Water Authority	Municipal Conservation	N/A	Municipal Conservation	433	930	1,081	1,273	1,375	1,576
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	1,955	1,229	845	437	153	0
	Water Loss Reduction	N/A	Water Loss Reduction	117	345	578	794	976	1,148
North Forest MUD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	151	152	151	150	153
	Municipal Conservation	N/A	Municipal Conservation	6	9	10	11	12	14
North Fort Bend Water Authority	Municipal Conservation	N/A	Municipal Conservation	2,229	4,603	5,557	6,876	7,606	9,053
	NFBWA GRP	Houston	Indirect Reuse, Houston	0	35,443	34,685	33,728	32,116	31,700
			Livingston-Wallisville Lake/Reservoir System	19,279	16,728	18,731	16,729	14,367	10,951
			San Jacinto Regional Return Flows	11,354	6,426	8,508	9,346	10,425	10,967
	NFBWA Member District Reuse	N/A	Direct Reuse, North Fort Bend Water Authority	4,280	4,280	4,280	4,280	4,280	4,280
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Fort Bend County	213	591	870	1,108	1,290	1,471
			Direct Reuse, Master Planned Communities, Harris County	6	8	9	9	13	17
	Water Loss Reduction	N/A	Water Loss Reduction	495	1,585	2,718	3,861	4,113	4,297

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
North Green MUD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	376	389	393	401	403
	Municipal Conservation	N/A	Municipal Conservation	12	15	16	18	19	21
North Harris County Regional Water Authority	Municipal Conservation	N/A	Municipal Conservation	4,691	9,767	11,117	13,126	13,975	16,393
	NHCRWA GRP	Houston	Indirect Reuse, Houston	0	64,637	65,127	68,672	69,152	71,147
			Livingston-Wallisville Lake/Reservoir System	42,398	51,738	53,061	44,402	36,172	26,354
		N/A	Gulf Coast Aquifer System, Harris	2,471	2,471	2,471	2,471	2,471	2,471
			San Jacinto Regional Return Flows	24,969	19,874	24,098	24,805	26,250	26,387
	NHCRWA Member District Reuse	N/A	Direct Reuse, North Harris County Regional Water Authority	300	300	300	300	300	300
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Harris County	342	509	732	840	1,103	1,277
North Zulch MUD	Expanded Use of Groundwater, Madison County	N/A	Queen City Aquifer, Madison	50	3	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	10	17	19	22	24	28
	Water Loss Reduction	N/A	Water Loss Reduction	3	9	15	20	25	29
Northeast Harris County MUD 1	Municipal Conservation	N/A	Municipal Conservation	5	9	10	11	11	13
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	97	87	81	75	71	68
	Water Loss Reduction	N/A	Water Loss Reduction	3	9	14	19	24	29
Northwest Harris County MUD 16	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	80	79	81	94	101
	Municipal Conservation	N/A	Municipal Conservation	16	25	28	30	32	37
Oak Hollow Utility	Municipal Conservation	N/A	Municipal Conservation	7	11	12	14	15	18
Oak Ridge North	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	79	272	278	379	355	335
	Municipal Conservation	N/A	Municipal Conservation	16	31	39	45	43	45
	Water Loss Reduction	N/A	Water Loss Reduction	10	35	59	88	108	126
Onalaska WSC	Municipal Conservation	N/A	Municipal Conservation	15	28	32	39	44	55
One Five O WSC	Municipal Conservation	N/A	Municipal Conservation	9	15	16	18	20	23
	Water Loss Reduction	N/A	Water Loss Reduction	3	9	15	19	23	26

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Oyster Creek	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	13	13	13	13	13	13
	Municipal Conservation	N/A	Municipal Conservation	8	12	13	14	13	13
	Water Loss Reduction	N/A	Water Loss Reduction	6	17	27	35	42	46
P B & S C WSC	Municipal Conservation	N/A	Municipal Conservation	8	12	13	14	14	16
Palmer Plantation MUD 1	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	1	1	1	4	15
	Municipal Conservation	N/A	Municipal Conservation	12	17	18	19	20	23
	Water Loss Reduction	N/A	Water Loss Reduction	1	1	1	1	1	1
Palmer Plantation MUD 2	Municipal Conservation	N/A	Municipal Conservation	10	16	17	19	21	24
	Water Loss Reduction	N/A	Water Loss Reduction	1	1	1	1	1	1
Panorama Village	Brackish Groundwater Supplies	N/A	Gulf Coast Aquifer System (Catahoula Formation), Montgomery	0	0	48	48	48	52
	Municipal Conservation	N/A	Municipal Conservation	20	28	31	35	38	44
	Water Loss Reduction	N/A	Water Loss Reduction	4	12	17	18	18	19
Parkway MUD	Municipal Conservation	N/A	Municipal Conservation	20	35	39	44	48	57
Pasadena	Municipal Conservation	N/A	Municipal Conservation	674	1,422	1,599	1,830	1,860	2,099
Pattison WSC	Municipal Conservation	N/A	Municipal Conservation	7	10	12	13	14	16
	Water Loss Reduction	N/A	Water Loss Reduction	5	14	23	32	40	48
Patton Village	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	7	19	31	35	36
	Municipal Conservation	N/A	Municipal Conservation	4	8	11	16	19	24
Pearland	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	2,018	2,064	2,156	2,257	2,364	2,477
	City of Pearland Reuse	N/A	Direct Reuse, Pearland	0	314	1,154	1,154	1,154	1,154
	Municipal Conservation	N/A	Municipal Conservation	725	1,588	1,885	2,271	2,441	2,853
	Pearland SWTP	N/A	BRA System Operations Permit Supply	1,977	1,822	1,668	1,511	1,356	1,201
			Brazos River Authority Main Stem Lake/Reservoir System	1,141	1,286	1,383	1,473	1,555	1,633
			Brazos Run-of-River, Fort Bend	12,784	9,388	9,353	9,319	9,285	9,249
	Water Loss Reduction	N/A	Water Loss Reduction	158	500	824	1,142	1,332	1,353

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Pecan Grove MUD 1	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	5	29	52	73	93
	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	317	329	352	377	404	432
	Municipal Conservation	N/A	Municipal Conservation	85	150	173	202	228	266
	Water Loss Reduction	N/A	Water Loss Reduction	16	50	61	62	62	63
Phelps SUD	Municipal Conservation	N/A	Municipal Conservation	6	10	12	13	15	18
Pine Village PUD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	169	169	169	169	169
	Municipal Conservation	N/A	Municipal Conservation	9	15	16	18	20	23
Pinehurst Decker Prairie WSC	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	19	40	58	66	72
	Municipal Conservation	N/A	Municipal Conservation	5	9	12	16	20	24
	Water Loss Reduction	N/A	Water Loss Reduction	2	8	15	24	32	39
Pinewood Community	Municipal Conservation	N/A	Municipal Conservation	3	5	6	7	7	9
	NHCRWA GRP	North Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	14	14	15	18	16
Plantation MUD	Municipal Conservation	N/A	Municipal Conservation	13	22	25	29	32	38
	Sugar Land IWRP	Sugar Land	Gulf Coast Aquifer System, Fort Bend	0	0	13	16	19	26
	Water Loss Reduction	N/A	Water Loss Reduction	1	1	1	1	1	1
Point Aquarius MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	29	60	80	99
	Municipal Conservation	N/A	Municipal Conservation	17	28	35	43	48	56
Porter SUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	315	1,182	1,891	2,373	2,734	3,062
	Municipal Conservation	N/A	Municipal Conservation	92	201	254	318	366	460
Prairie View	Municipal Conservation	N/A	Municipal Conservation	25	40	47	56	64	74
Prairie View A&M University	Municipal Conservation	N/A	Municipal Conservation	33	61	68	79	87	106
Providence WSC	Municipal Conservation	N/A	Municipal Conservation	11	17	18	19	20	21

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Quadvest	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	22	24	23	24	23	21
	Expanded Use of Groundwater, Liberty County	N/A	Gulf Coast Aquifer System, Liberty	0	450	450	450	725	725
	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	2	902	1,832	2,441	2,809	3,189
	Municipal Conservation	N/A	Municipal Conservation	242	486	636	828	1,022	1,278
	NFBWA GRP	North Fort Bend Water Authority	Gulf Coast Aquifer System, Fort Bend	0	144	331	485	596	648
	NHCRWA GRP	North Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	4	9	9	8	8
	Rosenberg GRP	Rosenberg	Gulf Coast Aquifer System, Fort Bend	0	165	341	498	619	693
Quail Valley UD	Missouri City GRP	Missouri City	Direct Reuse, Quail Valley UD	59	84	94	140	164	188
	Municipal Conservation	N/A	Municipal Conservation	60	109	123	146	169	201
	Water Loss Reduction	N/A	Water Loss Reduction	14	40	64	91	107	111
Ranch Crest Water	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1	34	60	75	85	95
	Municipal Conservation	N/A	Municipal Conservation	6	9	11	12	13	14
Rayford Road MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	267	780	825	1,008	1,052	1,091
	Municipal Conservation	N/A	Municipal Conservation	53	81	91	101	106	119
Raywood WSC	Municipal Conservation	N/A	Municipal Conservation	5	8	8	10	11	14
	Water Loss Reduction	N/A	Water Loss Reduction	2	5	9	12	16	20
Richmond	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	18	118	230	353	487
	Municipal Conservation	N/A	Municipal Conservation	89	160	188	216	238	279
	Richmond GRP	County-Other, Fort Bend	Gulf Coast Aquifer System, Fort Bend	0	0	0	0	0	0
		Fort Bend County MUD 121	Gulf Coast Aquifer System, Fort Bend	0	0	0	0	0	0
		Fort Bend County MUD 140	Gulf Coast Aquifer System, Fort Bend	0	0	0	0	0	0
		N/A	BRA System Operations Permit Supply	1,195	1,091	1,019	884	806	771
			Brazos River Authority Main Stem Lake/Reservoir System	84	325	491	644	786	917

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Richwood	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	224	224	224	224	224	224
	Municipal Conservation	N/A	Municipal Conservation	14	22	23	26	27	31
River Plantation MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	45	135	256	281	307
	Municipal Conservation	N/A	Municipal Conservation	18	30	38	50	54	60
	River Plantation Reuse	N/A	Direct Reuse, River Plantation MUD	25	25	25	25	25	25
Riverside SUD	Municipal Conservation	N/A	Municipal Conservation	18	31	37	45	53	67
	Water Loss Reduction	N/A	Water Loss Reduction	8	24	41	59	79	101
Rolling Fork PUD	Municipal Conservation	N/A	Municipal Conservation	12	17	20	22	22	24
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	25	109	117	120	116	114
Roman Forest Consolidated MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	36	79	125	151	159
	Municipal Conservation	N/A	Municipal Conservation	8	14	20	29	35	41
	Water Loss Reduction	N/A	Water Loss Reduction	2	8	17	29	39	46
Rosenberg	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	32	186	332	470	601
	Municipal Conservation	N/A	Municipal Conservation	192	417	551	711	828	1,051
	Rosenberg GRP	N/A	Brazos River Authority Main Stem Lake/Reservoir System	0	0	1,105	1,970	2,672	3,199
			Brazos Run-of-River, Brazoria	1,826	2,872	2,765	2,632	2,514	2,456
	Water Loss Reduction	N/A	Water Loss Reduction	53	185	344	506	663	818
Royal Valley Utilities	Municipal Conservation	N/A	Municipal Conservation	22	30	33	39	42	48
	NFBWA GRP	North Fort Bend Water Authority	Gulf Coast Aquifer System, Fort Bend	0	27	50	129	143	172
	Sugar Land IWRP	Sugar Land	Gulf Coast Aquifer System, Fort Bend	0	32	45	92	101	120
Sagemeadow UD	Municipal Conservation	N/A	Municipal Conservation	25	37	40	45	48	57
San Jacinto River Authority	Montgomery County Supply Expansion	N/A	Gulf Coast Aquifer System, Montgomery	0	0	0	0	0	0
San Jacinto SUD	Municipal Conservation	N/A	Municipal Conservation	11	18	20	22	23	27
San Leon MUD	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	368	385	402	422	442
	Municipal Conservation	N/A	Municipal Conservation	27	43	49	56	61	72
Seabrook	Municipal Conservation	N/A	Municipal Conservation	63	111	124	144	160	186

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Sealy	Municipal Conservation	N/A	Municipal Conservation	38	60	71	76	74	78
Sedona Lakes MUD 1	Manvel Supply Expansion	Pearland	Brazos Run-of-River, Fort Bend	50	50	50	50	50	50
	Municipal Conservation	N/A	Municipal Conservation	9	13	15	18	19	22
Sequoia Improvement District	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	16	13	10	7	4
	Municipal Conservation	N/A	Municipal Conservation	4	7	7	8	8	9
	Water Loss Reduction	N/A	Water Loss Reduction	2	4	7	9	11	13
Shenandoah	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	9	382	661	878	1,016	1,133
	Municipal Conservation	N/A	Municipal Conservation	54	90	108	115	106	105
	Water Loss Reduction	N/A	Water Loss Reduction	14	48	79	82	83	83
Shepherd	Municipal Conservation	N/A	Municipal Conservation	11	17	18	20	20	22
Shoreacres	Municipal Conservation	N/A	Municipal Conservation	10	14	15	16	17	19
	Water Loss Reduction	N/A	Water Loss Reduction	8	23	37	50	62	72
Sienna Plantation	Missouri City GRP	Missouri City	Direct Reuse, Sienna Plantation	2,706	2,785	2,903	2,955	3,013	3,092
	Municipal Conservation	N/A	Municipal Conservation	217	356	401	468	535	632
Soda WSC	Municipal Conservation	N/A	Municipal Conservation	7	12	14	17	19	23
	Water Loss Reduction	N/A	Water Loss Reduction	3	10	16	24	30	37
South Cleveland WSC	Expanded Use of Groundwater, Liberty County	N/A	Gulf Coast Aquifer System, Liberty	0	0	0	650	650	650
	Municipal Conservation	N/A	Municipal Conservation	19	43	77	114	153	218
	Water Loss Reduction	N/A	Water Loss Reduction	3	7	9	11	14	16
South Houston	Municipal Conservation	N/A	Municipal Conservation	52	105	125	134	132	149
Southeast WSC	Municipal Conservation	N/A	Municipal Conservation	11	18	20	22	24	28
Southern Montgomery County MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	224	218	321	349	352
	Municipal Conservation	N/A	Municipal Conservation	32	51	76	94	99	119
Southern Water	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	66	82	89	78	72
	Municipal Conservation	N/A	Municipal Conservation	15	24	27	31	33	38
	Water Loss Reduction	N/A	Water Loss Reduction	3	8	10	10	10	10

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Southside Place	Municipal Conservation	N/A	Municipal Conservation	8	13	14	15	15	16
	Water Loss Reduction	N/A	Water Loss Reduction	2	5	9	10	10	10
Southwest Harris County MUD 1	Municipal Conservation	N/A	Municipal Conservation	5	3	3	4	3	4
Splendora	Expanded Use of Groundwater, Liberty County	N/A	Gulf Coast Aquifer System, Liberty	500	500	1,500	1,500	1,500	1,500
	Municipal Conservation	N/A	Municipal Conservation	42	100	140	204	271	361
	Water Loss Reduction	N/A	Water Loss Reduction	14	50	100	169	243	289
Spring Creek UD	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	938	1,070	1,090	1,090
			Gulf Coast Aquifer System, Montgomery	0	150	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	45	91	105	125	142	176
Spring Meadows MUD	Municipal Conservation	N/A	Municipal Conservation	12	23	27	31	33	39
Spring Valley	Municipal Conservation	N/A	Municipal Conservation	34	51	56	61	62	68
	Water Loss Reduction	N/A	Water Loss Reduction	8	24	38	51	54	54
Stanley Lake MUD	Brackish Groundwater Supplies	N/A	Gulf Coast Aquifer System (Catahoula Formation), Montgomery	0	27	65	96	119	143
	Municipal Conservation	N/A	Municipal Conservation	23	34	39	42	44	49
Steam-Electric Power, Austin	Expanded Use of Groundwater, Austin County	N/A	Gulf Coast Aquifer System, Austin	900	900	900	900	900	900
Steam-Electric Power, Fort Bend	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	590	3,434	6,122	8,668	11,082
Steam-Electric Power, Harris	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	14,835	14,835	14,835	14,835	14,835	14,835
Steam-Electric Power, Montgomery	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	315	501	631	711	758	801
Suburban Utility	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	0	105	115	105	89
	Municipal Conservation	N/A	Municipal Conservation	18	28	36	45	50	59
	Water Loss Reduction	N/A	Water Loss Reduction	7	20	40	56	70	82

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Sugar Land	Additional Supply from BRA	Brazos River Authority	Allens Creek Lake/Reservoir	0	54	345	672	1,033	1,424
	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	2,692	2,790	2,990	3,205	3,434	3,677
	Municipal Conservation	N/A	Municipal Conservation	2,169	2,971	3,194	3,483	3,563	3,894
	Sugar Land IWRP	N/A	Brazos River Authority Main Stem Lake/Reservoir System	2,160	2,380	2,539	2,664	2,905	3,045
			Direct Reuse, Sugar Land	1,232	1,680	1,680	1,680	1,680	1,680
Sunbelt FWSD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	1,600	1,600	1,600	1,600	1,600
	Municipal Conservation	N/A	Municipal Conservation	94	188	213	250	274	329
	Water Loss Reduction	N/A	Water Loss Reduction	21	62	100	135	164	175
Surfside Beach	Municipal Conservation	N/A	Municipal Conservation	9	19	22	23	21	20
Sweeny	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	12	19	35	44	53	48
	Municipal Conservation	N/A	Municipal Conservation	17	27	30	32	32	34
T & W Water Service	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	1,603	1,932	2,033	2,007
			Gulf Coast Aquifer System, Montgomery	0	223	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	90	182	293	406	524	672
Tarkington SUD	Municipal Conservation	N/A	Municipal Conservation	17	27	30	34	37	44
	Water Loss Reduction	N/A	Water Loss Reduction	3	8	8	9	9	9
TDCJ Darrington Unit	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	41	68	75	80	82	80
	Municipal Conservation	N/A	Municipal Conservation	19	23	23	25	25	27
TDCJ Ferguson Unit	Expanded Use of Groundwater, Madison County	N/A	Queen City Aquifer, Madison	154	29	0	0	0	0
			Yegua-Jackson Aquifer, Madison	14	0	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	27	32	33	35	37	39
TDCJ Jester Units	Municipal Conservation	N/A	Municipal Conservation	14	17	18	19	20	22
TDCJ Ramsey Area	BWSC Reservoir and Pump Station Expansion	Brazosport Water Authority	Harris Reservoir	250	250	250	250	250	250
	Municipal Conservation	N/A	Municipal Conservation	70	87	91	97	102	111
Tempe WSC 1	Municipal Conservation	N/A	Municipal Conservation	8	14	16	16	17	18

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Texas City	Additional Supply from GCWA	Gulf Coast Water Authority	Brazos Run-of-River, Fort Bend	9,744	9,744	9,744	9,744	9,744	9,744
	GCWA Coastal Desalination	Gulf Coast Water Authority	Gulf of Mexico	0	2,374	2,481	2,597	2,720	2,849
	Municipal Conservation	N/A	Municipal Conservation	242	452	517	602	661	794
	Water Loss Reduction	N/A	Water Loss Reduction	56	165	269	366	407	411
The Commons Water Supply	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	69	59	51	44	37
	Municipal Conservation	N/A	Municipal Conservation	15	21	23	25	26	29
	Water Loss Reduction	N/A	Water Loss Reduction	4	12	20	26	32	36
The Woodlands	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	1,746	8,437	8,579	10,597	11,536	13,614
	Municipal Conservation	N/A	Municipal Conservation	289	1,289	1,569	1,788	1,662	1,983
	Water Loss Reduction	N/A	Water Loss Reduction	169	505	822	1,108	1,207	1,332
Thunderbird UD	Missouri City GRP	Missouri City	Gulf Coast Aquifer System, Fort Bend	0	19	46	53	64	86
	Municipal Conservation	N/A	Municipal Conservation	26	41	47	53	55	62
Tomball	Municipal Conservation	N/A	Municipal Conservation	124	268	332	373	343	378
	NHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	2,471	3,202	3,569	3,685	3,979	4,048
	Water Loss Reduction	N/A	Water Loss Reduction	29	89	161	226	242	248
Trail of the Lakes MUD	Municipal Conservation	N/A	Municipal Conservation	38	71	80	94	107	131
	WHCRWA GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	1,172	1,207	1,225	1,264	1,273
Trinity	Municipal Conservation	N/A	Municipal Conservation	13	20	21	22	23	26
Trinity Bay Conservation District	Municipal Conservation	N/A	Municipal Conservation	73	148	183	242	369	481
	Water Loss Reduction	N/A	Water Loss Reduction	27	80	139	194	254	316
Trinity Rural WSC	Municipal Conservation	N/A	Municipal Conservation	12	18	18	19	20	22
Valley Ranch MUD 1	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	27	0	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	12	21	25	29	32	39
Varner Creek UD	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	126	124	125	126	127	122
	Municipal Conservation	N/A	Municipal Conservation	11	18	19	21	22	24

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Walker County SUD	Expanded Use of Groundwater, Walker County	N/A	Gulf Coast Aquifer System, Walker	100	100	100	100	100	100
	Municipal Conservation	N/A	Municipal Conservation	37	63	93	121	148	197
Waller	Expanded Use of Groundwater, Waller County	N/A	Gulf Coast Aquifer System, Waller	102	171	169	168	168	167
	Municipal Conservation	N/A	Municipal Conservation	18	31	37	41	44	49
Wallis	Municipal Conservation	N/A	Municipal Conservation	5	9	9	11	12	14
Waterwood MUD 1	Municipal Conservation	N/A	Municipal Conservation	5	8	8	9	9	10
Webster	Municipal Conservation	N/A	Municipal Conservation	80	186	217	219	168	172
	Southeast Transmission Line Expansion	N/A	Livingston-Wallisville Lake/Reservoir System	90	90	90	90	90	90
	Water Loss Reduction	N/A	Water Loss Reduction	28	82	130	174	215	250
West Columbia	Brazoria County Groundwater Reallocation	N/A	Gulf Coast Aquifer System, Brazoria	178	173	176	176	175	163
	Municipal Conservation	N/A	Municipal Conservation	15	26	28	31	33	39
	Water Loss Reduction	N/A	Water Loss Reduction	3	3	3	3	3	3
West End WSC	Municipal Conservation	N/A	Municipal Conservation	4	6	7	8	8	10
	Water Loss Reduction	N/A	Water Loss Reduction	2	7	12	15	19	22
West Harris County MUD 6	City of Houston GRP	Houston	Gulf Coast Aquifer System, Harris	0	67	65	63	64	65
	Municipal Conservation	N/A	Municipal Conservation	9	11	12	13	13	15
West Harris County Regional Water Authority	Municipal Conservation	N/A	Municipal Conservation	2,545	5,722	6,519	7,473	8,081	9,469
	Wastewater Reclamation for Municipal Irrigation	N/A	Direct Reuse, Master Planned Communities, Fort Bend County	4	6	11	15	19	23
			Direct Reuse, Master Planned Communities, Harris County	205	396	442	467	614	755
	WHCRWA GRP	Houston	Indirect Reuse, Houston	0	59,774	64,151	63,439	59,699	55,730
			Livingston-Wallisville Lake/Reservoir System	16,324	18,741	18,621	15,260	12,480	9,175
			San Jacinto Regional Return Flows	9,614	7,198	8,457	8,524	9,056	9,186
West University Place	Municipal Conservation	N/A	Municipal Conservation	96	168	186	212	235	266
	Water Loss Reduction	N/A	Water Loss Reduction	15	24	24	24	23	23

Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac ft)					
				2030	2040	2050	2060	2070	2080
Westfield Garden Park	Municipal Conservation	N/A	Municipal Conservation	3	4	4	4	5	5
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	50	66	66	66	65	65
Westwood North WSC	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	545	615	614	721
			Gulf Coast Aquifer System, Montgomery	3	95	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	17	26	31	35	36	44
Westwood Shores MUD	Municipal Conservation	N/A	Municipal Conservation	5	9	10	10	10	11
	Water Loss Reduction	N/A	Water Loss Reduction	1	2	4	5	5	6
	Westwood Shores MUD Reuse	N/A	Direct Reuse, Westwood Shores MUD	150	150	150	150	150	150
White Oak WSC	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	27	51	74	87	102
	Municipal Conservation	N/A	Municipal Conservation	5	10	12	16	19	24
Willis	Municipal Conservation	N/A	Municipal Conservation	30	53	58	63	70	85
	Water Loss Reduction	N/A	Water Loss Reduction	9	26	44	62	80	96
Willow Creek Farms MUD	Municipal Conservation	N/A	Municipal Conservation	26	37	45	53	56	61
	Water Loss Reduction	N/A	Water Loss Reduction	1	1	1	1	1	1
Windfern Forest Utility District	Municipal Conservation	N/A	Municipal Conservation	23	31	33	37	39	43
	New / Expanded Contract with City of Houston	Houston	Livingston-Wallisville Lake/Reservoir System	471	626	636	638	628	623
Wood Branch Village	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	33	74	123	140	153
	Municipal Conservation	N/A	Municipal Conservation	6	12	16	24	28	35
Wood Trace MUD 1	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	20	48	69	78	89
	Municipal Conservation	N/A	Municipal Conservation	8	16	16	16	19	23
Woodcreek MUD	City of Houston GRP	Houston	Livingston-Wallisville Lake/Reservoir System	0	383	382	380	379	377
	Municipal Conservation	N/A	Municipal Conservation	14	20	21	23	24	26
Woodland Oaks Utility	Montgomery County Supply Expansion	San Jacinto River Authority	Conroe Lake/Reservoir	0	0	329	386	401	409
			Gulf Coast Aquifer System, Montgomery	0	55	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	13	22	26	32	37	45
Woodridge MUD	Montgomery County Supply Expansion	San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	13	0	0	0	0	0
	Municipal Conservation	N/A	Municipal Conservation	6	11	13	16	18	22

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Table 5-A9 – Source Water Balance After WMS Allocation

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Allens Creek Lake/Reservoir	H	Reservoir	Brazos	0	33,911	41,570	50,152	58,416	66,490	0	65,739	58,080	49,498	41,234	33,160
Anahuac Lake/Reservoir	H	Reservoir	Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Brazoria Lake/Reservoir	H	Reservoir	Brazos	0	0	0	0	0	0	0	0	0	0	0	0
Brazos River Alluvium Aquifer	H	Austin	Brazos	0	0	0	0	0	0	7,944	7,944	7,944	7,944	7,944	7,944
Brazos River Alluvium Aquifer	H	Waller	Brazos	868	868	868	868	868	868	11,159	11,159	11,159	11,159	11,159	11,159
Brazos Run-of-River	H	Brazoria	Brazos	175,343	173,814	172,284	170,755	169,225	167,696	0	0	0	0	0	0
Brazos Run-of-River	H	Fort Bend	Brazos	280,855	279,958	279,060	278,163	277,265	276,368	0	0	0	0	0	0
Brazos Run-of-River	H	Waller	Brazos	44	44	44	44	44	44	0	0	0	0	0	0
Brazos-Colorado Run-of-River	H	Brazoria	Brazos-Colorado	11,730	11,730	11,730	11,730	11,730	11,730	0	0	0	0	0	0
Carrizo-Wilcox Aquifer	H	Leon	Brazos	1,386	1,399	1,419	1,428	1,439	1,454	1,197	1,587	1,970	2,364	2,716	2,701
Carrizo-Wilcox Aquifer	H	Leon	Trinity	4,343	4,377	4,271	4,201	4,128	4,055	2,624	3,729	4,975	6,186	7,285	7,358
Carrizo-Wilcox Aquifer	H	Madison	Brazos	0	0	0	0	0	0	0	0	0	0	0	0
Carrizo-Wilcox Aquifer	H	Madison	Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Carrizo-Wilcox Aquifer	H	Trinity	Trinity	0	0	0	0	0	0	1	1	1	1	1	1
Carrizo-Wilcox Aquifer	H	Walker	Trinity	0	0	0	0	0	0	2,099	2,099	2,099	2,099	2,099	2,099
Cedar Bayou Generating Pond Lake/Reservoir	H	Reservoir	Trinity-San Jacinto	0	0	0	0	0	0	0	0	0	0	0	0
Conroe Lake/Reservoir	H	Reservoir	San Jacinto	80,000	79,350	78,700	78,100	77,500	76,850	0	0	0	0	0	0
Direct Reuse, Alvin	H	Brazoria	San Jacinto-Brazos	81	81	81	81	81	81	0	0	0	0	0	0
Direct Reuse, Bacliff MUD	H	Galveston	San Jacinto-Brazos	68	68	68	68	68	68	0	0	0	0	0	0
Direct Reuse, Blue Ridge West MUD	H	Fort Bend	San Jacinto	9	9	9	9	9	9	0	0	0	0	0	0
Direct Reuse, Brazoria County MUD 3	H	Brazoria	San Jacinto-Brazos	9	9	9	9	9	9	0	0	0	0	0	0
Direct Reuse, Chimney Hill MUD	H	Harris	San Jacinto	69	69	69	69	69	69	0	0	0	0	0	0

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Direct Reuse, Clear Lake City Water Authority	H	Harris	San Jacinto-Brazos	436	436	436	436	436	436	0	0	0	0	0	0
Direct Reuse, Corinthian Point MUD 2	H	Montgomery	San Jacinto	13	13	13	13	13	13	0	0	0	0	0	0
Direct Reuse, County-Other, Fort Bend	H	Fort Bend	Brazos	458	458	458	458	458	458	0	0	0	0	0	0
Direct Reuse, County-Other, Montgomery	H	Montgomery	San Jacinto	224	847	1,474	1,961	2,329	2,579	0	0	0	0	0	0
Direct Reuse, Dow Chemical USA	H	Brazoria	San Jacinto-Brazos	3,300	3,300	3,300	3,300	3,300	3,300	0	0	0	0	0	0
Direct Reuse, Forest Hills MUD	H	Harris	San Jacinto	34	34	34	34	34	34	0	0	0	0	0	0
Direct Reuse, Fort Bend County MUD 128	H	Fort Bend	San Jacinto-Brazos	411	411	411	411	411	411	0	0	0	0	0	0
Direct Reuse, Fort Bend County MUD 25	H	Fort Bend	San Jacinto-Brazos	589	589	589	589	589	589	0	0	0	0	0	0
Direct Reuse, Freeport	H	Brazoria	San Jacinto-Brazos	22	22	22	22	22	22	0	0	0	0	0	0
Direct Reuse, Galveston County Industries	H	Galveston	San Jacinto-Brazos	0	11,200	11,200	11,200	11,200	11,200	0	0	0	0	0	0
Direct Reuse, Galveston County WCID 1	H	Galveston	San Jacinto-Brazos	424	424	424	424	424	424	0	0	0	0	0	0
Direct Reuse, Galveston County WCID 8	H	Galveston	San Jacinto-Brazos	161	161	161	161	161	161	0	0	0	0	0	0
Direct Reuse, Harris County MUD 11	H	Harris	San Jacinto	45	45	45	45	45	45	0	0	0	0	0	0
Direct Reuse, Harris County MUD 278	H	Harris	San Jacinto	9	9	9	9	9	9	0	0	0	0	0	0
Direct Reuse, Harris County WCID 89	H	Harris	San Jacinto-Brazos	9	9	9	9	9	9	0	0	0	0	0	0
Direct Reuse, Harris County WCID 96	H	Harris	San Jacinto	83	83	83	83	83	83	0	0	0	0	0	0
Direct Reuse, La Porte	H	Harris	San Jacinto-Brazos	773	773	773	773	773	773	0	0	0	0	0	0
Direct Reuse, Lazy River Improvement District	H	Montgomery	San Jacinto	17	17	17	17	17	17	0	0	0	0	0	0
Direct Reuse, League City	H	Galveston	San Jacinto-Brazos	6,384	7,504	8,624	9,744	10,864	11,984	0	0	0	0	0	0
Direct Reuse, Manufacturing, Brazoria	H	Brazoria	San Jacinto-Brazos	325	325	325	325	325	325	0	0	0	0	0	0
Direct Reuse, Manufacturing, Harris	H	Harris	San Jacinto	6,844	6,844	6,844	6,844	6,844	6,844	0	0	0	0	0	0
Direct Reuse, Manufacturing, Harris	H	Harris	San Jacinto-Brazos	303	303	303	303	303	303	0	0	0	0	0	0
Direct Reuse, Manufacturing, Harris	H	Harris	Trinity-San Jacinto	3,172	3,172	3,172	3,172	3,172	3,172	0	0	0	0	0	0

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Direct Reuse, Manufacturing, Leon	H	Leon	Trinity	58	58	58	58	58	58	0	0	0	0	0	0
Direct Reuse, Manufacturing, Waller	H	Waller	San Jacinto	16	16	16	16	16	16	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Brazoria	Brazos	2	6	11	13	15	19	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Brazoria	Brazos-Colorado	8	19	34	40	47	55	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Brazoria	San Jacinto-Brazos	32	85	147	175	207	239	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Chambers	Neches-Trinity	1	6	13	20	28	36	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Chambers	Trinity	10	58	130	198	271	356	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Chambers	Trinity-San Jacinto	11	62	138	211	290	379	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Fort Bend	Brazos	210	835	1,565	2,167	2,807	3,382	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Fort Bend	Brazos-Colorado	64	258	488	677	880	1,062	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Fort Bend	San Jacinto	125	345	513	654	764	874	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Fort Bend	San Jacinto-Brazos	118	379	623	828	1,021	1,199	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Harris	San Jacinto	808	1,511	1,980	2,233	2,723	3,077	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Harris	San Jacinto-Brazos	6	15	19	22	23	24	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Harris	Trinity-San Jacinto	38	90	120	138	147	151	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Liberty	Neches	0	0	2	2	2	3	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Liberty	Neches-Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Liberty	San Jacinto	21	73	137	205	273	345	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Liberty	Trinity	34	120	222	335	444	563	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Liberty	Trinity-San Jacinto	11	39	73	111	147	186	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Waller	Brazos	19	47	100	167	239	316	0	0	0	0	0	0
Direct Reuse, Master Planned Communities	H	Waller	San Jacinto	17	45	96	160	229	303	0	0	0	0	0	0
Direct Reuse, Meadows Place	H	Fort Bend	San Jacinto	26	26	26	26	26	26	0	0	0	0	0	0

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Direct Reuse, Missouri City	H	Fort Bend	San Jacinto-Brazos	579	678	725	747	786	804	0	0	0	0	0	0
Direct Reuse, North Fort Bend Water Authority CRU	H	Fort Bend	San Jacinto	6,294	6,294	6,294	6,294	6,294	6,294	0	0	0	0	0	0
Direct Reuse, North Green MUD	H	Harris	San Jacinto	45	45	45	45	45	45	0	0	0	0	0	0
Direct Reuse, North Harris County Regional W	H	Harris	San Jacinto	1,477	1,477	1,477	1,477	1,477	1,477	0	0	0	0	0	0
Direct Reuse, Panorama Village	H	Montgomery	San Jacinto	43	43	43	43	43	43	0	0	0	0	0	0
Direct Reuse, Pearland	H	Brazoria	San Jacinto-Brazos	0	314	1,154	1,154	1,154	1,154	0	0	0	0	0	0
Direct Reuse, Plantation MUD	H	Fort Bend	Brazos	6	6	6	6	6	6	0	0	0	0	0	0
Direct Reuse, Quail Valley UD	H	Fort Bend	San Jacinto-Brazos	693	718	728	774	798	822	0	0	0	0	0	0
Direct Reuse, Richmond	H	Fort Bend	Brazos	263	263	263	263	263	263	0	0	0	0	0	0
Direct Reuse, River Plantation MUD	H	Montgomery	San Jacinto	307	307	307	307	307	307	0	0	0	0	0	0
Direct Reuse, Rosenberg	H	Fort Bend	Brazos	556	556	556	556	556	556	0	0	0	0	0	0
Direct Reuse, Sienna Plantation CRU	H	Fort Bend	San Jacinto-Brazos	2,718	2,797	2,915	2,967	3,025	3,104	0	0	0	0	0	0
Direct Reuse, South Houston	H	Harris	San Jacinto	54	54	54	54	54	54	0	0	0	0	0	0
Direct Reuse, Southern Montgomery County MUD	H	Montgomery	San Jacinto	179	179	179	179	179	179	0	0	0	0	0	0
Direct Reuse, Sugar Land	H	Fort Bend	Brazos	1,232	1,680	2,912	2,912	2,912	2,912	0	0	0	0	0	0
Direct Reuse, Sugar Land	H	Fort Bend	San Jacinto-Brazos	329	329	329	329	329	329	0	0	0	0	0	0
Direct Reuse, Trail of The Lakes MUD	H	Harris	San Jacinto	9	9	9	9	9	9	0	0	0	0	0	0
Direct Reuse, West Harris County Regional	H	Harris	San Jacinto	1,469	1,469	1,469	1,469	1,469	1,469	0	0	0	0	0	0
Direct Reuse, West University Place	H	Harris	San Jacinto	9	9	9	9	9	9	0	0	0	0	0	0
Direct Reuse, Westwood Shores MUD	H	Trinity	Trinity	150	150	150	150	150	150	0	0	0	0	0	0
Direct Reuse, Wood Trace MUD 1	H	Montgomery	San Jacinto	10	10	10	10	10	10	0	0	0	0	0	0
Eagle Nest Lake/Reservoir	H	Reservoir	Brazos	0	0	0	0	0	0	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Austin	Brazos	8,622	8,764	8,930	9,008	9,064	9,114	16,621	16,479	16,313	16,235	16,179	16,129
Gulf Coast Aquifer System	H	Austin	Brazos-Colorado	4,666	4,673	4,679	4,681	4,684	4,688	15,986	15,979	15,973	15,971	15,968	15,964

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Gulf Coast Aquifer System	H	Austin	Colorado	37	37	37	37	37	37	628	628	628	628	628	628
Gulf Coast Aquifer System	H	Brazoria	Brazos	3,641	3,578	3,510	3,454	3,407	3,407	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Brazoria	Brazos-Colorado	10,049	9,846	9,582	9,324	9,072	9,072	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Brazoria	San Jacinto-Brazos	41,240	41,483	41,803	42,110	42,408	42,408	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Chambers	Neches-Trinity	1,496	3,097	3,618	7,067	9,850	9,968	8,472	6,871	6,350	2,901	118	0
Gulf Coast Aquifer System	H	Chambers	Trinity	8,650	9,240	9,738	9,847	9,810	10,222	1,572	982	484	375	412	0
Gulf Coast Aquifer System	H	Chambers	Trinity-San Jacinto	2,063	2,063	2,063	2,063	2,063	2,063	79	89	98	100	101	101
Gulf Coast Aquifer System	H	Fort Bend	Brazos	30,410	40,686	50,799	58,940	67,693	75,540	563	0	0	0	0	0
Gulf Coast Aquifer System	H	Fort Bend	Brazos-Colorado	16,510	19,204	22,015	24,088	26,280	27,981	9	795	1,533	2,366	3,320	4,423
Gulf Coast Aquifer System	H	Fort Bend	San Jacinto	26,743	28,374	29,594	30,584	31,502	32,407	63	70	74	74	74	74
Gulf Coast Aquifer System	H	Fort Bend	San Jacinto-Brazos	29,441	33,717	36,342	38,407	40,046	41,485	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Galveston	Neches-Trinity	57	57	57	57	57	57	125	126	127	128	128	128
Gulf Coast Aquifer System	H	Galveston	San Jacinto-Brazos	3,965	5,913	6,016	6,085	6,130	6,168	8,537	6,970	7,209	7,427	7,647	7,867
Gulf Coast Aquifer System	H	Harris	San Jacinto	289,255	197,432	203,289	206,062	208,124	210,309	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Harris	San Jacinto-Brazos	15,452	16,173	16,831	17,123	17,248	17,494	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Harris	Trinity-San Jacinto	13,157	14,247	15,062	15,507	15,845	16,136	0	0	0	0	0	0
Gulf Coast Aquifer System	H	Liberty	Neches	5,596	5,608	5,622	5,637	5,652	5,668	3,136	3,124	3,110	3,095	3,080	3,064
Gulf Coast Aquifer System	H	Liberty	Neches-Trinity	263	265	267	269	272	274	1,790	1,788	1,786	1,784	1,781	1,779
Gulf Coast Aquifer System	H	Liberty	San Jacinto	6,654	7,831	9,165	10,336	11,299	11,299	4,645	3,468	2,134	963	0	0
Gulf Coast Aquifer System	H	Liberty	Trinity	11,117	13,486	16,503	19,300	21,557	23,686	27,915	25,545	22,529	19,732	17,475	15,346
Gulf Coast Aquifer System	H	Liberty	Trinity-San Jacinto	2,178	2,599	3,109	3,662	4,222	5,909	8,366	7,944	7,434	6,882	6,322	4,635
Gulf Coast Aquifer System	H	Montgomery	San Jacinto	106,457	107,027	107,434	107,655	107,870	118,609	2	0	0	0	0	0
Gulf Coast Aquifer System	H	Polk	Trinity	4,504	4,790	4,939	5,103	5,282	5,479	19,477	19,191	19,042	18,878	18,699	18,502
Gulf Coast Aquifer System	H	San Jacinto	San Jacinto	1,511	1,496	1,464	1,434	1,401	1,364	16,932	16,956	17,003	17,048	17,123	17,160

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Gulf Coast Aquifer System	H	San Jacinto	Trinity	2,319	2,295	2,244	2,194	2,138	2,078	14,285	14,309	14,360	14,410	14,466	14,526
Gulf Coast Aquifer System	H	Trinity	Trinity	74	69	65	61	58	55	244	253	274	278	281	284
Gulf Coast Aquifer System	H	Walker	San Jacinto	2,801	2,863	3,060	3,111	3,376	3,399	23,821	23,759	23,562	23,511	23,246	23,223
Gulf Coast Aquifer System	H	Walker	Trinity	7,938	8,888	10,552	12,393	15,198	15,638	7,943	6,993	5,329	3,488	683	243
Gulf Coast Aquifer System	H	Waller	Brazos	12,459	12,554	13,845	13,897	15,520	15,633	10,938	10,843	9,552	9,500	7,877	7,764
Gulf Coast Aquifer System	H	Waller	San Jacinto	21,034	22,732	25,168	25,935	27,809	28,154	11,102	9,404	6,968	6,201	4,327	3,982
Gulf Coast Water Authority Lake/Reservoir	H	Reservoir	San Jacinto-Brazos	0	0	0	0	0	0	0	0	0	0	0	0
Gulf of Mexico Saline	H	Gulf of Mexico	Gulf of Mexico	0	0	0	0	0	0	0	0	0	0	0	0
Harris Reservoir	H	Reservoir	Brazos	80,000	80,000	80,000	80,000	80,000	80,000	0	0	0	0	0	0
Houston Lake/Reservoir	H	Reservoir	San Jacinto	182,500	180,650	178,850	177,050	175,300	173,550	0	0	0	0	0	0
Indirect Reuse, Houston	H	Harris	San Jacinto	4,862	164,791	168,990	170,986	170,315	170,852	0	1	0	0	0	0
Indirect Reuse, Huntsville	H	Walker	San Jacinto	2,240	2,240	2,240	2,240	2,240	2,240	0	0	0	0	0	0
Indirect Reuse, Montgomery County MUDS 8 and 9	H	Montgomery	San Jacinto	419	465	511	522	551	589	0	0	0	0	0	0
Indirect Reuse, SJRA	H	Harris	San Jacinto	6,846	6,846	6,846	6,846	6,846	6,846	0	0	0	0	0	0
Indirect Reuse, SJRA and Conroe	H	Montgomery	San Jacinto	6,352	7,602	9,527	11,397	12,441	13,476	0	0	0	0	0	0
Indirect Reuse, The Woodlands	H	Montgomery	San Jacinto	750	750	750	750	750	750	0	0	0	0	0	0
Industrial Conservation	H	Conservation	Conservation	3,320	10,414	18,171	26,242	34,806	43,892	0	0	0	0	0	0
Irrigation Conservation	H	Conservation	Conservation	103,799	103,799	103,799	103,799	103,799	103,799	0	0	0	0	0	0
Lewis Creek Lake/Reservoir	H	Reservoir	San Jacinto	0	0	0	0	0	0	0	0	0	0	0	0
Livingston-Wallisville Lake/Reservoir System	H	Reservoir	Trinity	1,210,300	1,220,750	1,231,200	1,201,800	1,172,300	1,142,900	0	0	0	0	0	0
Municipal Conservation[2]	H	Conservation	Conservation	42,812	80,533	94,526	111,279	119,907	140,580	0	0	0	0	0	0
Neches Run-of-River	H	Liberty	Neches	161	161	161	161	161	161	0	0	0	0	0	0
Neches-Trinity Run-of-River	H	Chambers	Neches-Trinity	37,475	37,475	37,475	37,475	37,475	37,475	0	0	0	0	0	0
Phillips Petroleum off-channel Lake/Reservoir	H	Reservoir	Brazos-Colorado	0	0	0	0	0	0	0	0	0	0	0	0

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Queen City Aquifer	H	Leon	Brazos	309	306	307	307	305	307	99	145	186	229	270	268
Queen City Aquifer	H	Leon	Trinity	449	445	441	438	435	431	62	71	80	89	96	100
Queen City Aquifer	H	Madison	Brazos	132	43	11	11	11	11	0	111	164	186	205	205
Queen City Aquifer	H	Madison	Trinity	132	52	53	55	57	60	0	102	123	142	160	157
Queen City Aquifer	H	Trinity	Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Queen City Aquifer	H	Walker	Trinity	109	109	109	109	109	109	120	120	120	120	120	120
San Bernard River Alluvium Aquifer	H	Austin	Brazos-Colorado	0	0	0	0	0	0	520	520	520	520	520	520
San Jacinto Regional Return Flows	H	Harris	San Jacinto	75,463	77,888	93,415	96,281	99,677	100,445	0	0	0	0	0	0
San Jacinto River Alluvium Aquifer	H	Walker	San Jacinto	0	0	0	0	0	0	1,450	1,450	1,450	1,450	1,450	1,450
San Jacinto Run-of-River	H	Harris	San Jacinto	12,477	12,477	12,477	12,477	12,477	12,477	0	0	0	0	0	0
San Jacinto Run-of-River	H	Liberty	San Jacinto	9	9	9	9	9	9	0	0	0	0	0	0
San Jacinto Run-of-River	H	Montgomery	San Jacinto	141	141	141	141	141	141	0	0	0	0	0	0
San Jacinto-Brazos Run-of-River	H	Brazoria	San Jacinto-Brazos	30,941	30,941	30,941	30,941	30,941	30,941	0	0	0	0	0	0
San Jacinto-Brazos Run-of-River	H	Fort Bend	San Jacinto-Brazos	5,803	5,803	5,803	5,803	5,803	5,803	0	0	0	0	0	0
San Jacinto-Brazos Run-of-River	H	Galveston	San Jacinto-Brazos	36	36	36	36	36	36	0	0	0	0	0	0
San Jacinto-Brazos Run-of-River	H	Harris	San Jacinto-Brazos	311	311	311	311	311	311	0	0	0	0	0	0
Sheldon Lake/Reservoir	H	Reservoir	San Jacinto	0	0	0	0	0	0	0	0	0	0	0	0
Smithers Lake/Reservoir	H	Reservoir	Brazos	0	0	0	0	0	0	0	0	0	0	0	0
Sparta Aquifer	H	Leon	Brazos	90	90	90	90	90	90	7	7	7	7	7	7
Sparta Aquifer	H	Leon	Trinity	106	104	101	100	98	96	45	48	53	56	59	61
Sparta Aquifer	H	Madison	Brazos	238	277	316	319	319	319	0	0	0	36	71	71
Sparta Aquifer	H	Madison	Trinity	1,662	1,934	2,058	2,055	2,053	2,052	0	0	149	424	672	673
Sparta Aquifer	H	Trinity	Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Sparta Aquifer	H	Walker	San Jacinto	0	0	0	0	0	0	266	266	266	266	266	266

Source	Reg	County	Basin	Total Existing and WMS Allocations from Source (ac ft)[1]						Unallocated Source Balance (ac ft)					
				2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Sparta Aquifer	H	Walker	Trinity	0	0	0	0	0	0	2,084	2,084	2,084	2,084	2,084	2,084
Trinity River Alluvium Aquifer	H	Walker	Trinity	0	0	0	0	0	0	3,913	3,913	3,913	3,913	3,913	3,913
Trinity Run-of-River	H	Chambers	Trinity	60,837	60,837	60,837	60,837	60,837	60,837	0	0	0	0	0	0
Trinity Run-of-River	H	Leon	Trinity	156	156	156	156	156	156	0	0	0	0	0	0
Trinity Run-of-River	H	Liberty	Trinity	48,893	48,893	48,893	48,893	48,893	48,893	0	0	0	0	0	0
Trinity Run-of-River	H	Madison	Trinity	169	169	169	169	169	169	0	0	0	0	0	0
Trinity Run-of-River	H	Polk	Trinity	26,510	26,510	26,510	26,510	26,510	26,510	0	0	0	0	0	0
Trinity Run-of-River	H	Trinity	Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Trinity Run-of-River	H	Walker	Trinity	460	460	460	460	460	460	0	0	0	0	0	0
Trinity-San Jacinto Run-of-River	H	Chambers	Trinity-San Jacinto	1,213	1,213	1,213	1,213	1,213	1,213	0	0	0	0	0	0
Trinity-San Jacinto Run-of-River	H	Harris	Trinity-San Jacinto	2,421	2,421	2,421	2,421	2,421	2,421	0	0	0	0	0	0
Trinity-San Jacinto Run-of-River	H	Liberty	Trinity-San Jacinto	1,905	1,905	1,905	1,905	1,905	1,905	0	0	0	0	0	0
Water Loss Reduction[2]	H	Conservation	Conservation	8,388	25,724	43,576	60,824	75,737	89,634	0	0	0	0	0	0
Yegua-Jackson Aquifer	H	Leon	Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Yegua-Jackson Aquifer	H	Madison	Brazos	11	11	11	11	11	11	0	0	0	0	0	0
Yegua-Jackson Aquifer	H	Madison	Trinity	1,068	951	964	986	1,007	1,028	43	160	147	125	104	83
Yegua-Jackson Aquifer	H	Polk	Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Yegua-Jackson Aquifer	H	Trinity	Trinity	630	614	596	586	574	561	1,561	1,577	1,595	1,605	1,617	1,630
Yegua-Jackson Aquifer	H	Walker	San Jacinto	0	0	0	0	0	0	351	351	351	351	351	351
Yegua-Jackson Aquifer	H	Walker	Trinity	1,574	1,636	1,743	1,841	1,937	2,047	2,249	2,187	2,080	1,982	1,886	1,776

1. For this table, calculation of existing allocations includes allocations to WUG demand as well as allocations from sources to WWPs. Some allocations of existing supply to WWPs may be retained at the WWP level and not allocated to WUG demands.

2. Values in this table exclude a limited portion of potential conservation and loss reduction savings estimated by Region H associated with municipal WUGs split between Regions H and I and associated primarily with Region I in TWDB's DB27 database.

Table 5-A10 – Project Cost Summary (Sponsor-Level Data)

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Allens Creek Reservoir	WMS	Brazos River Authority	$493,919,561	$0	$27,825,039	$27,825,039	$27,825,039	$27,825,039	$4,696,128
BAWA East SWTP Expansion - Phase 1	WMS	Baytown	$0	$0	$0	$0	$0	$0	$0
		Baytown Area Water Authority	$62,257,729	$5,835,426	$5,835,426	$1,454,906	$1,454,906	$1,454,906	$1,454,906
BAWA East SWTP Expansion - Phase 2	WMS	Baytown	$0	$0	$0	$0	$0	$0	$0
		Baytown Area Water Authority	$62,257,729	$0	$5,835,426	$5,835,426	$1,454,906	$1,454,906	$1,454,906
Brazos Saltwater Barrier	WMS	Dow Inc	$77,571,019	$5,964,480	$5,964,480	$506,500	$506,500	$506,500	$506,500
BWA Brackish Groundwater Development	WMS	Brazosport Water Authority	$74,055,688	$11,153,406	$11,153,406	$5,942,768	$5,942,768	$5,942,768	$5,942,768
BWA Conventional Treatment Expansion	WMS	Brazosport Water Authority	$23,244,186	$3,357,914	$3,357,914	$1,722,428	$1,722,428	$1,722,428	$1,722,428
BWA Transmission and Storage Expansion	WMS	Brazosport Water Authority	$84,794,502	$7,340,333	$7,340,333	$1,374,101	$1,374,101	$1,374,101	$1,374,101
BWSC Reservoir and Pump Station Expansion	WMS	Brazosport Water Authority	$67,865,177	$5,577,528	$5,577,528	$802,461	$802,461	$802,461	$802,461
		Dow Inc	$384,569,339	$31,605,994	$31,605,994	$4,547,281	$4,547,281	$4,547,281	$4,547,281
CHCRWA Transmission and Internal Distribution	WMS	Central Harris County Regional Water Authority	$22,717,067	$1,718,497	$1,718,497	$120,100	$120,100	$120,100	$120,100
City of Houston Area 2 Groundwater Infrastructure	WMS	Houston	$150,754,783	$24,267,851	$24,267,851	$13,660,582	$13,660,582	$13,660,582	$13,660,582
City of Houston EWPP Enhancement	WMS	Houston	$5,000,000,000	$0	$701,805,384	$701,805,384	$350,000,000	$350,000,000	$350,000,000
City of Houston GRP Transmission - 2025 Phase	WMS	Houston	$160,640,042	$12,909,207	$12,909,207	$1,606,400	$1,606,400	$1,606,400	$1,606,400
City of Houston GRP Transmission - 2035 Phase	WMS	Houston	$100,000,000	$0	$8,036,108	$8,036,108	$1,000,000	$1,000,000	$1,000,000
City of Houston Repump Expansion - Phase 1	WMS	Houston	$23,600,899	$2,250,607	$2,250,607	$590,022	$590,022	$590,022	$590,022
City of Houston Repump Expansion - Phase 2	WMS	Houston	$150,000,000	$0	$14,304,162	$14,304,162	$3,750,000	$3,750,000	$3,750,000
City Of Houston Reuse Infrastructure	WMS	Houston	$820,816,940	$0	$98,501,263	$98,501,263	$40,747,699	$40,747,699	$40,747,699
City of Houston SEWPP Expansion - Phase 1	WMS	Houston	$89,352,537	$10,230,480	$10,230,480	$3,943,539	$3,943,539	$3,943,539	$3,943,539
City of Houston SEWPP Expansion - Phase 2	WMS	Houston	$1,026,896,376	$0	$115,804,347	$115,804,347	$43,550,812	$43,550,812	$43,550,812
City of Houston Transmission and Distribution Expansion - Phase 1	WMS	Houston	$478,742,379	$38,472,253	$38,472,253	$4,787,424	$4,787,424	$4,787,424	$4,787,424
City of Houston Transmission and Distribution Expansion - Phase 2	WMS	Houston	$30,000,000	$0	$2,645,187	$2,645,187	$534,355	$534,355	$534,355

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
COH Northeast Water Purification Plant Expansion - Phase 2	WMS	Central Harris County Regional Water Authority	$20,634,888	$2,659,149	$2,659,149	$1,207,256	$1,207,256	$1,207,256	$1,207,256
		Houston	$216,497,183	$27,899,264	$27,899,264	$12,666,289	$12,666,289	$12,666,289	$12,666,289
		North Fort Bend Water Authority	$289,646,168	$37,325,727	$37,325,727	$16,945,911	$16,945,911	$16,945,911	$16,945,911
		North Harris County Regional Water Authority	$477,822,813	$61,575,418	$61,575,418	$27,955,291	$27,955,291	$27,955,291	$27,955,291
		West Harris County Regional Water Authority	$348,506,340	$44,910,840	$44,910,840	$20,389,558	$20,389,558	$20,389,558	$20,389,558
COH Northeast Water Purification Plant Expansion - Phase 3	WMS	Houston	$800,000,000	$0	$112,288,861	$112,288,861	$56,000,000	$56,000,000	$56,000,000
CWA Transmission Expansion	WMS	Houston	$497,255,512	$0	$44,931,214	$44,931,214	$9,943,781	$9,943,781	$9,943,781
East Texas Transfer	WMS	Houston	$591,526,599	$0	$0	$47,264,018	$47,264,018	$5,643,569	$5,643,569
		Lower Neches Valley Authority	$0	$0	$0	$0	$0	$0	$0
		Sabine River Authority	$0	$0	$0	$0	$0	$0	$0
Fairchilds Supply Infrastructure - Phase 1	WMS	County-Other, Fort Bend	$17,400,000	$1,494,963	$1,494,963	$270,681	$270,681	$270,681	$270,681
Fairchilds Supply Infrastructure - Phase 2	WMS	County-Other, Fort Bend	$86,500,000	$0	$7,650,456	$7,650,456	$1,564,223	$1,564,223	$1,564,223
Fort Bend MUD 25 GRP Infrastructure	WMS	Fort Bend County MUD 25	$11,567,244	$878,409	$878,409	$64,526	$64,526	$64,526	$64,526
Fort Bend WCID 2 GRP Infrastructure - Phase 1	WMS	Fort Bend County WCID 2	$35,843,734	$3,843,533	$3,843,533	$1,321,529	$1,321,529	$1,321,529	$1,321,529
Fort Bend WCID 2 GRP Infrastructure - Phase 2	WMS	Fort Bend County WCID 2	$35,843,734	$0	$3,843,533	$3,843,533	$1,321,529	$1,321,529	$1,321,529
GCWA Canal Lining and Loss Mitigation	WMS	Gulf Coast Water Authority	$12,393,000	$991,985	$991,985	$120,000	$120,000	$120,000	$120,000
GCWA Coastal Desalination	WMS	Gulf Coast Water Authority	$283,297,581	$0	$49,430,662	$49,430,662	$29,497,540	$29,497,540	$29,497,540
GCWA Groundwater Well Development	WMS	Gulf Coast Water Authority	$28,564,015	$0	$4,224,916	$4,224,916	$2,215,121	$2,215,121	$2,215,121
GCWA Shannon Pump Station Expansion	WMS	Gulf Coast Water Authority	$81,410,301	$7,417,951	$7,417,951	$1,689,835	$1,689,835	$1,689,835	$1,689,835
Harris County MUD 50 SWTP	WMS	Harris County MUD 50	$22,804,420	$2,796,753	$2,796,753	$1,192,209	$1,192,209	$1,192,209	$1,192,209
Industrial Conservation, Austin County	WUG	Manufacturing, Austin	$5,300	$0	$0	$0	$346	$284	$247
Industrial Conservation, Brazoria County	WUG	Manufacturing, Brazoria	$102,929,682	$608,921	$1,894,302	$2,730,915	$3,041,377	$3,335,225	$3,674,315
Industrial Conservation, Chambers County	WUG	Manufacturing, Chambers	$15,507,495	$91,852	$285,280	$411,508	$458,091	$502,416	$553,644
Industrial Conservation, Fort Bend County	WUG	Manufacturing, Fort Bend	$1,802,203	$10,266	$33,499	$47,776	$53,588	$58,288	$64,509
Industrial Conservation, Galveston County	WUG	Manufacturing, Galveston	$20,004,412	$118,326	$367,946	$530,949	$591,196	$648,279	$714,052
Industrial Conservation, Harris County	WUG	Manufacturing, Harris	$163,990,765	$954,715	$3,015,971	$4,426,074	$4,880,308	$5,299,680	$5,784,092

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Industrial Conservation, Leon County	WUG	Manufacturing, Leon	$404,713	$2,161	$7,564	$10,817	$12,101	$13,079	$14,583
Industrial Conservation, Liberty County	WUG	Manufacturing, Liberty	$105,305	$540	$2,161	$2,704	$3,112	$3,412	$3,707
Industrial Conservation, Montgomery County	WUG	Manufacturing, Montgomery	$913,368	$5,403	$16,749	$24,339	$26,967	$29,571	$32,625
Industrial Conservation, Walker County	WUG	Manufacturing, Walker	$123,706	$1,081	$2,161	$3,155	$3,457	$3,981	$4,202
Industrial Conservation, Waller County	WUG	Manufacturing, Waller	$69,362	$540	$1,081	$1,803	$2,074	$2,275	$2,472
Irrigation Conservation, Austin County	WUG	Irrigation, Austin	$47,464	$429,087	$429,087	$425,748	$425,748	$425,748	$425,748
Irrigation Conservation, Brazoria County	WUG	Irrigation, Brazoria	$791,628	$4,539,010	$4,539,010	$4,483,309	$4,483,309	$4,483,309	$4,483,309
Irrigation Conservation, Chambers County	WUG	Irrigation, Chambers	$947,375	$6,851,671	$6,851,671	$6,785,013	$6,785,013	$6,785,013	$6,785,013
Irrigation Conservation, Fort Bend County	WUG	Irrigation, Fort Bend	$92,560	$763,512	$763,512	$756,999	$756,999	$756,999	$756,999
Irrigation Conservation, Galveston County	WUG	Irrigation, Galveston	$43,820	$396,388	$396,388	$393,305	$393,305	$393,305	$393,305
Irrigation Conservation, Harris County	WUG	Irrigation, Harris	$2,219	$20,108	$20,108	$19,951	$19,951	$19,951	$19,951
Irrigation Conservation, Liberty County	WUG	Irrigation, Liberty	$411,925	$2,267,110	$2,267,110	$2,238,126	$2,238,126	$2,238,126	$2,238,126
Irrigation Conservation, Waller County	WUG	Irrigation, Waller	$184,194	$1,004,455	$1,004,455	$991,495	$991,495	$991,495	$991,495
League City Effluent	WMS	Gulf Coast Water Authority	$0	$0	$0	$0	$0	$0	$0
		League City	$4,686,566	$370,952	$370,952	$41,200	$41,200	$41,200	$41,200
LNVA Devers Pump Station Relocation	WMS	Lower Neches Valley Authority	$21,337,986	$1,882,922	$1,882,922	$381,558	$381,558	$381,558	$381,558
LNVA Neches-Trinity Basin Interconnect	WMS	Lower Neches Valley Authority	$127,821,515	$0	$11,064,310	$11,064,310	$2,070,651	$2,070,651	$2,070,651
Manvel Supply Expansion - Phase 1	WMS	Manvel	$27,435,261	$2,128,326	$2,128,326	$197,951	$197,951	$197,951	$197,951
Manvel Supply Expansion - Phase 2	WMS	Manvel	$34,800,431	$0	$2,699,688	$2,699,688	$251,092	$251,092	$251,092
Missouri City GRP Infrastructure	WMS	Missouri City	$58,835,350	$0	$6,814,884	$6,814,884	$2,675,165	$2,675,165	$2,675,165
Montgomery County MUDs 8 and 9 Supply Expansion	WMS	Montgomery County MUD 8	$26,773,804	$3,428,657	$3,428,657	$1,544,823	$1,544,823	$1,544,823	$1,544,823
		Montgomery County MUD 9	$26,773,804	$3,428,656	$3,428,656	$1,544,823	$1,544,823	$1,544,823	$1,544,823
Montgomery County Supply Expansion - 2040 Phase	WMS	San Jacinto River Authority	$174,361,455	$0	$20,734,084	$20,734,084	$8,465,824	$8,465,824	$8,465,824
Montgomery County Supply Expansion - 2050 Phase	WMS	San Jacinto River Authority	$430,947,380	$0	$0	$42,383,920	$42,383,920	$12,061,999	$12,061,999
Montgomery County Supply Expansion - 2060 Phase	WMS	San Jacinto River Authority	$174,361,455	$0	$0	$0	$20,734,084	$20,734,084	$8,465,824
Montgomery County WCID 1 Water Plant 3	WUG	Montgomery County WCID 1	$8,178,966	$0	$826,142	$826,142	$250,661	$250,661	$250,661
Municipal Conservation, Alvin	WUG	Alvin	$9,952,142	$148,303	$156,358	$195,852	$205,512	$262,476	$267,132

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Ames Minglewood WSC	WUG	Ames Minglewood WSC	$385,782	$6,075	$6,290	$7,397	$7,612	$10,118	$10,862
Municipal Conservation, Anahuac	WUG	Anahuac	$623,595	$9,877	$10,194	$11,969	$12,285	$16,353	$16,815
Municipal Conservation, Angleton	WUG	Angleton	$7,501,330	$123,621	$125,615	$146,288	$149,369	$186,975	$182,650
Municipal Conservation, Austin County WSC	WUG	Austin County WSC	$848,018	$11,387	$13,317	$16,928	$17,934	$22,900	$23,358
Municipal Conservation, Bacliff MUD	WUG	Bacliff MUD	$2,657,532	$40,653	$43,451	$51,910	$54,104	$68,582	$70,532
Municipal Conservation, Baker Road MUD	WUG	Baker Road MUD	$289,015	$4,518	$4,791	$5,562	$5,641	$7,600	$7,895
Municipal Conservation, Baybrook MUD 1	WUG	Baybrook MUD 1	$643,494	$11,697	$12,186	$13,010	$11,953	$14,053	$14,504
Municipal Conservation, Baytown	WUG	Baytown	$53,620,462	$714,236	$876,920	$1,093,246	$1,160,683	$1,377,490	$1,394,712
Municipal Conservation, Bayview MUD	WUG	Bayview MUD	$567,894	$8,349	$9,158	$11,128	$11,679	$14,932	$15,434
Municipal Conservation, Bellaire	WUG	Bellaire	$8,584,633	$166,930	$135,398	$157,350	$169,549	$208,648	$205,883
Municipal Conservation, Bellville	WUG	Bellville	$1,817,669	$31,259	$31,991	$37,113	$33,911	$43,124	$43,689
Municipal Conservation, Blaketree MUD 1 of Montgomery County	WUG	Blaketree MUD 1 of Montgomery County	$463,442	$0	$5,715	$11,516	$12,237	$15,342	$15,342
Municipal Conservation, Blue Bell Manor Utility	WUG	Blue Bell Manor Utility	$920,589	$14,707	$15,193	$18,098	$18,808	$22,915	$23,379
Municipal Conservation, Blue Ridge West MUD	WUG	Blue Ridge West MUD	$1,930,541	$29,467	$30,664	$36,677	$39,812	$51,106	$53,281
Municipal Conservation, Bolivar Peninsula SUD	WUG	Bolivar Peninsula SUD	$4,552,510	$73,926	$76,892	$89,581	$90,267	$113,249	$113,360
Municipal Conservation, Brazoria	WUG	Brazoria	$1,071,969	$17,634	$18,095	$21,203	$21,333	$26,339	$25,929
Municipal Conservation, Brazoria County FWSD 1	WUG	Brazoria County FWSD 1	$256,352	$3,891	$4,448	$5,085	$5,196	$6,368	$6,472
Municipal Conservation, Brazoria County MUD 2	WUG	Brazoria County MUD 2	$987,957	$14,710	$15,971	$19,223	$20,394	$25,915	$25,827
Municipal Conservation, Brazoria County MUD 21	WUG	Brazoria County MUD 21	$1,350,729	$21,491	$22,772	$26,473	$27,058	$33,905	$33,739
Municipal Conservation, Brazoria County MUD 22	WUG	Brazoria County MUD 22	$1,163,207	$20,977	$21,123	$23,468	$20,560	$27,370	$28,227
Municipal Conservation, Brazoria County MUD 25	WUG	Brazoria County MUD 25	$966,634	$15,671	$16,423	$18,792	$19,370	$23,942	$24,654
Municipal Conservation, Brazoria County MUD 29	WUG	Brazoria County MUD 29	$1,383,398	$20,604	$22,946	$26,964	$27,917	$36,138	$37,708
Municipal Conservation, Brazoria County MUD 3	WUG	Brazoria County MUD 3	$1,181,442	$18,080	$19,248	$22,760	$24,022	$30,901	$31,332
Municipal Conservation, Brazoria County MUD 31	WUG	Brazoria County MUD 31	$1,208,168	$19,661	$20,344	$23,527	$24,153	$30,158	$29,738
Municipal Conservation, Brazoria County MUD 39	WUG	Brazoria County MUD 39	$547,453	$7,916	$8,931	$10,403	$11,300	$14,706	$14,893
Municipal Conservation, Brazoria County MUD 55	WUG	Brazoria County MUD 55	$983,897	$16,247	$16,793	$19,316	$19,549	$24,137	$23,477
Municipal Conservation, Brazoria County MUD 6	WUG	Brazoria County MUD 6	$1,586,165	$24,848	$27,031	$30,962	$31,851	$39,879	$40,455

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Brookshire MWD	WUG	Brookshire MWD	$1,777,193	$29,089	$30,658	$34,767	$33,226	$45,120	$48,593
Municipal Conservation, Buffalo	WUG	Buffalo	$892,930	$17,641	$16,879	$17,758	$16,237	$18,991	$17,870
Municipal Conservation, Bunker Hill Village	WUG	Bunker Hill Village	$1,091,711	$17,124	$18,562	$21,576	$21,801	$27,380	$27,281
Municipal Conservation, C C Water Works	WUG	C C Water Works	$1,003,668	$7,379	$11,046	$17,926	$23,378	$36,157	$44,808
Municipal Conservation, Cape Royale UD	WUG	Cape Royale UD	$538,510	$9,242	$9,450	$10,678	$10,495	$12,756	$12,300
Municipal Conservation, Centerville	WUG	Centerville	$561,589	$10,339	$10,265	$11,328	$10,303	$12,682	$12,419
Municipal Conservation, Central Harris County Regional Water Authority	WUG	Central Harris County Regional Water Authority	$16,967,779	$260,349	$269,068	$322,443	$345,183	$453,053	$466,819
Municipal Conservation, Chambers County MUD 1	WUG	Chambers County MUD 1	$1,117,797	$15,233	$16,901	$21,154	$23,508	$31,500	$34,837
Municipal Conservation, Chateau Woods MUD	WUG	Chateau Woods MUD	$1,212,547	$14,832	$20,337	$24,266	$25,657	$32,723	$34,397
Municipal Conservation, Chimney Hill MUD	WUG	Chimney Hill MUD	$1,302,380	$20,867	$21,607	$25,371	$26,116	$32,910	$33,670
Municipal Conservation, Clear Brook City MUD	WUG	Clear Brook City MUD	$6,560,665	$102,356	$105,395	$124,883	$133,241	$172,595	$175,965
Municipal Conservation, Clear Lake City Water Authority	WUG	Clear Lake City Water Authority	$34,465,278	$1,001,845	$493,776	$562,233	$598,175	$728,537	$619,618
Municipal Conservation, Cleveland	WUG	Cleveland	$6,490,679	$44,002	$49,482	$233,400	$131,707	$173,649	$168,279
Municipal Conservation, Clute	WUG	Clute	$4,263,996	$224,649	$30,563	$54,487	$50,533	$60,379	$57,886
Municipal Conservation, Concord-Robbins WSC	WUG	Concord-Robbins WSC	$687,883	$16,087	$14,225	$13,455	$11,884	$12,204	$9,333
Municipal Conservation, Conroe	WUG	Conroe	$71,927,227	$691,388	$955,352	$1,444,474	$1,685,569	$2,184,709	$2,312,307
Municipal Conservation, Conroe Resort Utilities	WUG	Conroe Resort Utilities	$442,947	$6,824	$7,269	$8,839	$8,541	$11,578	$12,437
Municipal Conservation, Corinthian Point MUD 2	WUG	Corinthian Point MUD 2	$302,928	$3,942	$4,428	$6,082	$6,515	$8,453	$8,728
Municipal Conservation, Country Terrace Water	WUG	Country Terrace Water	$553,326	$8,887	$9,176	$10,787	$11,075	$13,991	$14,166
Municipal Conservation, County-Other, Austin	WUG	County-Other, Austin	$6,923,139	$107,522	$113,932	$135,438	$139,986	$177,194	$182,419
Municipal Conservation, County-Other, Brazoria	WUG	County-Other, Brazoria	$37,923,304	$523,056	$584,136	$743,090	$793,616	$1,038,235	$1,101,974
Municipal Conservation, County-Other, Chambers	WUG	County-Other, Chambers	$9,624,900	$63,590	$97,493	$168,681	$227,895	$359,523	$453,080
Municipal Conservation, County-Other, Fort Bend	WUG	County-Other, Fort Bend	$128,640,523	$702,820	$1,310,242	$2,348,548	$3,094,328	$4,830,669	$5,774,453
Municipal Conservation, County-Other, Galveston	WUG	County-Other, Galveston	$6,859,374	$99,881	$110,198	$134,103	$141,914	$181,119	$187,224
Municipal Conservation, County-Other, Harris	WUG	County-Other, Harris	$52,473,708	$657,457	$813,703	$1,043,290	$1,127,048	$1,455,708	$1,501,648
Municipal Conservation, County-Other, Leon	WUG	County-Other, Leon	$591,205	$14,665	$12,848	$11,584	$9,947	$9,478	$5,985
Municipal Conservation, County-Other, Liberty	WUG	County-Other, Liberty	$39,335,406	$328,172	$457,875	$702,704	$908,062	$1,371,416	$1,653,116

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, County-Other, Madison	WUG	County-Other, Madison	$886,574	$12,827	$14,151	$17,038	$18,238	$23,866	$25,374
Municipal Conservation, County-Other, Montgomery	WUG	County-Other, Montgomery	$90,575,412	$860,517	$1,187,128	$1,743,673	$2,074,823	$2,878,407	$3,129,932
Municipal Conservation, County-Other, Polk	WUG	County-Other, Polk	$2,930,686	$42,239	$46,797	$56,682	$60,334	$78,665	$83,516
Municipal Conservation, County-Other, San Jacinto	WUG	County-Other, San Jacinto	$1,564,641	$26,257	$27,005	$30,844	$30,912	$37,720	$37,261
Municipal Conservation, County-Other, Walker	WUG	County-Other, Walker	$2,366,444	$44,555	$44,544	$49,553	$44,865	$48,901	$42,264
Municipal Conservation, County-Other, Waller	WUG	County-Other, Waller	$13,456,809	$105,915	$138,521	$224,663	$311,991	$501,324	$632,669
Municipal Conservation, Crosby MUD	WUG	Crosby MUD	$1,965,266	$31,018	$34,565	$39,162	$37,106	$49,703	$49,726
Municipal Conservation, Cut and Shoot	WUG	Cut & Shoot	$5,913,943	$61,940	$78,260	$109,815	$132,618	$189,183	$195,783
Municipal Conservation, Daisetta	WUG	Daisetta	$283,781	$4,556	$4,711	$5,529	$5,684	$7,166	$7,321
Municipal Conservation, Danbury	WUG	Danbury	$494,013	$7,958	$8,353	$9,759	$9,892	$12,232	$12,073
Municipal Conservation, Dayton	WUG	Dayton	$8,637,305	$126,827	$121,153	$155,808	$186,730	$246,995	$262,175
Municipal Conservation, Deer Park	WUG	Deer Park	$18,861,836	$472,170	$280,132	$323,586	$343,964	$426,914	$394,176
Municipal Conservation, Devers	WUG	Devers	$199,031	$3,211	$3,323	$3,879	$3,983	$5,004	$5,031
Municipal Conservation, Dobbin Plantersville WSC	WUG	Dobbin Plantersville WSC	$4,148,478	$22,144	$54,167	$88,959	$104,430	$133,689	$114,588
Municipal Conservation, Dodge Oakhurst WSC	WUG	Dodge Oakhurst WSC	$1,066,677	$10,566	$12,746	$18,453	$23,863	$36,587	$44,527
Municipal Conservation, Domestic Water	WUG	Domestic Water	$498,536	$7,224	$7,559	$9,105	$10,333	$14,161	$14,716
Municipal Conservation, Douglas Utility	WUG	Douglas Utility	$175,450	$2,752	$2,871	$3,432	$3,599	$4,435	$4,560
Municipal Conservation, East Montgomery County MUD 6	WUG	East Montgomery County MUD 6	$771,009	$9,288	$10,149	$13,545	$17,065	$24,582	$24,719
Municipal Conservation, East Plantation UD	WUG	East Plantation UD	$478,398	$5,527	$5,771	$9,637	$11,447	$14,046	$14,118
Municipal Conservation, El Dorado UD	WUG	El Dorado UD	$899,107	$13,433	$14,281	$17,795	$18,573	$23,422	$24,067
Municipal Conservation, Far Hills UD	WUG	Far Hills UD	$794,995	$8,897	$11,641	$15,695	$17,439	$23,376	$24,515
Municipal Conservation, First Colony MUD 9	WUG	First Colony MUD 9	$2,234,187	$33,944	$35,312	$43,174	$45,356	$59,461	$61,717
Municipal Conservation, Flo Community WSC	WUG	Flo Community WSC	$1,024,143	$17,659	$17,639	$20,015	$20,063	$24,590	$24,483
Municipal Conservation, Forest Hills MUD	WUG	Forest Hills MUD	$617,715	$9,915	$10,276	$12,066	$12,423	$15,514	$15,775
Municipal Conservation, Fort Bend County FWSD 2	WUG	Fort Bend County FWSD 2	$1,168,717	$16,626	$17,686	$22,162	$23,753	$31,521	$51,237
Municipal Conservation, Fort Bend County MUD 115	WUG	Fort Bend County MUD 115	$437,024	$6,890	$7,094	$8,881	$8,576	$11,124	$11,374
Municipal Conservation, Fort Bend County MUD 116	WUG	Fort Bend County MUD 116	$1,418,448	$20,297	$24,326	$28,134	$28,913	$36,460	$37,148

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Fort Bend County MUD 121	WUG	Fort Bend County MUD 121	$837,276	$13,409	$13,894	$16,313	$16,798	$21,150	$21,636
Municipal Conservation, Fort Bend County MUD 128	WUG	Fort Bend County MUD 128	$5,337,983	$132,218	$78,302	$90,235	$97,293	$123,864	$118,863
Municipal Conservation, Fort Bend County MUD 129	WUG	Fort Bend County MUD 129	$1,276,740	$19,900	$21,054	$24,744	$25,785	$32,773	$34,180
Municipal Conservation, Fort Bend County MUD 131	WUG	Fort Bend County MUD 131	$1,039,521	$14,678	$16,183	$19,800	$20,726	$29,432	$31,331
Municipal Conservation, Fort Bend County MUD 140	WUG	Fort Bend County MUD 140	$701,144	$10,849	$11,218	$13,177	$13,486	$19,271	$21,134
Municipal Conservation, Fort Bend County MUD 149	WUG	Fort Bend County MUD 149	$1,148,200	$18,097	$18,783	$22,560	$23,223	$29,187	$29,700
Municipal Conservation, Fort Bend County MUD 152	WUG	Fort Bend County MUD 152	$1,059,002	$16,424	$17,009	$19,978	$21,533	$28,132	$28,242
Municipal Conservation, Fort Bend County MUD 155	WUG	Fort Bend County MUD 155	$1,500,105	$16,041	$20,257	$28,696	$33,571	$46,531	$49,145
Municipal Conservation, Fort Bend County MUD 158	WUG	Fort Bend County MUD 158	$728,116	$8,926	$10,444	$13,984	$15,816	$21,407	$22,346
Municipal Conservation, Fort Bend County MUD 162	WUG	Fort Bend County MUD 162	$793,237	$10,654	$11,052	$14,029	$15,784	$25,026	$27,787
Municipal Conservation, Fort Bend County MUD 23	WUG	Fort Bend County MUD 23	$5,767,965	$86,672	$91,890	$109,565	$119,068	$153,881	$157,205
Municipal Conservation, Fort Bend County MUD 24	WUG	Fort Bend County MUD 24	$822,472	$12,035	$13,850	$16,264	$16,753	$21,170	$21,752
Municipal Conservation, Fort Bend County MUD 25	WUG	Fort Bend County MUD 25	$6,596,502	$156,126	$98,944	$114,086	$122,143	$153,726	$146,252
Municipal Conservation, Fort Bend County MUD 26	WUG	Fort Bend County MUD 26	$1,546,386	$22,705	$24,493	$29,621	$32,192	$41,294	$43,336
Municipal Conservation, Fort Bend County MUD 42	WUG	Fort Bend County MUD 42	$1,166,289	$17,797	$19,173	$22,788	$23,560	$30,204	$31,069
Municipal Conservation, Fort Bend County MUD 46	WUG	Fort Bend County MUD 46	$783,755	$11,612	$12,985	$15,912	$15,892	$19,972	$20,025
Municipal Conservation, Fort Bend County MUD 47	WUG	Fort Bend County MUD 47	$822,909	$13,165	$13,633	$16,007	$16,475	$20,757	$22,539
Municipal Conservation, Fort Bend County MUD 48	WUG	Fort Bend County MUD 48	$1,192,820	$18,169	$19,088	$22,576	$24,556	$31,621	$32,720
Municipal Conservation, Fort Bend County MUD 49	WUG	Fort Bend County MUD 49	$335,195	$5,163	$5,558	$6,446	$6,491	$8,965	$8,965
Municipal Conservation, Fort Bend County MUD 5	WUG	Fort Bend County MUD 5	$1,164,661	$15,226	$17,764	$23,277	$25,033	$31,888	$32,781
Municipal Conservation, Fort Bend County MUD 81	WUG	Fort Bend County MUD 81	$1,514,895	$16,161	$16,709	$28,430	$35,709	$49,239	$52,415
Municipal Conservation, Fort Bend County WCID 2	WUG	Fort Bend County WCID 2	$30,383,182	$967,360	$439,457	$480,508	$498,461	$603,479	$490,532
Municipal Conservation, Fort Bend County WCID 3	WUG	Fort Bend County WCID 3	$171,672	$2,771	$2,855	$3,305	$3,300	$4,468	$4,682
Municipal Conservation, Freeport	WUG	Freeport	$3,163,871	$94,518	$72,477	$30,025	$51,032	$62,342	$59,931
Municipal Conservation, Friendswood	WUG	Friendswood	$23,891,804	$550,587	$358,639	$415,665	$448,962	$561,706	$536,214
Municipal Conservation, Fulshear	WUG	Fulshear	$22,520,309	$298,221	$421,686	$412,666	$462,070	$597,953	$594,349
Municipal Conservation, Galena Park	WUG	Galena Park	$2,825,335	$54,760	$52,773	$56,505	$52,101	$61,600	$47,945

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Galveston	WUG	Galveston	$36,972,363	$915,415	$588,459	$677,973	$668,871	$766,981	$795,373
Municipal Conservation, Galveston County FWSD 6	WUG	Galveston County FWSD 6	$764,865	$12,517	$12,901	$14,987	$15,176	$19,005	$19,005
Municipal Conservation, Galveston County MUD 12	WUG	Galveston County MUD 12	$1,187,254	$19,238	$19,893	$23,193	$23,727	$29,704	$29,704
Municipal Conservation, Galveston County WCID 1	WUG	Galveston County WCID 1	$10,685,446	$163,112	$171,420	$205,672	$217,691	$281,896	$287,536
Municipal Conservation, Galveston County WCID 12	WUG	Galveston County WCID 12	$1,288,407	$22,103	$22,894	$26,106	$24,294	$30,386	$30,577
Municipal Conservation, Galveston County WCID 8	WUG	Galveston County WCID 8	$1,732,340	$27,129	$28,646	$33,959	$34,991	$44,009	$45,000
Municipal Conservation, Glendale WSC	WUG	Glendale WSC	$295,585	$5,451	$5,294	$5,776	$5,664	$6,738	$6,355
Municipal Conservation, Grand Oaks MUD	WUG	Grand Oaks MUD	$439,886	$6,572	$7,188	$8,552	$8,941	$11,533	$12,026
Municipal Conservation, Green Trails MUD	WUG	Green Trails MUD	$640,655	$10,610	$11,084	$12,647	$12,400	$15,724	$16,005
Municipal Conservation, Greenwood UD	WUG	Greenwood UD	$2,221,104	$39,767	$57,308	$47,066	$41,246	$31,330	$53,934
Municipal Conservation, Groveton	WUG	Groveton	$230,972	$4,575	$4,329	$4,605	$4,137	$4,977	$4,742
Municipal Conservation, Hardin WSC	WUG	Hardin WSC	$1,436,182	$21,813	$23,024	$27,631	$29,074	$38,006	$40,702
Municipal Conservation, Harris County FWSD 1-A	WUG	Harris County FWSD 1-A	$637,163	$10,170	$10,578	$12,429	$12,778	$16,158	$16,033
Municipal Conservation, Harris County FWSD 27	WUG	Harris County FWSD 27	$692,979	$8,719	$10,705	$13,289	$14,071	$20,510	$20,039
Municipal Conservation, Harris County FWSD 58	WUG	Harris County FWSD 58	$674,690	$10,918	$11,336	$13,203	$13,466	$16,860	$16,860
Municipal Conservation, Harris County MUD 106	WUG	Harris County MUD 106	$1,249,611	$19,312	$20,253	$24,286	$25,223	$32,587	$33,001
Municipal Conservation, Harris County MUD 11	WUG	Harris County MUD 11	$862,881	$13,861	$14,353	$16,853	$17,345	$21,671	$22,051
Municipal Conservation, Harris County MUD 119	WUG	Harris County MUD 119	$1,390,462	$22,409	$23,667	$27,279	$27,928	$34,282	$34,812
Municipal Conservation, Harris County MUD 122	WUG	Harris County MUD 122	$332,181	$5,161	$5,529	$6,474	$6,647	$8,485	$9,221
Municipal Conservation, Harris County MUD 132	WUG	Harris County MUD 132	$2,006,256	$32,487	$33,962	$39,804	$39,391	$49,917	$50,646
Municipal Conservation, Harris County MUD 148	WUG	Harris County MUD 148	$1,746,249	$25,084	$26,645	$34,429	$37,005	$46,678	$47,839
Municipal Conservation, Harris County MUD 151	WUG	Harris County MUD 151	$1,824,394	$28,205	$29,668	$35,329	$36,616	$47,804	$48,174
Municipal Conservation, Harris County MUD 152	WUG	Harris County MUD 152	$2,070,611	$31,400	$33,154	$40,253	$41,963	$54,636	$56,551
Municipal Conservation, Harris County MUD 153	WUG	Harris County MUD 153	$2,682,966	$43,779	$45,355	$53,222	$51,961	$67,185	$67,946
Municipal Conservation, Harris County MUD 154	WUG	Harris County MUD 154	$3,317,403	$50,264	$51,933	$63,203	$67,872	$89,315	$91,533
Municipal Conservation, Harris County MUD 180	WUG	Harris County MUD 180	$1,334,885	$20,931	$22,102	$25,931	$26,787	$34,158	$35,795
Municipal Conservation, Harris County MUD 189	WUG	Harris County MUD 189	$703,679	$12,251	$12,711	$13,879	$13,561	$16,267	$16,989

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Harris County MUD 216	WUG	Harris County MUD 216	$409,057	$7,422	$7,572	$8,112	$7,826	$9,061	$9,127
Municipal Conservation, Harris County MUD 221	WUG	Harris County MUD 221	$1,061,430	$16,680	$17,391	$20,650	$21,394	$27,223	$28,050
Municipal Conservation, Harris County MUD 23	WUG	Harris County MUD 23	$886,619	$14,216	$14,750	$17,319	$17,827	$22,281	$22,689
Municipal Conservation, Harris County MUD 261	WUG	Harris County MUD 261	$375,092	$5,768	$6,199	$7,415	$7,635	$9,533	$9,592
Municipal Conservation, Harris County MUD 278	WUG	Harris County MUD 278	$3,843,576	$42,118	$44,105	$81,305	$89,302	$115,704	$118,236
Municipal Conservation, Harris County MUD 290	WUG	Harris County MUD 290	$3,483,963	$37,715	$39,953	$73,570	$80,144	$106,129	$108,853
Municipal Conservation, Harris County MUD 321	WUG	Harris County MUD 321	$132,308	$2,571	$2,720	$2,883	$2,199	$2,599	$2,588
Municipal Conservation, Harris County MUD 342	WUG	Harris County MUD 342	$1,084,244	$15,074	$15,637	$21,704	$23,721	$29,308	$29,804
Municipal Conservation, Harris County MUD 344	WUG	Harris County MUD 344	$1,237,864	$17,329	$21,615	$24,950	$25,294	$31,451	$31,474
Municipal Conservation, Harris County MUD 345	WUG	Harris County MUD 345	$1,044,458	$16,464	$17,183	$20,162	$20,786	$27,128	$27,228
Municipal Conservation, Harris County MUD 36	WUG	Harris County MUD 36	$831,557	$12,627	$13,024	$19,005	$16,204	$20,210	$20,857
Municipal Conservation, Harris County MUD 361	WUG	Harris County MUD 361	$1,433,706	$21,466	$22,592	$27,956	$29,425	$38,007	$39,246
Municipal Conservation, Harris County MUD 372	WUG	Harris County MUD 372	$677,223	$10,383	$11,352	$13,226	$13,540	$17,421	$18,003
Municipal Conservation, Harris County MUD 400	WUG	Harris County MUD 400	$8,722,413	$96,861	$97,382	$264,009	$170,251	$222,400	$213,383
Municipal Conservation, Harris County MUD 412	WUG	Harris County MUD 412	$1,395,065	$20,168	$21,185	$27,905	$29,229	$37,242	$37,775
Municipal Conservation, Harris County MUD 420	WUG	Harris County MUD 420	$410,176	$6,375	$6,591	$8,193	$8,426	$10,373	$10,596
Municipal Conservation, Harris County MUD 46	WUG	Harris County MUD 46	$897,151	$14,647	$15,092	$17,584	$17,833	$22,326	$22,331
Municipal Conservation, Harris County MUD 49	WUG	Harris County MUD 49	$2,501,104	$37,956	$40,069	$49,108	$51,754	$64,611	$66,124
Municipal Conservation, Harris County MUD 494	WUG	Harris County MUD 494	$1,172,325	$17,329	$18,250	$22,878	$24,123	$31,409	$32,435
Municipal Conservation, Harris County MUD 5	WUG	Harris County MUD 5	$1,432,556	$22,218	$23,402	$27,752	$28,833	$37,126	$39,246
Municipal Conservation, Harris County MUD 50	WUG	Harris County MUD 50	$1,162,339	$17,398	$18,445	$22,558	$23,554	$31,022	$32,569
Municipal Conservation, Harris County MUD 504	WUG	Harris County MUD 504	$853,824	$13,709	$14,186	$16,630	$17,129	$21,516	$22,124
Municipal Conservation, Harris County MUD 55	WUG	Harris County MUD 55	$5,269,820	$82,888	$85,753	$100,736	$106,511	$137,105	$139,890
Municipal Conservation, Harris County MUD 58	WUG	Harris County MUD 58	$320,827	$5,606	$5,674	$6,325	$6,231	$7,497	$7,497
Municipal Conservation, Harris County MUD 6	WUG	Harris County MUD 6	$921,454	$14,721	$15,315	$18,017	$18,554	$23,178	$23,604
Municipal Conservation, Harris County MUD 8	WUG	Harris County MUD 8	$968,269	$15,455	$16,148	$19,184	$19,938	$23,694	$24,079
Municipal Conservation, Harris County MUD 96	WUG	Harris County MUD 96	$1,977,058	$29,716	$30,880	$38,802	$41,007	$51,946	$53,548

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Harris County UD 15	WUG	Harris County UD 15	$785,622	$13,109	$13,451	$15,407	$15,252	$19,369	$19,742
Municipal Conservation, Harris County WCID 1	WUG	Harris County WCID 1	$2,358,837	$36,757	$38,247	$46,037	$46,764	$61,840	$62,387
Municipal Conservation, Harris County WCID 133	WUG	Harris County WCID 133	$1,147,038	$18,172	$19,244	$22,486	$23,130	$28,745	$29,268
Municipal Conservation, Harris County WCID 156	WUG	Harris County WCID 156	$201,296	$3,242	$3,360	$3,926	$4,041	$5,058	$5,026
Municipal Conservation, Harris County WCID 161	WUG	Harris County WCID 161	$340,144	$5,465	$5,664	$6,652	$6,851	$8,528	$8,544
Municipal Conservation, Harris County WCID 50	WUG	Harris County WCID 50	$753,121	$12,212	$12,630	$14,698	$15,093	$18,770	$19,091
Municipal Conservation, Harris County WCID 70	WUG	Harris County WCID 70	$578,134	$9,343	$9,666	$11,282	$11,579	$14,494	$14,494
Municipal Conservation, Harris County WCID 74	WUG	Harris County WCID 74	$1,000,070	$15,582	$16,327	$19,767	$20,396	$25,341	$25,940
Municipal Conservation, Harris County WCID 89	WUG	Harris County WCID 89	$2,139,457	$34,595	$36,151	$41,985	$42,830	$53,077	$53,077
Municipal Conservation, Harris County WCID 96	WUG	Harris County WCID 96	$2,118,022	$31,316	$32,827	$42,814	$45,017	$54,372	$54,562
Municipal Conservation, Harris County WCID-Fondren Road	WUG	Harris County WCID-Fondren Road	$725,164	$11,465	$12,155	$14,214	$14,616	$18,212	$18,544
Municipal Conservation, Harris-Montgomery Counties MUD 386	WUG	Harris-Montgomery Counties MUD 386	$806,293	$12,498	$13,455	$15,743	$16,255	$20,503	$21,753
Municipal Conservation, Hempstead	WUG	Hempstead	$1,951,138	$32,810	$34,209	$38,970	$37,271	$47,138	$47,158
Municipal Conservation, High Prairie WSC	WUG	High Prairie WSC	$389,054	$5,995	$6,334	$7,596	$7,911	$10,047	$10,224
Municipal Conservation, Hillcrest Village	WUG	Hillcrest Village	$186,100	$3,128	$3,169	$3,678	$3,696	$4,505	$4,340
Municipal Conservation, Hilltop Lakes WSC	WUG	Hilltop Lakes WSC	$909,206	$10,205	$12,748	$18,025	$19,692	$27,222	$30,286
Municipal Conservation, Hilshire Village	WUG	Hilshire Village	$242,459	$3,960	$4,088	$4,756	$4,835	$6,009	$5,979
Municipal Conservation, Hitchcock	WUG	Hitchcock	$2,012,602	$31,645	$33,670	$39,244	$40,461	$51,002	$52,382
Municipal Conservation, HMW SUD	WUG	HMW SUD	$6,614,772	$57,615	$99,464	$132,067	$149,438	$201,625	$212,682
Municipal Conservation, Houston	WUG	Houston	$928,160,611	$17,364,601	$14,881,618	$18,329,125	$18,311,101	$21,814,351	$21,152,651
Municipal Conservation, Humble	WUG	Humble	$17,794,341	$493,546	$228,824	$332,943	$317,130	$376,596	$303,951
Municipal Conservation, Huntsville	WUG	Huntsville	$53,204,161	$1,292,321	$624,360	$850,315	$1,032,399	$1,370,112	$1,509,091
Municipal Conservation, Jacinto City	WUG	Jacinto City	$620,705	$22,470	$8,276	$12,025	$8,835	$9,971	$4,935
Municipal Conservation, Jamaica Beach	WUG	Jamaica Beach	$973,527	$15,671	$16,225	$18,956	$19,565	$24,487	$24,487
Municipal Conservation, Jersey Village	WUG	Jersey Village	$6,031,795	$51,226	$53,885	$61,584	$60,013	$362,715	$137,565
Municipal Conservation, Jewett	WUG	Jewett	$126,100	$4,604	$3,343	$2,777	$1,886	$0	$0
Municipal Conservation, Johnston Water Utility	WUG	Johnston Water Utility	$992,334	$9,413	$14,155	$19,670	$22,431	$30,353	$32,114

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Katy	WUG	Katy	$19,629,446	$267,849	$302,663	$375,381	$408,196	$551,698	$571,576
Municipal Conservation, Keenan WSC	WUG	Keenan WSC	$602,094	$5,187	$7,422	$12,168	$14,122	$19,218	$20,924
Municipal Conservation, Kendleton	WUG	Kendleton	$905,468	$3,022	$17,147	$20,034	$20,620	$26,956	$27,678
Municipal Conservation, Kings Manor MUD	WUG	Kings Manor MUD	$1,062,045	$16,719	$17,501	$20,603	$21,478	$27,140	$27,635
Municipal Conservation, Kirkmont MUD	WUG	Kirkmont MUD	$621,104	$9,969	$10,515	$12,167	$12,354	$15,547	$15,584
Municipal Conservation, La Marque	WUG	La Marque	$8,874,630	$162,850	$137,623	$163,190	$176,957	$224,347	$224,960
Municipal Conservation, La Porte	WUG	La Porte	$23,119,005	$594,377	$368,817	$400,131	$420,263	$480,439	$478,735
Municipal Conservation, Lake Bonanza WSC	WUG	Lake Bonanza WSC	$1,022,338	$11,314	$14,229	$19,876	$22,783	$30,741	$32,908
Municipal Conservation, Lake Conroe Hills MUD	WUG	Lake Conroe Hills MUD	$767,022	$10,154	$12,400	$15,060	$16,031	$20,853	$22,042
Municipal Conservation, Lake Jackson	WUG	Lake Jackson	$15,307,159	$477,994	$218,684	$250,982	$254,772	$302,147	$261,369
Municipal Conservation, Lake MUD	WUG	Lake MUD	$2,021,491	$30,518	$32,670	$39,114	$40,602	$53,698	$55,471
Municipal Conservation, Lazy River Improvement District	WUG	Lazy River Improvement District	$374,802	$5,512	$6,013	$7,209	$7,659	$10,037	$10,502
Municipal Conservation, League City	WUG	League City	$59,373,682	$882,847	$980,859	$1,185,593	$1,254,897	$1,481,824	$1,513,482
Municipal Conservation, Leggett WSC	WUG	Leggett WSC	$554,465	$8,351	$9,202	$10,940	$11,037	$14,412	$15,045
Municipal Conservation, Liberty	WUG	Liberty	$2,429,683	$41,519	$42,450	$48,784	$45,936	$58,391	$58,883
Municipal Conservation, Liberty County FWSD 1 Hull	WUG	Liberty County FWSD 1 Hull	$208,655	$3,414	$3,519	$4,088	$4,141	$5,185	$5,185
Municipal Conservation, Livingston	WUG	Livingston	$2,548,265	$41,287	$44,874	$51,947	$47,905	$62,307	$65,065
Municipal Conservation, Longhorn Town UD	WUG	Longhorn Town UD	$448,947	$7,721	$7,876	$8,919	$8,583	$10,697	$10,987
Municipal Conservation, Luce Bayou PUD	WUG	Luce Bayou PUD	$189,760	$0	$3,784	$4,433	$4,523	$5,665	$5,710
Municipal Conservation, Madisonville	WUG	Madisonville	$1,459,357	$25,941	$26,085	$29,354	$27,165	$33,998	$33,927
Municipal Conservation, Magnolia	WUG	Magnolia	$1,576,295	$21,172	$25,381	$33,347	$32,011	$41,436	$42,825
Municipal Conservation, Manvel	WUG	Manvel	$7,997,808	$42,312	$67,373	$208,762	$190,359	$262,815	$281,598
Municipal Conservation, Mason Creek UD	WUG	Mason Creek UD	$1,943,747	$31,469	$32,781	$37,956	$38,363	$48,828	$49,777
Municipal Conservation, Meadowcreek MUD	WUG	Meadowcreek MUD	$684,235	$10,768	$11,141	$13,353	$13,832	$17,549	$17,805
Municipal Conservation, Meadows Place	WUG	Meadows Place	$1,434,348	$21,477	$22,825	$27,598	$29,524	$38,079	$39,318
Municipal Conservation, Memorial Point UD	WUG	Memorial Point UD	$346,267	$4,996	$5,591	$6,723	$7,119	$9,232	$9,657
Municipal Conservation, Memorial Villages Water Authority	WUG	Memorial Villages Water Authority	$6,288,600	$152,981	$90,070	$117,641	$123,449	$131,113	$136,060

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				2030	2040	2050	2060	2070	2080
Municipal Conservation, Mercy WSC	WUG	Mercy WSC	$602,471	$10,035	$10,334	$11,855	$11,928	$14,628	$14,671
Municipal Conservation, Missouri City	WUG	Missouri City	$5,420,251	$43,551	$109,854	$104,190	$115,537	$153,386	$155,071
Municipal Conservation, Mont Belvieu	WUG	Mont Belvieu	$10,117,859	$166,722	$148,079	$154,769	$217,269	$289,524	$354,229
Municipal Conservation, Montgomery	WUG	Montgomery	$1,910,009	$26,023	$33,634	$39,638	$38,207	$48,571	$49,279
Municipal Conservation, Montgomery County MUD 105	WUG	Montgomery County MUD 105	$348,602	$4,981	$5,480	$6,745	$7,198	$9,477	$9,792
Municipal Conservation, Montgomery County MUD 112	WUG	Montgomery County MUD 112	$1,371,753	$20,477	$22,353	$27,393	$27,530	$35,002	$44,203
Municipal Conservation, Montgomery County MUD 115	WUG	Montgomery County MUD 115	$1,385,396	$21,179	$22,430	$27,072	$27,917	$36,202	$37,396
Municipal Conservation, Montgomery County MUD 119	WUG	Montgomery County MUD 119	$5,985,823	$49,249	$167,163	$107,633	$114,094	$146,345	$140,983
Municipal Conservation, Montgomery County MUD 126	WUG	Montgomery County MUD 126	$372,729	$4,437	$5,049	$7,162	$7,816	$11,659	$11,499
Municipal Conservation, Montgomery County MUD 137	WUG	Montgomery County MUD 137	$873,420	$10,530	$13,111	$17,404	$19,041	$24,740	$25,160
Municipal Conservation, Montgomery County MUD 139	WUG	Montgomery County MUD 139	$1,563,175	$28,608	$28,551	$31,824	$28,235	$35,545	$35,545
Municipal Conservation, Montgomery County MUD 15	WUG	Montgomery County MUD 15	$1,790,712	$26,397	$29,186	$34,935	$36,512	$47,098	$49,432
Municipal Conservation, Montgomery County MUD 18	WUG	Montgomery County MUD 18	$2,158,665	$31,764	$34,878	$42,067	$44,175	$57,088	$58,945
Municipal Conservation, Montgomery County MUD 19	WUG	Montgomery County MUD 19	$449,006	$8,339	$8,419	$9,104	$8,321	$9,738	$9,796
Municipal Conservation, Montgomery County MUD 24	WUG	Montgomery County MUD 24	$563,391	$7,850	$9,719	$11,459	$11,198	$14,597	$15,161
Municipal Conservation, Montgomery County MUD 56	WUG	Montgomery County MUD 56	$293,209	$4,208	$4,558	$5,796	$6,078	$7,864	$8,169
Municipal Conservation, Montgomery County MUD 8	WUG	Montgomery County MUD 8	$3,309,289	$49,660	$53,278	$64,140	$67,539	$87,296	$90,159
Municipal Conservation, Montgomery County MUD 83	WUG	Montgomery County MUD 83	$717,644	$10,600	$11,491	$13,895	$14,748	$19,065	$19,654
Municipal Conservation, Montgomery County MUD 84	WUG	Montgomery County MUD 84	$950,375	$13,732	$15,054	$18,381	$19,668	$25,555	$26,475
Municipal Conservation, Montgomery County MUD 88	WUG	Montgomery County MUD 88	$1,062,372	$17,420	$17,934	$20,772	$20,655	$26,695	$27,612
Municipal Conservation, Montgomery County MUD 89	WUG	Montgomery County MUD 89	$1,468,135	$22,608	$23,877	$28,503	$29,492	$38,353	$39,805
Municipal Conservation, Montgomery County MUD 9	WUG	Montgomery County MUD 9	$3,290,470	$49,664	$52,765	$63,623	$67,111	$86,895	$89,890
Municipal Conservation, Montgomery County MUD 94	WUG	Montgomery County MUD 94	$1,722,371	$24,732	$27,679	$33,462	$35,554	$46,045	$47,651
Municipal Conservation, Montgomery County MUD 95	WUG	Montgomery County MUD 95	$1,700,463	$23,958	$30,069	$36,381	$32,943	$42,419	$42,763

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Montgomery County MUD 98	WUG	Montgomery County MUD 98	$710,560	$10,673	$11,334	$13,700	$14,514	$18,851	$19,840
Municipal Conservation, Montgomery County MUD 99	WUG	Montgomery County MUD 99	$768,215	$10,939	$12,157	$15,833	$15,143	$20,672	$20,775
Municipal Conservation, Montgomery County UD 2	WUG	Montgomery County UD 2	$941,299	$13,230	$15,654	$18,624	$19,317	$24,758	$25,469
Municipal Conservation, Montgomery County UD 3	WUG	Montgomery County UD 3	$2,600,435	$39,129	$41,739	$50,412	$52,865	$68,763	$71,355
Municipal Conservation, Montgomery County UD 4	WUG	Montgomery County UD 4	$2,681,844	$40,512	$43,161	$52,014	$54,454	$70,711	$73,324
Municipal Conservation, Montgomery County WCID 1	WUG	Montgomery County WCID 1	$2,078,112	$30,813	$35,194	$41,259	$42,291	$52,784	$54,702
Municipal Conservation, Morgans Point	WUG	Morgans Point	$170,766	$2,928	$3,134	$3,524	$3,168	$3,942	$3,806
Municipal Conservation, Mount Houston Road MUD	WUG	Mount Houston Road MUD	$1,404,846	$22,290	$23,540	$27,564	$28,338	$35,173	$35,796
Municipal Conservation, MSEC Enterprises	WUG	MSEC Enterprises	$15,554,627	$200,700	$220,381	$298,482	$349,983	$439,675	$462,417
Municipal Conservation, Nassau Bay	WUG	Nassau Bay	$1,489,763	$25,680	$26,324	$29,734	$28,576	$35,158	$35,043
Municipal Conservation, Needville	WUG	Needville	$1,766,011	$16,389	$27,362	$37,484	$39,682	$50,503	$51,811
Municipal Conservation, New Caney MUD	WUG	New Caney MUD	$9,823,300	$110,134	$138,871	$186,199	$216,066	$299,610	$314,500
Municipal Conservation, New Waverly	WUG	New Waverly	$274,651	$6,274	$5,615	$5,663	$4,539	$4,944	$4,301
Municipal Conservation, Newport MUD	WUG	Newport MUD	$5,780,504	$83,136	$85,404	$108,947	$121,720	$162,354	$164,894
Municipal Conservation, Nitsch and Son Utility	WUG	Nitsch and Son Utility	$522,047	$8,355	$8,661	$10,171	$10,477	$13,191	$13,497
Municipal Conservation, Normangee	WUG	Normangee	$132,650	$3,728	$2,925	$2,632	$1,954	$2,026	$0
Municipal Conservation, North Belt UD	WUG	North Belt UD	$894,827	$13,627	$13,882	$18,212	$18,414	$23,012	$23,357
Municipal Conservation, North Channel Water Authority	WUG	North Channel Water Authority	$47,407,394	$692,892	$762,707	$948,992	$1,019,032	$1,195,366	$1,217,504
Municipal Conservation, North Forest MUD	WUG	North Forest MUD	$380,184	$6,033	$6,251	$7,429	$7,646	$9,639	$10,204
Municipal Conservation, North Fort Bend Water Authority	WUG	North Fort Bend Water Authority	$278,453,191	$4,776,577	$4,112,567	$5,299,492	$5,792,103	$7,158,369	$7,062,111
Municipal Conservation, North Green MUD	WUG	North Green MUD	$650,825	$10,719	$11,111	$12,733	$13,074	$15,833	$16,125
Municipal Conservation, North Harris County Regional Water Authority	WUG	North Harris County Regional Water Authority	$611,387,103	$14,052,432	$9,012,884	$11,146,017	$11,425,442	$14,193,203	$13,087,323
Municipal Conservation, North Zulch MUD	WUG	North Zulch MUD	$926,523	$14,838	$15,373	$18,052	$18,586	$23,409	$23,943
Municipal Conservation, Northeast Harris County MUD 1	WUG	Northeast Harris County MUD 1	$416,930	$6,992	$7,181	$8,271	$8,052	$10,134	$10,630
Municipal Conservation, Northwest Harris County MUD 16	WUG	Northwest Harris County MUD 16	$1,063,355	$16,835	$17,783	$20,730	$20,974	$27,216	$27,975
Municipal Conservation, Oak Hollow Utility	WUG	Oak Hollow Utility	$542,906	$8,617	$8,937	$10,505	$10,949	$13,864	$14,186

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Conservation, Oak Ridge North	WUG	Oak Ridge North	$1,247,418	$17,864	$21,210	$25,189	$25,490	$31,808	$31,808
Municipal Conservation, Onalaska WSC	WUG	Onalaska WSC	$1,714,496	$24,172	$27,145	$33,108	$35,433	$46,613	$49,786
Municipal Conservation, One Five O WSC	WUG	One Five O WSC	$766,670	$12,630	$13,049	$15,033	$15,233	$18,835	$18,870
Municipal Conservation, Oyster Creek	WUG	Oyster Creek	$417,195	$7,367	$7,497	$8,512	$7,918	$9,523	$9,025
Municipal Conservation, P B & S C WSC	WUG	P B & S C WSC	$517,093	$8,689	$8,923	$10,193	$10,206	$12,467	$12,313
Municipal Conservation, Palmer Plantation MUD 1	WUG	Palmer Plantation MUD 1	$552,844	$8,983	$9,309	$10,810	$10,931	$13,813	$14,384
Municipal Conservation, Palmer Plantation MUD 2	WUG	Palmer Plantation MUD 2	$702,919	$11,238	$11,648	$13,702	$14,109	$17,776	$18,189
Municipal Conservation, Panorama Village	WUG	Panorama Village	$1,110,493	$16,714	$18,013	$21,553	$22,667	$29,115	$29,873
Municipal Conservation, Parkway MUD	WUG	Parkway MUD	$1,903,798	$30,107	$31,841	$37,295	$38,401	$47,844	$48,918
Municipal Conservation, Pasadena	WUG	Pasadena	$67,967,584	$1,238,826	$1,096,781	$1,338,077	$1,346,829	$1,619,184	$1,570,614
Municipal Conservation, Pattison WSC	WUG	Pattison WSC	$425,820	$6,631	$6,870	$8,359	$8,574	$11,022	$11,260
Municipal Conservation, Patton Village	WUG	Patton Village	$697,363	$7,244	$8,746	$12,740	$16,890	$21,828	$22,883
Municipal Conservation, Pearland	WUG	Pearland	$102,019,474	$2,053,063	$1,586,540	$1,893,581	$2,011,070	$2,432,154	$2,255,394
Municipal Conservation, Pecan Grove MUD 1	WUG	Pecan Grove MUD 1	$8,365,415	$175,348	$127,038	$150,725	$162,327	$201,584	$195,195
Municipal Conservation, Phelps SUD	WUG	Phelps SUD	$511,729	$7,702	$8,144	$9,933	$10,446	$13,517	$14,309
Municipal Conservation, Pine Village PUD	WUG	Pine Village PUD	$721,696	$11,198	$12,024	$14,112	$14,785	$18,188	$18,626
Municipal Conservation, Pinehurst Decker Prairie WSC	WUG	Pinehurst Decker Prairie WSC	$589,185	$6,062	$7,886	$10,992	$13,537	$18,459	$19,825
Municipal Conservation, Pinewood Community	WUG	Pinewood Community	$270,038	$4,033	$4,321	$5,216	$5,498	$7,196	$7,398
Municipal Conservation, Plantation MUD	WUG	Plantation MUD	$1,107,372	$16,553	$17,627	$21,774	$22,714	$29,028	$30,412
Municipal Conservation, Point Aquarius MUD	WUG	Point Aquarius MUD	$1,354,539	$15,822	$20,051	$26,829	$29,865	$38,850	$40,369
Municipal Conservation, Porter SUD	WUG	Porter SUD	$11,645,575	$137,645	$172,049	$224,642	$253,315	$340,691	$362,155
Municipal Conservation, Prairie View	WUG	Prairie View	$1,568,954	$19,118	$24,034	$30,148	$33,124	$45,606	$48,654
Municipal Conservation, Prairie View A&M University	WUG	Prairie View A&M University	$3,579,869	$55,867	$58,834	$69,585	$72,294	$91,891	$95,159
Municipal Conservation, Providence WSC	WUG	Providence WSC	$651,788	$10,082	$11,352	$13,127	$12,836	$16,269	$15,128
Municipal Conservation, Quadvest	WUG	Quadvest	$32,321,486	$415,290	$439,756	$602,470	$716,590	$955,540	$1,025,026
Municipal Conservation, Quail Valley UD	WUG	Quail Valley UD	$6,923,410	$161,811	$99,644	$113,537	$134,968	$166,425	$159,560
Municipal Conservation, Ranch Crest Water	WUG	Ranch Crest Water	$376,497	$5,183	$6,262	$7,540	$7,772	$9,882	$10,107

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
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Municipal Conservation, Rayford Road MUD	WUG	Rayford Road MUD	$3,225,844	$50,994	$53,505	$63,338	$63,858	$82,406	$84,834
Municipal Conservation, Raywood WSC	WUG	Raywood WSC	$402,027	$6,283	$6,492	$7,565	$7,947	$10,727	$11,887
Municipal Conservation, Richmond	WUG	Richmond	$7,703,270	$137,871	$119,064	$143,923	$151,368	$197,486	$206,150
Municipal Conservation, Richwood	WUG	Richwood	$1,170,320	$20,327	$20,387	$23,171	$23,026	$27,447	$26,740
Municipal Conservation, River Plantation MUD	WUG	River Plantation MUD	$1,302,791	$13,938	$18,294	$24,709	$31,109	$38,388	$38,411
Municipal Conservation, Riverside SUD	WUG	Riverside SUD	$1,870,793	$25,664	$27,851	$35,222	$39,159	$53,270	$59,133
Municipal Conservation, Rolling Fork PUD	WUG	Rolling Fork PUD	$661,905	$10,430	$11,005	$13,185	$13,365	$16,548	$16,575
Municipal Conservation, Roman Forest Consolidated MUD	WUG	Roman Forest Consolidated MUD	$956,467	$8,507	$11,884	$17,504	$22,908	$31,663	$31,807
Municipal Conservation, Rosenberg	WUG	Rosenberg	$26,160,676	$292,326	$366,945	$504,570	$576,708	$790,919	$845,996
Municipal Conservation, Royal Valley Utilities	WUG	Royal Valley Utilities	$815,084	$10,892	$12,493	$15,206	$17,771	$22,758	$23,884
Municipal Conservation, Sagemeadow UD	WUG	Sagemeadow UD	$1,658,164	$26,501	$27,760	$32,270	$32,976	$41,953	$43,564
Municipal Conservation, San Jacinto SUD	WUG	San Jacinto SUD	$940,997	$15,802	$16,246	$18,549	$18,591	$22,673	$22,387
Municipal Conservation, San Leon MUD	WUG	San Leon MUD	$2,189,037	$33,259	$35,681	$42,944	$44,598	$56,582	$58,397
Municipal Conservation, Seabrook	WUG	Seabrook	$9,703,007	$329,960	$134,122	$151,047	$156,874	$183,802	$144,957
Municipal Conservation, Sealy	WUG	Sealy	$2,150,869	$35,347	$37,174	$43,792	$41,381	$52,128	$52,649
Municipal Conservation, Sedona Lakes MUD 1	WUG	Sedona Lakes MUD 1	$574,009	$8,052	$8,776	$11,399	$12,222	$15,387	$15,649
Municipal Conservation, Sequoia Improvement District	WUG	Sequoia Improvement District	$282,164	$4,623	$4,763	$5,546	$5,631	$6,957	$6,964
Municipal Conservation, Shenandoah	WUG	Shenandoah	$2,323,078	$36,517	$43,577	$49,557	$43,082	$54,127	$54,478
Municipal Conservation, Shepherd	WUG	Shepherd	$739,735	$12,570	$12,887	$14,627	$14,535	$17,649	$17,055
Municipal Conservation, Shoreacres	WUG	Shoreacres	$513,626	$8,239	$8,526	$10,013	$10,306	$12,976	$13,026
Municipal Conservation, Sienna Plantation	WUG	Sienna Plantation	$20,210,290	$465,249	$290,710	$353,069	$383,208	$482,029	$467,640
Municipal Conservation, Soda WSC	WUG	Soda WSC	$662,149	$9,305	$10,476	$12,780	$13,714	$18,013	$19,269
Municipal Conservation, South Cleveland WSC	WUG	South Cleveland WSC	$4,101,946	$20,193	$46,939	$75,020	$97,871	$151,912	$182,596
Municipal Conservation, South Houston	WUG	South Houston	$4,316,054	$73,334	$73,820	$85,218	$81,716	$106,749	$107,684
Municipal Conservation, Southeast WSC	WUG	Southeast WSC	$951,171	$15,567	$15,977	$18,582	$18,950	$23,645	$23,961
Municipal Conservation, Southern Montgomery County MUD	WUG	Southern Montgomery County MUD	$3,576,276	$42,162	$63,059	$73,272	$72,939	$96,297	$98,986
Municipal Conservation, Southern Water	WUG	Southern Water	$1,103,448	$16,884	$17,586	$21,729	$22,951	$28,308	$28,868

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
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Municipal Conservation, Southside Place	WUG	Southside Place	$516,254	$8,866	$9,162	$10,354	$9,999	$12,060	$11,844
Municipal Conservation, Southwest Harris County MUD 1	WUG	Southwest Harris County MUD 1	$178,864	$6,300	$2,528	$2,638	$3,273	$2,798	$3,494
Municipal Conservation, Splendora	WUG	Splendora	$8,072,498	$71,069	$94,588	$140,331	$188,319	$283,665	$292,778
Municipal Conservation, Spring Creek UD	WUG	Spring Creek UD	$4,907,063	$71,672	$75,484	$92,774	$101,929	$134,792	$140,553
Municipal Conservation, Spring Meadows MUD	WUG	Spring Meadows MUD	$1,203,322	$16,228	$20,456	$24,179	$24,904	$31,357	$32,082
Municipal Conservation, Spring Valley	WUG	Spring Valley	$1,892,786	$30,505	$32,329	$37,487	$37,565	$46,735	$46,576
Municipal Conservation, Stanley Lake MUD	WUG	Stanley Lake MUD	$1,203,644	$18,913	$20,005	$23,686	$23,874	$30,709	$31,774
Municipal Conservation, Suburban Utility	WUG	Suburban Utility	$1,519,062	$18,835	$20,654	$31,038	$33,766	$43,163	$44,502
Municipal Conservation, Sugar Land	WUG	Sugar Land	$80,623,329	$1,583,559	$1,249,117	$1,540,923	$1,576,033	$1,924,658	$1,880,429
Municipal Conservation, Sunbelt FWSD	WUG	Sunbelt FWSD	$9,654,586	$148,051	$154,120	$185,428	$199,228	$252,970	$256,616
Municipal Conservation, Surfside Beach	WUG	Surfside Beach	$848,717	$15,651	$15,849	$17,545	$15,588	$18,501	$17,377
Municipal Conservation, Sweeny	WUG	Sweeny	$1,107,901	$18,944	$19,381	$22,130	$21,367	$26,410	$25,581
Municipal Conservation, T & W Water Service	WUG	T & W Water Service	$18,834,451	$130,128	$330,381	$352,997	$428,324	$581,455	$601,601
Municipal Conservation, Tarkington SUD	WUG	Tarkington SUD	$1,228,577	$18,643	$19,675	$23,737	$24,980	$32,429	$33,937
Municipal Conservation, TDCJ Darrington Unit	WUG	TDCJ Darrington Unit	$480,722	$7,865	$8,143	$9,350	$9,624	$11,918	$11,722
Municipal Conservation, TDCJ Ferguson Unit	WUG	TDCJ Ferguson Unit	$652,991	$10,525	$10,897	$12,732	$13,104	$16,401	$16,401
Municipal Conservation, TDCJ Jester Units	WUG	TDCJ Jester Units	$465,543	$7,504	$7,769	$9,077	$9,342	$11,693	$11,693
Municipal Conservation, TDCJ Ramsey Area	WUG	TDCJ Ramsey Area	$2,282,715	$36,793	$38,094	$44,507	$45,809	$57,335	$57,335
Municipal Conservation, Tempe WSC 1	WUG	Tempe WSC 1	$702,193	$11,032	$12,406	$15,134	$13,654	$16,474	$15,193
Municipal Conservation, Texas City	WUG	Texas City	$21,251,622	$315,313	$334,676	$407,891	$438,463	$570,366	$584,532
Municipal Conservation, The Commons Water Supply	WUG	The Commons Water Supply	$784,176	$12,639	$13,086	$15,290	$15,737	$19,696	$19,696
Municipal Conservation, The Woodlands	WUG	The Woodlands	$80,426,503	$1,881,576	$1,256,320	$1,503,517	$1,386,854	$1,820,880	$1,935,033
Municipal Conservation, Thunderbird UD	WUG	Thunderbird UD	$1,714,912	$26,575	$27,888	$34,307	$34,302	$43,854	$45,652
Municipal Conservation, Tomball	WUG	Tomball	$10,588,219	$200,793	$173,265	$220,629	$192,189	$246,413	$255,329
Municipal Conservation, Trail of the Lakes MUD	WUG	Trail of the Lakes MUD	$3,583,257	$53,403	$55,406	$67,909	$73,915	$97,709	$99,837
Municipal Conservation, Trinity	WUG	Trinity	$938,260	$17,225	$16,706	$18,334	$17,993	$21,492	$20,760
Municipal Conservation, Trinity Bay Conservation District	WUG	Trinity Bay Conservation District	$13,285,853	$126,473	$142,320	$177,557	$418,312	$418,935	$449,883

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Municipal Conservation, Trinity Rural WSC	WUG	Trinity Rural WSC	$760,840	$13,977	$13,522	$14,826	$14,591	$17,474	$16,940
Municipal Conservation, Valley Ranch MUD 1	WUG	Valley Ranch MUD 1	$1,157,262	$15,359	$18,369	$22,995	$24,382	$31,321	$33,002
Municipal Conservation, Varner Creek UD	WUG	Varner Creek UD	$769,279	$12,912	$13,279	$15,023	$15,096	$18,789	$18,289
Municipal Conservation, Walker County SUD	WUG	Walker County SUD	$4,427,857	$39,165	$63,374	$83,715	$99,680	$141,056	$157,957
Municipal Conservation, Waller	WUG	Waller	$1,498,505	$21,934	$24,871	$30,030	$30,303	$38,756	$39,565
Municipal Conservation, Wallis	WUG	Wallis	$447,255	$7,208	$7,441	$8,709	$8,941	$11,270	$11,565
Municipal Conservation, Waterwood MUD 1	WUG	Waterwood MUD 1	$363,973	$6,201	$6,360	$7,202	$7,144	$8,654	$8,363
Municipal Conservation, Webster	WUG	Webster	$13,918,742	$650,947	$216,199	$212,046	$175,635	$124,809	$122,382
Municipal Conservation, West Columbia	WUG	West Columbia	$1,378,909	$22,870	$23,459	$27,106	$27,340	$33,768	$33,479
Municipal Conservation, West End WSC	WUG	West End WSC	$308,457	$4,963	$5,121	$6,010	$6,168	$7,789	$7,947
Municipal Conservation, West Harris County MUD 6	WUG	West Harris County MUD 6	$471,872	$7,951	$8,245	$9,245	$9,340	$11,255	$11,512
Municipal Conservation, West Harris County Regional Water Authority	WUG	West Harris County Regional Water Authority	$293,716,822	$4,451,986	$4,896,356	$5,815,102	$6,106,032	$7,341,511	$7,606,952
Municipal Conservation, West University Place	WUG	West University Place	$8,185,659	$159,974	$128,629	$150,063	$163,203	$197,315	$193,819
Municipal Conservation, Westfield Garden Park	WUG	Westfield Garden Park	$136,745	$2,195	$2,291	$2,677	$2,755	$3,415	$3,415
Municipal Conservation, Westwood North WSC	WUG	Westwood North WSC	$1,009,025	$14,589	$15,773	$20,698	$20,758	$26,021	$30,635
Municipal Conservation, Westwood Shores MUD	WUG	Westwood Shores MUD	$449,957	$8,393	$8,114	$8,819	$8,545	$10,165	$9,597
Municipal Conservation, White Oak WSC	WUG	White Oak WSC	$625,123	$7,267	$9,061	$11,629	$13,863	$18,619	$20,733
Municipal Conservation, Willis	WUG	Willis	$2,408,521	$38,550	$36,363	$45,438	$49,093	$64,610	$67,981
Municipal Conservation, Willow Creek Farms MUD	WUG	Willow Creek Farms MUD	$1,353,983	$18,454	$20,031	$27,088	$29,007	$37,107	$37,113
Municipal Conservation, Windfern Forest Utility District	WUG	Windfern Forest Utility District	$1,300,774	$21,423	$21,994	$25,568	$26,217	$31,709	$31,664
Municipal Conservation, Wood Branch Village	WUG	Wood Branch Village	$823,466	$7,559	$9,992	$14,924	$20,498	$26,576	$27,976
Municipal Conservation, Wood Trace MUD 1	WUG	Wood Trace MUD 1	$708,065	$12,627	$10,654	$12,883	$14,023	$18,648	$19,715
Municipal Conservation, Woodcreek MUD	WUG	Woodcreek MUD	$675,700	$11,103	$11,429	$13,258	$13,366	$16,740	$16,740
Municipal Conservation, Woodland Oaks Utility	WUG	Woodland Oaks Utility	$1,252,030	$16,251	$18,982	$24,433	$26,647	$35,170	$37,200
Municipal Conservation, Woodridge MUD	WUG	Woodridge MUD	$617,438	$8,069	$9,610	$11,949	$13,001	$17,256	$18,588
Municipal Irrigation Reuse Development, Brazoria County	WUG	County-Other, Brazoria	$6,976,737	$133,206	$274,703	$368,977	$383,269	$410,926	$456,346

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Municipal Irrigation Reuse Development, Chambers County	WUG	County-Other, Chambers	$11,052,579	$69,775	$314,660	$540,014	$721,151	$899,761	$1,124,098
Municipal Irrigation Reuse Development, CHCRWA	WUG	Central Harris County Regional Water Authority	$640,638	$69,938	$103,922	$117,842	$126,737	$188,014	$230,504
Municipal Irrigation Reuse Development, Fort Bend County	WUG	County-Other, Fort Bend	$76,491,907	$1,332,811	$3,648,690	$4,783,805	$5,504,285	$6,203,860	$6,886,036
Municipal Irrigation Reuse Development, Harris County	WUG	County-Other, Harris	$33,720,187	$1,947,745	$3,130,443	$3,181,053	$3,154,467	$3,279,051	$3,368,119
Municipal Irrigation Reuse Development, Liberty County	WUG	County-Other, Liberty	$17,829,496	$209,325	$579,373	$834,042	$1,097,697	$1,322,909	$1,599,397
Municipal Irrigation Reuse Development, Montgomery County	WUG	County-Other, Montgomery	$53,065,362	$681,887	$2,092,737	$2,815,372	$3,281,323	$3,544,048	$3,746,993
Municipal Irrigation Reuse Development, NFBWA	WUG	North Fort Bend Water Authority	$45,784,242	$574,929	$1,112,932	$1,450,075	$1,760,363	$2,149,664	$2,609,573
Municipal Irrigation Reuse Development, NHCRWA	WUG	North Harris County Regional Water Authority	$38,043,034	$199,643	$232,464	$269,763	$274,861	$347,915	$395,900
Municipal Irrigation Reuse Development, Waller County	WUG	County-Other, Waller	$8,967,316	$114,176	$229,752	$376,664	$549,689	$714,920	$902,486
Municipal Irrigation Reuse Development, WHCRWA	WUG	West Harris County Regional Water Authority	$17,894,661	$216,812	$344,775	$398,139	$473,961	$609,927	$752,814
NFBWA Member District Reuse Infrastructure	WMS	North Fort Bend Water Authority	$58,450,435	$7,309,283	$7,309,283	$3,196,647	$3,196,647	$3,196,647	$3,196,647
NFBWA Phase 2 Distribution Segments	WMS	North Fort Bend Water Authority	$129,366,992	$10,396,071	$10,396,071	$1,293,670	$1,293,670	$1,293,670	$1,293,670
NHCRWA Distribution Expansion - 2025 Phase	WMS	North Harris County Regional Water Authority	$645,074,187	$49,654,898	$49,654,898	$4,266,784	$4,266,784	$4,266,784	$4,266,784
NHCRWA Distribution Expansion - 2035 Phase	WMS	North Harris County Regional Water Authority	$565,206,820	$0	$44,043,937	$44,043,937	$4,275,376	$4,275,376	$4,275,376
NHCRWA Distribution Expansion - 2045 Phase	WMS	North Harris County Regional Water Authority	$18,183,597	$0	$0	$1,375,916	$1,375,916	$96,499	$96,499
NHCRWA Member District Reuse Infrastructure	WMS	North Harris County Regional Water Authority	$5,441,580	$661,724	$661,724	$278,849	$278,849	$278,849	$278,849
NHCRWA Transmission Lines	WMS	North Harris County Regional Water Authority	$453,864,685	$36,574,382	$36,574,382	$4,639,974	$4,639,974	$4,639,974	$4,639,974
Pearland Reuse Infrastructure	WMS	Pearland	$24,161,522	$0	$491,455	$1,942,559	$1,513,642	$242,528	$242,528
Pearland Surface Water Treatment Plant Development	WMS	Pearland	$261,245,745	$26,199,868	$26,199,868	$7,818,336	$7,818,336	$7,818,336	$7,818,336
Richmond GRP Infrastructure	WMS	Richmond	$85,626,919	$8,413,501	$8,413,501	$2,388,698	$2,388,698	$2,388,698	$2,388,698
Rosenberg GRP Infrastructure	WMS	Rosenberg	$17,081,984	$1,346,807	$1,346,807	$144,900	$144,900	$144,900	$144,900
SJRA Catahoula Aquifer Supplies	WMS	San Jacinto River Authority	$22,386,712	$0	$0	$0	$0	$0	$5,099,087

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Southeast Transmission Line Improvements	WMS	Baybrook MUD 1	$10,162,896	$781,391	$781,391	$66,319	$66,319	$66,319	$66,319
		Clear Lake City Water Authority	$12,702,913	$976,684	$976,684	$82,894	$82,894	$82,894	$82,894
		Friendswood	$16,851,945	$1,295,690	$1,295,690	$109,969	$109,969	$109,969	$109,969
		Gulf Coast Water Authority	$70,794,248	$5,443,133	$5,443,133	$461,974	$461,974	$461,974	$461,974
		Harris County MUD 55	$12,322,901	$947,467	$947,467	$80,414	$80,414	$80,414	$80,414
		Houston	$23,279,198	$1,789,860	$1,789,860	$151,910	$151,910	$151,910	$151,910
		Pasadena	$63,151	$4,855	$4,855	$412	$412	$412	$412
		Webster	$12,973,919	$997,521	$997,521	$84,662	$84,662	$84,662	$84,662
Sugar Land Advanced Loss Reduction	WMS	Sugar Land	$434,096	$189,712	$189,712	$159,169	$159,169	$159,169	$159,169
Sugar Land AMI	WMS	Sugar Land	$13,367,100	$1,811,129	$1,811,129	$870,605	$870,605	$870,605	$870,605
Sugar Land Groundwater Plant Conversion	WMS	Sugar Land	$24,584,598	$1,849,517	$1,849,517	$119,718	$119,718	$119,718	$119,718
Sugar Land IWRP Reuse Infrastructure - Phase 1	WMS	Sugar Land	$23,661,567	$2,109,843	$2,109,843	$444,990	$444,990	$444,990	$444,990
Sugar Land IWRP Reuse Infrastructure - Phase 2	WMS	Sugar Land	$13,068,708	$0	$1,163,671	$1,163,671	$244,143	$244,143	$244,143
Sugar Land IWRP Reuse Infrastructure - Phase 3	WMS	Sugar Land	$23,661,567	$0	$0	$2,109,843	$2,109,843	$444,990	$444,990
Sugar Land Surface Water Expansion - Phase 1	WMS	Sugar Land	$86,046,985	$9,182,266	$9,182,266	$3,127,907	$3,127,907	$3,127,907	$3,127,907
Sugar Land Surface Water Expansion - Phase 2	WMS	Sugar Land	$20,976,721	$0	$4,607,470	$4,607,470	$3,131,525	$3,131,525	$3,131,525
Texas City Industrial Complex Reuse	WMS	Gulf Coast Water Authority	$45,700,000	$0	$3,856,794	$3,856,794	$641,293	$641,293	$641,293
Water Loss Reduction, Alvin	WUG	Alvin	$2,394,110	$14,459	$42,504	$59,600	$58,640	$58,400	$58,080
Water Loss Reduction, Ames Minglewood WSC	WUG	Ames Minglewood WSC	$183,874	$761	$2,277	$3,725	$5,131	$5,840	$6,534
Water Loss Reduction, Anahuac	WUG	Anahuac	$684,702	$3,044	$9,108	$13,410	$17,592	$22,630	$26,862
Water Loss Reduction, Angleton	WUG	Angleton	$5,157,590	$24,352	$69,069	$105,790	$136,338	$162,060	$181,500
Water Loss Reduction, Austin County WSC	WUG	Austin County WSC	$915,796	$3,044	$10,626	$18,625	$24,922	$30,660	$37,026
Water Loss Reduction, Baytown	WUG	Baytown	$19,164,824	$73,817	$245,916	$408,260	$553,415	$577,430	$576,444
Water Loss Reduction, Blaketree MUD 1 of Montgomery County	WUG	Blaketree MUD 1 of Montgomery County	$215,588	$0	$1,518	$4,470	$6,597	$8,030	$9,438
Water Loss Reduction, Bolivar Peninsula SUD	WUG	Bolivar Peninsula SUD	$2,111,624	$9,132	$27,324	$42,465	$55,708	$68,620	$79,134
Water Loss Reduction, Brazoria County FWSD 1	WUG	Brazoria County FWSD 1	$169,244	$761	$2,277	$3,725	$4,398	$5,110	$6,534
Water Loss Reduction, Brazoria County MUD 2	WUG	Brazoria County MUD 2	$2,858,342	$11,415	$34,914	$55,875	$76,965	$95,630	$110,352

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Water Loss Reduction, Brazoria County MUD 21	WUG	Brazoria County MUD 21	$532,028	$3,044	$9,108	$13,410	$13,194	$13,140	$13,068
Water Loss Reduction, Brazoria County MUD 22	WUG	Brazoria County MUD 22	$274,024	$2,283	$6,072	$5,960	$5,864	$6,570	$6,534
Water Loss Reduction, Brazoria County MUD 31	WUG	Brazoria County MUD 31	$1,902,796	$8,371	$25,047	$37,995	$50,577	$61,320	$69,696
Water Loss Reduction, Brookshire MWD	WUG	Brookshire MWD	$2,762,422	$11,415	$34,155	$53,640	$71,101	$94,170	$117,612
Water Loss Reduction, Buffalo	WUG	Buffalo	$212,376	$1,522	$4,554	$5,215	$5,131	$4,380	$4,356
Water Loss Reduction, Centerville	WUG	Centerville	$144,410	$761	$2,277	$3,725	$3,665	$3,650	$3,630
Water Loss Reduction, Cleveland	WUG	Cleveland	$4,080,714	$13,698	$43,263	$75,990	$109,950	$146,730	$184,404
Water Loss Reduction, Conroe Resort Utilities	WUG	Conroe Resort Utilities	$255,306	$761	$3,036	$5,215	$6,597	$8,760	$11,616
Water Loss Reduction, County-Other, Brazoria	WUG	County-Other, Brazoria	$30,785,620	$117,194	$359,007	$605,685	$824,625	$1,046,090	$1,259,610
Water Loss Reduction, County-Other, Chambers	WUG	County-Other, Chambers	$19,873,850	$32,723	$138,138	$316,625	$545,352	$835,120	$1,194,270
Water Loss Reduction, County-Other, Fort Bend	WUG	County-Other, Fort Bend	$117,644,008	$157,527	$811,371	$1,934,020	$3,260,384	$4,930,420	$6,706,788
Water Loss Reduction, County-Other, Galveston	WUG	County-Other, Galveston	$4,573,274	$19,025	$56,166	$90,890	$123,144	$151,840	$162,624
Water Loss Reduction, County-Other, Leon	WUG	County-Other, Leon	$505,782	$3,805	$9,108	$11,920	$13,194	$11,680	$8,712
Water Loss Reduction, County-Other, Liberty	WUG	County-Other, Liberty	$27,684,064	$58,597	$226,182	$461,155	$759,388	$1,111,060	$1,520,244
Water Loss Reduction, County-Other, Madison	WUG	County-Other, Madison	$1,539,966	$6,088	$18,975	$30,545	$40,315	$51,830	$62,436
Water Loss Reduction, County-Other, Montgomery	WUG	County-Other, Montgomery	$61,751,746	$154,483	$582,153	$1,134,635	$1,721,817	$2,317,750	$2,643,366
Water Loss Reduction, County-Other, Polk	WUG	County-Other, Polk	$3,264,262	$12,937	$40,227	$63,325	$86,494	$110,230	$132,132
Water Loss Reduction, County-Other, San Jacinto	WUG	County-Other, San Jacinto	$2,268,044	$10,654	$31,119	$46,935	$59,373	$70,810	$79,134
Water Loss Reduction, County-Other, Walker	WUG	County-Other, Walker	$2,575,470	$14,459	$39,468	$58,110	$67,436	$71,540	$65,340
Water Loss Reduction, County-Other, Waller	WUG	County-Other, Waller	$10,601,550	$21,308	$75,900	$162,410	$287,336	$448,950	$642,510
Water Loss Reduction, Crosby MUD	WUG	Crosby MUD	$1,846,066	$6,849	$22,770	$35,760	$49,111	$63,510	$66,066
Water Loss Reduction, Daisetta	WUG	Daisetta	$138,122	$761	$1,518	$2,980	$3,665	$4,380	$5,082
Water Loss Reduction, Dayton	WUG	Dayton	$8,041,294	$22,830	$82,731	$148,255	$219,900	$293,460	$369,534
Water Loss Reduction, Deer Park	WUG	Deer Park	$7,513,122	$33,484	$96,393	$151,235	$198,643	$244,550	$270,072
Water Loss Reduction, Fort Bend County FWSD 1	WUG	Fort Bend County FWSD 1	$1,880,064	$4,566	$21,252	$37,995	$51,310	$64,970	$79,134
Water Loss Reduction, Fort Bend County MUD 116	WUG	Fort Bend County MUD 116	$889,666	$4,566	$15,180	$22,350	$21,990	$22,630	$22,506
Water Loss Reduction, Fort Bend County MUD 25	WUG	Fort Bend County MUD 25	$3,265,306	$14,459	$41,745	$65,560	$86,494	$107,310	$109,626

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Water Loss Reduction, Fort Bend County WCID 2	WUG	Fort Bend County WCID 2	$12,642,010	$52,509	$160,908	$262,240	$356,971	$391,280	$402,930
Water Loss Reduction, Freeport	WUG	Freeport	$2,842,026	$13,698	$37,950	$58,855	$74,766	$89,060	$98,736
Water Loss Reduction, Friendswood	WUG	Friendswood	$14,816,594	$63,924	$186,714	$295,765	$392,888	$485,450	$569,184
Water Loss Reduction, Galena Park	WUG	Galena Park	$1,756,794	$7,610	$22,011	$35,015	$46,912	$57,670	$64,614
Water Loss Reduction, Galveston	WUG	Galveston	$53,756,744	$238,193	$680,823	$1,075,780	$1,424,219	$1,752,000	$2,046,594
Water Loss Reduction, Galveston County WCID 1	WUG	Galveston County WCID 1	$8,428,974	$36,528	$106,260	$168,370	$223,565	$275,940	$322,344
Water Loss Reduction, Galveston County WCID 12	WUG	Galveston County WCID 12	$1,790,094	$7,610	$22,770	$35,760	$47,645	$58,400	$68,244
Water Loss Reduction, Galveston County WCID 8	WUG	Galveston County WCID 8	$342,006	$2,283	$6,831	$8,195	$8,063	$8,030	$7,986
Water Loss Reduction, Groveton	WUG	Groveton	$228,744	$1,522	$3,795	$4,470	$5,864	$6,570	$6,534
Water Loss Reduction, Hardin WSC	WUG	Hardin WSC	$30,396	$0	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County FWSD 1-A	WUG	Harris County FWSD 1-A	$475,734	$2,283	$6,072	$9,685	$12,461	$15,330	$17,424
Water Loss Reduction, Harris County MUD 132	WUG	Harris County MUD 132	$1,605,272	$9,132	$26,565	$40,230	$39,582	$40,880	$41,382
Water Loss Reduction, Harris County MUD 154	WUG	Harris County MUD 154	$1,309,380	$6,849	$18,975	$29,800	$35,184	$36,500	$36,300
Water Loss Reduction, Harris County MUD 189	WUG	Harris County MUD 189	$182,836	$2,283	$3,795	$3,725	$3,665	$4,380	$4,356
Water Loss Reduction, Harris County MUD 221	WUG	Harris County MUD 221	$388,344	$2,283	$6,831	$9,685	$9,529	$9,490	$10,164
Water Loss Reduction, Harris County MUD 23	WUG	Harris County MUD 23	$519,308	$2,283	$6,831	$10,430	$13,927	$16,790	$16,698
Water Loss Reduction, Harris County MUD 345	WUG	Harris County MUD 345	$1,560,318	$6,849	$19,734	$30,545	$41,048	$51,830	$60,258
Water Loss Reduction, Harris County MUD 5	WUG	Harris County MUD 5	$1,200,050	$5,327	$15,180	$23,840	$31,519	$39,420	$47,190
Water Loss Reduction, Harris County MUD 50	WUG	Harris County MUD 50	$869,738	$3,805	$10,626	$17,135	$22,723	$29,200	$34,848
Water Loss Reduction, Harris County MUD 55	WUG	Harris County MUD 55	$2,734,522	$12,176	$35,673	$55,130	$71,834	$88,330	$103,092
Water Loss Reduction, Harris County MUD 58	WUG	Harris County MUD 58	$182,416	$1,522	$3,036	$4,470	$4,398	$4,380	$4,356
Water Loss Reduction, Harris County MUD 6	WUG	Harris County MUD 6	$197,596	$1,522	$4,554	$4,470	$4,398	$4,380	$4,356
Water Loss Reduction, Harris County UD 14	WUG	Harris County UD 14	$129,194	$761	$3,036	$2,980	$2,932	$2,920	$2,904
Water Loss Reduction, Harris County UD 15	WUG	Harris County UD 15	$518,030	$3,044	$7,590	$11,920	$13,927	$13,870	$14,520
Water Loss Reduction, Harris County WCID 1	WUG	Harris County WCID 1	$2,554,250	$10,654	$31,119	$49,915	$66,703	$86,870	$101,640
Water Loss Reduction, Harris County WCID 70	WUG	Harris County WCID 70	$68,402	$761	$1,518	$1,490	$1,466	$1,460	$1,452
Water Loss Reduction, Harris County WCID 89	WUG	Harris County WCID 89	$968,786	$4,566	$12,903	$20,115	$26,388	$29,930	$29,766

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Water Loss Reduction, Harris County WCID-Fondren Road	WUG	Harris County WCID-Fondren Road	$129,194	$761	$3,036	$2,980	$2,932	$2,920	$2,904
Water Loss Reduction, Harris-Montgomery Counties MUD 386	WUG	Harris-Montgomery Counties MUD 386	$1,609,124	$6,849	$20,493	$32,035	$42,514	$52,560	$64,614
Water Loss Reduction, Hillcrest Village	WUG	Hillcrest Village	$252,712	$1,522	$3,036	$5,215	$6,597	$8,030	$8,712
Water Loss Reduction, Hitchcock	WUG	Hitchcock	$1,897,354	$8,371	$24,288	$37,995	$49,844	$62,050	$71,874
Water Loss Reduction, Houston	WUG	Houston	$857,736,590	$3,685,523	$10,789,944	$17,250,475	$22,915,779	$27,884,540	$32,473,980
Water Loss Reduction, Humble	WUG	Humble	$5,032,616	$22,830	$67,551	$120,690	$137,071	$140,890	$142,296
Water Loss Reduction, Jacinto City	WUG	Jacinto City	$38,006	$761	$759	$745	$733	$730	$726
Water Loss Reduction, La Marque	WUG	La Marque	$7,916,552	$32,723	$97,911	$157,940	$211,104	$261,340	$306,372
Water Loss Reduction, Lake Conroe Hills MUD	WUG	Lake Conroe Hills MUD	$298,154	$761	$3,795	$5,960	$8,063	$10,220	$10,164
Water Loss Reduction, Lake Jackson	WUG	Lake Jackson	$8,452,980	$40,333	$112,332	$173,585	$222,832	$266,450	$297,660
Water Loss Reduction, Lake Livingston WSC	WUG	Lake Livingston WSC	$6,875,514	$27,396	$83,490	$135,590	$182,517	$230,680	$278,784
Water Loss Reduction, Liberty	WUG	Liberty	$3,112,500	$13,698	$38,709	$61,835	$82,829	$102,200	$119,790
Water Loss Reduction, Livingston	WUG	Livingston	$8,195,824	$31,962	$98,670	$159,430	$218,434	$277,400	$336,864
Water Loss Reduction, Luce Bayou PUD	WUG	Luce Bayou PUD	$222,296	$761	$3,036	$4,470	$5,864	$7,300	$7,986
Water Loss Reduction, Madisonville	WUG	Madisonville	$2,365,062	$10,654	$30,360	$47,680	$62,305	$76,650	$88,572
Water Loss Reduction, Mercy WSC	WUG	Mercy WSC	$690,314	$3,805	$9,108	$14,155	$18,325	$21,170	$24,684
Water Loss Reduction, Mont Belvieu	WUG	Mont Belvieu	$12,716,338	$35,006	$126,753	$207,110	$336,447	$497,130	$691,878
Water Loss Reduction, Montgomery	WUG	Montgomery	$914,182	$3,805	$12,144	$20,115	$26,388	$26,280	$26,862
Water Loss Reduction, Montgomery County MUD 18	WUG	Montgomery County MUD 18	$2,147,924	$9,893	$31,119	$49,915	$57,907	$59,860	$60,984
Water Loss Reduction, Montgomery County MUD 8	WUG	Montgomery County MUD 8	$1,659,232	$6,849	$20,493	$33,525	$45,446	$54,020	$55,902
Water Loss Reduction, Montgomery County MUD 83	WUG	Montgomery County MUD 83	$685,168	$3,044	$8,349	$13,410	$18,325	$22,630	$27,588
Water Loss Reduction, Montgomery County MUD 9	WUG	Montgomery County MUD 9	$2,752,092	$11,415	$34,155	$55,130	$75,499	$89,790	$92,202
Water Loss Reduction, Montgomery County MUD 99	WUG	Montgomery County MUD 99	$527,490	$1,522	$6,072	$10,430	$14,660	$18,250	$18,150
Water Loss Reduction, Montgomery County UD 3	WUG	Montgomery County UD 3	$722,916	$3,805	$12,144	$17,880	$18,325	$18,250	$18,876
Water Loss Reduction, Montgomery County UD 4	WUG	Montgomery County UD 4	$898,578	$5,327	$15,180	$21,605	$21,990	$23,360	$23,958
Water Loss Reduction, Nassau Bay	WUG	Nassau Bay	$1,802,580	$8,371	$23,529	$36,505	$47,645	$58,400	$58,080
Water Loss Reduction, New Caney MUD	WUG	New Caney MUD	$2,839,982	$9,893	$33,396	$59,600	$82,829	$89,060	$92,202

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Water Loss Reduction, North Channel Water Authority	WUG	North Channel Water Authority	$21,593,288	$89,037	$261,855	$430,610	$582,002	$712,480	$833,448
Water Loss Reduction, North Fort Bend Water Authority	WUG	North Fort Bend Water Authority	$97,491,852	$376,695	$1,203,015	$2,024,910	$2,830,113	$3,002,490	$3,119,622
Water Loss Reduction, North Zulch MUD	WUG	North Zulch MUD	$553,044	$2,283	$6,831	$11,175	$14,660	$18,250	$21,054
Water Loss Reduction, Northeast Harris County MUD 1	WUG	Northeast Harris County MUD 1	$530,964	$2,283	$6,831	$10,430	$13,927	$17,520	$21,054
Water Loss Reduction, Oak Ridge North	WUG	Oak Ridge North	$2,306,216	$7,610	$26,565	$43,955	$64,504	$78,840	$91,476
Water Loss Reduction, One Five O WSC	WUG	One Five O WSC	$528,936	$2,283	$6,831	$11,175	$13,927	$16,790	$18,876
Water Loss Reduction, Oyster Creek	WUG	Oyster Creek	$972,386	$4,566	$12,903	$20,115	$25,655	$30,660	$33,396
Water Loss Reduction, Palmer Plantation MUD 1	WUG	Palmer Plantation MUD 1	$38,006	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Palmer Plantation MUD 2	WUG	Palmer Plantation MUD 2	$38,006	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Panorama Village	WUG	Panorama Village	$525,304	$3,044	$9,108	$12,665	$13,194	$13,140	$13,794
Water Loss Reduction, Pattison WSC	WUG	Pattison WSC	$877,068	$3,805	$10,626	$17,135	$23,456	$29,200	$34,848
Water Loss Reduction, Pearland	WUG	Pearland	$30,212,918	$120,238	$379,500	$613,880	$837,086	$972,360	$982,278
Water Loss Reduction, Pecan Grove MUD 1	WUG	Pecan Grove MUD 1	$1,908,508	$12,176	$37,950	$45,445	$45,446	$45,260	$45,738
Water Loss Reduction, Pinehurst Decker Prairie WSC	WUG	Pinehurst Decker Prairie WSC	$625,524	$1,522	$6,072	$11,175	$17,592	$23,360	$28,314
Water Loss Reduction, Plantation MUD	WUG	Plantation MUD	$38,006	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Quail Valley UD	WUG	Quail Valley UD	$2,415,656	$10,654	$30,360	$47,680	$66,703	$78,110	$80,586
Water Loss Reduction, Raywood WSC	WUG	Raywood WSC	$339,500	$1,522	$3,795	$6,705	$8,796	$11,680	$14,520
Water Loss Reduction, Riverside SUD	WUG	Riverside SUD	$1,630,986	$6,088	$18,216	$30,545	$43,247	$57,670	$73,326
Water Loss Reduction, Roman Forest Consolidated MUD	WUG	Roman Forest Consolidated MUD	$733,256	$1,522	$6,072	$12,665	$21,257	$28,470	$33,396
Water Loss Reduction, Rosenberg	WUG	Rosenberg	$13,513,028	$40,333	$140,415	$256,280	$370,898	$483,990	$593,868
Water Loss Reduction, Sequoia Improvement District	WUG	Sequoia Improvement District	$253,438	$1,522	$3,036	$5,215	$6,597	$8,030	$9,438
Water Loss Reduction, Shenandoah	WUG	Shenandoah	$2,326,628	$10,654	$36,432	$58,855	$60,106	$60,590	$60,258
Water Loss Reduction, Shoreacres	WUG	Shoreacres	$1,382,472	$6,088	$17,457	$27,565	$36,650	$45,260	$52,272
Water Loss Reduction, Soda WSC	WUG	Soda WSC	$639,712	$2,283	$7,590	$11,920	$17,592	$21,900	$26,862
Water Loss Reduction, South Cleveland WSC	WUG	South Cleveland WSC	$337,456	$2,283	$5,313	$6,705	$8,063	$10,220	$11,616
Water Loss Reduction, Southern Water	WUG	Southern Water	$311,610	$2,283	$6,072	$7,450	$7,330	$7,300	$7,260

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
Water Loss Reduction, Southside Place	WUG	Southside Place	$273,780	$1,522	$3,795	$6,705	$7,330	$7,300	$7,260
Water Loss Reduction, Splendora	WUG	Splendora	$4,453,524	$10,654	$37,950	$74,500	$123,877	$177,390	$209,814
Water Loss Reduction, Spring Valley	WUG	Spring Valley	$1,333,374	$6,088	$18,216	$28,310	$37,383	$39,420	$39,204
Water Loss Reduction, Suburban Utility	WUG	Suburban Utility	$1,484,082	$5,327	$15,180	$29,800	$41,048	$51,100	$59,532
Water Loss Reduction, Sunbelt FWSD	WUG	Sunbelt FWSD	$3,689,190	$15,981	$47,058	$74,500	$98,955	$119,720	$127,050
Water Loss Reduction, Tarkington SUD	WUG	Tarkington SUD	$281,354	$2,283	$6,072	$5,960	$6,597	$6,570	$6,534
Water Loss Reduction, Texas City	WUG	Texas City	$9,634,826	$42,616	$125,235	$200,405	$268,278	$297,110	$298,386
Water Loss Reduction, The Commons Water Supply	WUG	The Commons Water Supply	$720,836	$3,044	$9,108	$14,900	$19,058	$23,360	$26,136
Water Loss Reduction, The Woodlands	WUG	The Woodlands	$29,142,712	$128,609	$383,295	$612,390	$812,164	$881,110	$967,032
Water Loss Reduction, Tomball	WUG	Tomball	$5,698,878	$22,069	$67,551	$119,945	$165,658	$176,660	$180,048
Water Loss Reduction, Trinity Bay Conservation District	WUG	Trinity Bay Conservation District	$5,353,856	$20,547	$60,720	$103,555	$142,202	$185,420	$229,416
Water Loss Reduction, Webster	WUG	Webster	$4,830,380	$21,308	$62,238	$96,850	$127,542	$156,950	$181,500
Water Loss Reduction, West Columbia	WUG	West Columbia	$114,018	$2,283	$2,277	$2,235	$2,199	$2,190	$2,178
Water Loss Reduction, West End WSC	WUG	West End WSC	$422,372	$1,522	$5,313	$8,940	$10,995	$13,870	$15,972
Water Loss Reduction, West University Place	WUG	West University Place	$835,628	$11,415	$18,216	$17,880	$17,592	$16,790	$16,698
Water Loss Reduction, Westwood Shores MUD	WUG	Westwood Shores MUD	$130,096	$761	$1,518	$2,980	$3,665	$3,650	$4,356
Water Loss Reduction, Willis	WUG	Willis	$1,701,786	$6,849	$19,734	$32,780	$45,446	$58,400	$69,696
Water Loss Reduction, Willow Creek Farms MUD	WUG	Willow Creek Farms MUD	$38,006	$761	$759	$745	$733	$730	$726
Westwood Shores Reuse Infrastructure	WMS	Westwood Shores MUD	$2,476,273	$324,372	$324,372	$150,139	$150,139	$150,139	$150,139
WHCRWA 2025 Distribution Expansion	WMS	West Harris County Regional Water Authority	$225,008,263	$17,746,424	$17,746,424	$1,914,600	$1,914,600	$1,914,600	$1,914,600
WHCRWA 2035 Distribution Expansion	WMS	West Harris County Regional Water Authority	$166,317,609	$0	$13,117,486	$13,117,486	$1,415,200	$1,415,200	$1,415,200
WHCRWA/NFBWA Transmission Line	WMS	North Fort Bend Water Authority	$55,450,327	$4,466,869	$4,466,869	$565,325	$565,325	$565,325	$565,325
		West Harris County Regional Water Authority	$567,008,877	$45,676,099	$45,676,099	$5,780,743	$5,780,743	$5,780,743	$5,780,743
WUG Infrastructure Expansion - Angleton	WUG	Angleton	$16,362,879	$1,322,777	$1,322,777	$171,467	$171,467	$171,467	$171,467
WUG Infrastructure Expansion - Brazoria County MUD 25	WUG	Brazoria County MUD 25	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Brazoria County MUD 29	WUG	Brazoria County MUD 29	$11,594,049	$857,859	$857,859	$42,089	$42,089	$42,089	$42,089

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - Brazoria County MUD 39	WUG	Brazoria County MUD 39	$12,100,494	$904,819	$904,819	$53,416	$53,416	$53,416	$53,416
WUG Infrastructure Expansion - CHCRWA Districts	WUG	Central Harris County Regional Water Authority	$17,428,176	$1,429,214	$1,429,214	$202,949	$202,949	$202,949	$202,949
WUG Infrastructure Expansion - Conroe - Phase 1	WUG	Conroe	$16,362,879	$1,322,777	$1,322,777	$171,467	$171,467	$171,467	$171,467
WUG Infrastructure Expansion - Conroe - Phase 2	WUG	Conroe	$19,982,699	$0	$0	$1,686,975	$1,686,975	$280,971	$280,971
WUG Infrastructure Expansion - Conroe - Phase 3	WUG	Conroe	$14,112,504	$0	$0	$0	$0	$1,097,910	$1,097,910
WUG Infrastructure Expansion - Conroe Resort Utilities	WUG	Conroe Resort Utilities	$11,594,049	$0	$0	$857,859	$857,859	$42,089	$42,089
WUG Infrastructure Expansion - County-Other, Brazoria (B) - Phase 1	WUG	County-Other, Brazoria	$11,839,130	$883,897	$883,897	$50,883	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - County-Other, Brazoria (B) - Phase 2	WUG	County-Other, Brazoria	$15,255,754	$0	$0	$1,212,205	$1,212,205	$138,793	$138,793
WUG Infrastructure Expansion - County-Other, Brazoria (BC)	WUG	County-Other, Brazoria	$11,839,130	$883,897	$883,897	$50,883	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - County-Other, Brazoria (SJB)	WUG	County-Other, Brazoria	$15,255,754	$1,212,205	$1,212,205	$138,793	$138,793	$138,793	$138,793
WUG Infrastructure Expansion - County-Other, Fort Bend (SJ)	WUG	County-Other, Fort Bend	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 1	WUG	County-Other, Fort Bend	$12,213,162	$916,742	$916,742	$57,411	$57,411	$57,411	$57,411
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 2	WUG	County-Other, Fort Bend	$12,407,135	$0	$0	$937,205	$937,205	$64,225	$64,225
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 3	WUG	County-Other, Fort Bend	$11,839,130	$0	$0	$0	$0	$883,897	$883,897
WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 1	WUG	County-Other, Fort Bend	$12,917,913	$984,709	$984,709	$75,790	$75,790	$75,790	$75,790
WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 2	WUG	County-Other, Fort Bend	$13,473,239	$0	$0	$1,036,765	$1,036,765	$88,773	$88,773
WUG Infrastructure Expansion - County-Other, Galveston (SJB)	WUG	County-Other, Galveston	$15,255,754	$1,212,205	$1,212,205	$138,793	$138,793	$138,793	$138,793
WUG Infrastructure Expansion - County-Other, Harris (COH GRP Participants)	WUG	County-Other, Harris	$12,798,768	$0	$972,159	$972,159	$71,624	$71,624	$71,624
WUG Infrastructure Expansion - County-Other, Harris (SJ)	WUG	County-Other, Harris	$22,530,020	$1,937,510	$1,937,510	$352,274	$352,274	$352,274	$352,274
WUG Infrastructure Expansion - County-Other, Harris (SJB)	WUG	County-Other, Harris	$12,407,135	$937,205	$937,205	$64,225	$64,225	$64,225	$64,225
WUG Infrastructure Expansion - County-Other, Harris (TSJ)	WUG	County-Other, Harris	$15,255,754	$1,212,205	$1,212,205	$138,793	$138,793	$138,793	$138,793
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 1	WUG	County-Other, Montgomery	$13,473,239	$0	$0	$1,036,765	$1,036,765	$88,773	$88,773
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 2	WUG	County-Other, Montgomery	$19,982,699	$0	$0	$0	$1,686,975	$1,686,975	$280,971
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 3	WUG	County-Other, Montgomery	$17,428,176	$0	$0	$0	$0	$0	$1,429,214

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - El Dorado UD	WUG	El Dorado UD	$11,839,130	$0	$883,897	$883,897	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Forest Hills MUD	WUG	Forest Hills MUD	$11,594,049	$0	$857,859	$857,859	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Fort Bend County MUD 115	WUG	Fort Bend County MUD 115	$11,461,492	$0	$844,301	$844,301	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Fort Bend County MUD 121	WUG	Fort Bend County MUD 121	$11,698,973	$869,134	$869,134	$45,981	$45,981	$45,981	$45,981
WUG Infrastructure Expansion - Fort Bend County MUD 128	WUG	Fort Bend County MUD 128	$11,594,049	$857,859	$857,859	$42,089	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Fort Bend County MUD 129	WUG	Fort Bend County MUD 129	$11,461,492	$0	$844,301	$844,301	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Fort Bend County MUD 149	WUG	Fort Bend County MUD 149	$11,461,492	$0	$844,301	$844,301	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Fort Bend County MUD 152	WUG	Fort Bend County MUD 152	$11,461,492	$0	$0	$844,301	$844,301	$37,858	$37,858
WUG Infrastructure Expansion - Fort Bend County MUD 155	WUG	Fort Bend County MUD 155	$11,839,130	$0	$883,897	$883,897	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Fort Bend County MUD 158	WUG	Fort Bend County MUD 158	$11,594,049	$0	$857,859	$857,859	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Fort Bend County MUD 48	WUG	Fort Bend County MUD 48	$11,461,492	$0	$844,301	$844,301	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Fort Bend County MUD 49	WUG	Fort Bend County MUD 49	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Fulshear	WUG	Fulshear	$13,179,518	$0	$1,012,224	$1,012,224	$84,899	$84,899	$84,899
WUG Infrastructure Expansion - Harris County FWSD 27	WUG	Harris County FWSD 27	$11,594,049	$857,859	$857,859	$42,089	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Harris County MUD 106	WUG	Harris County MUD 106	$12,407,135	$0	$937,205	$937,205	$64,225	$64,225	$64,225
WUG Infrastructure Expansion - Harris County MUD 11	WUG	Harris County MUD 11	$11,594,049	$0	$857,859	$857,859	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Harris County MUD 119	WUG	Harris County MUD 119	$12,213,162	$0	$916,742	$916,742	$57,411	$57,411	$57,411
WUG Infrastructure Expansion - Harris County MUD 132	WUG	Harris County MUD 132	$14,112,504	$0	$1,097,910	$1,097,910	$104,939	$104,939	$104,939
WUG Infrastructure Expansion - Harris County MUD 151	WUG	Harris County MUD 151	$13,179,518	$0	$1,012,224	$1,012,224	$84,899	$84,899	$84,899
WUG Infrastructure Expansion - Harris County MUD 152	WUG	Harris County MUD 152	$12,917,913	$0	$984,709	$984,709	$75,790	$75,790	$75,790
WUG Infrastructure Expansion - Harris County MUD 154	WUG	Harris County MUD 154	$12,798,768	$0	$972,159	$972,159	$71,624	$71,624	$71,624
WUG Infrastructure Expansion - Harris County MUD 189	WUG	Harris County MUD 189	$12,100,494	$0	$904,819	$904,819	$53,416	$53,416	$53,416
WUG Infrastructure Expansion - Harris County MUD 221	WUG	Harris County MUD 221	$11,839,130	$0	$883,897	$883,897	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Harris County MUD 261	WUG	Harris County MUD 261	$11,698,973	$869,134	$869,134	$45,981	$45,981	$45,981	$45,981

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - Harris County MUD 278	WUG	Harris County MUD 278	$12,213,162	$0	$916,742	$916,742	$57,411	$57,411	$57,411
WUG Infrastructure Expansion - Harris County MUD 290	WUG	Harris County MUD 290	$13,179,518	$0	$1,012,224	$1,012,224	$84,899	$84,899	$84,899
WUG Infrastructure Expansion - Harris County MUD 36	WUG	Harris County MUD 36	$12,407,135	$0	$937,205	$937,205	$64,225	$64,225	$64,225
WUG Infrastructure Expansion - Harris County MUD 46	WUG	Harris County MUD 46	$12,407,135	$0	$937,205	$937,205	$64,225	$64,225	$64,225
WUG Infrastructure Expansion - Harris County MUD 6	WUG	Harris County MUD 6	$11,461,492	$0	$844,301	$844,301	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Harris County UD 14	WUG	Harris County UD 14	$11,594,049	$0	$857,859	$857,859	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Harris County UD 15	WUG	Harris County UD 15	$11,839,130	$0	$883,897	$883,897	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Harris County WCID 1	WUG	Harris County WCID 1	$11,698,973	$869,134	$869,134	$45,981	$45,981	$45,981	$45,981
WUG Infrastructure Expansion - Harris County WCID 133	WUG	Harris County WCID 133	$12,213,162	$0	$916,742	$916,742	$57,411	$57,411	$57,411
WUG Infrastructure Expansion - Harris County WCID 74	WUG	Harris County WCID 74	$12,213,162	$0	$916,742	$916,742	$57,411	$57,411	$57,411
WUG Infrastructure Expansion - HMW SUD	WUG	HMW SUD	$13,044,542	$0	$0	$998,038	$998,038	$80,210	$80,210
WUG Infrastructure Expansion - Kings Manor MUD	WUG	Kings Manor MUD	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Lake Bonanza WSC	WUG	Lake Bonanza WSC	$11,839,130	$0	$0	$883,897	$883,897	$50,883	$50,883
WUG Infrastructure Expansion - Lake Jackson	WUG	Lake Jackson	$12,213,162	$916,742	$916,742	$57,411	$57,411	$57,411	$57,411
WUG Infrastructure Expansion - Manufacturing, Fort Bend (B)	WUG	Manufacturing, Fort Bend	$20,047,133	$2,007,381	$2,007,381	$596,843	$596,843	$596,843	$596,843
WUG Infrastructure Expansion - Manufacturing, Fort Bend (SJ)	WUG	Manufacturing, Fort Bend	$29,315,697	$3,097,223	$3,097,223	$1,034,539	$1,034,539	$1,034,539	$1,034,539
WUG Infrastructure Expansion - Memorial Villages Water Authority	WUG	Memorial Villages Water Authority	$15,255,754	$1,212,205	$1,212,205	$138,793	$138,793	$138,793	$138,793
WUG Infrastructure Expansion - Mining, Brazoria (SJB)	WUG	Mining, Brazoria	$25,164,619	$2,667,721	$2,667,721	$897,112	$897,112	$897,112	$897,112
WUG Infrastructure Expansion - Mining, Harris (SJ)	WUG	Mining, Harris	$15,255,754	$1,212,205	$1,212,205	$138,793	$138,793	$138,793	$138,793
WUG Infrastructure Expansion - Mining, Harris (SJB)	WUG	Mining, Harris	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Mont Belvieu	WUG	Mont Belvieu	$14,112,504	$0	$0	$0	$0	$0	$1,097,910
WUG Infrastructure Expansion - Montgomery County MUD 112	WUG	Montgomery County MUD 112	$12,917,913	$0	$0	$984,709	$984,709	$75,790	$75,790
WUG Infrastructure Expansion - Montgomery County MUD 119	WUG	Montgomery County MUD 119	$13,473,239	$0	$0	$1,036,765	$1,036,765	$88,773	$88,773
WUG Infrastructure Expansion - Montgomery County MUD 19	WUG	Montgomery County MUD 19	$12,407,135	$0	$0	$937,205	$937,205	$64,225	$64,225
WUG Infrastructure Expansion - Montgomery County MUD 88	WUG	Montgomery County MUD 88	$12,213,162	$0	$0	$916,742	$916,742	$57,411	$57,411

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - Montgomery County MUD 89	WUG	Montgomery County MUD 89	$12,798,768	$0	$0	$972,159	$972,159	$71,624	$71,624
WUG Infrastructure Expansion - Montgomery County MUD 95	WUG	Montgomery County MUD 95	$14,112,504	$0	$1,097,910	$1,097,910	$104,939	$104,939	$104,939
WUG Infrastructure Expansion - Montgomery County MUD 98	WUG	Montgomery County MUD 98	$11,461,492	$0	$0	$844,301	$844,301	$37,858	$37,858
WUG Infrastructure Expansion - Mount Houston Road MUD	WUG	Mount Houston Road MUD	$12,213,162	$0	$916,742	$916,742	$57,411	$57,411	$57,411
WUG Infrastructure Expansion - MSEC Enterprises - Phase 1	WUG	MSEC Enterprises	$16,362,879	$1,322,777	$1,322,777	$171,467	$171,467	$171,467	$171,467
WUG Infrastructure Expansion - MSEC Enterprises - Phase 2	WUG	MSEC Enterprises	$14,112,504	$0	$0	$0	$1,097,910	$1,097,910	$104,939
WUG Infrastructure Expansion - NFBWA Districts	WUG	North Fort Bend Water Authority	$149,292,624	$12,722,970	$12,722,970	$2,218,583	$2,218,583	$2,218,583	$2,218,583
WUG Infrastructure Expansion - NHCRWA Districts 2025	WUG	North Harris County Regional Water Authority	$155,162,819	$13,312,035	$13,312,035	$2,394,615	$2,394,615	$2,394,615	$2,394,615
WUG Infrastructure Expansion - NHCRWA Districts 2035	WUG	North Harris County Regional Water Authority	$175,138,316	$0	$14,991,784	$14,991,784	$2,668,867	$2,668,867	$2,668,867
WUG Infrastructure Expansion - North Belt UD	WUG	North Belt UD	$12,407,135	$0	$937,205	$937,205	$64,225	$64,225	$64,225
WUG Infrastructure Expansion - North Channel Water Authority	WUG	North Channel Water Authority	$14,112,504	$1,097,910	$1,097,910	$104,939	$104,939	$104,939	$104,939
WUG Infrastructure Expansion - North Forest MUD	WUG	North Forest MUD	$11,594,049	$0	$857,859	$857,859	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - North Green MUD	WUG	North Green MUD	$11,839,130	$0	$883,897	$883,897	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Northeast Harris County MUD 1	WUG	Northeast Harris County MUD 1	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Oak Ridge North	WUG	Oak Ridge North	$11,839,130	$883,897	$883,897	$50,883	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Pine Village PUD	WUG	Pine Village PUD	$11,594,049	$0	$857,859	$857,859	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Rayford Road MUD	WUG	Rayford Road MUD	$12,917,913	$984,709	$984,709	$75,790	$75,790	$75,790	$75,790
WUG Infrastructure Expansion - Richwood	WUG	Richwood	$11,698,973	$869,134	$869,134	$45,981	$45,981	$45,981	$45,981
WUG Infrastructure Expansion - Rolling Fork PUD	WUG	Rolling Fork PUD	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Sedona Lakes MUD 1	WUG	Sedona Lakes MUD 1	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Southern Montgomery County MUD	WUG	Southern Montgomery County MUD	$11,839,130	$0	$883,897	$883,897	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Spring Creek UD	WUG	Spring Creek UD	$12,917,913	$0	$0	$984,709	$984,709	$75,790	$75,790
WUG Infrastructure Expansion - Steam-Electric Power, Harris (SJ)	WUG	Steam-Electric Power, Harris	$22,530,020	$1,937,510	$1,937,510	$352,274	$352,274	$352,274	$352,274
WUG Infrastructure Expansion - Steam-Electric Power, Harris (SJB)	WUG	Steam-Electric Power, Harris	$11,594,049	$857,859	$857,859	$42,089	$42,089	$42,089	$42,089
WUG Infrastructure Expansion - Sunbelt FWSD	WUG	Sunbelt FWSD	$14,112,504	$0	$1,097,910	$1,097,910	$104,939	$104,939	$104,939

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - T & W Water Service	WUG	T & W Water Service	$14,112,504	$0	$0	$1,097,910	$1,097,910	$104,939	$104,939
WUG Infrastructure Expansion - The Woodlands - Phase 1	WUG	The Woodlands	$22,530,020	$1,937,510	$1,937,510	$352,274	$352,274	$352,274	$352,274
WUG Infrastructure Expansion - The Woodlands - Phase 2	WUG	The Woodlands	$16,362,879	$0	$0	$0	$1,322,777	$1,322,777	$171,467
WUG Infrastructure Expansion - Tomball	WUG	Tomball	$16,362,879	$1,322,777	$1,322,777	$171,467	$171,467	$171,467	$171,467
WUG Infrastructure Expansion - Trail of the Lakes MUD	WUG	Trail of the Lakes MUD	$13,179,518	$0	$1,012,224	$1,012,224	$84,899	$84,899	$84,899
WUG Infrastructure Expansion - Westfield Garden Park	WUG	Westfield Garden Park	$11,461,492	$844,301	$844,301	$37,858	$37,858	$37,858	$37,858
WUG Infrastructure Expansion - Westwood North WSC	WUG	Westwood North WSC	$12,407,135	$0	$0	$937,205	$937,205	$64,225	$64,225
WUG Infrastructure Expansion - WHCRWA Districts	WUG	West Harris County Regional Water Authority	$215,949,698	$18,449,814	$18,449,814	$3,255,365	$3,255,365	$3,255,365	$3,255,365
WUG Infrastructure Expansion - Windfern Forest Utility District	WUG	Windfern Forest Utility District	$12,407,135	$937,205	$937,205	$64,225	$64,225	$64,225	$64,225
WUG Infrastructure Expansion - Woodcreek MUD	WUG	Woodcreek MUD	$11,839,130	$0	$883,897	$883,897	$50,883	$50,883	$50,883
WUG Infrastructure Expansion - Woodland Oaks Utility	WUG	Woodland Oaks Utility	$11,839,130	$0	$0	$883,897	$883,897	$50,883	$50,883
WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 1	WUG	Dobbin Plantersville WSC	$9,763,575	$1,143,322	$1,143,322	$456,346	$456,346	$456,346	$456,346
WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 2	WUG	Dobbin Plantersville WSC	$9,763,575	$0	$0	$0	$1,143,322	$1,143,322	$456,346
WUG Infrastructure Expansion (Brackish Groundwater) - Far Hills UD	WUG	Far Hills UD	$8,178,966	$0	$826,142	$826,142	$250,661	$250,661	$250,661
WUG Infrastructure Expansion (Brackish Groundwater) - Montgomery	WUG	Montgomery	$8,805,593	$0	$955,680	$955,680	$336,109	$336,109	$336,109
WUG Infrastructure Expansion (Brackish Groundwater) - Panorama Village	WUG	Panorama Village	$7,617,801	$0	$0	$717,871	$717,871	$181,874	$181,874
WUG Infrastructure Expansion (Brackish Groundwater) - Stanley Lake MUD	WUG	Stanley Lake MUD	$7,936,798	$0	$774,985	$774,985	$216,543	$216,543	$216,543
WUG Infrastructure Expansion (Groundwater) - Baker Road MUD	WUG	Baker Road MUD	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Blaketree MUD 1 of Montgomery County	WUG	Blaketree MUD 1 of Montgomery County	$7,617,801	$717,871	$717,871	$181,874	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Blue Bell Manor Utility	WUG	Blue Bell Manor Utility	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Blue Ridge West MUD	WUG	Blue Ridge West MUD	$7,617,801	$0	$0	$717,871	$717,871	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - C C Water Works - Phase 1	WUG	C C Water Works	$9,045,172	$1,006,636	$1,006,636	$370,208	$370,208	$370,208	$370,208
WUG Infrastructure Expansion (Groundwater) - C C Water Works - Phase 2	WUG	C C Water Works	$9,763,575	$0	$0	$0	$1,143,322	$1,143,322	$456,346
WUG Infrastructure Expansion (Groundwater) - Chateau Woods MUD	WUG	Chateau Woods MUD	$8,055,762	$0	$800,399	$800,399	$233,587	$233,587	$233,587

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Corinthian Point MUD 2	WUG	Corinthian Point MUD 2	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (T)	WUG	County-Other, Chambers	$7,237,909	$0	$0	$0	$0	$1,286,064	$1,286,064
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 1	WUG	County-Other, Chambers	$7,237,909	$0	$1,286,064	$1,286,064	$1,286,064	$1,286,064	$1,286,064
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 2	WUG	County-Other, Chambers	$7,759,724	$0	$0	$0	$1,416,321	$1,416,321	$1,416,321
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 3	WUG	County-Other, Chambers	$5,994,000	$0	$0	$0	$0	$0	$1,002,518
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 1	WUG	County-Other, Fort Bend	$9,801,334	$0	$1,746,663	$1,746,663	$1,746,663	$1,746,663	$1,746,663
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 2	WUG	County-Other, Fort Bend	$18,581,259	$0	$0	$3,467,502	$3,467,502	$3,467,502	$3,467,502
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 3	WUG	County-Other, Fort Bend	$12,254,528	$0	$0	$0	$0	$2,288,621	$2,288,621
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (SJB) - Phase 1	WUG	County-Other, Fort Bend	$7,237,909	$0	$1,286,064	$1,286,064	$1,286,064	$1,286,064	$1,286,064
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (SJB) - Phase 2	WUG	County-Other, Fort Bend	$9,108,817	$0	$0	$0	$1,610,652	$1,610,652	$1,610,652
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (Sugar Land IWRP)	WUG	County-Other, Fort Bend	$6,212,031	$1,049,354	$1,049,354	$1,049,354	$1,049,354	$1,049,354	$1,049,354
WUG Infrastructure Expansion (Groundwater) - County-Other, Harris (COH GRP Participants)	WUG	County-Other, Harris	$9,801,334	$1,746,663	$1,746,663	$1,746,663	$1,746,663	$1,746,663	$1,746,663
WUG Infrastructure Expansion (Groundwater) - County-Other, Madison (B)	WUG	County-Other, Madison	$3,294,122	$405,149	$405,149	$405,149	$405,149	$405,149	$405,149
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 1	WUG	County-Other, Montgomery	$12,254,528	$0	$2,288,621	$2,288,621	$2,288,621	$2,288,621	$2,288,621
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 2	WUG	County-Other, Montgomery (Converting Portion)	$12,254,528	$0	$0	$2,288,621	$2,288,621	$2,288,621	$2,288,621
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 3	WUG	County-Other, Montgomery (Converting Portion)	$9,801,334	$0	$0	$0	$1,746,663	$1,746,663	$1,746,663
WUG Infrastructure Expansion (Groundwater) - County-Other, Walker (T)	WUG	County-Other, Walker	$3,546,698	$455,366	$455,366	$455,366	$455,366	$455,366	$455,366
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 1	WUG	County-Other, Waller	$5,641,830	$937,773	$937,773	$937,773	$937,773	$937,773	$937,773
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 2	WUG	County-Other, Waller	$7,237,909	$0	$0	$1,286,064	$1,286,064	$1,286,064	$1,286,064
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 3	WUG	County-Other, Waller	$7,759,724	$0	$0	$0	$0	$1,416,321	$1,416,321
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 1	WUG	County-Other, Waller	$5,641,830	$937,773	$937,773	$937,773	$937,773	$937,773	$937,773
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 2	WUG	County-Other, Waller	$7,759,724	$0	$0	$1,416,321	$1,416,321	$1,416,321	$1,416,321
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 3	WUG	County-Other, Waller	$7,237,909	$0	$0	$0	$0	$1,286,064	$1,286,064
WUG Infrastructure Expansion (Groundwater) - Cut and Shoot - Phase 1	WUG	Cut & Shoot	$11,412,959	$1,458,024	$1,458,024	$654,996	$654,996	$654,996	$654,996

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Cut and Shoot - Phase 2	WUG	Cut & Shoot	$9,763,575	$0	$0	$0	$1,143,322	$1,143,322	$456,346
WUG Infrastructure Expansion (Groundwater) - Dodge Oakhurst WSC - Phase 1	WUG	Dodge Oakhurst WSC	$7,617,801	$0	$0	$717,871	$717,871	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Dodge Oakhurst WSC - Phase 2	WUG	Dodge Oakhurst WSC	$8,304,292	$0	$0	$0	$0	$852,050	$852,050
WUG Infrastructure Expansion (Groundwater) - Domestic Water	WUG	Domestic Water	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Douglas Utility	WUG	Douglas Utility	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - East Montgomery County MUD 6	WUG	East Montgomery County MUD 6	$8,055,762	$800,399	$800,399	$233,587	$233,587	$233,587	$233,587
WUG Infrastructure Expansion (Groundwater) - East Plantation UD	WUG	East Plantation UD	$8,055,762	$800,399	$800,399	$233,587	$233,587	$233,587	$233,587
WUG Infrastructure Expansion (Groundwater) - First Colony MUD 9	WUG	First Colony MUD 9	$8,055,762	$0	$800,399	$800,399	$233,587	$233,587	$233,587
WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 1	WUG	Fort Bend County FWSD 1	$9,045,172	$0	$1,006,636	$1,006,636	$370,208	$370,208	$370,208
WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 2	WUG	Fort Bend County FWSD 2	$9,763,575	$1,143,322	$1,143,322	$456,346	$456,346	$456,346	$456,346
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 116	WUG	Fort Bend County MUD 116	$7,777,301	$0	$746,428	$746,428	$199,209	$199,209	$199,209
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 131	WUG	Fort Bend County MUD 131	$7,617,801	$0	$0	$0	$0	$717,871	$717,871
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 162	WUG	Fort Bend County MUD 162	$7,617,801	$0	$0	$717,871	$717,871	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 23	WUG	Fort Bend County MUD 23	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 24	WUG	Fort Bend County MUD 24	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 26	WUG	Fort Bend County MUD 26	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 42	WUG	Fort Bend County MUD 42	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 5	WUG	Fort Bend County MUD 5	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Fort Bend County WCID 3	WUG	Fort Bend County WCID 3	$7,617,801	$0	$0	$0	$0	$717,871	$717,871
WUG Infrastructure Expansion (Groundwater) - Grand Oaks MUD	WUG	Grand Oaks MUD	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Green Trails MUD	WUG	Green Trails MUD	$7,777,301	$0	$746,428	$746,428	$199,209	$199,209	$199,209
WUG Infrastructure Expansion (Groundwater) - Harris County FWSD 58	WUG	Harris County FWSD 58	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 153	WUG	Harris County MUD 153	$9,045,172	$0	$1,006,636	$1,006,636	$370,208	$370,208	$370,208
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 216	WUG	Harris County MUD 216	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 342	WUG	Harris County MUD 342	$8,805,593	$0	$955,680	$955,680	$336,109	$336,109	$336,109
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 345	WUG	Harris County MUD 345	$7,936,798	$0	$774,985	$774,985	$216,543	$216,543	$216,543
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 361	WUG	Harris County MUD 361	$7,936,798	$0	$774,985	$774,985	$216,543	$216,543	$216,543
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 494	WUG	Harris County MUD 494	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 58	WUG	Harris County MUD 58	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Harris County WCID 70	WUG	Harris County WCID 70	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - High Prairie WSC	WUG	High Prairie WSC	$7,617,801	$717,871	$717,871	$181,874	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - HMW SUD	WUG	HMW SUD	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Huntsville	WUG	Huntsville	$20,469,349	$0	$0	$0	$0	$3,017,552	$3,017,552
WUG Infrastructure Expansion (Groundwater) - Irrigation, Leon (T)	WUG	Irrigation, Leon	$443,938	$41,518	$41,518	$10,282	$10,282	$10,282	$10,282
WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty (N)	WUG	Irrigation, Liberty	$8,646,473	$1,025,433	$1,025,433	$417,058	$417,058	$417,058	$417,058
WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty (SJ)	WUG	Irrigation, Liberty	$2,483,088	$294,775	$294,775	$120,062	$120,062	$120,062	$120,062
WUG Infrastructure Expansion (Groundwater) - Irrigation, Montgomery (SJ) - Phase 1	WUG	Irrigation, Montgomery	$2,483,088	$294,775	$294,775	$120,062	$120,062	$120,062	$120,062
WUG Infrastructure Expansion (Groundwater) - Irrigation, Montgomery (SJ) - Phase 2	WUG	Irrigation, Montgomery	$1,241,544	$0	$0	$0	$147,387	$147,387	$60,031
WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 1	WUG	Johnston Water Utility	$13,629,412	$1,905,633	$1,905,633	$946,653	$946,653	$946,653	$946,653
WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 2	WUG	Johnston Water Utility	$10,003,157	$0	$0	$0	$1,194,274	$1,194,274	$490,441
WUG Infrastructure Expansion (Groundwater) - Katy	WUG	Katy	$13,629,412	$1,905,633	$1,905,633	$946,653	$946,653	$946,653	$946,653
WUG Infrastructure Expansion (Groundwater) - Keenan WSC	WUG	Keenan WSC	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Kings Manor MUD	WUG	Kings Manor MUD	$8,304,292	$852,050	$852,050	$267,751	$267,751	$267,751	$267,751
WUG Infrastructure Expansion (Groundwater) - Lake Conroe Hills MUD	WUG	Lake Conroe Hills MUD	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Lazy River Improvement District	WUG	Lazy River Improvement District	$7,777,301	$746,428	$746,428	$199,209	$199,209	$199,209	$199,209
WUG Infrastructure Expansion (Groundwater) - Livestock, Leon (B)	WUG	Livestock, Leon	$443,938	$41,518	$41,518	$10,282	$10,282	$10,282	$10,282
WUG Infrastructure Expansion (Groundwater) - Livestock, Leon (T)	WUG	Livestock, Leon	$443,938	$41,518	$41,518	$10,282	$10,282	$10,282	$10,282
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (NT)	WUG	Livestock, Liberty	$615,787	$61,944	$61,944	$18,616	$18,616	$18,616	$18,616

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (SJ)	WUG	Livestock, Liberty	$443,938	$41,518	$41,518	$10,282	$10,282	$10,282	$10,282
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (T)	WUG	Livestock, Liberty	$997,698	$112,857	$112,857	$42,658	$42,658	$42,658	$42,658
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (TSJ)	WUG	Livestock, Liberty	$443,938	$41,518	$41,518	$10,282	$10,282	$10,282	$10,282
WUG Infrastructure Expansion (Groundwater) - Livestock, Montgomery (SJ)	WUG	Livestock, Montgomery	$615,787	$61,944	$61,944	$18,616	$18,616	$18,616	$18,616
WUG Infrastructure Expansion (Groundwater) - Longhorn Town UD	WUG	Longhorn Town UD	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Luce Bayou PUD	WUG	Luce Bayou PUD	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 1	WUG	Magnolia	$8,178,966	$826,142	$826,142	$250,661	$250,661	$250,661	$250,661
WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 2	WUG	Magnolia	$9,523,994	$0	$0	$1,092,366	$1,092,366	$422,247	$422,247
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Leon (T)	WUG	Manufacturing, Leon	$3,546,698	$0	$455,366	$455,366	$455,366	$455,366	$455,366
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Montgomery - Phase 1	WUG	Manufacturing, Montgomery	$12,884,250	$1,747,597	$1,747,597	$841,047	$841,047	$841,047	$841,047
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Montgomery - Phase 2	WUG	Manufacturing, Montgomery	$10,003,157	$0	$0	$1,194,274	$1,194,274	$490,441	$490,441
WUG Infrastructure Expansion (Groundwater) - Mason Creek UD	WUG	Mason Creek UD	$8,680,267	$0	$929,772	$929,772	$319,019	$319,019	$319,019
WUG Infrastructure Expansion (Groundwater) - Meadowcreek MUD	WUG	Meadowcreek MUD	$7,617,801	$0	$0	$717,871	$717,871	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Mining, Austin (B)	WUG	Mining, Austin	$3,294,122	$405,149	$405,149	$405,149	$405,149	$405,149	$405,149
WUG Infrastructure Expansion (Groundwater) - Mining, Liberty (SJ)	WUG	Mining, Liberty	$3,294,122	$0	$405,149	$405,149	$405,149	$405,149	$405,149
WUG Infrastructure Expansion (Groundwater) - Mining, Liberty (T)	WUG	Mining, Liberty	$3,641,193	$478,014	$478,014	$478,014	$478,014	$478,014	$478,014
WUG Infrastructure Expansion (Groundwater) - Mining, Montgomery	WUG	Mining, Montgomery	$7,617,801	$717,871	$717,871	$181,874	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Mining, Polk (T)	WUG	Mining, Polk	$3,294,122	$405,149	$405,149	$405,149	$405,149	$405,149	$405,149
WUG Infrastructure Expansion (Groundwater) - Mining, San Jacinto (T)	WUG	Mining, San Jacinto	$3,294,122	$405,149	$405,149	$405,149	$405,149	$405,149	$405,149
WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 1	WUG	Mont Belvieu	$16,955,665	$2,352,354	$2,352,354	$1,159,335	$1,159,335	$1,159,335	$1,159,335
WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 2	WUG	Mont Belvieu	$12,884,250	$0	$0	$0	$1,747,597	$1,747,597	$841,047
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 105	WUG	Montgomery County MUD 105	$7,617,801	$717,871	$717,871	$181,874	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 115	WUG	Montgomery County MUD 115	$9,523,994	$1,092,366	$1,092,366	$422,247	$422,247	$422,247	$422,247
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 126	WUG	Montgomery County MUD 126	$8,805,593	$955,680	$955,680	$336,109	$336,109	$336,109	$336,109

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 127	WUG	Montgomery County MUD 127	$7,936,798	$774,985	$774,985	$216,543	$216,543	$216,543	$216,543
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 137	WUG	Montgomery County MUD 137	$8,055,762	$0	$800,399	$800,399	$233,587	$233,587	$233,587
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 139	WUG	Montgomery County MUD 139	$8,680,267	$929,772	$929,772	$319,019	$319,019	$319,019	$319,019
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 15	WUG	Montgomery County MUD 15	$9,045,172	$1,006,636	$1,006,636	$370,208	$370,208	$370,208	$370,208
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 18	WUG	Montgomery County MUD 18	$9,045,172	$0	$1,006,636	$1,006,636	$370,208	$370,208	$370,208
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 56	WUG	Montgomery County MUD 56	$7,617,801	$717,871	$717,871	$181,874	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 83	WUG	Montgomery County MUD 83	$7,936,798	$0	$774,985	$774,985	$216,543	$216,543	$216,543
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 94	WUG	Montgomery County MUD 94	$9,523,994	$1,092,366	$1,092,366	$422,247	$422,247	$422,247	$422,247
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 2	WUG	Montgomery County UD 2	$8,680,267	$929,772	$929,772	$319,019	$319,019	$319,019	$319,019
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 3	WUG	Montgomery County UD 3	$7,617,801	$0	$0	$0	$717,871	$717,871	$181,874
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 4	WUG	Montgomery County UD 4	$8,554,943	$0	$0	$903,865	$903,865	$301,930	$301,930
WUG Infrastructure Expansion (Groundwater) - New Caney MUD - Phase 1	WUG	New Caney MUD	$10,003,157	$0	$1,194,274	$1,194,274	$490,441	$490,441	$490,441
WUG Infrastructure Expansion (Groundwater) - New Caney MUD - Phase 2	WUG	New Caney MUD	$9,763,575	$0	$0	$0	$1,143,322	$1,143,322	$456,346
WUG Infrastructure Expansion (Groundwater) - Nitsch and Son Utility	WUG	Nitsch and Son Utility	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Northwest Harris County MUD 16	WUG	Northwest Harris County MUD 16	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Palmer Plantation MUD 1	WUG	Palmer Plantation MUD 1	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Patton Village	WUG	Patton Village	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Pinehurst Decker Prairie WSC	WUG	Pinehurst Decker Prairie WSC	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Pinewood Community	WUG	Pinewood Community	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Plantation MUD	WUG	Plantation MUD	$7,617,801	$0	$0	$717,871	$717,871	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Point Aquarius MUD	WUG	Point Aquarius MUD	$7,617,801	$0	$0	$717,871	$717,871	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Porter SUD - Phase 1	WUG	Porter SUD	$12,884,250	$1,747,597	$1,747,597	$841,047	$841,047	$841,047	$841,047
WUG Infrastructure Expansion (Groundwater) - Porter SUD - Phase 2	WUG	Porter SUD	$16,955,665	$0	$0	$2,352,354	$2,352,354	$1,159,335	$1,159,335
WUG Infrastructure Expansion (Groundwater) - Quadvest (Rosenberg GRP)	WUG	Quadvest	$11,100,824	$0	$1,400,401	$1,400,401	$619,336	$619,336	$619,336

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Quadvest, Fort Bend (B)	WUG	Quadvest	$5,750,846	$0	$961,193	$961,193	$961,193	$961,193	$961,193
WUG Infrastructure Expansion (Groundwater) - Quadvest, Harris (SJ)	WUG	Quadvest	$3,294,122	$0	$405,149	$405,149	$405,149	$405,149	$405,149
WUG Infrastructure Expansion (Groundwater) - Quadvest, Liberty (SJ) - Phase 1	WUG	Quadvest	$4,984,965	$0	$781,358	$781,358	$781,358	$781,358	$781,358
WUG Infrastructure Expansion (Groundwater) - Quadvest, Liberty (SJ) - Phase 2	WUG	Quadvest	$4,143,350	$0	$0	$0	$0	$593,536	$593,536
WUG Infrastructure Expansion (Groundwater) - Quadvest, Montgomery (SJ) - Phase 1	WUG	Quadvest	$9,801,334	$1,746,663	$1,746,663	$1,746,663	$1,746,663	$1,746,663	$1,746,663
WUG Infrastructure Expansion (Groundwater) - Quadvest, Montgomery (SJ) - Phase 2	WUG	Quadvest	$7,237,909	$0	$0	$0	$1,286,064	$1,286,064	$1,286,064
WUG Infrastructure Expansion (Groundwater) - Ranch Crest Water	WUG	Ranch Crest Water	$7,617,801	$717,871	$717,871	$181,874	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - River Plantation MUD	WUG	River Plantation MUD	$8,805,593	$0	$955,680	$955,680	$336,109	$336,109	$336,109
WUG Infrastructure Expansion (Groundwater) - Roman Forest Consolidated MUD	WUG	Roman Forest Consolidated MUD	$8,055,762	$0	$800,399	$800,399	$233,587	$233,587	$233,587
WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (NFBWA GRP Participant)	WUG	Royal Valley Utilities	$8,055,762	$0	$800,399	$800,399	$233,587	$233,587	$233,587
WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (Sugar Land IWRP)	WUG	Royal Valley Utilities	$7,777,301	$0	$746,428	$746,428	$199,209	$199,209	$199,209
WUG Infrastructure Expansion (Groundwater) - Sequoia Improvement District	WUG	Sequoia Improvement District	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Shenandoah - Phase 1	WUG	Shenandoah	$9,763,575	$1,143,322	$1,143,322	$456,346	$456,346	$456,346	$456,346
WUG Infrastructure Expansion (Groundwater) - Shenandoah - Phase 2	WUG	Shenandoah	$11,100,824	$0	$0	$1,400,401	$1,400,401	$619,336	$619,336
WUG Infrastructure Expansion (Groundwater) - South Cleveland WSC	WUG	South Cleveland WSC	$10,750,595	$0	$0	$0	$1,348,148	$1,348,148	$591,725
WUG Infrastructure Expansion (Groundwater) - Southern Water	WUG	Southern Water	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Splendora - Phase 1	WUG	Splendora	$10,003,157	$1,194,274	$1,194,274	$490,441	$490,441	$490,441	$490,441
WUG Infrastructure Expansion (Groundwater) - Splendora - Phase 2	WUG	Splendora	$12,081,739	$0	$0	$1,593,432	$1,593,432	$743,348	$743,348
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Austin (B)	WUG	Steam-Electric Power, Austin	$6,462,525	$1,106,193	$1,106,193	$1,106,193	$1,106,193	$1,106,193	$1,106,193
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Montgomery - Phase 1	WUG	Steam-Electric Power, Montgomery	$10,003,157	$1,194,274	$1,194,274	$490,441	$490,441	$490,441	$490,441
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Montgomery - Phase 2	WUG	Steam-Electric Power, Montgomery	$8,805,593	$0	$0	$955,680	$955,680	$336,109	$336,109
WUG Infrastructure Expansion (Groundwater) - Suburban Utility	WUG	Suburban Utility	$7,777,301	$0	$0	$746,428	$746,428	$199,209	$199,209
WUG Infrastructure Expansion (Groundwater) - The Commons Water Supply	WUG	The Commons Water Supply	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Thunderbird UD	WUG	Thunderbird UD	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874

Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Walker County SUD	WUG	Walker County SUD	$7,617,801	$717,871	$717,871	$181,874	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Waller	WUG	Waller	$8,055,762	$800,399	$800,399	$233,587	$233,587	$233,587	$233,587
WUG Infrastructure Expansion (Groundwater) - West Harris County MUD 6	WUG	West Harris County MUD 6	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - White Oak WSC	WUG	White Oak WSC	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874
WUG Infrastructure Expansion (Groundwater) - Wood Branch Village	WUG	Wood Branch Village	$7,936,798	$0	$774,985	$774,985	$216,543	$216,543	$216,543
WUG Infrastructure Expansion (Groundwater) - Wood Trace MUD 1	WUG	Wood Trace MUD 1	$7,617,801	$0	$717,871	$717,871	$181,874	$181,874	$181,874

Table 5-A11 – Project Cost Summary (Unit Cost)

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Allens Creek Reservoir	WMS	$0	$279	$279	$279	$279	$47
BAWA East SWTP Expansion - Phase 1	WMS	$868	$868	$217	$217	$217	$217
BAWA East SWTP Expansion - Phase 2	WMS	$0	$868	$868	$217	$217	$217
Brazos Saltwater Barrier	WMS	$596	$596	$51	$51	$51	$51
BWA Brackish Groundwater Development	WMS	$830	$830	$442	$442	$442	$442
BWA Conventional Treatment Expansion	WMS	$400	$400	$205	$205	$205	$205
BWA Transmission and Storage Expansion	WMS	$437	$437	$82	$82	$82	$82
BWSC Reservoir and Pump Station Expansion	WMS	$465	$465	$67	$67	$67	$67
CHCRWA Transmission and Internal Distribution	WMS	$314	$314	$22	$22	$22	$22
City of Houston Area 2 Groundwater Infrastructure	WMS	$482	$482	$271	$271	$271	$271
City of Houston EWPP Enhancement	WMS	$0	$1,492	$1,492	$744	$744	$744
City of Houston GRP Transmission - 2025 Phase	WMS	$347	$347	$43	$43	$43	$43
City of Houston GRP Transmission - 2035 Phase	WMS	$0	$552	$552	$69	$69	$69
City of Houston Repump Expansion - Phase 1	WMS	$287	$287	$75	$75	$75	$75
City of Houston Repump Expansion - Phase 2	WMS	$0	$160	$160	$42	$42	$42
City Of Houston Reuse Infrastructure	WMS	$0	$536	$521	$213	$214	$213
City of Houston SEWPP Expansion - Phase 1	WMS	$457	$457	$176	$176	$176	$176
City of Houston SEWPP Expansion - Phase 2	WMS	$0	$1,034	$1,034	$389	$389	$389
City of Houston Transmission and Distribution Expansion - Phase 1	WMS	$83	$83	$10	$10	$10	$10
City of Houston Transmission and Distribution Expansion - Phase 2	WMS	$0	$149	$149	$30	$30	$30
COH Northeast Water Purification Plant Expansion - Phase 2	WMS	$649	$649	$295	$295	$295	$295
COH Northeast Water Purification Plant Expansion - Phase 3	WMS	$0	$1,003	$1,003	$500	$500	$500
CWA Transmission Expansion	WMS	$0	$128	$128	$28	$28	$28
East Texas Transfer	WMS	$0	$0	$189	$189	$23	$23
Fairchilds Supply Infrastructure - Phase 1	WMS	$3,337	$3,337	$604	$604	$604	$604

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Fairchilds Supply Infrastructure - Phase 2	WMS	$0	$4,554	$4,554	$931	$931	$931
Fort Bend MUD 25 GRP Infrastructure	WMS	$784	$784	$58	$58	$58	$58
Fort Bend WCID 2 GRP Infrastructure - Phase 1	WMS	$1,144	$1,144	$393	$393	$393	$393
Fort Bend WCID 2 GRP Infrastructure - Phase 2	WMS	$0	$1,144	$1,144	$393	$393	$393
GCWA Canal Lining and Loss Mitigation	WMS	$111	$111	$13	$13	$13	$13
GCWA Coastal Desalination	WMS	$0	$2,207	$2,207	$1,317	$1,317	$1,317
GCWA Groundwater Well Development	WMS	$0	$118	$118	$62	$62	$62
GCWA Shannon Pump Station Expansion	WMS	$120	$120	$27	$27	$27	$27
Harris County MUD 50 SWTP	WMS	$4,994	$4,994	$2,129	$2,129	$2,129	$2,129
League City Effluent	WMS	$66	$55	$5	$5	$4	$4
LNVA Devers Pump Station Relocation	WMS	$21	$21	$4	$4	$4	$4
LNVA Neches-Trinity Basin Interconnect	WMS	$0	$165	$165	$31	$31	$31
Manvel Supply Expansion - Phase 1	WMS	$475	$475	$44	$44	$44	$44
Manvel Supply Expansion - Phase 2	WMS	$0	$803	$803	$75	$75	$75
Missouri City GRP Infrastructure	WMS	$0	$608	$608	$239	$239	$239
Montgomery County MUDs 8 and 9 Supply Expansion	WMS	$5,097	$5,097	$2,671	$2,671	$2,671	$2,671
Montgomery County Supply Expansion - 2040 Phase	WMS	$0	$829	$829	$339	$339	$339
Montgomery County Supply Expansion - 2050 Phase	WMS	$0	$0	$1,695	$1,695	$482	$482
Montgomery County Supply Expansion - 2060 Phase	WMS	$0	$0	$0	$829	$829	$339
NFBWA Member District Reuse Infrastructure	WMS	$1,708	$1,708	$747	$747	$747	$747
NFBWA Phase 2 Distribution Segments	WMS	$166	$166	$21	$21	$21	$21
NHCRWA Distribution Expansion - 2025 Phase	WMS	$346	$346	$30	$30	$30	$30
NHCRWA Distribution Expansion - 2035 Phase	WMS	$0	$307	$307	$30	$30	$30
NHCRWA Distribution Expansion - 2045 Phase	WMS	$0	$0	$10	$10	$1	$1
NHCRWA Member District Reuse Infrastructure	WMS	$2,206	$2,206	$929	$929	$929	$929
NHCRWA Transmission Lines	WMS	$255	$255	$32	$32	$32	$32
Pearland Reuse Infrastructure	WMS	$0	$1,565	$1,683	$1,312	$210	$210

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Pearland Surface Water Treatment Plant Development	WMS	$1,170	$1,170	$349	$349	$349	$349
Richmond GRP Infrastructure	WMS	$1,252	$1,252	$355	$355	$355	$355
Rosenberg GRP Infrastructure	WMS	$344	$344	$37	$37	$37	$37
SJRA Catahoula Aquifer Supplies	WMS	$0	$0	$0	$0	$0	$486
Southeast Transmission Line Improvements	WMS	$213	$213	$18	$18	$18	$18
Sugar Land Advanced Loss Reduction	WMS	$705	$705	$592	$592	$592	$592
Sugar Land AMI	WMS	$1,817	$1,720	$827	$827	$827	$827
Sugar Land Groundwater Plant Conversion	WMS	$292	$292	$19	$19	$19	$19
Sugar Land IWRP Reuse Infrastructure - Phase 1	WMS	$1,713	$1,713	$361	$361	$361	$361
Sugar Land IWRP Reuse Infrastructure - Phase 2	WMS	$0	$2,597	$2,597	$545	$545	$545
Sugar Land IWRP Reuse Infrastructure - Phase 3	WMS	$0	$0	$1,713	$1,713	$361	$361
Sugar Land Surface Water Expansion - Phase 1	WMS	$1,451	$1,451	$494	$494	$494	$494
Sugar Land Surface Water Expansion - Phase 2	WMS	$0	$748	$748	$508	$508	$508
Texas City Industrial Complex Reuse	WMS	$0	$344	$344	$57	$57	$57
Westwood Shores Reuse Infrastructure	WMS	$2,162	$2,162	$1,001	$1,001	$1,001	$1,001
WHCRWA 2025 Distribution Expansion	WMS	$256	$256	$28	$28	$28	$28
WHCRWA 2035 Distribution Expansion	WMS	$0	$142	$142	$15	$15	$15
WHCRWA/NFBWA Transmission Line	WMS	$297	$297	$38	$38	$38	$38
Industrial Conservation, Austin County	WUG	$0	$0	$0	$346	$284	$247
Industrial Conservation, Brazoria County	WUG	$540	$540	$451	$346	$284	$247
Industrial Conservation, Chambers County	WUG	$540	$540	$451	$346	$284	$247
Industrial Conservation, Fort Bend County	WUG	$540	$540	$451	$346	$284	$247
Industrial Conservation, Galveston County	WUG	$540	$540	$451	$346	$284	$247
Industrial Conservation, Harris County	WUG	$540	$540	$451	$346	$284	$247
Industrial Conservation, Leon County	WUG	$540	$540	$451	$346	$284	$247
Industrial Conservation, Liberty County	WUG	$540	$540	$451	$346	$284	$247
Industrial Conservation, Montgomery County	WUG	$540	$540	$451	$346	$284	$247

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Industrial Conservation, Walker County	WUG	$541	$540	$451	$346	$284	$247
Industrial Conservation, Waller County	WUG	$540	$541	$451	$346	$284	$247
Irrigation Conservation, Austin County	WUG	$161	$161	$160	$160	$160	$160
Irrigation Conservation, Brazoria County	WUG	$155	$155	$153	$153	$153	$153
Irrigation Conservation, Chambers County	WUG	$158	$158	$157	$157	$157	$157
Irrigation Conservation, Fort Bend County	WUG	$160	$160	$159	$159	$159	$159
Irrigation Conservation, Galveston County	WUG	$161	$161	$160	$160	$160	$160
Irrigation Conservation, Harris County	WUG	$161	$161	$160	$160	$160	$160
Irrigation Conservation, Liberty County	WUG	$154	$154	$152	$152	$152	$152
Irrigation Conservation, Waller County	WUG	$154	$154	$152	$152	$152	$152
Montgomery County WCID 1 Water Plant 3	WUG	$0	$11,973	$6,609	$1,617	$1,408	$1,299
Municipal Conservation, Alvin	WUG	$1,426	$770	$819	$737	$875	$752
Municipal Conservation, Ames Minglewood WSC	WUG	$1,215	$786	$925	$761	$920	$836
Municipal Conservation, Anahuac	WUG	$1,235	$850	$921	$819	$962	$841
Municipal Conservation, Angleton	WUG	$1,766	$860	$887	$799	$949	$791
Municipal Conservation, Austin County WSC	WUG	$1,035	$740	$806	$717	$848	$753
Municipal Conservation, Bacliff MUD	WUG	$1,506	$905	$961	$873	$1,009	$860
Municipal Conservation, Baker Road MUD	WUG	$645	$532	$556	$564	$691	$607
Municipal Conservation, Baybrook MUD 1	WUG	$1,671	$1,108	$1,001	$854	$1,171	$1,116
Municipal Conservation, Baytown	WUG	$1,665	$891	$897	$804	$890	$787
Municipal Conservation, Bayview MUD	WUG	$1,670	$1,018	$1,012	$898	$1,067	$908
Municipal Conservation, Bellaire	WUG	$1,439	$694	$732	$701	$790	$691
Municipal Conservation, Bellville	WUG	$947	$592	$580	$506	$674	$662
Municipal Conservation, Blaketree MUD 1 of Montgomery County	WUG	$0	$953	$1,047	$765	$902	$852
Municipal Conservation, Blue Bell Manor Utility	WUG	$1,131	$800	$862	$784	$917	$806
Municipal Conservation, Blue Ridge West MUD	WUG	$1,016	$713	$780	$724	$852	$750
Municipal Conservation, Bolivar Peninsula SUD	WUG	$1,422	$854	$878	$792	$952	$846

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Brazoria	WUG	$1,356	$862	$922	$821	$976	$810
Municipal Conservation, Brazoria County FWSD 1	WUG	$1,297	$890	$1,017	$866	$1,061	$809
Municipal Conservation, Brazoria County MUD 2	WUG	$398	$347	$384	$378	$455	$423
Municipal Conservation, Brazoria County MUD 21	WUG	$977	$690	$735	$676	$807	$733
Municipal Conservation, Brazoria County MUD 22	WUG	$1,398	$704	$652	$556	$805	$784
Municipal Conservation, Brazoria County MUD 25	WUG	$1,306	$912	$940	$880	$998	$881
Municipal Conservation, Brazoria County MUD 29	WUG	$1,374	$883	$899	$821	$977	$838
Municipal Conservation, Brazoria County MUD 3	WUG	$904	$687	$734	$686	$813	$712
Municipal Conservation, Brazoria County MUD 31	WUG	$786	$598	$654	$619	$736	$661
Municipal Conservation, Brazoria County MUD 39	WUG	$466	$406	$452	$435	$525	$480
Municipal Conservation, Brazoria County MUD 55	WUG	$1,161	$763	$805	$752	$894	$783
Municipal Conservation, Brazoria County MUD 6	WUG	$654	$541	$563	$540	$643	$595
Municipal Conservation, Brookshire MWD	WUG	$1,119	$697	$695	$615	$820	$771
Municipal Conservation, Buffalo	WUG	$1,470	$844	$807	$738	$950	$851
Municipal Conservation, Bunker Hill Village	WUG	$428	$371	$407	$389	$472	$447
Municipal Conservation, C C Water Works	WUG	$922	$736	$779	$731	$841	$759
Municipal Conservation, Cape Royale UD	WUG	$1,320	$859	$890	$807	$911	$820
Municipal Conservation, Centerville	WUG	$1,723	$790	$755	$687	$906	$887
Municipal Conservation, Central Harris County Regional Water Authority	WUG	$1,488	$818	$876	$803	$940	$786
Municipal Conservation, Chambers County MUD 1	WUG	$1,172	$845	$920	$840	$955	$850
Municipal Conservation, Chateau Woods MUD	WUG	$1,236	$884	$899	$802	$935	$819
Municipal Conservation, Chimney Hill MUD	WUG	$1,159	$772	$846	$768	$914	$783
Municipal Conservation, Clear Brook City MUD	WUG	$1,462	$792	$850	$784	$918	$768
Municipal Conservation, Clear Lake City Water Authority	WUG	$2,947	$899	$926	$866	$946	$702
Municipal Conservation, Cleveland	WUG	$1,023	$669	$2,334	$941	$1,079	$859
Municipal Conservation, Clute	WUG	$4,493	$364	$690	$640	$805	$752
Municipal Conservation, Concord-Robbins WSC	WUG	$1,609	$889	$897	$849	$939	$718

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Conroe	WUG	$1,452	$993	$912	$785	$903	$780
Municipal Conservation, Conroe Resort Utilities	WUG	$1,365	$808	$737	$610	$891	$829
Municipal Conservation, Corinthian Point MUD 2	WUG	$788	$633	$676	$592	$704	$671
Municipal Conservation, Country Terrace Water	WUG	$1,481	$918	$981	$852	$999	$833
Municipal Conservation, County-Other, Austin	WUG	$1,536	$934	$989	$875	$1,013	$873
Municipal Conservation, County-Other, Brazoria	WUG	$1,106	$767	$832	$756	$884	$777
Municipal Conservation, County-Other, Chambers	WUG	$826	$687	$753	$693	$817	$734
Municipal Conservation, County-Other, Fort Bend	WUG	$1,257	$952	$1,002	$878	$1,014	$871
Municipal Conservation, County-Other, Galveston	WUG	$1,051	$740	$798	$732	$854	$752
Municipal Conservation, County-Other, Harris	WUG	$834	$651	$703	$651	$764	$679
Municipal Conservation, County-Other, Leon	WUG	$1,333	$756	$772	$765	$790	$599
Municipal Conservation, County-Other, Liberty	WUG	$1,356	$938	$1,005	$907	$1,039	$899
Municipal Conservation, County-Other, Madison	WUG	$855	$643	$682	$651	$770	$686
Municipal Conservation, County-Other, Montgomery	WUG	$1,088	$802	$862	$779	$899	$781
Municipal Conservation, County-Other, Polk	WUG	$918	$669	$727	$678	$795	$714
Municipal Conservation, County-Other, San Jacinto	WUG	$796	$587	$643	$606	$712	$642
Municipal Conservation, County-Other, Walker	WUG	$719	$550	$604	$554	$652	$579
Municipal Conservation, County-Other, Waller	WUG	$1,127	$815	$906	$836	$966	$847
Municipal Conservation, Crosby MUD	WUG	$940	$606	$585	$515	$690	$654
Municipal Conservation, Cut and Shoot	WUG	$1,770	$943	$980	$884	$1,023	$816
Municipal Conservation, Daisetta	WUG	$1,139	$785	$922	$812	$896	$813
Municipal Conservation, Danbury	WUG	$1,326	$835	$887	$824	$941	$805
Municipal Conservation, Dayton	WUG	$1,585	$813	$816	$772	$858	$743
Municipal Conservation, Deer Park	WUG	$2,638	$875	$901	$841	$942	$755
Municipal Conservation, Devers	WUG	$803	$665	$776	$664	$834	$719
Municipal Conservation, Dobbin Plantersville WSC	WUG	$1,007	$1,083	$978	$842	$955	$780
Municipal Conservation, Dodge Oakhurst WSC	WUG	$1,057	$750	$802	$770	$915	$810

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Domestic Water	WUG	$1,445	$945	$911	$861	$1,012	$866
Municipal Conservation, Douglas Utility	WUG	$393	$359	$429	$400	$493	$456
Municipal Conservation, East Montgomery County MUD 6	WUG	$1,032	$725	$847	$776	$910	$749
Municipal Conservation, East Plantation UD	WUG	$790	$641	$741	$673	$739	$672
Municipal Conservation, El Dorado UD	WUG	$1,119	$793	$890	$808	$901	$802
Municipal Conservation, Far Hills UD	WUG	$989	$728	$747	$698	$806	$721
Municipal Conservation, First Colony MUD 9	WUG	$870	$620	$675	$621	$753	$686
Municipal Conservation, Flo Community WSC	WUG	$1,261	$840	$870	$803	$946	$816
Municipal Conservation, Forest Hills MUD	WUG	$1,102	$790	$862	$776	$913	$789
Municipal Conservation, Fort Bend County FWSD 2	WUG	$1,039	$737	$821	$742	$876	$1,090
Municipal Conservation, Fort Bend County MUD 115	WUG	$431	$355	$370	$343	$428	$421
Municipal Conservation, Fort Bend County MUD 116	WUG	$781	$608	$639	$590	$715	$652
Municipal Conservation, Fort Bend County MUD 121	WUG	$958	$695	$742	$700	$813	$721
Municipal Conservation, Fort Bend County MUD 128	WUG	$1,862	$725	$771	$737	$831	$687
Municipal Conservation, Fort Bend County MUD 129	WUG	$603	$490	$538	$516	$618	$570
Municipal Conservation, Fort Bend County MUD 131	WUG	$1,468	$899	$943	$864	$1,015	$870
Municipal Conservation, Fort Bend County MUD 140	WUG	$904	$660	$732	$674	$838	$755
Municipal Conservation, Fort Bend County MUD 149	WUG	$464	$400	$442	$430	$512	$479
Municipal Conservation, Fort Bend County MUD 152	WUG	$821	$607	$666	$633	$760	$672
Municipal Conservation, Fort Bend County MUD 155	WUG	$844	$675	$736	$671	$789	$702
Municipal Conservation, Fort Bend County MUD 158	WUG	$744	$580	$636	$608	$714	$638
Municipal Conservation, Fort Bend County MUD 162	WUG	$1,184	$789	$877	$789	$1,001	$817
Municipal Conservation, Fort Bend County MUD 23	WUG	$1,521	$820	$877	$810	$933	$778
Municipal Conservation, Fort Bend County MUD 24	WUG	$1,204	$815	$856	$798	$920	$806
Municipal Conservation, Fort Bend County MUD 25	WUG	$2,139	$811	$839	$788	$883	$724
Municipal Conservation, Fort Bend County MUD 26	WUG	$1,135	$790	$846	$785	$898	$788
Municipal Conservation, Fort Bend County MUD 42	WUG	$890	$639	$670	$637	$755	$690

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Fort Bend County MUD 46	WUG	$683	$519	$549	$497	$624	$589
Municipal Conservation, Fort Bend County MUD 47	WUG	$1,317	$802	$889	$785	$944	$835
Municipal Conservation, Fort Bend County MUD 48	WUG	$1,136	$795	$836	$792	$903	$779
Municipal Conservation, Fort Bend County MUD 49	WUG	$1,033	$794	$806	$721	$897	$747
Municipal Conservation, Fort Bend County MUD 5	WUG	$1,269	$846	$895	$808	$938	$800
Municipal Conservation, Fort Bend County MUD 81	WUG	$437	$380	$444	$425	$502	$468
Municipal Conservation, Fort Bend County WCID 2	WUG	$3,885	$1,085	$1,031	$944	$1,057	$745
Municipal Conservation, Fort Bend County WCID 3	WUG	$346	$286	$331	$330	$406	$390
Municipal Conservation, Freeport	WUG	$1,929	$771	$294	$573	$770	$722
Municipal Conservation, Friendswood	WUG	$2,275	$844	$868	$815	$910	$748
Municipal Conservation, Fulshear	WUG	$2,161	$1,219	$911	$849	$952	$792
Municipal Conservation, Galena Park	WUG	$1,766	$865	$911	$827	$978	$786
Municipal Conservation, Galveston	WUG	$1,724	$647	$673	$611	$706	$658
Municipal Conservation, Galveston County FWSD 6	WUG	$1,391	$860	$882	$799	$950	$826
Municipal Conservation, Galveston County MUD 12	WUG	$1,374	$865	$928	$847	$958	$849
Municipal Conservation, Galveston County WCID 1	WUG	$1,648	$853	$887	$803	$952	$799
Municipal Conservation, Galveston County WCID 12	WUG	$961	$636	$622	$552	$723	$695
Municipal Conservation, Galveston County WCID 8	WUG	$1,507	$924	$970	$875	$1,000	$865
Municipal Conservation, Glendale WSC	WUG	$1,363	$882	$963	$809	$963	$908
Municipal Conservation, Grand Oaks MUD	WUG	$1,314	$899	$950	$894	$961	$859
Municipal Conservation, Green Trails MUD	WUG	$707	$528	$550	$517	$629	$593
Municipal Conservation, Greenwood UD	WUG	$1,473	$1,219	$1,001	$878	$681	$1,172
Municipal Conservation, Groveton	WUG	$1,525	$866	$768	$690	$995	$790
Municipal Conservation, Hardin WSC	WUG	$1,212	$794	$863	$786	$927	$814
Municipal Conservation, Harris County FWSD 1-A	WUG	$1,271	$814	$888	$799	$950	$802
Municipal Conservation, Harris County FWSD 27	WUG	$969	$714	$782	$704	$855	$716
Municipal Conservation, Harris County FWSD 58	WUG	$993	$709	$734	$709	$803	$733

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Harris County MUD 106	WUG	$1,016	$723	$783	$721	$836	$750
Municipal Conservation, Harris County MUD 11	WUG	$1,155	$755	$843	$754	$903	$788
Municipal Conservation, Harris County MUD 119	WUG	$1,019	$763	$802	$755	$857	$774
Municipal Conservation, Harris County MUD 122	WUG	$1,290	$790	$809	$739	$943	$838
Municipal Conservation, Harris County MUD 132	WUG	$691	$531	$561	$518	$632	$596
Municipal Conservation, Harris County MUD 148	WUG	$1,254	$807	$883	$804	$915	$797
Municipal Conservation, Harris County MUD 151	WUG	$855	$631	$693	$642	$771	$688
Municipal Conservation, Harris County MUD 152	WUG	$1,013	$721	$774	$724	$841	$744
Municipal Conservation, Harris County MUD 153	WUG	$995	$648	$665	$604	$763	$708
Municipal Conservation, Harris County MUD 154	WUG	$1,257	$742	$810	$746	$876	$738
Municipal Conservation, Harris County MUD 180	WUG	$1,231	$819	$864	$788	$923	$814
Municipal Conservation, Harris County MUD 189	WUG	$1,021	$794	$816	$753	$856	$809
Municipal Conservation, Harris County MUD 216	WUG	$742	$582	$624	$559	$697	$652
Municipal Conservation, Harris County MUD 221	WUG	$1,043	$756	$826	$764	$878	$779
Municipal Conservation, Harris County MUD 23	WUG	$1,094	$738	$825	$743	$857	$756
Municipal Conservation, Harris County MUD 261	WUG	$721	$564	$618	$587	$681	$639
Municipal Conservation, Harris County MUD 278	WUG	$1,276	$832	$1,251	$876	$972	$804
Municipal Conservation, Harris County MUD 290	WUG	$1,078	$740	$1,115	$801	$915	$767
Municipal Conservation, Harris County MUD 321	WUG	$514	$389	$320	$244	$325	$370
Municipal Conservation, Harris County MUD 342	WUG	$793	$601	$678	$624	$715	$662
Municipal Conservation, Harris County MUD 344	WUG	$619	$515	$542	$516	$617	$572
Municipal Conservation, Harris County MUD 345	WUG	$659	$521	$576	$547	$646	$592
Municipal Conservation, Harris County MUD 36	WUG	$842	$521	$528	$395	$532	$579
Municipal Conservation, Harris County MUD 361	WUG	$1,073	$729	$799	$736	$864	$755
Municipal Conservation, Harris County MUD 372	WUG	$546	$454	$490	$467	$562	$530
Municipal Conservation, Harris County MUD 400	WUG	$1,730	$785	$1,581	$777	$984	$840
Municipal Conservation, Harris County MUD 412	WUG	$807	$588	$649	$597	$716	$651

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Harris County MUD 420	WUG	$1,275	$824	$910	$843	$943	$815
Municipal Conservation, Harris County MUD 46	WUG	$771	$580	$628	$594	$720	$657
Municipal Conservation, Harris County MUD 49	WUG	$1,356	$890	$963	$877	$994	$859
Municipal Conservation, Harris County MUD 494	WUG	$1,333	$830	$915	$832	$952	$832
Municipal Conservation, Harris County MUD 5	WUG	$1,234	$836	$867	$801	$928	$818
Municipal Conservation, Harris County MUD 50	WUG	$1,160	$802	$868	$785	$912	$794
Municipal Conservation, Harris County MUD 504	WUG	$1,055	$747	$792	$745	$861	$763
Municipal Conservation, Harris County MUD 55	WUG	$1,564	$841	$891	$813	$946	$790
Municipal Conservation, Harris County MUD 58	WUG	$934	$709	$703	$623	$750	$682
Municipal Conservation, Harris County MUD 6	WUG	$1,132	$766	$819	$742	$891	$761
Municipal Conservation, Harris County MUD 8	WUG	$1,189	$897	$914	$867	$948	$860
Municipal Conservation, Harris County MUD 96	WUG	$1,238	$813	$882	$804	$928	$811
Municipal Conservation, Harris County UD 15	WUG	$874	$641	$670	$610	$745	$681
Municipal Conservation, Harris County WCID 1	WUG	$993	$683	$719	$659	$814	$725
Municipal Conservation, Harris County WCID 133	WUG	$909	$664	$725	$661	$777	$697
Municipal Conservation, Harris County WCID 156	WUG	$648	$560	$561	$577	$632	$628
Municipal Conservation, Harris County WCID 161	WUG	$911	$708	$739	$685	$853	$712
Municipal Conservation, Harris County WCID 50	WUG	$1,110	$743	$817	$755	$853	$764
Municipal Conservation, Harris County WCID 70	WUG	$1,168	$744	$806	$772	$906	$805
Municipal Conservation, Harris County WCID 74	WUG	$820	$628	$682	$637	$745	$665
Municipal Conservation, Harris County WCID 89	WUG	$1,236	$803	$857	$779	$915	$804
Municipal Conservation, Harris County WCID 96	WUG	$783	$608	$680	$625	$725	$665
Municipal Conservation, Harris County WCID-Fondren Road	WUG	$1,274	$868	$888	$812	$959	$806
Municipal Conservation, Harris-Montgomery Counties MUD 386	WUG	$1,042	$708	$787	$707	$854	$750
Municipal Conservation, Hempstead	WUG	$911	$611	$619	$556	$704	$664
Municipal Conservation, High Prairie WSC	WUG	$749	$576	$691	$609	$670	$639
Municipal Conservation, Hillcrest Village	WUG	$1,043	$634	$736	$739	$751	$723

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Hilltop Lakes WSC	WUG	$1,134	$750	$819	$703	$851	$797
Municipal Conservation, Hilshire Village	WUG	$660	$511	$595	$537	$668	$598
Municipal Conservation, Hitchcock	WUG	$1,217	$821	$872	$809	$927	$806
Municipal Conservation, HMW SUD	WUG	$1,309	$1,184	$993	$854	$988	$821
Municipal Conservation, Houston	WUG	$1,362	$646	$708	$627	$745	$652
Municipal Conservation, Humble	WUG	$3,739	$966	$1,125	$917	$1,026	$734
Municipal Conservation, Huntsville	WUG	$4,351	$1,201	$1,314	$1,273	$1,408	$1,182
Municipal Conservation, Jacinto City	WUG	$1,498	$920	$1,336	$884	$997	$548
Municipal Conservation, Jamaica Beach	WUG	$1,306	$854	$903	$851	$979	$844
Municipal Conservation, Jersey Village	WUG	$1,004	$691	$700	$632	$3,390	$844
Municipal Conservation, Jewett	WUG	$1,535	$669	$694	$629	$0	$0
Municipal Conservation, Johnston Water Utility	WUG	$362	$337	$371	$362	$434	$407
Municipal Conservation, Katy	WUG	$1,425	$794	$758	$684	$816	$716
Municipal Conservation, Keenan WSC	WUG	$1,297	$928	$1,014	$883	$961	$837
Municipal Conservation, Kendleton	WUG	$1,007	$953	$801	$711	$842	$748
Municipal Conservation, Kings Manor MUD	WUG	$983	$729	$763	$716	$848	$747
Municipal Conservation, Kirkmont MUD	WUG	$831	$619	$676	$650	$740	$678
Municipal Conservation, La Marque	WUG	$1,441	$709	$735	$694	$798	$699
Municipal Conservation, La Porte	WUG	$3,416	$1,054	$978	$896	$955	$828
Municipal Conservation, Lake Bonanza WSC	WUG	$1,414	$889	$946	$844	$992	$844
Municipal Conservation, Lake Conroe Hills MUD	WUG	$1,451	$886	$941	$844	$993	$848
Municipal Conservation, Lake Jackson	WUG	$3,064	$851	$896	$822	$907	$704
Municipal Conservation, Lake MUD	WUG	$1,221	$817	$869	$796	$942	$804
Municipal Conservation, Lazy River Improvement District	WUG	$787	$547	$601	$589	$717	$656
Municipal Conservation, League City	WUG	$1,650	$821	$860	$789	$869	$774
Municipal Conservation, Leggett WSC	WUG	$1,044	$657	$684	$613	$801	$716
Municipal Conservation, Liberty	WUG	$966	$606	$595	$528	$695	$669

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Liberty County FWSD 1 Hull	WUG	$1,138	$704	$818	$690	$864	$741
Municipal Conservation, Livingston	WUG	$616	$453	$452	$389	$519	$512
Municipal Conservation, Longhorn Town UD	WUG	$702	$525	$557	$505	$629	$610
Municipal Conservation, Luce Bayou PUD	WUG	$0	$757	$633	$646	$708	$634
Municipal Conservation, Madisonville	WUG	$1,038	$636	$625	$554	$723	$692
Municipal Conservation, Magnolia	WUG	$1,059	$668	$667	$562	$727	$702
Municipal Conservation, Manvel	WUG	$1,322	$910	$1,697	$933	$1,035	$880
Municipal Conservation, Mason Creek UD	WUG	$807	$596	$643	$599	$718	$664
Municipal Conservation, Meadowcreek MUD	WUG	$1,196	$796	$835	$768	$877	$809
Municipal Conservation, Meadows Place	WUG	$895	$652	$708	$656	$777	$702
Municipal Conservation, Memorial Point UD	WUG	$999	$799	$840	$712	$923	$805
Municipal Conservation, Memorial Villages Water Authority	WUG	$1,034	$460	$535	$504	$516	$489
Municipal Conservation, Mercy WSC	WUG	$836	$608	$659	$628	$731	$667
Municipal Conservation, Missouri City	WUG	$927	$1,340	$891	$802	$908	$768
Municipal Conservation, Mont Belvieu	WUG	$1,323	$673	$598	$666	$733	$685
Municipal Conservation, Montgomery	WUG	$1,239	$801	$762	$659	$837	$795
Municipal Conservation, Montgomery County MUD 105	WUG	$830	$609	$675	$654	$729	$699
Municipal Conservation, Montgomery County MUD 112	WUG	$853	$639	$668	$612	$745	$737
Municipal Conservation, Montgomery County MUD 115	WUG	$882	$641	$677	$634	$754	$693
Municipal Conservation, Montgomery County MUD 119	WUG	$1,145	$2,039	$928	$833	$989	$815
Municipal Conservation, Montgomery County MUD 126	WUG	$1,109	$631	$651	$558	$729	$676
Municipal Conservation, Montgomery County MUD 137	WUG	$1,316	$874	$916	$828	$952	$839
Municipal Conservation, Montgomery County MUD 139	WUG	$1,300	$696	$649	$554	$773	$756
Municipal Conservation, Montgomery County MUD 15	WUG	$1,320	$858	$919	$830	$961	$838
Municipal Conservation, Montgomery County MUD 18	WUG	$599	$484	$532	$502	$607	$561
Municipal Conservation, Montgomery County MUD 19	WUG	$556	$443	$455	$396	$487	$490
Municipal Conservation, Montgomery County MUD 24	WUG	$1,308	$810	$764	$659	$859	$798

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Montgomery County MUD 56	WUG	$1,403	$760	$828	$760	$874	$817
Municipal Conservation, Montgomery County MUD 8	WUG	$1,129	$772	$822	$750	$891	$791
Municipal Conservation, Montgomery County MUD 83	WUG	$883	$638	$695	$670	$794	$702
Municipal Conservation, Montgomery County MUD 84	WUG	$858	$655	$707	$656	$774	$697
Municipal Conservation, Montgomery County MUD 88	WUG	$917	$618	$649	$608	$742	$690
Municipal Conservation, Montgomery County MUD 89	WUG	$837	$612	$648	$602	$738	$675
Municipal Conservation, Montgomery County MUD 9	WUG	$828	$614	$670	$627	$743	$676
Municipal Conservation, Montgomery County MUD 94	WUG	$989	$710	$761	$697	$822	$745
Municipal Conservation, Montgomery County MUD 95	WUG	$1,331	$791	$728	$599	$816	$778
Municipal Conservation, Montgomery County MUD 98	WUG	$1,186	$810	$856	$806	$943	$794
Municipal Conservation, Montgomery County MUD 99	WUG	$1,094	$675	$688	$582	$766	$716
Municipal Conservation, Montgomery County UD 2	WUG	$1,018	$745	$776	$690	$825	$749
Municipal Conservation, Montgomery County UD 3	WUG	$1,223	$803	$840	$766	$905	$811
Municipal Conservation, Montgomery County UD 4	WUG	$1,095	$744	$788	$726	$862	$780
Municipal Conservation, Montgomery County WCID 1	WUG	$1,926	$1,214	$1,214	$1,057	$1,200	$1,032
Municipal Conservation, Morgans Point	WUG	$732	$522	$503	$453	$563	$544
Municipal Conservation, Mount Houston Road MUD	WUG	$1,013	$713	$766	$708	$837	$746
Municipal Conservation, MSEC Enterprises	WUG	$1,520	$848	$873	$799	$850	$747
Municipal Conservation, Nassau Bay	WUG	$734	$560	$572	$520	$651	$615
Municipal Conservation, Needville	WUG	$1,366	$1,013	$986	$844	$971	$836
Municipal Conservation, New Caney MUD	WUG	$1,694	$945	$970	$868	$1,009	$825
Municipal Conservation, New Waverly	WUG	$1,255	$702	$629	$567	$706	$717
Municipal Conservation, Newport MUD	WUG	$1,512	$813	$900	$822	$949	$778
Municipal Conservation, Nitsch and Son Utility	WUG	$1,194	$787	$848	$748	$879	$794
Municipal Conservation, Normangee	WUG	$1,243	$731	$658	$489	$1,013	$0
Municipal Conservation, North Belt UD	WUG	$681	$514	$552	$498	$606	$584
Municipal Conservation, North Channel Water Authority	WUG	$1,600	$820	$878	$800	$869	$773

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, North Forest MUD	WUG	$1,006	$695	$743	$695	$803	$729
Municipal Conservation, North Fort Bend Water Authority	WUG	$2,143	$893	$954	$842	$941	$780
Municipal Conservation, North Green MUD	WUG	$893	$741	$796	$726	$833	$768
Municipal Conservation, North Harris County Regional Water Authority	WUG	$2,996	$923	$1,003	$870	$1,016	$798
Municipal Conservation, North Zulch MUD	WUG	$1,484	$904	$950	$845	$975	$855
Municipal Conservation, Northeast Harris County MUD 1	WUG	$1,398	$798	$827	$732	$921	$818
Municipal Conservation, Northwest Harris County MUD 16	WUG	$1,052	$711	$740	$699	$851	$756
Municipal Conservation, Oak Hollow Utility	WUG	$1,231	$812	$875	$782	$924	$788
Municipal Conservation, Oak Ridge North	WUG	$1,117	$684	$646	$566	$740	$707
Municipal Conservation, Onalaska WSC	WUG	$1,611	$969	$1,035	$909	$1,059	$905
Municipal Conservation, One Five O WSC	WUG	$1,403	$870	$940	$846	$942	$820
Municipal Conservation, Oyster Creek	WUG	$921	$625	$655	$566	$733	$694
Municipal Conservation, P B & S C WSC	WUG	$1,086	$744	$784	$729	$891	$770
Municipal Conservation, Palmer Plantation MUD 1	WUG	$749	$548	$601	$575	$691	$625
Municipal Conservation, Palmer Plantation MUD 2	WUG	$1,124	$728	$806	$743	$846	$758
Municipal Conservation, Panorama Village	WUG	$836	$643	$695	$648	$766	$679
Municipal Conservation, Parkway MUD	WUG	$1,505	$910	$956	$873	$997	$858
Municipal Conservation, Pasadena	WUG	$1,838	$771	$837	$736	$871	$748
Municipal Conservation, Pattison WSC	WUG	$947	$687	$697	$660	$787	$704
Municipal Conservation, Patton Village	WUG	$1,811	$1,093	$1,158	$1,056	$1,149	$953
Municipal Conservation, Pearland	WUG	$2,832	$999	$1,005	$886	$996	$791
Municipal Conservation, Pecan Grove MUD 1	WUG	$2,063	$847	$871	$804	$884	$734
Municipal Conservation, Phelps SUD	WUG	$1,284	$814	$828	$804	$901	$795
Municipal Conservation, Pine Village PUD	WUG	$1,244	$802	$882	$821	$909	$810
Municipal Conservation, Pinehurst Decker Prairie WSC	WUG	$1,212	$876	$916	$846	$923	$826
Municipal Conservation, Pinewood Community	WUG	$1,344	$864	$869	$785	$1,028	$822
Municipal Conservation, Plantation MUD	WUG	$1,273	$801	$871	$783	$907	$800

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Point Aquarius MUD	WUG	$931	$716	$767	$695	$809	$721
Municipal Conservation, Porter SUD	WUG	$1,496	$856	$884	$797	$931	$787
Municipal Conservation, Prairie View	WUG	$765	$601	$641	$592	$713	$657
Municipal Conservation, Prairie View A&M University	WUG	$1,693	$964	$1,023	$915	$1,056	$898
Municipal Conservation, Providence WSC	WUG	$917	$668	$729	$676	$813	$720
Municipal Conservation, Quadvest	WUG	$1,716	$905	$947	$865	$935	$802
Municipal Conservation, Quail Valley UD	WUG	$2,697	$914	$923	$924	$985	$794
Municipal Conservation, Ranch Crest Water	WUG	$864	$696	$685	$648	$760	$722
Municipal Conservation, Rayford Road MUD	WUG	$962	$661	$696	$632	$777	$713
Municipal Conservation, Raywood WSC	WUG	$1,257	$812	$946	$795	$975	$849
Municipal Conservation, Richmond	WUG	$1,549	$744	$766	$701	$830	$739
Municipal Conservation, Richwood	WUG	$1,452	$927	$1,007	$886	$1,017	$863
Municipal Conservation, River Plantation MUD	WUG	$774	$610	$650	$622	$711	$640
Municipal Conservation, Riverside SUD	WUG	$1,426	$898	$952	$870	$1,005	$883
Municipal Conservation, Rolling Fork PUD	WUG	$869	$647	$659	$608	$752	$691
Municipal Conservation, Roman Forest Consolidated MUD	WUG	$1,063	$849	$875	$790	$905	$776
Municipal Conservation, Rosenberg	WUG	$1,523	$880	$916	$811	$955	$805
Municipal Conservation, Royal Valley Utilities	WUG	$495	$416	$461	$456	$542	$498
Municipal Conservation, Sagemeadow UD	WUG	$1,060	$750	$807	$733	$874	$764
Municipal Conservation, San Jacinto SUD	WUG	$1,437	$903	$927	$845	$986	$829
Municipal Conservation, San Leon MUD	WUG	$1,232	$830	$876	$796	$928	$811
Municipal Conservation, Seabrook	WUG	$5,237	$1,208	$1,218	$1,089	$1,149	$779
Municipal Conservation, Sealy	WUG	$930	$620	$617	$544	$704	$675
Municipal Conservation, Sedona Lakes MUD 1	WUG	$895	$675	$760	$679	$810	$711
Municipal Conservation, Sequoia Improvement District	WUG	$1,156	$680	$792	$704	$870	$774
Municipal Conservation, Shenandoah	WUG	$676	$484	$459	$375	$511	$519
Municipal Conservation, Shepherd	WUG	$1,143	$758	$813	$727	$882	$775

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Shoreacres	WUG	$824	$609	$668	$644	$763	$686
Municipal Conservation, Sienna Plantation	WUG	$2,144	$817	$880	$819	$901	$740
Municipal Conservation, Soda WSC	WUG	$1,329	$873	$913	$807	$948	$838
Municipal Conservation, South Cleveland WSC	WUG	$1,063	$1,092	$974	$859	$993	$838
Municipal Conservation, South Houston	WUG	$1,410	$703	$682	$610	$809	$723
Municipal Conservation, Southeast WSC	WUG	$1,415	$888	$929	$861	$985	$856
Municipal Conservation, Southern Montgomery County MUD	WUG	$1,318	$1,236	$964	$776	$973	$832
Municipal Conservation, Southern Water	WUG	$1,126	$733	$805	$740	$858	$760
Municipal Conservation, Southside Place	WUG	$1,108	$705	$740	$667	$804	$740
Municipal Conservation, Southwest Harris County MUD 1	WUG	$1,260	$843	$879	$818	$933	$874
Municipal Conservation, Splendora	WUG	$1,692	$946	$1,002	$923	$1,047	$811
Municipal Conservation, Spring Creek UD	WUG	$1,593	$829	$884	$815	$949	$799
Municipal Conservation, Spring Meadows MUD	WUG	$1,352	$889	$896	$803	$950	$823
Municipal Conservation, Spring Valley	WUG	$897	$634	$669	$616	$754	$685
Municipal Conservation, Stanley Lake MUD	WUG	$822	$588	$607	$568	$698	$648
Municipal Conservation, Suburban Utility	WUG	$1,046	$738	$862	$750	$863	$754
Municipal Conservation, Sugar Land	WUG	$1,870	$757	$823	$729	$859	$731
Municipal Conservation, Sunbelt FWSD	WUG	$1,575	$820	$871	$797	$923	$780
Municipal Conservation, Surfside Beach	WUG	$1,739	$834	$798	$678	$881	$869
Municipal Conservation, Sweeny	WUG	$1,114	$718	$738	$668	$825	$752
Municipal Conservation, T & W Water Service	WUG	$1,446	$1,815	$1,205	$1,055	$1,110	$895
Municipal Conservation, Tarkington SUD	WUG	$1,097	$729	$791	$735	$876	$771
Municipal Conservation, TDCJ Darrington Unit	WUG	$414	$354	$407	$385	$477	$434
Municipal Conservation, TDCJ Ferguson Unit	WUG	$390	$341	$386	$374	$443	$421
Municipal Conservation, TDCJ Jester Units	WUG	$536	$457	$504	$492	$585	$532
Municipal Conservation, TDCJ Ramsey Area	WUG	$526	$438	$489	$472	$562	$517
Municipal Conservation, Tempe WSC 1	WUG	$1,379	$886	$946	$853	$969	$844

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Texas City	WUG	$1,303	$740	$789	$728	$863	$736
Municipal Conservation, The Commons Water Supply	WUG	$843	$623	$665	$629	$758	$679
Municipal Conservation, The Woodlands	WUG	$6,511	$975	$958	$776	$1,096	$976
Municipal Conservation, Thunderbird UD	WUG	$1,022	$680	$730	$647	$797	$736
Municipal Conservation, Tomball	WUG	$1,619	$647	$665	$515	$718	$675
Municipal Conservation, Trail of the Lakes MUD	WUG	$1,405	$780	$849	$786	$913	$762
Municipal Conservation, Trinity	WUG	$1,325	$835	$873	$818	$934	$798
Municipal Conservation, Trinity Bay Conservation District	WUG	$1,733	$962	$970	$1,729	$1,135	$935
Municipal Conservation, Trinity Rural WSC	WUG	$1,165	$751	$824	$768	$874	$770
Municipal Conservation, Valley Ranch MUD 1	WUG	$1,280	$875	$920	$841	$979	$846
Municipal Conservation, Varner Creek UD	WUG	$1,174	$738	$791	$719	$854	$762
Municipal Conservation, Walker County SUD	WUG	$1,059	$1,006	$900	$824	$953	$802
Municipal Conservation, Waller	WUG	$1,219	$802	$812	$739	$881	$807
Municipal Conservation, Wallis	WUG	$1,442	$827	$968	$813	$939	$826
Municipal Conservation, Waterwood MUD 1	WUG	$1,240	$795	$900	$794	$962	$836
Municipal Conservation, Webster	WUG	$8,137	$1,162	$977	$802	$743	$712
Municipal Conservation, West Columbia	WUG	$1,525	$902	$968	$882	$1,023	$858
Municipal Conservation, West End WSC	WUG	$1,241	$854	$859	$771	$974	$795
Municipal Conservation, West Harris County MUD 6	WUG	$883	$750	$770	$718	$866	$767
Municipal Conservation, West Harris County Regional Water Authority	WUG	$1,749	$856	$892	$817	$908	$803
Municipal Conservation, West University Place	WUG	$1,666	$766	$807	$770	$840	$729
Municipal Conservation, Westfield Garden Park	WUG	$732	$573	$669	$689	$683	$683
Municipal Conservation, Westwood North WSC	WUG	$858	$607	$668	$593	$723	$696
Municipal Conservation, Westwood Shores MUD	WUG	$1,679	$902	$882	$855	$1,017	$872
Municipal Conservation, White Oak WSC	WUG	$1,453	$906	$969	$866	$980	$864
Municipal Conservation, Willis	WUG	$1,285	$686	$783	$779	$923	$800
Municipal Conservation, Willow Creek Farms MUD	WUG	$710	$541	$602	$547	$663	$608

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Municipal Conservation, Windfern Forest Utility District	WUG	$931	$709	$775	$709	$813	$736
Municipal Conservation, Wood Branch Village	WUG	$1,260	$833	$933	$854	$949	$799
Municipal Conservation, Wood Trace MUD 1	WUG	$1,578	$666	$805	$876	$981	$857
Municipal Conservation, Woodcreek MUD	WUG	$793	$571	$631	$581	$698	$644
Municipal Conservation, Woodland Oaks Utility	WUG	$1,250	$863	$940	$833	$951	$827
Municipal Conservation, Woodridge MUD	WUG	$1,345	$874	$919	$813	$959	$845
Municipal Irrigation Reuse Development, Brazoria County	WUG	$3,172	$2,497	$1,922	$1,681	$1,528	$1,458
Municipal Irrigation Reuse Development, Chambers County	WUG	$3,172	$2,497	$1,922	$1,681	$1,528	$1,458
Municipal Irrigation Reuse Development, CHCRWA	WUG	$8,742	$6,928	$5,612	$5,281	$4,948	$4,904
Municipal Irrigation Reuse Development, Fort Bend County	WUG	$4,443	$2,991	$2,073	$1,718	$1,490	$1,371
Municipal Irrigation Reuse Development, Harris County	WUG	$6,693	$4,550	$3,477	$2,996	$2,915	$2,914
Municipal Irrigation Reuse Development, Liberty County	WUG	$3,172	$2,497	$1,922	$1,681	$1,528	$1,458
Municipal Irrigation Reuse Development, Montgomery County	WUG	$3,172	$2,497	$1,922	$1,681	$1,528	$1,458
Municipal Irrigation Reuse Development, NFBWA	WUG	$2,625	$1,858	$1,650	$1,576	$1,650	$1,754
Municipal Irrigation Reuse Development, NHCRWA	WUG	$584	$457	$369	$327	$315	$310
Municipal Irrigation Reuse Development, Waller County	WUG	$3,172	$2,497	$1,922	$1,681	$1,528	$1,458
Municipal Irrigation Reuse Development, WHCRWA	WUG	$1,037	$858	$879	$983	$964	$968
Water Loss Reduction, Alvin	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Ames Minglewood WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Anahuac	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Angleton	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Austin County WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Baytown	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Blaketree MUD 1 of Montgomery County	WUG	$0	$759	$745	$733	$730	$726
Water Loss Reduction, Bolivar Peninsula SUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Brazoria County FWSD 1	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Brazoria County MUD 2	WUG	$761	$759	$745	$733	$730	$726

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Water Loss Reduction, Brazoria County MUD 21	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Brazoria County MUD 22	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Brazoria County MUD 31	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Brookshire MWD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Buffalo	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Centerville	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Cleveland	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Conroe Resort Utilities	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Brazoria	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Chambers	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Fort Bend	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Galveston	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Leon	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Liberty	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Madison	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Montgomery	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Polk	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, San Jacinto	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Walker	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, County-Other, Waller	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Crosby MUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Daisetta	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Dayton	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Deer Park	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Fort Bend County FWSD 1	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Fort Bend County MUD 116	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Fort Bend County MUD 25	WUG	$761	$759	$745	$733	$730	$726

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Water Loss Reduction, Fort Bend County WCID 2	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Freeport	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Friendswood	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Galena Park	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Galveston	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Galveston County WCID 1	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Galveston County WCID 12	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Galveston County WCID 8	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Groveton	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Hardin WSC	WUG	$0	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County FWSD 1-A	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 132	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 154	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 189	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 221	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 23	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 345	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 5	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 50	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 55	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 58	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County MUD 6	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County UD 14	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County UD 15	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County WCID 1	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County WCID 70	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris County WCID 89	WUG	$761	$759	$745	$733	$730	$726

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Water Loss Reduction, Harris County WCID-Fondren Road	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Harris-Montgomery Counties MUD 386	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Hillcrest Village	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Hitchcock	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Houston	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Humble	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Jacinto City	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, La Marque	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Lake Conroe Hills MUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Lake Jackson	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Lake Livingston WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Liberty	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Livingston	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Luce Bayou PUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Madisonville	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Mercy WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Mont Belvieu	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery County MUD 18	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery County MUD 8	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery County MUD 83	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery County MUD 9	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery County MUD 99	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery County UD 3	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Montgomery County UD 4	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Nassau Bay	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, New Caney MUD	WUG	$761	$759	$745	$733	$730	$726

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Water Loss Reduction, North Channel Water Authority	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, North Fort Bend Water Authority	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, North Zulch MUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Northeast Harris County MUD 1	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Oak Ridge North	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, One Five O WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Oyster Creek	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Palmer Plantation MUD 1	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Palmer Plantation MUD 2	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Panorama Village	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Pattison WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Pearland	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Pecan Grove MUD 1	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Pinehurst Decker Prairie WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Plantation MUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Quail Valley UD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Raywood WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Riverside SUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Roman Forest Consolidated MUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Rosenberg	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Sequoia Improvement District	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Shenandoah	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Shoreacres	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Soda WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, South Cleveland WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Southern Water	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Southside Place	WUG	$761	$759	$745	$733	$730	$726

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
Water Loss Reduction, Splendora	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Spring Valley	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Suburban Utility	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Sunbelt FWSD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Tarkington SUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Texas City	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, The Commons Water Supply	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, The Woodlands	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Tomball	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Trinity Bay Conservation District	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Webster	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, West Columbia	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, West End WSC	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, West University Place	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Westwood Shores MUD	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Willis	WUG	$761	$759	$745	$733	$730	$726
Water Loss Reduction, Willow Creek Farms MUD	WUG	$761	$759	$745	$733	$730	$726
WUG Infrastructure Expansion - Angleton	WUG	$334	$399	$68	$76	$87	$92
WUG Infrastructure Expansion - Brazoria County MUD 25	WUG	$16,886	$16,886	$757	$757	$757	$757
WUG Infrastructure Expansion - Brazoria County MUD 29	WUG	$5,719	$5,719	$281	$281	$281	$281
WUG Infrastructure Expansion - Brazoria County MUD 39	WUG	$1,810	$1,810	$107	$107	$107	$107
WUG Infrastructure Expansion - CHCRWA Districts	WUG	$261	$261	$37	$37	$37	$37
WUG Infrastructure Expansion - Conroe - Phase 1	WUG	$597	$328	$28	$16	$14	$13
WUG Infrastructure Expansion - Conroe - Phase 2	WUG	$0	$0	$278	$158	$23	$21
WUG Infrastructure Expansion - Conroe - Phase 3	WUG	$0	$0	$0	$0	$89	$81
WUG Infrastructure Expansion - Conroe Resort Utilities	WUG	$0	$0	$8,410	$6,974	$319	$305
WUG Infrastructure Expansion - County-Other, Brazoria (B) - Phase 1	WUG	$2,455	$2,455	$141	$141	$141	$141

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - County-Other, Brazoria (B) - Phase 2	WUG	$0	$0	$3,367	$3,367	$386	$386
WUG Infrastructure Expansion - County-Other, Brazoria (BC)	WUG	$26,785	$36,829	$435	$245	$162	$155
WUG Infrastructure Expansion - County-Other, Brazoria (SJB)	WUG	$303	$262	$13	$13	$13	$13
WUG Infrastructure Expansion - County-Other, Fort Bend (SJ)	WUG	$105,538	$32,473	$823	$676	$621	$557
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 1	WUG	$6,893	$1,491	$59	$44	$42	$34
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 2	WUG	$0	$0	$969	$717	$47	$38
WUG Infrastructure Expansion - County-Other, Fort Bend (SJB) - Phase 3	WUG	$0	$0	$0	$0	$643	$524
WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 1	WUG	$1,383	$851	$48	$35	$28	$28
WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 2	WUG	$0	$0	$662	$484	$33	$33
WUG Infrastructure Expansion - County-Other, Galveston (SJB)	WUG	$465	$454	$51	$51	$51	$52
WUG Infrastructure Expansion - County-Other, Harris (COH GRP Participants)	WUG	$0	$1,157	$1,152	$85	$85	$85
WUG Infrastructure Expansion - County-Other, Harris (SJ)	WUG	$3,135	$256	$36	$35	$34	$34
WUG Infrastructure Expansion - County-Other, Harris (SJB)	WUG	$2,120	$1,765	$109	$103	$101	$100
WUG Infrastructure Expansion - County-Other, Harris (TSJ)	WUG	$345	$444	$43	$46	$46	$45
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 1	WUG	$0	$0	$726	$421	$12	$24
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 2	WUG	$0	$0	$0	$686	$219	$74
WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 3	WUG	$0	$0	$0	$0	$0	$100
WUG Infrastructure Expansion - El Dorado UD	WUG	$0	$2,703	$2,504	$142	$141	$141
WUG Infrastructure Expansion - Forest Hills MUD	WUG	$0	$5,295	$5,328	$265	$175	$266
WUG Infrastructure Expansion - Fort Bend County MUD 115	WUG	$0	$140,717	$14,557	$519	$390	$335
WUG Infrastructure Expansion - Fort Bend County MUD 121	WUG	$3,172	$3,082	$164	$164	$164	$164
WUG Infrastructure Expansion - Fort Bend County MUD 128	WUG	$8,410	$8,665	$393	$457	$348	$268
WUG Infrastructure Expansion - Fort Bend County MUD 129	WUG	$0	$40,205	$27,236	$773	$526	$310
WUG Infrastructure Expansion - Fort Bend County MUD 149	WUG	$0	$281,434	$22,819	$860	$757	$505
WUG Infrastructure Expansion - Fort Bend County MUD 152	WUG	$0	$0	$844,301	$40,205	$946	$923
WUG Infrastructure Expansion - Fort Bend County MUD 155	WUG	$0	$10,912	$4,911	$197	$156	$139

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - Fort Bend County MUD 158	WUG	$0	$25,996	$10,998	$372	$292	$260
WUG Infrastructure Expansion - Fort Bend County MUD 48	WUG	$0	$168,860	$93,811	$1,147	$823	$728
WUG Infrastructure Expansion - Fort Bend County MUD 49	WUG	$64,946	$60,307	$2,704	$2,524	$1,456	$1,402
WUG Infrastructure Expansion - Fulshear	WUG	$0	$854	$893	$74	$71	$72
WUG Infrastructure Expansion - Harris County FWSD 27	WUG	$23,829	$10,213	$409	$372	$251	$281
WUG Infrastructure Expansion - Harris County MUD 106	WUG	$0	$1,509	$1,458	$98	$95	$93
WUG Infrastructure Expansion - Harris County MUD 11	WUG	$0	$3,698	$3,714	$185	$187	$189
WUG Infrastructure Expansion - Harris County MUD 119	WUG	$0	$1,503	$1,510	$95	$96	$97
WUG Infrastructure Expansion - Harris County MUD 132	WUG	$0	$563	$545	$51	$50	$49
WUG Infrastructure Expansion - Harris County MUD 151	WUG	$0	$903	$885	$73	$70	$70
WUG Infrastructure Expansion - Harris County MUD 152	WUG	$0	$962	$930	$71	$68	$68
WUG Infrastructure Expansion - Harris County MUD 154	WUG	$0	$1,028	$1,024	$77	$75	$76
WUG Infrastructure Expansion - Harris County MUD 189	WUG	$0	$2,042	$2,020	$118	$115	$110
WUG Infrastructure Expansion - Harris County MUD 221	WUG	$0	$2,243	$2,221	$128	$126	$126
WUG Infrastructure Expansion - Harris County MUD 261	WUG	$5,365	$3,880	$200	$199	$201	$200
WUG Infrastructure Expansion - Harris County MUD 278	WUG	$0	$1,628	$1,628	$102	$102	$102
WUG Infrastructure Expansion - Harris County MUD 290	WUG	$0	$863	$815	$67	$65	$64
WUG Infrastructure Expansion - Harris County MUD 36	WUG	$0	$1,948	$1,433	$88	$88	$84
WUG Infrastructure Expansion - Harris County MUD 46	WUG	$0	$1,433	$1,429	$98	$98	$98
WUG Infrastructure Expansion - Harris County MUD 6	WUG	$0	$23,453	$24,123	$1,183	$1,352	$1,721
WUG Infrastructure Expansion - Harris County UD 14	WUG	$0	$5,199	$5,168	$254	$254	$251
WUG Infrastructure Expansion - Harris County UD 15	WUG	$0	$2,261	$2,308	$135	$132	$130
WUG Infrastructure Expansion - Harris County WCID 1	WUG	$6,438	$5,994	$237	$215	$162	$156
WUG Infrastructure Expansion - Harris County WCID 133	WUG	$0	$1,594	$1,597	$101	$102	$103
WUG Infrastructure Expansion - Harris County WCID 74	WUG	$0	$1,780	$1,733	$109	$111	$112
WUG Infrastructure Expansion - HMW SUD	WUG	$0	$0	$1,080	$914	$71	$70
WUG Infrastructure Expansion - Kings Manor MUD	WUG	$38,377	$19,189	$688	$611	$582	$557

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - Lake Bonanza WSC	WUG	$0	$0	$3,536	$2,879	$156	$152
WUG Infrastructure Expansion - Lake Jackson	WUG	$1,637	$1,637	$103	$103	$103	$103
WUG Infrastructure Expansion - Manufacturing, Fort Bend (B)	WUG	$6,332	$6,046	$1,715	$1,644	$1,575	$1,511
WUG Infrastructure Expansion - Manufacturing, Fort Bend (SJ)	WUG	$2,643	$2,590	$848	$832	$815	$800
WUG Infrastructure Expansion - Memorial Villages Water Authority	WUG	$495	$496	$49	$47	$48	$49
WUG Infrastructure Expansion - Mining, Brazoria (SJB)	WUG	$8,035	$6,737	$1,954	$1,706	$1,500	$1,329
WUG Infrastructure Expansion - Mining, Harris (SJ)	WUG	$449	$444	$50	$50	$49	$49
WUG Infrastructure Expansion - Mining, Harris (SJB)	WUG	$105,538	$105,538	$4,732	$4,732	$4,732	$4,732
WUG Infrastructure Expansion - Mont Belvieu	WUG	$0	$0	$0	$0	$0	$602
WUG Infrastructure Expansion - Montgomery County MUD 112	WUG	$0	$0	$1,315	$1,178	$89	$70
WUG Infrastructure Expansion - Montgomery County MUD 119	WUG	$0	$0	$856	$741	$61	$60
WUG Infrastructure Expansion - Montgomery County MUD 19	WUG	$0	$0	$1,638	$1,460	$100	$99
WUG Infrastructure Expansion - Montgomery County MUD 88	WUG	$0	$0	$1,808	$1,620	$98	$96
WUG Infrastructure Expansion - Montgomery County MUD 89	WUG	$0	$0	$1,284	$1,117	$79	$77
WUG Infrastructure Expansion - Montgomery County MUD 95	WUG	$0	$516	$524	$49	$50	$50
WUG Infrastructure Expansion - Montgomery County MUD 98	WUG	$0	$0	$844,301	$120,614	$2,704	$2,103
WUG Infrastructure Expansion - Mount Houston Road MUD	WUG	$0	$1,567	$1,570	$99	$100	$102
WUG Infrastructure Expansion - MSEC Enterprises - Phase 1	WUG	$1,096	$394	$41	$32	$31	$29
WUG Infrastructure Expansion - MSEC Enterprises - Phase 2	WUG	$0	$0	$0	$207	$201	$18
WUG Infrastructure Expansion - NFBWA Districts	WUG	$415	$217	$36	$37	$39	$41
WUG Infrastructure Expansion - NHCRWA Districts 2025	WUG	$198	$98	$17	$17	$18	$19
WUG Infrastructure Expansion - NHCRWA Districts 2035	WUG	$0	$110	$105	$19	$20	$22
WUG Infrastructure Expansion - North Belt UD	WUG	$0	$1,567	$1,358	$88	$88	$87
WUG Infrastructure Expansion - North Channel Water Authority	WUG	$562	$893	$124	$240	$686	$0
WUG Infrastructure Expansion - North Forest MUD	WUG	$0	$5,681	$5,644	$279	$281	$275
WUG Infrastructure Expansion - North Green MUD	WUG	$0	$2,351	$2,272	$129	$127	$126

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion - Northeast Harris County MUD 1	WUG	$8,704	$9,705	$467	$505	$533	$557
WUG Infrastructure Expansion - Oak Ridge North	WUG	$11,189	$3,250	$183	$134	$143	$152
WUG Infrastructure Expansion - Pine Village PUD	WUG	$0	$5,076	$5,076	$249	$249	$249
WUG Infrastructure Expansion - Rayford Road MUD	WUG	$3,688	$1,262	$92	$75	$72	$69
WUG Infrastructure Expansion - Richwood	WUG	$3,880	$3,880	$205	$205	$205	$205
WUG Infrastructure Expansion - Rolling Fork PUD	WUG	$33,772	$7,746	$324	$315	$326	$332
WUG Infrastructure Expansion - Sedona Lakes MUD 1	WUG	$16,886	$16,886	$757	$757	$757	$757
WUG Infrastructure Expansion - Southern Montgomery County MUD	WUG	$0	$3,946	$4,055	$159	$146	$145
WUG Infrastructure Expansion - Spring Creek UD	WUG	$0	$0	$1,050	$920	$70	$70
WUG Infrastructure Expansion - Steam-Electric Power, Harris (SJ)	WUG	$132	$132	$24	$24	$24	$24
WUG Infrastructure Expansion - Steam-Electric Power, Harris (SJB)	WUG	$6,128	$6,128	$301	$301	$301	$301
WUG Infrastructure Expansion - Sunbelt FWSD	WUG	$0	$686	$686	$66	$66	$66
WUG Infrastructure Expansion - T & W Water Service	WUG	$0	$0	$685	$568	$52	$52
WUG Infrastructure Expansion - The Woodlands - Phase 1	WUG	$1,110	$230	$41	$33	$31	$26
WUG Infrastructure Expansion - The Woodlands - Phase 2	WUG	$0	$0	$0	$125	$115	$13
WUG Infrastructure Expansion - Tomball	WUG	$535	$413	$48	$47	$43	$42
WUG Infrastructure Expansion - Trail of the Lakes MUD	WUG	$0	$864	$839	$69	$67	$67
WUG Infrastructure Expansion - Westfield Garden Park	WUG	$16,886	$12,792	$574	$574	$582	$582
WUG Infrastructure Expansion - Westwood North WSC	WUG	$0	$0	$1,720	$1,524	$105	$89
WUG Infrastructure Expansion - WHCRWA Districts	WUG	$711	$215	$36	$37	$40	$44
WUG Infrastructure Expansion - Windfern Forest Utility District	WUG	$1,990	$1,497	$101	$101	$102	$103
WUG Infrastructure Expansion - Woodcreek MUD	WUG	$0	$2,308	$2,314	$134	$134	$135
WUG Infrastructure Expansion - Woodland Oaks Utility	WUG	$0	$0	$2,687	$2,290	$127	$124
WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 1	WUG	$18,148	$4,971	$1,001	$689	$508	$411
WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 2	WUG	$0	$0	$0	$1,727	$1,273	$411

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Brackish Groundwater) - Far Hills UD	WUG	$0	$8,517	$3,991	$1,223	$1,229	$1,229
WUG Infrastructure Expansion (Brackish Groundwater) - Montgomery	WUG	$0	$3,342	$3,342	$1,175	$1,175	$1,175
WUG Infrastructure Expansion (Brackish Groundwater) - Panorama Village	WUG	$0	$0	$14,956	$14,956	$3,789	$3,498
WUG Infrastructure Expansion (Brackish Groundwater) - Stanley Lake MUD	WUG	$0	$28,703	$11,923	$2,256	$1,820	$1,514
WUG Infrastructure Expansion (Groundwater) - Baker Road MUD	WUG	$0	$15,606	$15,953	$4,134	$3,083	$2,798
WUG Infrastructure Expansion (Groundwater) - Blaketree MUD 1 of Montgomery County	WUG	$358,936	$65,261	$5,196	$4,042	$3,637	$3,368
WUG Infrastructure Expansion (Groundwater) - Blue Bell Manor Utility	WUG	$0	$11,044	$9,834	$2,425	$2,675	$2,842
WUG Infrastructure Expansion (Groundwater) - Blue Ridge West MUD	WUG	$0	$0	$358,936	$21,754	$4,042	$3,191
WUG Infrastructure Expansion (Groundwater) - C C Water Works - Phase 1	WUG	$2,876	$2,876	$1,058	$463	$463	$463
WUG Infrastructure Expansion (Groundwater) - C C Water Works - Phase 2	WUG	$0	$0	$0	$1,429	$1,429	$570
WUG Infrastructure Expansion (Groundwater) - Chateau Woods MUD	WUG	$0	$12,506	$7,211	$1,645	$1,451	$1,320
WUG Infrastructure Expansion (Groundwater) - Corinthian Point MUD 2	WUG	$0	$239,290	$42,228	$6,995	$5,511	$4,547
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (T)	WUG	$0	$0	$0	$0	$1,029	$1,029
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 1	WUG	$0	$1,029	$1,029	$468	$468	$373
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 2	WUG	$0	$0	$0	$515	$515	$411
WUG Infrastructure Expansion (Groundwater) - County-Other, Chambers (TSJ) - Phase 3	WUG	$0	$0	$0	$0	$0	$291
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 1	WUG	$0	$800	$353	$249	$191	$161
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 2	WUG	$0	$0	$701	$495	$379	$320
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (BC) - Phase 3	WUG	$0	$0	$0	$0	$250	$211
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (SJB) - Phase 1	WUG	$0	$3,122	$1,041	$688	$456	$391
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (SJB) - Phase 2	WUG	$0	$0	$0	$862	$571	$490
WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (Sugar Land IWRP)	WUG	$2,281	$1,335	$1,335	$1,335	$1,335	$1,335
WUG Infrastructure Expansion (Groundwater) - County-Other, Harris (COH GRP Participants)	WUG	$1,154	$1,050	$994	$949	$946	$926
WUG Infrastructure Expansion (Groundwater) - County-Other, Madison (B)	WUG	$36,832	$36,832	$36,832	$36,832	$36,832	$36,832
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 1	WUG	$0	$830	$406	$288	$460	$658

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 2	WUG	$0	$0	$406	$288	$460	$658
WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJ) - Phase 3	WUG	$0	$0	$0	$220	$351	$502
WUG Infrastructure Expansion (Groundwater) - County-Other, Walker (T)	WUG	$3,036	$3,036	$3,036	$3,036	$3,036	$3,036
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 1	WUG	$1,563	$1,563	$507	$507	$280	$280
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 2	WUG	$0	$0	$695	$695	$384	$384
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (B) - Phase 3	WUG	$0	$0	$0	$0	$423	$423
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 1	WUG	$1,563	$1,563	$447	$447	$280	$280
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 2	WUG	$0	$0	$674	$674	$423	$423
WUG Infrastructure Expansion (Groundwater) - County-Other, Waller (SJ) - Phase 3	WUG	$0	$0	$0	$0	$384	$384
WUG Infrastructure Expansion (Groundwater) - Cut and Shoot - Phase 1	WUG	$3,344	$2,562	$827	$642	$547	$537
WUG Infrastructure Expansion (Groundwater) - Cut and Shoot - Phase 2	WUG	$0	$0	$0	$1,121	$955	$374
WUG Infrastructure Expansion (Groundwater) - Dodge Oakhurst WSC - Phase 1	WUG	$0	$0	$7,179	$7,179	$560	$560
WUG Infrastructure Expansion (Groundwater) - Dodge Oakhurst WSC - Phase 2	WUG	$0	$0	$0	$0	$2,622	$2,622
WUG Infrastructure Expansion (Groundwater) - Domestic Water	WUG	$0	$44,867	$24,754	$4,436	$3,637	$3,368
WUG Infrastructure Expansion (Groundwater) - Douglas Utility	WUG	$0	$14,357	$13,294	$3,191	$3,498	$3,498
WUG Infrastructure Expansion (Groundwater) - East Montgomery County MUD 6	WUG	$800,399	$18,614	$2,748	$1,811	$1,424	$1,358
WUG Infrastructure Expansion (Groundwater) - East Plantation UD	WUG	$800,399	$22,869	$2,685	$1,657	$1,600	$1,469
WUG Infrastructure Expansion (Groundwater) - First Colony MUD 9	WUG	$0	$100,050	$15,694	$2,595	$1,770	$1,390
WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 1	WUG	$0	$4,555	$3,459	$1,246	$1,183	$1,136
WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 2	WUG	$3,486	$3,403	$1,271	$1,207	$1,144	$1,081
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 116	WUG	$0	$8,113	$8,113	$1,915	$1,779	$1,594
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 131	WUG	$0	$0	$0	$0	$51,277	$37,783
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 162	WUG	$0	$0	$59,823	$25,638	$2,393	$1,875
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 23	WUG	$0	$26,588	$26,588	$5,052	$4,042	$3,498
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 24	WUG	$0	$42,228	$42,228	$10,698	$10,104	$9,572

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 26	WUG	$0	$39,882	$26,588	$3,712	$3,031	$2,562
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 42	WUG	$0	$37,783	$23,157	$4,230	$3,307	$2,636
WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 5	WUG	$0	$26,588	$13,052	$2,675	$2,562	$2,491
WUG Infrastructure Expansion (Groundwater) - Fort Bend County WCID 3	WUG	$0	$0	$0	$0	$39,882	$24,754
WUG Infrastructure Expansion (Groundwater) - Grand Oaks MUD	WUG	$0	$26,588	$14,357	$3,083	$2,798	$2,636
WUG Infrastructure Expansion (Groundwater) - Green Trails MUD	WUG	$0	$6,911	$6,976	$1,879	$1,703	$1,620
WUG Infrastructure Expansion (Groundwater) - Harris County FWSD 58	WUG	$0	$13,805	$14,357	$3,712	$3,870	$4,042
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 153	WUG	$0	$4,109	$3,770	$1,341	$1,179	$1,157
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 216	WUG	$0	$7,637	$7,803	$2,044	$1,977	$1,956
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 342	WUG	$0	$7,585	$3,901	$1,128	$1,132	$1,095
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 345	WUG	$0	$5,783	$6,352	$2,005	$1,775	$1,987
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 361	WUG	$0	$8,807	$6,982	$1,835	$1,679	$1,705
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 494	WUG	$0	$12,167	$9,446	$2,245	$2,067	$2,115
WUG Infrastructure Expansion (Groundwater) - Harris County MUD 58	WUG	$0	$17,947	$19,402	$5,052	$5,052	$5,196
WUG Infrastructure Expansion (Groundwater) - Harris County WCID 70	WUG	$0	$23,929	$24,754	$6,496	$6,736	$7,275
WUG Infrastructure Expansion (Groundwater) - High Prairie WSC	WUG	$7,179	$7,179	$1,819	$1,819	$1,819	$1,819
WUG Infrastructure Expansion (Groundwater) - HMW SUD	WUG	$0	$16,315	$18,407	$5,349	$5,052	$5,349
WUG Infrastructure Expansion (Groundwater) - Huntsville	WUG	$0	$0	$0	$0	$1,207	$1,161
WUG Infrastructure Expansion (Groundwater) - Irrigation, Leon (T)	WUG	$415	$415	$103	$103	$103	$103
WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty (N)	WUG	$205	$205	$83	$83	$83	$83
WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty (SJ)	WUG	$266	$266	$108	$108	$108	$108
WUG Infrastructure Expansion (Groundwater) - Irrigation, Montgomery (SJ) - Phase 1	WUG	$1,765	$313	$81	$66	$59	$55
WUG Infrastructure Expansion (Groundwater) - Irrigation, Montgomery (SJ) - Phase 2	WUG	$0	$0	$0	$81	$73	$27
WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 1	WUG	$5,041	$1,933	$693	$585	$521	$481
WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 2	WUG	$0	$0	$0	$738	$658	$249

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Katy	WUG	$2,379	$1,691	$724	$728	$663	$619
WUG Infrastructure Expansion (Groundwater) - Keenan WSC	WUG	$0	$34,184	$13,805	$2,526	$2,115	$1,875
WUG Infrastructure Expansion (Groundwater) - Kings Manor MUD	WUG	$13,968	$6,762	$1,663	$1,455	$1,326	$1,245
WUG Infrastructure Expansion (Groundwater) - Lake Conroe Hills MUD	WUG	$0	$28,715	$15,274	$3,031	$2,675	$2,393
WUG Infrastructure Expansion (Groundwater) - Lazy River Improvement District	WUG	$746,428	$18,661	$2,806	$2,097	$1,795	$1,569
WUG Infrastructure Expansion (Groundwater) - Livestock, Leon (B)	WUG	$415	$415	$103	$103	$103	$103
WUG Infrastructure Expansion (Groundwater) - Livestock, Leon (T)	WUG	$415	$415	$103	$103	$103	$103
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (NT)	WUG	$310	$310	$93	$93	$93	$93
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (SJ)	WUG	$415	$415	$103	$103	$321	$321
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (T)	WUG	$226	$226	$85	$85	$85	$85
WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty (TSJ)	WUG	$415	$415	$103	$103	$103	$103
WUG Infrastructure Expansion (Groundwater) - Livestock, Montgomery (SJ)	WUG	$3,644	$645	$123	$101	$91	$83
WUG Infrastructure Expansion (Groundwater) - Longhorn Town UD	WUG	$0	$10,404	$10,557	$2,798	$2,756	$2,458
WUG Infrastructure Expansion (Groundwater) - Luce Bayou PUD	WUG	$0	$11,044	$11,395	$2,933	$3,083	$3,136
WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 1	WUG	$206,536	$4,281	$638	$518	$461	$416
WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 2	WUG	$0	$0	$2,780	$2,257	$776	$701
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Leon (T)	WUG	$0	$3,036	$3,036	$3,036	$3,036	$3,036
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Montgomery - Phase 1	WUG	$1,912	$1,496	$617	$558	$519	$486
WUG Infrastructure Expansion (Groundwater) - Manufacturing, Montgomery - Phase 2	WUG	$0	$0	$876	$792	$303	$284
WUG Infrastructure Expansion (Groundwater) - Mason Creek UD	WUG	$0	$3,956	$4,008	$1,399	$1,292	$1,213
WUG Infrastructure Expansion (Groundwater) - Meadowcreek MUD	WUG	$0	$0	$179,468	$102,553	$18,187	$15,156
WUG Infrastructure Expansion (Groundwater) - Mining, Austin (B)	WUG	$4,051	$4,051	$4,051	$4,051	$4,051	$4,051
WUG Infrastructure Expansion (Groundwater) - Mining, Liberty (SJ)	WUG	$0	$40,515	$40,515	$40,515	$40,515	$40,515
WUG Infrastructure Expansion (Groundwater) - Mining, Liberty (T)	WUG	$2,732	$2,732	$2,732	$2,732	$2,732	$2,732
WUG Infrastructure Expansion (Groundwater) - Mining, Montgomery	WUG	$717,871	$102,553	$15,156	$10,104	$8,267	$6,496

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Mining, Polk (T)	WUG	$4,051	$4,051	$4,051	$4,051	$4,051	$4,051
WUG Infrastructure Expansion (Groundwater) - Mining, San Jacinto (T)	WUG	$4,051	$4,051	$4,051	$4,051	$4,051	$4,051
WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 1	WUG	$1,176	$1,176	$580	$430	$311	$382
WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 2	WUG	$0	$0	$0	$649	$470	$277
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 105	WUG	$717,871	$21,754	$3,031	$2,302	$1,977	$1,749
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 115	WUG	$10,209	$5,631	$1,656	$1,371	$1,257	$1,117
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 126	WUG	$6,925	$6,166	$1,689	$1,313	$1,106	$1,128
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 127	WUG	$16,848	$9,810	$2,210	$1,883	$1,746	$1,558
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 137	WUG	$0	$13,566	$7,211	$1,668	$1,488	$1,407
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 139	WUG	$464,886	$10,106	$1,981	$1,549	$1,335	$1,208
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 15	WUG	$5,819	$4,109	$1,264	$1,168	$1,099	$1,055
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 18	WUG	$0	$20,133	$7,457	$1,806	$1,381	$1,122
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 56	WUG	$717,871	$47,858	$6,272	$5,052	$4,436	$3,954
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 83	WUG	$0	$15,196	$8,333	$1,835	$1,604	$1,473
WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 94	WUG	$546,183	$8,601	$1,860	$1,446	$1,249	$1,108
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 2	WUG	$154,962	$7,498	$1,782	$1,470	$1,297	$1,177
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 3	WUG	$0	$0	$0	$26,588	$12,594	$2,218
WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 4	WUG	$0	$0	$28,246	$7,660	$1,706	$1,307
WUG Infrastructure Expansion (Groundwater) - New Caney MUD - Phase 1	WUG	$0	$4,835	$2,333	$701	$574	$527
WUG Infrastructure Expansion (Groundwater) - New Caney MUD - Phase 2	WUG	$0	$0	$0	$1,633	$1,337	$490
WUG Infrastructure Expansion (Groundwater) - Nitsch and Son Utility	WUG	$0	$21,754	$22,433	$6,062	$6,272	$6,736
WUG Infrastructure Expansion (Groundwater) - Northwest Harris County MUD 16	WUG	$0	$8,973	$9,087	$2,245	$1,935	$1,801
WUG Infrastructure Expansion (Groundwater) - Palmer Plantation MUD 1	WUG	$0	$717,871	$717,871	$181,874	$45,469	$12,125
WUG Infrastructure Expansion (Groundwater) - Patton Village	WUG	$0	$102,553	$37,783	$5,867	$5,196	$5,052
WUG Infrastructure Expansion (Groundwater) - Pinehurst Decker Prairie WSC	WUG	$0	$37,783	$17,947	$3,136	$2,756	$2,526

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Pinewood Community	WUG	$0	$51,277	$51,277	$12,125	$10,104	$11,367
WUG Infrastructure Expansion (Groundwater) - Plantation MUD	WUG	$0	$0	$55,221	$44,867	$9,572	$6,995
WUG Infrastructure Expansion (Groundwater) - Point Aquarius MUD	WUG	$0	$0	$24,754	$11,965	$2,273	$1,837
WUG Infrastructure Expansion (Groundwater) - Porter SUD - Phase 1	WUG	$5,548	$1,479	$445	$354	$308	$275
WUG Infrastructure Expansion (Groundwater) - Porter SUD - Phase 2	WUG	$0	$0	$1,244	$991	$424	$379
WUG Infrastructure Expansion (Groundwater) - Quadvest (Rosenberg GRP)	WUG	$0	$8,487	$4,107	$1,244	$1,001	$894
WUG Infrastructure Expansion (Groundwater) - Quadvest, Fort Bend (B)	WUG	$0	$6,675	$2,904	$1,982	$1,613	$1,483
WUG Infrastructure Expansion (Groundwater) - Quadvest, Harris (SJ)	WUG	$0	$101,287	$45,017	$45,017	$50,644	$50,644
WUG Infrastructure Expansion (Groundwater) - Quadvest, Liberty (SJ) - Phase 1	WUG	$0	$1,736	$1,736	$1,736	$1,078	$1,078
WUG Infrastructure Expansion (Groundwater) - Quadvest, Liberty (SJ) - Phase 2	WUG	$0	$0	$0	$0	$819	$819
WUG Infrastructure Expansion (Groundwater) - Quadvest, Montgomery (SJ) - Phase 1	WUG	$873,332	$1,936	$953	$716	$622	$548
WUG Infrastructure Expansion (Groundwater) - Quadvest, Montgomery (SJ) - Phase 2	WUG	$0	$0	$0	$527	$458	$403
WUG Infrastructure Expansion (Groundwater) - Ranch Crest Water	WUG	$717,871	$21,114	$3,031	$2,425	$2,140	$1,914
WUG Infrastructure Expansion (Groundwater) - River Plantation MUD	WUG	$0	$21,237	$7,079	$1,313	$1,196	$1,095
WUG Infrastructure Expansion (Groundwater) - Roman Forest Consolidated MUD	WUG	$0	$22,233	$10,132	$1,869	$1,547	$1,469
WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (NFBWA GRP Participant)	WUG	$0	$29,644	$16,008	$1,811	$1,633	$1,358
WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (Sugar Land IWRP)	WUG	$0	$23,326	$16,587	$2,165	$1,972	$1,660
WUG Infrastructure Expansion (Groundwater) - Sequoia Improvement District	WUG	$0	$44,867	$55,221	$18,187	$25,982	$45,469
WUG Infrastructure Expansion (Groundwater) - Shenandoah - Phase 1	WUG	$127,036	$2,993	$690	$520	$449	$403
WUG Infrastructure Expansion (Groundwater) - Shenandoah - Phase 2	WUG	$0	$0	$2,119	$1,595	$610	$547
WUG Infrastructure Expansion (Groundwater) - South Cleveland WSC	WUG	$0	$0	$0	$2,074	$2,074	$910
WUG Infrastructure Expansion (Groundwater) - Southern Water	WUG	$0	$10,877	$8,755	$2,044	$2,332	$2,526
WUG Infrastructure Expansion (Groundwater) - Splendora - Phase 1	WUG	$2,389	$2,389	$327	$327	$327	$327
WUG Infrastructure Expansion (Groundwater) - Splendora - Phase 2	WUG	$0	$0	$1,062	$1,062	$496	$496
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Austin (B)	WUG	$1,229	$1,229	$1,229	$1,229	$1,229	$1,229

Project Name	Proj. Level	Unit Cost ($/ac ft)					
		2030	2040	2050	2060	2070	2080
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Montgomery - Phase 1	WUG	$3,791	$2,384	$777	$690	$647	$612
WUG Infrastructure Expansion (Groundwater) - Steam-Electric Power, Montgomery - Phase 2	WUG	$0	$0	$1,515	$1,344	$443	$420
WUG Infrastructure Expansion (Groundwater) - Suburban Utility	WUG	$0	$0	$7,109	$6,491	$1,897	$2,238
WUG Infrastructure Expansion (Groundwater) - The Commons Water Supply	WUG	$0	$10,404	$12,167	$3,566	$4,134	$4,916
WUG Infrastructure Expansion (Groundwater) - Thunderbird UD	WUG	$0	$37,783	$15,606	$3,432	$2,842	$2,115
WUG Infrastructure Expansion (Groundwater) - Walker County SUD	WUG	$7,179	$7,179	$1,819	$1,819	$1,819	$1,819
WUG Infrastructure Expansion (Groundwater) - Waller	WUG	$7,847	$4,681	$1,382	$1,390	$1,390	$1,399
WUG Infrastructure Expansion (Groundwater) - West Harris County MUD 6	WUG	$0	$10,714	$11,044	$2,887	$2,842	$2,798
WUG Infrastructure Expansion (Groundwater) - White Oak WSC	WUG	$0	$26,588	$14,076	$2,458	$2,091	$1,783
WUG Infrastructure Expansion (Groundwater) - Wood Branch Village	WUG	$0	$23,484	$10,473	$1,761	$1,547	$1,415
WUG Infrastructure Expansion (Groundwater) - Wood Trace MUD 1	WUG	$0	$35,894	$14,956	$2,636	$2,332	$2,044

Table 5-A12 – WWP and WUG WMS Contractual Volumes

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Baytown Area Water Authority							
Baytown	Livingston-Wallisville Lake/Reservoir System	6,549	9,481	9,413	9,383	9,259	9,266
Harris County FWSD 27	Livingston-Wallisville Lake/Reservoir System	36	84	103	113	168	150
Harris County WCID 1	Livingston-Wallisville Lake/Reservoir System	135	145	194	214	283	294
Mont Belvieu	Livingston-Wallisville Lake/Reservoir System	0	0	0	0	0	1,824
Brazos River Authority							
Gulf Coast Water Authority	Allens Creek Lake/Reservoir	0	3,148	5,120	7,373	9,297	11,586
Irrigation, Waller	Allens Creek Lake/Reservoir	0	0	3	6	9	12
Manufacturing, Brazoria	Allens Creek Lake/Reservoir	0	25,784	27,603	29,486	31,454	33,457
Manufacturing, Galveston	Allens Creek Lake/Reservoir	0	2,587	2,852	3,117	3,382	3,647
Manvel	Allens Creek Lake/Reservoir	0	1,693	1,867	2,040	2,214	2,387
Pecan Grove MUD 1	Allens Creek Lake/Reservoir	0	5	29	52	73	93
Richmond	Allens Creek Lake/Reservoir	0	18	131	952	1,816	2,201
Rosenberg	Allens Creek Lake/Reservoir	0	32	186	332	470	601
Steam-Electric Power, Fort Bend	Allens Creek Lake/Reservoir	0	590	3,434	6,122	8,668	11,082
Sugar Land	Allens Creek Lake/Reservoir	0	54	345	672	1,033	1,424
Brazosport Water Authority							
Angleton	Harris Reservoir	3,955	3,318	2,540	2,271	1,967	1,867
County-Other, Brazoria	Gulf Coast Aquifer System, Brazoria	0	0	0	0	0	0
	Harris Reservoir	3,597	4,207	4,978	5,242	5,544	5,646
Lake Jackson	Harris Reservoir	560	560	560	560	560	560
Manufacturing, Brazoria	Harris Reservoir	3,360	3,360	3,360	3,360	3,360	3,360
Oyster Creek	Harris Reservoir	13	13	13	13	13	13
Richwood	Harris Reservoir	224	224	224	224	224	224
TDCJ Darrington Unit	Harris Reservoir	41	68	75	80	82	80
TDCJ Ramsey Area	Harris Reservoir	250	250	250	250	250	250

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Conroe							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	1,111	2,372	5,813	6,019	6,224
Conroe Resort Utilities							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	75	86	85	84
County-Other, Fort Bend							
Richmond	Gulf Coast Aquifer System, Fort Bend	0	64	68	81	101	119
County-Other, Harris							
Houston	Gulf Coast Aquifer System, Harris	0	837	837	836	836	836
Dow Inc							
Manufacturing, Brazoria	Brazos Run-of-River, Brazoria	10,000	10,000	10,000	10,000	10,000	10,000
	Harris Reservoir	68,000	68,000	68,000	68,000	68,000	68,000
El Dorado UD							
Houston	Gulf Coast Aquifer System, Harris	0	251	251	251	251	251
Forest Hills MUD							
Houston	Gulf Coast Aquifer System, Harris	0	158	158	158	125	158
Fort Bend County MUD 115							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	2	13	20	27	33
Fort Bend County MUD 121							
Richmond	Gulf Coast Aquifer System, Fort Bend	0	10	8	8	8	9
Fort Bend County MUD 129							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	5	7	14	21	36
Fort Bend County MUD 140							
Richmond	Gulf Coast Aquifer System, Fort Bend	0	8	7	6	8	10
Fort Bend County MUD 149							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	2	9	13	16	23
Fort Bend County MUD 46							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	10	17	28	31	33

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Fort Bend County MUD 47							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	0	0	1	1	5
Fort Bend County MUD 48							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	2	2	9	13	15
Fort Bend County MUD 49							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	3	3	5	8	9
Fort Bend County WCID 2							
Meadows Place	Gulf Coast Aquifer System, Fort Bend	0	0	12	42	61	80
Gulf Coast Water Authority							
Bacliff MUD	Gulf of Mexico	0	246	256	269	281	295
Bayview MUD	Gulf of Mexico	0	80	84	87	92	96
County-Other, Fort Bend	Brazos Run-of-River, Fort Bend	426	641	1,013	1,363	1,436	1,755
County-Other, Galveston	Brazos Run-of-River, Fort Bend	2,608	2,671	2,709	2,720	2,703	2,685
Fort Bend County WCID 2	Brazos Run-of-River, Fort Bend	1,414	1,465	1,570	1,682	1,803	1,930
Galveston	Brazos Run-of-River, Fort Bend	6,944	6,944	6,944	6,944	6,944	6,944
	Gulf Coast Aquifer System, Galveston	0	1,839	1,865	1,881	1,893	1,905
	Gulf of Mexico	0	4,332	4,527	4,737	4,961	5,198
Galveston County FWSD 6	Gulf of Mexico	0	167	175	183	191	200
Galveston County MUD 12	Gulf of Mexico	0	93	97	101	106	111
Galveston County WCID 1	Gulf of Mexico	0	859	898	940	985	1,032
Galveston County WCID 12	Gulf of Mexico	0	637	666	697	730	764
Galveston County WCID 8	Gulf of Mexico	0	343	357	375	392	411
Hitchcock	Gulf of Mexico	0	413	431	452	473	496
La Marque	Gulf of Mexico	0	831	868	909	952	997
League City	Direct Reuse, League City	5,600	6,720	7,840	8,960	10,080	11,200
	Gulf of Mexico	0	1,144	1,196	1,251	1,310	1,373
	Livingston-Wallisville Lake/Reservoir System	18,480	18,480	18,480	18,480	18,480	18,480

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Manufacturing, Brazoria	Brazos Run-of-River, Fort Bend	5,058	5,137	5,306	5,485	5,676	5,878
	Gulf Coast Aquifer System, Galveston	0	0	0	0	0	0
Manufacturing, Fort Bend	Brazos Run-of-River, Fort Bend	1,704	1,751	1,807	1,862	1,923	1,982
Manufacturing, Galveston	Allens Creek Lake/Reservoir	0	3,148	5,120	7,373	9,297	11,586
	Brazos Run-of-River, Fort Bend	11,477	10,688	9,338	7,758	6,550	5,019
	Direct Reuse, Galveston County Industries	0	11,200	11,200	11,200	11,200	11,200
Mining, Brazoria	Brazos Run-of-River, Fort Bend	332	396	459	526	598	675
Missouri City	Brazos Run-of-River, Fort Bend	5,045	5,159	5,391	5,856	6,200	6,581
Pearland	Brazos Run-of-River, Fort Bend	2,018	2,064	2,156	2,257	2,364	2,477
Pecan Grove MUD 1	Brazos Run-of-River, Fort Bend	317	329	352	377	404	432
San Leon MUD	Gulf of Mexico	0	368	385	402	422	442
Sugar Land	Brazos Run-of-River, Fort Bend	2,692	2,790	2,990	3,205	3,434	3,677
Texas City	Brazos Run-of-River, Fort Bend	9,744	9,744	9,744	9,744	9,744	9,744
	Gulf of Mexico	0	2,374	2,481	2,597	2,720	2,849
Harris County MUD 106							
West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	621	643	654	679	688
Harris County MUD 11							
Houston	Gulf Coast Aquifer System, Harris	0	223	223	223	223	223
Harris County MUD 119							
Houston	Gulf Coast Aquifer System, Harris	0	470	470	470	470	470
Harris County MUD 132							
West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	1,951	2,016	2,041	2,101	2,132
Harris County MUD 151							
West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	1,121	1,144	1,157	1,206	1,216
Harris County MUD 152							
West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	1,024	1,059	1,072	1,109	1,122

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Harris County MUD 154							
Houston	Gulf Coast Aquifer System, Harris	0	776	776	776	776	776
Harris County MUD 189							
Houston	Gulf Coast Aquifer System, Harris	0	337	337	337	337	337
Harris County MUD 221							
Houston	Gulf Coast Aquifer System, Harris	0	319	319	319	319	319
Harris County MUD 278							
Houston	Gulf Coast Aquifer System, Harris	0	563	563	563	563	563
Harris County MUD 290							
West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	1,173	1,242	1,271	1,312	1,327
Harris County MUD 36							
Houston	Gulf Coast Aquifer System, Harris	0	364	364	364	364	364
Harris County MUD 46							
West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	654	656	658	658	658
Harris County UD 14							
Harris County UD 15	Livingston-Wallisville Lake/Reservoir System	0	391	383	378	386	390
Houston	Gulf Coast Aquifer System, Harris	0	126	126	126	126	126
Harris County UD 15							
Houston	Gulf Coast Aquifer System, Harris	0	317	317	317	317	317
Harris County WCID 133							
Houston	Gulf Coast Aquifer System, Harris	0	445	445	445	445	445
Harris County WCID 74							
Houston	Gulf Coast Aquifer System, Harris	0	403	403	403	403	403
HMW SUD							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	644	723	705	679

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Houston							
Baker Road MUD	Gulf Coast Aquifer System, Harris	0	46	45	44	59	65
Baytown Area Water Authority	Livingston-Wallisville Lake/Reservoir System	0	0	0	0	0	1,824
Blue Bell Manor Utility	Gulf Coast Aquifer System, Harris	0	65	73	75	68	64
Central Harris County Regional Water Authority	Livingston-Wallisville Lake/Reservoir System	5,466	5,466	5,466	5,466	5,466	5,466
County-Other, Harris	Gulf Coast Aquifer System, Harris	1,514	1,664	1,757	1,841	1,847	1,887
	Indirect Reuse, Houston	0	0	0	0	1,633	3,448
	Livingston-Wallisville Lake/Reservoir System	3,045	8,803	10,445	9,779	8,294	6,440
Douglas Utility	Gulf Coast Aquifer System, Harris	0	50	54	57	52	52
El Dorado UD	Livingston-Wallisville Lake/Reservoir System	0	327	353	358	362	362
Forest Hills MUD	Livingston-Wallisville Lake/Reservoir System	0	162	161	159	241	158
Green Trails MUD	Gulf Coast Aquifer System, Harris	0	108	107	106	117	123
Gulf Coast Water Authority	Livingston-Wallisville Lake/Reservoir System	18,480	18,480	18,480	18,480	18,480	18,480
Harris County FWSD 58	Gulf Coast Aquifer System, Harris	0	52	50	49	47	45
Harris County MUD 11	Livingston-Wallisville Lake/Reservoir System	0	232	231	228	225	223
Harris County MUD 119	Livingston-Wallisville Lake/Reservoir System	0	610	607	605	597	590
Harris County MUD 153	Gulf Coast Aquifer System, Harris	0	245	267	276	314	320
Harris County MUD 154	Livingston-Wallisville Lake/Reservoir System	0	946	949	935	952	942
Harris County MUD 189	Livingston-Wallisville Lake/Reservoir System	0	443	448	451	465	485
Harris County MUD 216	Gulf Coast Aquifer System, Harris	0	94	92	89	92	93
Harris County MUD 221	Livingston-Wallisville Lake/Reservoir System	0	394	398	398	405	403
Harris County MUD 261	Livingston-Wallisville Lake/Reservoir System	162	224	230	231	229	230
Harris County MUD 278	Livingston-Wallisville Lake/Reservoir System	0	563	563	563	563	563
Harris County MUD 342	Gulf Coast Aquifer System, Harris	0	126	245	298	297	307
Harris County MUD 345	Gulf Coast Aquifer System, Harris	0	134	122	108	122	109
Harris County MUD 36	Livingston-Wallisville Lake/Reservoir System	0	481	654	726	734	761

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Harris County MUD 361	Gulf Coast Aquifer System, Harris	0	88	111	118	129	127
Harris County MUD 494	Gulf Coast Aquifer System, Harris	0	59	76	81	88	86
Harris County MUD 58	Gulf Coast Aquifer System, Harris	0	40	37	36	36	35
Harris County MUD 6	Livingston-Wallisville Lake/Reservoir System	0	36	35	32	28	22
Harris County UD 14	Livingston-Wallisville Lake/Reservoir System	0	556	549	544	552	558
Harris County WCID 133	Livingston-Wallisville Lake/Reservoir System	0	575	574	571	565	558
Harris County WCID 70	Gulf Coast Aquifer System, Harris	0	30	29	28	27	25
Harris County WCID 74	Livingston-Wallisville Lake/Reservoir System	0	515	529	527	518	513
Kings Manor MUD	Livingston-Wallisville Lake/Reservoir System	22	44	55	62	65	68
Longhorn Town UD	Gulf Coast Aquifer System, Harris	0	69	68	65	66	74
Luce Bayou PUD	Gulf Coast Aquifer System, Harris	0	65	63	62	59	58
Manufacturing, Chambers	Livingston-Wallisville Lake/Reservoir System	5,334	5,645	5,963	6,288	6,621	6,962
Manufacturing, Harris	Indirect Reuse, Houston	0	0	0	0	210	733
	Livingston-Wallisville Lake/Reservoir System	0	0	0	409	875	1,052
	San Jacinto Regional Return Flows	0	0	0	228	635	1,053
Mason Creek UD	Gulf Coast Aquifer System, Harris	0	235	232	228	247	263
Memorial Villages Water Authority	Livingston-Wallisville Lake/Reservoir System	2,450	2,445	2,815	2,958	2,868	2,843
Mining, Harris	Livingston-Wallisville Lake/Reservoir System	2,709	2,737	2,763	2,789	2,815	2,841
Montgomery County MUD 98	Livingston-Wallisville Lake/Reservoir System	0	0	1	7	14	18
Mount Houston Road MUD	Livingston-Wallisville Lake/Reservoir System	0	585	584	580	572	564
Nitsch and Son Utility	Gulf Coast Aquifer System, Harris	0	33	32	30	29	27
North Belt UD	Livingston-Wallisville Lake/Reservoir System	0	598	690	729	733	742
North Channel Water Authority	Livingston-Wallisville Lake/Reservoir System	1,955	1,229	845	437	153	0
North Forest MUD	Livingston-Wallisville Lake/Reservoir System	0	151	152	151	150	153
North Fort Bend Water Authority	Indirect Reuse, Houston	0	35,443	34,685	33,728	32,116	31,700
	Livingston-Wallisville Lake/Reservoir System	19,279	17,913	19,864	17,876	15,571	12,134
	San Jacinto Regional Return Flows	11,354	6,426	8,508	9,346	10,425	10,967
North Green MUD	Livingston-Wallisville Lake/Reservoir System	0	376	389	393	401	403

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
North Harris County Regional Water Authority	Indirect Reuse, Houston	0	64,637	65,127	68,672	69,152	71,147
	Livingston-Wallisville Lake/Reservoir System	44,869	54,940	56,630	48,087	40,151	30,402
Northeast Harris County MUD 1	Livingston-Wallisville Lake/Reservoir System	97	87	81	75	71	68
Northwest Harris County MUD 16	Gulf Coast Aquifer System, Harris	0	80	79	81	94	101
NRG	Livingston-Wallisville Lake/Reservoir System	14,835	14,835	14,835	14,835	14,835	14,835
Pine Village PUD	Livingston-Wallisville Lake/Reservoir System	0	169	169	169	169	169
Rolling Fork PUD	Livingston-Wallisville Lake/Reservoir System	25	109	117	120	116	114
San Jacinto River Authority	Conroe Lake/Reservoir	4,384	18,311	31,461	42,217	50,765	51,234
Sequoia Improvement District	Gulf Coast Aquifer System, Harris	0	16	13	10	7	4
Southern Water	Gulf Coast Aquifer System, Harris	0	66	82	89	78	72
Suburban Utility	Gulf Coast Aquifer System, Harris	0	0	105	115	105	89
Sunbelt FWSD	Livingston-Wallisville Lake/Reservoir System	0	1,600	1,600	1,600	1,600	1,600
The Commons Water Supply	Gulf Coast Aquifer System, Harris	0	69	59	51	44	37
West Harris County MUD 6	Gulf Coast Aquifer System, Harris	0	67	65	63	64	65
West Harris County Regional Water Authority	Indirect Reuse, Houston	0	59,774	64,151	63,439	59,699	55,730
	Livingston-Wallisville Lake/Reservoir System	16,324	26,457	26,588	23,338	20,809	17,591
	San Jacinto Regional Return Flows	9,614	7,198	8,457	8,524	9,056	9,186
Westfield Garden Park	Livingston-Wallisville Lake/Reservoir System	50	66	66	66	65	65
Windfern Forest Utility District	Livingston-Wallisville Lake/Reservoir System	471	626	636	638	628	623
Woodcreek MUD	Livingston-Wallisville Lake/Reservoir System	0	383	382	380	379	377
Lake Bonanza WSC							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	169	196	193	186
Lower Neches Valley Authority							
Irrigation, Chambers	Livingston-Wallisville Lake/Reservoir System	5,052	5,052	5,052	5,052	5,052	5,052
	Sam Rayburn-Steinhagen Lake/Reservoir System	0	33,500	33,500	33,500	33,500	33,500

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Irrigation, Liberty	Livingston-Wallisville Lake/Reservoir System	3,369	3,369	3,369	3,369	3,369	3,369
	Sam Rayburn-Steinhagen Lake/Reservoir System	0	33,500	33,500	33,500	33,500	33,500
	Trinity Run-of-River, Liberty	665	665	665	665	665	665
Manvel							
Brazoria County MUD 25	Brazos Run-of-River, Fort Bend	50	50	50	50	50	50
Brazoria County MUD 29	Brazos Run-of-River, Fort Bend	150	150	150	150	150	150
Brazoria County MUD 39	Brazos Run-of-River, Fort Bend	500	500	500	500	500	500
County-Other, Brazoria	Brazos Run-of-River, Fort Bend	400	400	2,900	2,900	2,900	2,900
Sedona Lakes MUD 1	Brazos Run-of-River, Fort Bend	50	50	50	50	50	50
Missouri City							
Blue Ridge West MUD	Gulf Coast Aquifer System, Fort Bend	0	0	2	33	45	57
First Colony MUD 9	Gulf Coast Aquifer System, Fort Bend	0	8	51	90	132	168
Fort Bend County MUD 115	BRA System Operations Permit Supply	0	6	58	0	0	0
	Brazos Run-of-River, Fort Bend	0	0	0	73	97	113
Fort Bend County MUD 129	BRA System Operations Permit Supply	0	21	31	0	0	0
	Brazos Run-of-River, Fort Bend	0	0	0	49	72	122
Fort Bend County MUD 149	BRA System Operations Permit Supply	0	3	37	0	0	0
	Brazos Run-of-River, Fort Bend	0	0	0	44	50	75
Fort Bend County MUD 23	Gulf Coast Aquifer System, Fort Bend	0	27	27	36	45	52
Fort Bend County MUD 24	Gulf Coast Aquifer System, Fort Bend	0	17	17	17	18	19
Fort Bend County MUD 26	Gulf Coast Aquifer System, Fort Bend	0	18	27	49	60	71
Fort Bend County MUD 42	Gulf Coast Aquifer System, Fort Bend	0	19	31	43	55	69
Fort Bend County MUD 48	BRA System Operations Permit Supply	0	5	9	0	0	0
	Brazos Run-of-River, Fort Bend	0	0	0	33	46	52
Fort Bend County MUD 49	BRA System Operations Permit Supply	13	14	14	0	0	0
	Brazos Run-of-River, Fort Bend	0	0	0	15	26	27

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Meadowcreek MUD	Gulf Coast Aquifer System, Fort Bend	0	0	4	7	10	12
Palmer Plantation MUD 1	Gulf Coast Aquifer System, Fort Bend	0	1	1	1	4	15
Thunderbird UD	Gulf Coast Aquifer System, Fort Bend	0	19	46	53	64	86
Montgomery County MUD 112							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	493	516	487	568
Montgomery County MUD 119							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	828	900	864	830
Montgomery County MUD 19							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	369	388	358	333
Montgomery County MUD 88							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	336	351	334	320
Montgomery County MUD 89							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	500	539	516	494
Montgomery County MUD 95							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	2,128	2,097	2,131	2,118	2,103
Mount Houston Road MUD							
Houston	Gulf Coast Aquifer System, Harris	0	456	456	456	456	456
MSEC Enterprises							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1,179	2,652	2,698	3,226	3,061	2,975
North Belt UD							
Houston	Gulf Coast Aquifer System, Harris	0	469	469	469	469	469
North Forest MUD							
Houston	Gulf Coast Aquifer System, Harris	0	121	121	121	121	121
North Fort Bend Water Authority							
County-Other, Fort Bend	Gulf Coast Aquifer System, Fort Bend	0	412	1,235	1,868	2,820	3,290
Fort Bend County FWSD 1	Gulf Coast Aquifer System, Fort Bend	0	221	291	297	313	326

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Fort Bend County MUD 131	Gulf Coast Aquifer System, Fort Bend	0	0	0	0	14	19
Fulshear	Livingston-Wallisville Lake/Reservoir System	0	1,185	1,133	1,147	1,204	1,183
Quadvest	Gulf Coast Aquifer System, Fort Bend	0	144	331	485	596	648
Royal Valley Utilities	Gulf Coast Aquifer System, Fort Bend	0	27	50	129	143	172
North Green MUD							
Houston	Gulf Coast Aquifer System, Harris	0	322	322	322	322	322
North Harris County Regional Water Authority							
HMW SUD	Gulf Coast Aquifer System, Harris	0	44	39	34	36	34
Pinewood Community	Gulf Coast Aquifer System, Harris	0	14	14	15	18	16
Quadvest	Gulf Coast Aquifer System, Harris	0	4	9	9	8	8
Tomball	Livingston-Wallisville Lake/Reservoir System	2,471	3,202	3,569	3,685	3,979	4,048
NRG							
Steam-Electric Power, Fort Bend	Brazos River Authority Main Stem Lake/Reservoir System	22,866	0	0	0	0	0
Steam-Electric Power, Harris	Livingston-Wallisville Lake/Reservoir System	14,835	14,835	14,835	14,835	14,835	14,835
Oak Ridge North							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	79	247	222	292	265	243
Pearland							
Alvin	Gulf Coast Aquifer System, Brazoria	30	29	143	153	118	84
Brazoria County FWSD 1	Gulf Coast Aquifer System, Brazoria	40	44	43	42	43	39
Brazoria County MUD 2	Gulf Coast Aquifer System, Brazoria	226	351	371	395	392	380
Brazoria County MUD 21	Gulf Coast Aquifer System, Brazoria	132	175	179	190	220	230
Brazoria County MUD 31	Gulf Coast Aquifer System, Brazoria	28	29	18	5	0	0
Brazoria County MUD 55	Gulf Coast Aquifer System, Brazoria	22	29	30	31	30	27
Danbury	Gulf Coast Aquifer System, Brazoria	6	9	10	10	9	7
Hillcrest Village	Gulf Coast Aquifer System, Brazoria	3	3	1	0	0	0
Manvel	Brazos Run-of-River, Fort Bend	4,480	7,840	7,840	7,840	7,840	7,840

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Quadvest	Gulf Coast Aquifer System, Brazoria	22	24	23	24	23	21
Sweeny	Gulf Coast Aquifer System, Brazoria	12	19	35	44	53	48
Varner Creek UD	Gulf Coast Aquifer System, Brazoria	126	124	125	126	127	122
West Columbia	Gulf Coast Aquifer System, Brazoria	178	173	176	176	175	163
Pine Village PUD							
Houston	Gulf Coast Aquifer System, Harris	0	169	169	169	169	169
Rayford Road MUD							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	267	626	531	626	599	576
Richmond							
County-Other, Fort Bend	Allens Creek Lake/Reservoir	0	0	13	722	1,463	1,714
	BRA System Operations Permit Supply	712	1,157	1,552	1,421	1,234	1,003
Fort Bend County MUD 116	Gulf Coast Aquifer System, Fort Bend	0	92	92	104	112	125
Fort Bend County MUD 121	Brazos River Authority Main Stem Lake/Reservoir System	274	282	280	280	280	281
Fort Bend County WCID 3	Gulf Coast Aquifer System, Fort Bend	0	0	0	0	18	29
Rosenberg							
Fort Bend County FWSD 2	Gulf Coast Aquifer System, Fort Bend	328	336	359	378	399	422
Fort Bend County MUD 152	Brazos Run-of-River, Brazoria	0	0	1	21	40	41
Fort Bend County MUD 155	Brazos Run-of-River, Brazoria	0	81	180	258	326	365
Fort Bend County MUD 158	Brazos Run-of-River, Brazoria	0	33	78	113	144	162
Fort Bend County MUD 162	Gulf Coast Aquifer System, Fort Bend	0	0	12	28	76	97
Fort Bend County MUD 5	Gulf Coast Aquifer System, Fort Bend	0	27	55	68	71	73
Quadvest	Gulf Coast Aquifer System, Fort Bend	0	165	341	498	619	693
Sabine River Authority							
Houston	Toledo Bend Lake/Reservoir	0	0	250,000	250,000	250,000	250,000

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
San Jacinto River Authority							
Blaketree MUD 1 of Montgomery County	Gulf Coast Aquifer System, Montgomery	2	11	35	45	50	54
Chateau Woods MUD	Gulf Coast Aquifer System, Montgomery	0	64	111	142	161	177
Conroe	Conroe Lake/Reservoir	2,216	4,028	6,065	10,687	12,301	13,624
Conroe Resort Utilities	Conroe Lake/Reservoir	0	0	102	123	132	138
	Gulf Coast Aquifer System, Montgomery	0	13	0	0	0	0
Corinthian Point MUD 2	Gulf Coast Aquifer System, Montgomery	0	3	17	26	33	40
County-Other, Harris	San Jacinto Regional Return Flows	1,533	2,854	4,092	4,642	4,941	4,960
County-Other, Montgomery	Conroe Lake/Reservoir	0	0	1,429	2,460	7,710	3,776
	Gulf Coast Aquifer System (Catahoula Formation), Montgomery	0	0	0	0	0	10,500
	Gulf Coast Aquifer System, Montgomery	0	2,758	5,641	7,948	4,976	3,476
Crosby MUD	San Jacinto Regional Return Flows	0	1	0	2	54	45
Cut & Shoot	Gulf Coast Aquifer System, Montgomery	436	569	792	1,020	1,197	1,219
Domestic Water	Gulf Coast Aquifer System, Montgomery	0	16	29	41	50	54
East Montgomery County MUD 6	Gulf Coast Aquifer System, Montgomery	1	43	85	129	164	172
East Plantation UD	Gulf Coast Aquifer System, Montgomery	1	35	87	141	146	159
Grand Oaks MUD	Gulf Coast Aquifer System, Montgomery	0	27	50	59	65	69
HMW SUD	Conroe Lake/Reservoir	0	0	924	1,092	1,137	1,147
	Gulf Coast Aquifer System, Montgomery	0	149	0	0	0	0
Irrigation, Montgomery	Gulf Coast Aquifer System, Montgomery	167	943	1,485	1,820	2,019	2,200
Johnston Water Utility	Gulf Coast Aquifer System, Montgomery	378	986	1,367	1,619	1,816	1,970
Keenan WSC	Gulf Coast Aquifer System, Montgomery	0	21	52	72	86	97
Kings Manor MUD	Gulf Coast Aquifer System, Montgomery	61	126	161	184	202	215
Lake Bonanza WSC	Conroe Lake/Reservoir	0	0	250	307	327	335
	Gulf Coast Aquifer System, Montgomery	0	38	0	0	0	0
Lake Conroe Hills MUD	Gulf Coast Aquifer System, Montgomery	0	25	47	60	68	76

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Lazy River Improvement District	Gulf Coast Aquifer System, Montgomery	1	40	71	95	111	127
Livestock, Montgomery	Gulf Coast Aquifer System, Montgomery	17	96	151	185	205	223
Magnolia	Gulf Coast Aquifer System, Montgomery	4	193	393	484	544	602
Manufacturing, Harris	San Jacinto Regional Return Flows	26,424	31,259	36,471	38,811	41,181	43,609
Manufacturing, Montgomery	Gulf Coast Aquifer System, Montgomery	914	1,168	1,364	1,508	1,620	1,729
Mining, Montgomery	Gulf Coast Aquifer System, Montgomery	1	7	12	18	22	28
Montgomery County MUD 105	Gulf Coast Aquifer System, Montgomery	1	33	60	79	92	104
Montgomery County MUD 112	Conroe Lake/Reservoir	0	0	749	836	855	1,078
	Gulf Coast Aquifer System, Montgomery	5	142	0	0	0	0
Montgomery County MUD 115	Gulf Coast Aquifer System, Montgomery	107	194	255	308	336	378
Montgomery County MUD 119	Conroe Lake/Reservoir	0	0	1,211	1,399	1,451	1,491
	Gulf Coast Aquifer System, Montgomery	6	221	0	0	0	0
Montgomery County MUD 126	Gulf Coast Aquifer System, Montgomery	138	155	199	256	304	298
Montgomery County MUD 127	Gulf Coast Aquifer System, Montgomery	46	79	98	115	124	139
Montgomery County MUD 137	Gulf Coast Aquifer System, Montgomery	0	59	111	140	157	166
Montgomery County MUD 139	Gulf Coast Aquifer System, Montgomery	2	92	161	206	239	264
Montgomery County MUD 15	Gulf Coast Aquifer System, Montgomery	173	245	293	317	337	351
Montgomery County MUD 18	Gulf Coast Aquifer System, Montgomery	0	50	135	205	268	330
Montgomery County MUD 19	Conroe Lake/Reservoir	0	0	572	642	643	647
	Gulf Coast Aquifer System, Montgomery	9	121	0	0	0	0
Montgomery County MUD 24	Gulf Coast Aquifer System, Montgomery	2	0	0	0	0	0
Montgomery County MUD 56	Gulf Coast Aquifer System, Montgomery	1	15	29	36	41	46
Montgomery County MUD 83	Gulf Coast Aquifer System, Montgomery	0	51	93	118	135	147
Montgomery County MUD 88	Conroe Lake/Reservoir	0	0	507	566	583	601
	Gulf Coast Aquifer System, Montgomery	4	99	0	0	0	0
Montgomery County MUD 89	Conroe Lake/Reservoir	0	0	757	870	902	931
	Gulf Coast Aquifer System, Montgomery	5	146	0	0	0	0
Montgomery County MUD 94	Gulf Coast Aquifer System, Montgomery	2	127	227	292	338	381

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Montgomery County MUD 95	Conroe Lake/Reservoir	0	2,128	2,097	2,131	2,118	2,103
Montgomery County UD 2	Gulf Coast Aquifer System, Montgomery	6	124	179	217	246	271
Montgomery County UD 3	Gulf Coast Aquifer System, Montgomery	0	0	0	27	57	82
Montgomery County UD 4	Gulf Coast Aquifer System, Montgomery	0	0	32	118	177	231
Montgomery County WCID 1	Gulf Coast Aquifer System, Montgomery	0	69	125	155	178	193
MSEC Enterprises	Conroe Lake/Reservoir	1,207	3,357	4,181	5,294	5,474	5,825
New Caney MUD	Gulf Coast Aquifer System, Montgomery	0	247	512	700	855	931
Oak Ridge North	Conroe Lake/Reservoir	79	272	278	379	355	335
Patton Village	Gulf Coast Aquifer System, Montgomery	0	7	19	31	35	36
Pinehurst Decker Prairie WSC	Gulf Coast Aquifer System, Montgomery	0	19	40	58	66	72
Point Aquarius MUD	Gulf Coast Aquifer System, Montgomery	0	0	29	60	80	99
Porter SUD	Gulf Coast Aquifer System, Montgomery	315	1,182	1,891	2,373	2,734	3,062
Quadvest	Gulf Coast Aquifer System, Montgomery	2	902	1,832	2,441	2,809	3,189
Ranch Crest Water	Gulf Coast Aquifer System, Montgomery	1	34	60	75	85	95
Rayford Road MUD	Conroe Lake/Reservoir	267	780	825	1,008	1,052	1,091
River Plantation MUD	Gulf Coast Aquifer System, Montgomery	0	45	135	256	281	307
Roman Forest Consolidated MUD	Gulf Coast Aquifer System, Montgomery	0	36	79	125	151	159
Shenandoah	Gulf Coast Aquifer System, Montgomery	9	382	661	878	1,016	1,133
Southern Montgomery County MUD	Conroe Lake/Reservoir	0	224	218	321	349	352
Spring Creek UD	Conroe Lake/Reservoir	0	0	938	1,070	1,090	1,090
	Gulf Coast Aquifer System, Montgomery	0	150	0	0	0	0
Steam-Electric Power, Montgomery	Gulf Coast Aquifer System, Montgomery	315	501	631	711	758	801
T & W Water Service	Conroe Lake/Reservoir	0	0	1,603	1,932	2,033	2,007
	Gulf Coast Aquifer System, Montgomery	0	223	0	0	0	0
The Woodlands	Conroe Lake/Reservoir	1,746	8,437	8,579	10,597	11,536	13,614
Valley Ranch MUD 1	Gulf Coast Aquifer System, Montgomery	27	0	0	0	0	0

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Westwood North WSC	Conroe Lake/Reservoir	0	0	545	615	614	721
	Gulf Coast Aquifer System, Montgomery	3	95	0	0	0	0
White Oak WSC	Gulf Coast Aquifer System, Montgomery	0	27	51	74	87	102
Wood Branch Village	Gulf Coast Aquifer System, Montgomery	0	33	74	123	140	153
Wood Trace MUD 1	Gulf Coast Aquifer System, Montgomery	0	20	48	69	78	89
Woodland Oaks Utility	Conroe Lake/Reservoir	0	0	329	386	401	409
	Gulf Coast Aquifer System, Montgomery	0	55	0	0	0	0
Woodridge MUD	Gulf Coast Aquifer System, Montgomery	13	0	0	0	0	0
Sienna Plantation							
Missouri City	Gulf Coast Aquifer System, Fort Bend	0	41	90	147	193	252
Southern Montgomery County MUD							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	172	129	212	207	197
Spring Creek UD							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	651	700	666	632
Steam Electric Power, Fort Bend							
Manufacturing, Brazoria	Brazos River Authority Main Stem Lake/Reservoir System	22,866	0	0	0	0	0
Sugar Land							
County-Other, Fort Bend	Direct Reuse, County-Other, Fort Bend	0	0	1,232	1,232	1,232	1,232
	Gulf Coast Aquifer System, Fort Bend	460	786	786	786	786	786
Fort Bend County MUD 128	Brazos Run-of-River, Fort Bend	102	99	107	92	121	157
Fort Bend County MUD 25	Brazos River Authority Main Stem Lake/Reservoir System	1,120	1,120	1,120	1,120	1,120	1,120
Plantation MUD	Gulf Coast Aquifer System, Fort Bend	0	0	13	16	19	26
Royal Valley Utilities	Gulf Coast Aquifer System, Fort Bend	0	32	45	92	101	120
Sunbelt FWSD							
Houston	Gulf Coast Aquifer System, Harris	0	1,600	1,600	1,600	1,600	1,600
T & W Water Service							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	1,156	1,332	1,335	1,278

Contract Relationship	Source	Contractual Volume (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
The Woodlands							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	1,723	7,292	6,157	7,502	7,339	7,965
Tomball							
North Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	2,471	2,471	2,471	2,471	2,471	2,471
Trail of the Lakes MUD							
West Harris County Regional Water Authority	Gulf Coast Aquifer System, Harris	0	1,172	1,207	1,225	1,264	1,273
West Harris County Regional Water Authority							
Harris County MUD 106	Livingston-Wallisville Lake/Reservoir System	0	621	643	654	679	688
Harris County MUD 132	Livingston-Wallisville Lake/Reservoir System	0	1,951	2,016	2,041	2,101	2,132
Harris County MUD 151	Livingston-Wallisville Lake/Reservoir System	0	1,121	1,144	1,157	1,206	1,216
Harris County MUD 152	Livingston-Wallisville Lake/Reservoir System	0	1,024	1,059	1,072	1,109	1,122
Harris County MUD 290	Livingston-Wallisville Lake/Reservoir System	0	1,173	1,242	1,271	1,312	1,327
Harris County MUD 46	Livingston-Wallisville Lake/Reservoir System	0	654	656	658	658	658
Katy	Gulf Coast Aquifer System, Harris	801	1,127	1,308	1,301	1,427	1,529
Trail of the Lakes MUD	Livingston-Wallisville Lake/Reservoir System	0	1,172	1,207	1,225	1,264	1,273
Westwood North WSC							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	360	381	351	382
Woodcreek MUD							
Houston	Gulf Coast Aquifer System, Harris	0	304	304	304	304	304
Woodland Oaks Utility							
San Jacinto River Authority	Gulf Coast Aquifer System, Montgomery	0	0	222	245	237	227

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Table 5-A13 – WUG Management Supply Factors

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Alvin	1.0	1.0	1.0	1.0	1.0	1.0
Ames Minglewood WSC	1.0	1.1	1.1	1.1	1.1	1.1
Anahuac	4.9	5.0	5.0	5.1	4.8	4.8
Angleton	3.7	3.4	3.1	3.0	3.0	3.0
Austin County WSC	1.0	1.1	1.1	1.1	1.2	1.2
Bacliff MUD	1.7	2.0	2.0	1.9	1.9	1.9
Baker Road MUD	1.0	1.0	1.0	1.0	1.0	1.0
Baybrook MUD 1	6.1	5.8	5.8	5.7	5.6	5.4
Baytown	2.1	2.0	1.9	1.9	1.9	1.9
Bayview MUD	3.0	3.5	3.4	3.4	3.3	3.3
Bellaire	1.0	1.0	1.1	1.1	1.1	1.1
Bellville	1.0	1.0	1.1	1.1	1.1	1.1
Blaketree MUD 1 of Montgomery County	1.0	1.0	1.0	1.0	1.0	1.0
Blue Bell Manor Utility	1.0	1.0	1.0	1.0	1.0	1.0
Blue Ridge West MUD	1.0	1.1	1.0	1.1	1.1	1.1
Bolivar Peninsula SUD	4.8	4.8	4.8	4.8	4.9	4.9
Brazoria	2.1	2.2	2.2	2.2	2.3	2.4
Brazoria County FWSD 1	1.0	1.0	1.0	1.0	1.0	1.0
Brazoria County MUD 2	1.0	1.0	1.0	1.0	1.0	1.0
Brazoria County MUD 21	1.0	1.0	1.0	1.0	1.0	1.0
Brazoria County MUD 22	1.0	1.1	1.1	1.1	1.1	1.1
Brazoria County MUD 25	1.1	1.1	1.0	1.0	1.0	1.0
Brazoria County MUD 29	1.1	1.1	1.1	1.1	1.1	1.1
Brazoria County MUD 3	1.0	1.1	1.1	1.1	1.1	1.1
Brazoria County MUD 31	1.0	1.0	1.0	1.0	1.0	1.0
Brazoria County MUD 39	1.3	1.2	1.2	1.1	1.1	1.1
Brazoria County MUD 55	1.0	1.0	1.0	1.0	1.0	1.0
Brazoria County MUD 6	1.0	1.0	1.0	1.0	1.0	1.0
Brookshire MWD	1.0	1.1	1.1	1.2	1.2	1.2
Buffalo	1.0	1.1	1.1	1.1	1.1	1.1
Bunker Hill Village	1.0	1.0	1.0	1.0	1.0	1.0
C C Water Works	2.0	1.4	1.0	1.5	1.2	1.0
Cape Royale UD	1.0	1.1	1.1	1.1	1.1	1.1
Centerville	1.0	1.1	1.1	1.1	1.1	1.1
Central Harris County Regional Water Authority	1.9	1.7	1.7	1.7	1.7	1.7
Chambers County MUD 1	1.0	1.0	1.0	1.1	1.1	1.1
Chateau Woods MUD	1.0	1.0	1.0	1.0	1.0	1.0
Chimney Hill MUD	1.2	1.2	1.2	1.2	1.2	1.2
Clear Brook City MUD	1.6	1.7	1.7	1.7	1.7	1.7

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Clear Lake City Water Authority	2.1	2.1	2.1	2.1	2.1	2.1
Cleveland	1.0	1.1	1.1	1.1	1.2	1.2
Clute	1.7	1.8	1.8	1.8	1.6	1.3
Concord-Robbins WSC	1.0	1.1	1.1	1.1	1.1	1.2
Conroe	1.0	1.0	1.0	1.0	1.0	1.0
Conroe Resort Utilities	1.0	1.0	1.0	1.0	1.0	1.0
Corinthian Point MUD 2	1.0	1.0	1.0	1.0	1.0	1.0
Country Terrace Water	1.2	1.3	1.3	1.3	1.3	1.3
County-Other, Austin	1.0	1.1	1.1	1.1	1.1	1.1
County-Other, Brazoria	1.0	1.0	1.2	1.2	1.2	1.2
County-Other, Chambers	1.1	1.3	1.1	1.2	1.2	1.1
County-Other, Fort Bend	1.0	1.0	1.0	1.0	1.0	1.1
County-Other, Galveston	1.0	1.0	1.0	1.0	1.0	1.0
County-Other, Harris	1.1	1.0	1.0	1.0	1.0	1.0
County-Other, Leon	1.0	1.1	1.1	1.2	1.2	1.3
County-Other, Liberty	1.1	1.1	1.2	1.2	1.2	1.2
County-Other, Madison	1.0	1.1	1.1	1.1	1.1	1.2
County-Other, Montgomery	1.0	1.0	1.0	1.0	1.0	1.1
County-Other, Polk	1.0	1.1	1.1	1.1	1.1	1.1
County-Other, San Jacinto	1.0	1.1	1.1	1.1	1.1	1.2
County-Other, Trinity	5.4	5.7	6.1	6.3	6.6	6.9
County-Other, Walker	1.0	1.1	1.1	1.2	1.2	1.2
County-Other, Waller	1.3	1.1	1.4	1.1	1.2	1.1
Crosby MUD	1.1	1.0	1.0	1.0	1.0	1.0
Cut & Shoot	1.0	1.0	1.0	1.0	1.0	1.0
Daisetta	1.0	1.1	1.1	1.1	1.1	1.2
Danbury	1.0	1.0	1.0	1.0	1.0	1.0
Dayton	1.0	1.1	1.1	1.1	1.1	1.2
Deer Park	1.0	1.1	1.1	1.1	1.1	1.2
Devers	1.0	1.0	1.0	1.1	1.1	1.1
Dobbin Plantersville WSC	1.0	1.0	1.0	1.0	1.0	1.0
Dodge Oakhurst WSC	1.0	1.0	1.2	1.0	1.2	1.0
Domestic Water	1.0	1.0	1.0	1.0	1.0	1.0
Douglas Utility	1.0	1.0	1.0	1.0	1.0	1.0
East Montgomery County MUD 6	1.0	1.0	1.0	1.0	1.0	1.0
East Plantation UD	1.0	1.0	1.0	1.0	1.0	1.0
El Dorado UD	1.0	1.0	1.0	1.0	1.0	1.0
Far Hills UD	1.0	1.2	1.3	1.2	1.2	1.1
First Colony MUD 9	1.0	1.0	1.0	1.0	1.1	1.1
Flo Community WSC	1.0	1.1	1.1	1.1	1.1	1.1
Forest Hills MUD	1.2	1.0	1.0	1.0	1.1	1.0

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Fort Bend County FWSD 1	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County FWSD 2	1.0	1.0	1.0	1.0	1.1	1.1
Fort Bend County MUD 115	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County MUD 116	1.0	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 121	1.0	1.0	1.0	1.1	1.1	1.1
Fort Bend County MUD 128	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County MUD 129	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County MUD 131	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County MUD 140	1.8	1.8	1.8	1.8	1.6	1.5
Fort Bend County MUD 149	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County MUD 152	1.0	1.0	1.0	1.0	1.0	1.1
Fort Bend County MUD 155	1.0	1.0	1.0	1.0	1.1	1.1
Fort Bend County MUD 158	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County MUD 162	1.0	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 23	1.0	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 24	1.0	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 25	1.1	1.2	1.2	1.2	1.2	1.2
Fort Bend County MUD 26	1.0	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 42	1.0	1.0	1.0	1.0	1.1	1.1
Fort Bend County MUD 46	1.2	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 47	1.2	1.2	1.2	1.2	1.2	1.2
Fort Bend County MUD 48	1.0	1.0	1.1	1.1	1.1	1.1
Fort Bend County MUD 49	1.1	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 5	1.0	1.1	1.1	1.1	1.1	1.1
Fort Bend County MUD 81	1.0	1.0	1.0	1.0	1.0	1.0
Fort Bend County WCID 2	1.2	1.2	1.2	1.2	1.3	1.3
Fort Bend County WCID 3	1.0	1.0	1.0	1.0	1.0	1.0
Freeport	1.4	1.5	1.5	1.6	1.6	1.7
Friendswood	2.0	2.0	2.0	2.0	2.0	2.0
Fulshear	1.0	1.0	1.0	1.0	1.0	1.0
G & W WSC	1.0	1.0	1.0	1.0	1.0	1.0
Galena Park	1.3	1.3	1.3	1.3	1.3	1.4
Galveston	1.5	1.8	1.8	1.9	1.9	1.9
Galveston County FWSD 6	3.5	4.2	4.3	4.3	4.3	4.3
Galveston County MUD 12	1.4	1.7	1.7	1.7	1.7	1.7
Galveston County WCID 1	1.2	1.5	1.6	1.6	1.6	1.6
Galveston County WCID 12	3.5	4.2	4.1	4.1	4.1	4.1
Galveston County WCID 8	3.3	3.9	3.9	3.9	3.9	3.9
Glendale WSC	1.1	1.1	1.1	1.1	1.1	1.1

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Grand Oaks MUD	1.0	1.0	1.0	1.0	1.0	1.0
Green Trails MUD	1.0	1.0	1.0	1.0	1.0	1.0
Greenwood UD	1.0	1.1	1.1	1.1	1.1	1.1
Groveton	1.1	1.1	1.2	1.2	1.2	1.3
Hardin WSC	1.0	1.1	1.1	1.1	1.1	1.1
Harris County FWSD 1-A	1.1	1.1	1.1	1.1	1.2	1.2
Harris County FWSD 27	1.0	1.0	1.0	1.1	1.1	1.1
Harris County FWSD 58	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 106	1.0	1.0	1.0	1.1	1.1	1.1
Harris County MUD 11	1.2	1.0	1.0	1.0	1.0	1.0
Harris County MUD 119	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 122	1.3	1.2	1.2	1.3	1.2	1.2
Harris County MUD 132	1.0	1.1	1.1	1.1	1.1	1.1
Harris County MUD 148	1.0	1.1	1.1	1.1	1.1	1.1
Harris County MUD 151	1.0	1.0	1.0	1.0	1.1	1.1
Harris County MUD 152	1.0	1.0	1.0	1.1	1.1	1.1
Harris County MUD 153	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 154	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 180	1.0	1.1	1.1	1.1	1.1	1.1
Harris County MUD 189	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 216	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 221	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 23	1.0	1.1	1.1	1.1	1.1	1.1
Harris County MUD 261	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 278	1.9	1.7	1.7	1.7	1.7	1.7
Harris County MUD 290	1.0	1.0	1.1	1.1	1.1	1.1
Harris County MUD 321	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 342	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 344	1.6	1.2	1.2	1.2	1.2	1.2
Harris County MUD 345	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 36	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 361	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 372	1.2	1.0	1.0	1.0	1.0	1.0
Harris County MUD 400	1.7	1.6	1.5	1.5	1.5	1.5
Harris County MUD 412	1.9	1.6	1.4	1.4	1.4	1.4
Harris County MUD 420	1.0	1.1	1.1	1.1	1.1	1.1
Harris County MUD 46	1.0	1.0	1.0	1.0	1.0	1.1
Harris County MUD 49	1.5	1.3	1.2	1.2	1.2	1.2
Harris County MUD 494	1.0	1.0	1.0	1.0	1.0	1.0

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Harris County MUD 5	1.0	1.1	1.1	1.2	1.2	1.2
Harris County MUD 50	1.5	1.5	1.5	1.5	1.5	1.5
Harris County MUD 504	1.0	1.0	1.0	1.1	1.1	1.1
Harris County MUD 55	2.7	2.8	2.8	2.9	2.9	2.9
Harris County MUD 58	1.0	1.0	1.0	1.0	1.0	1.0
Harris County MUD 6	1.1	1.0	1.0	1.0	1.0	1.0
Harris County MUD 8	1.2	1.2	1.2	1.2	1.2	1.2
Harris County MUD 96	1.0	1.1	1.1	1.1	1.1	1.1
Harris County UD 14	1.0	1.0	1.0	1.0	1.0	1.0
Harris County UD 15	1.0	1.0	1.0	1.0	1.0	1.0
Harris County WCID 1	1.0	1.1	1.1	1.1	1.1	1.2
Harris County WCID 133	1.0	1.0	1.0	1.0	1.0	1.0
Harris County WCID 156	1.3	1.3	1.3	1.3	1.3	1.3
Harris County WCID 161	2.3	2.4	2.4	2.4	2.4	2.5
Harris County WCID 50	1.0	1.0	1.0	1.1	1.1	1.1
Harris County WCID 70	1.0	1.0	1.0	1.0	1.0	1.0
Harris County WCID 74	1.0	1.0	1.0	1.0	1.0	1.0
Harris County WCID 89	3.9	3.9	3.9	4.0	4.0	4.0
Harris County WCID 96	2.1	1.9	1.7	1.7	1.7	1.7
Harris County WCID-Fondren Road	1.4	1.4	1.4	1.5	1.5	1.5
Harris-Montgomery Counties MUD 386	1.1	1.1	1.2	1.2	1.2	1.3
Hempstead	1.0	1.0	1.0	1.1	1.1	1.1
High Prairie WSC	1.1	1.2	1.3	1.3	1.3	1.3
Hillcrest Village	1.0	1.0	1.0	1.0	1.0	1.1
Hilltop Lakes WSC	1.0	1.0	1.1	1.1	1.1	1.1
Hilshire Village	1.0	1.0	1.0	1.0	1.0	1.0
Hitchcock	2.3	2.8	2.8	2.8	2.8	2.8
HMW SUD	1.0	1.0	1.0	1.0	1.0	1.0
Houston	1.0	1.0	1.5	1.5	1.5	1.5
Humble	1.0	1.1	1.1	1.1	1.1	1.1
Huntsville	1.0	1.0	1.0	1.0	1.1	1.0
Irrigation, Austin	1.4	1.4	1.4	1.4	1.4	1.4
Irrigation, Brazoria	0.7	0.7	0.7	0.7	0.7	0.7
Irrigation, Chambers	1.5	1.7	1.7	1.7	1.7	1.7
Irrigation, Fort Bend	1.2	1.2	1.2	1.2	1.2	1.2
Irrigation, Galveston	0.3	0.3	0.3	0.3	0.3	0.3
Irrigation, Harris	1.5	1.5	1.5	1.5	1.5	1.5
Irrigation, Leon	1.2	1.2	1.2	1.2	1.2	1.2
Irrigation, Liberty	1.7	2.5	2.5	2.5	2.5	2.5

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Irrigation, Madison	0.5	0.5	0.5	0.5	0.5	0.5
Irrigation, Montgomery	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, Polk	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, San Jacinto	1.7	1.7	1.7	1.7	1.7	1.7
Irrigation, Trinity	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, Walker	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, Waller	1.3	1.3	1.3	1.3	1.3	1.3
Jacinto City	1.6	1.6	1.5	1.5	1.5	1.6
Jamaica Beach	1.2	1.2	1.2	1.2	1.2	1.2
Jersey Village	1.0	1.0	1.0	1.1	1.1	1.1
Jewett	1.0	1.1	1.1	1.1	1.0	1.0
Johnston Water Utility	1.0	1.0	1.0	1.0	1.0	1.0
Katy	1.0	1.0	1.0	1.0	1.0	1.0
Keenan WSC	1.0	1.0	1.0	1.0	1.0	1.0
Kendleton	1.0	1.0	1.1	1.1	1.1	1.1
Kings Manor MUD	1.0	1.0	1.0	1.0	1.0	1.0
Kirkmont MUD	1.0	1.0	1.0	1.0	1.1	1.1
La Marque	1.1	1.2	1.2	1.2	1.2	1.2
La Porte	1.7	1.6	1.6	1.6	1.7	1.6
Lake Bonanza WSC	1.0	1.0	1.0	1.0	1.0	1.0
Lake Conroe Hills MUD	1.0	1.0	1.0	1.0	1.0	1.0
Lake Jackson	1.1	1.1	1.1	1.2	1.2	1.2
Lake Livingston WSC	2.1	2.1	2.1	2.1	2.1	2.1
Lake MUD	1.6	1.6	1.5	1.5	1.5	1.5
Lazy River Improvement District	1.0	1.0	1.0	1.0	1.0	1.0
League City	3.6	3.6	3.6	3.6	3.6	3.7
Leggett WSC	1.0	1.0	1.1	1.1	1.1	1.1
Liberty	1.0	1.1	1.1	1.1	1.1	1.2
Liberty County FWSD 1 Hull	1.0	1.1	1.1	1.1	1.1	1.1
Livestock, Austin	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Brazoria	0.9	0.8	0.8	0.8	0.8	0.8
Livestock, Chambers	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Fort Bend	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Galveston	0.1	0.1	0.1	0.1	0.1	0.1
Livestock, Harris	0.4	0.2	0.2	0.2	0.2	0.2
Livestock, Leon	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Liberty	1.4	1.4	1.4	1.4	1.3	1.3
Livestock, Madison	0.0	0.0	0.0	0.0	0.0	0.0
Livestock, Montgomery	1.0	1.0	1.0	1.0	1.0	1.0

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Livestock, Polk	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, San Jacinto	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Trinity	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Walker	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Waller	1.0	1.0	1.0	1.0	1.0	1.0
Livingston	1.3	1.2	1.2	1.2	1.2	1.1
Longhorn Town UD	1.0	1.0	1.0	1.0	1.0	1.0
Luce Bayou PUD	1.0	1.0	1.0	1.0	1.0	1.0
Madisonville	1.0	1.0	1.1	1.2	1.2	1.2
Magnolia	1.0	1.0	1.0	1.0	1.0	1.0
Manufacturing, Austin	1.0	1.0	1.0	1.1	1.1	1.1
Manufacturing, Brazoria	1.5	1.4	1.4	1.3	1.3	1.3
Manufacturing, Chambers	1.4	1.3	1.3	1.3	1.3	1.2
Manufacturing, Fort Bend	1.5	1.4	1.4	1.4	1.4	1.4
Manufacturing, Galveston	1.7	1.9	1.9	1.8	1.8	1.7
Manufacturing, Harris	1.3	1.2	1.2	1.2	1.2	1.1
Manufacturing, Leon	1.0	1.1	1.1	1.1	1.0	1.0
Manufacturing, Liberty	1.0	1.0	1.0	1.0	1.0	1.1
Manufacturing, Montgomery	1.0	1.0	1.0	1.0	1.0	1.0
Manufacturing, Polk	2.0	2.0	2.0	2.0	2.0	2.0
Manufacturing, San Jacinto	1.0	1.0	1.0	1.0	1.0	1.0
Manufacturing, Walker	2.2	2.2	2.2	2.1	2.1	2.1
Manufacturing, Waller	1.1	1.1	1.1	1.1	1.1	1.1
Manvel	4.9	7.0	4.0	3.7	3.5	3.3
Mason Creek UD	1.0	1.0	1.0	1.0	1.0	1.0
Meadowcreek MUD	1.0	1.1	1.1	1.1	1.1	1.1
Meadows Place	1.1	1.1	1.0	1.0	1.1	1.1
Memorial Point UD	1.1	1.1	1.1	1.1	1.1	1.1
Memorial Villages Water Authority	1.0	1.0	1.0	1.0	1.0	1.0
Mercy WSC	1.0	1.1	1.1	1.1	1.1	1.1
Mining, Austin	1.8	1.7	1.5	1.3	1.2	1.1
Mining, Brazoria	1.0	1.0	1.0	1.0	1.0	1.0
Mining, Chambers	1.0	1.0	1.0	1.0	1.0	1.0
Mining, Fort Bend	30.1	26.2	23.2	20.9	19.9	18.2
Mining, Harris	1.0	1.0	1.0	1.0	1.0	1.0
Mining, Leon	1.0	1.0	1.0	1.0	1.0	1.0
Mining, Liberty	1.5	1.4	1.3	1.2	1.1	1.1
Mining, Madison	0.3	0.3	0.3	0.3	0.3	0.3
Mining, Montgomery	1.0	1.0	1.0	1.0	1.0	1.0

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Mining, Polk	3.8	3.7	3.6	3.4	3.3	3.3
Mining, San Jacinto	2.3	2.3	2.3	2.3	2.3	2.3
Mining, Trinity	1.0	1.0	1.0	1.0	1.0	1.0
Mining, Walker	1.0	1.0	1.0	1.0	1.0	1.0
Mining, Waller	1.0	1.0	1.0	1.0	1.0	1.0
Missouri City	9.5	8.3	7.9	7.8	7.5	7.3
Mont Belvieu	1.2	1.1	1.0	1.0	1.0	1.0
Montgomery	1.0	1.3	1.2	1.1	1.1	1.1
Montgomery County MUD 105	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 112	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 115	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 119	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 126	2.0	2.0	2.0	2.0	2.0	2.0
Montgomery County MUD 127	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 137	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 139	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 15	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 18	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 19	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 24	1.0	1.3	1.4	1.5	1.5	1.6
Montgomery County MUD 56	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 8	1.6	1.6	1.5	1.5	1.4	1.4
Montgomery County MUD 83	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 84	1.7	1.7	1.8	1.8	1.8	1.8
Montgomery County MUD 88	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 89	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 9	1.6	1.5	1.4	1.3	1.2	1.2
Montgomery County MUD 94	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 95	4.3	3.4	3.2	3.1	3.0	3.0
Montgomery County MUD 98	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County MUD 99	1.5	1.4	1.2	1.2	1.1	1.1
Montgomery County UD 2	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County UD 3	1.0	1.0	1.0	1.0	1.0	1.0
Montgomery County UD 4	1.2	1.1	1.0	1.0	1.0	1.0
Montgomery County WCID 1	1.0	1.0	1.0	1.0	1.0	1.0
Morgans Point	4.2	4.0	4.0	4.0	4.0	4.2
Moscow WSC	1.0	1.0	1.0	1.0	1.0	1.0
Mount Houston Road MUD	1.0	1.0	1.0	1.0	1.0	1.0
MSEC Enterprises	1.0	1.0	1.0	1.0	1.0	1.0

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Nassau Bay	1.7	1.7	1.7	1.7	1.7	1.7
Needville	1.0	1.1	1.1	1.1	1.1	1.1
New Caney MUD	1.0	1.0	1.0	1.0	1.0	1.0
New Waverly	1.0	1.1	1.1	1.1	1.1	1.1
Newport MUD	1.7	1.6	1.5	1.5	1.5	1.5
Nitsch and Son Utility	1.0	1.0	1.0	1.0	1.0	1.0
Normangee	1.0	1.1	1.1	1.1	1.1	1.0
North Belt UD	1.0	1.0	1.0	1.0	1.0	1.0
North Channel Water Authority	1.0	1.0	1.0	1.0	1.0	1.0
North Forest MUD	1.0	1.0	1.0	1.0	1.0	1.0
North Fort Bend Water Authority	1.2	1.5	1.5	1.4	1.3	1.3
North Green MUD	1.1	1.0	1.0	1.0	1.0	1.0
North Harris County Regional Water Authority	1.2	1.5	1.5	1.5	1.4	1.3
North Zulch MUD	1.0	1.0	1.1	1.2	1.2	1.2
Northeast Harris County MUD 1	1.0	1.0	1.0	1.0	1.0	1.0
Northwest Harris County MUD 16	1.0	1.0	1.0	1.0	1.0	1.0
Oak Hollow Utility	1.0	1.1	1.1	1.1	1.1	1.1
Oak Ridge North	1.0	1.0	1.0	1.0	1.0	1.0
Onalaska WSC	1.0	1.1	1.1	1.1	1.1	1.1
One Five O WSC	1.0	1.1	1.1	1.2	1.2	1.2
Oyster Creek	1.1	1.1	1.2	1.2	1.3	1.3
P B & S C WSC	1.0	1.0	1.1	1.1	1.1	1.1
Palmer Plantation MUD 1	1.0	1.0	1.0	1.0	1.0	1.1
Palmer Plantation MUD 2	1.0	1.1	1.1	1.1	1.1	1.1
Panorama Village	1.0	1.0	1.1	1.0	1.0	1.0
Parkway MUD	1.0	1.1	1.1	1.1	1.1	1.1
Pasadena	2.2	2.3	2.2	2.3	2.3	2.3
Pattison WSC	1.1	1.1	1.1	1.2	1.2	1.3
Patton Village	1.0	1.0	1.0	1.0	1.0	1.0
Pearland	2.0	1.8	1.8	1.8	1.8	1.8
Pecan Grove MUD 1	1.7	1.6	1.5	1.5	1.5	1.5
Pennington WSC	1.0	1.0	1.0	1.0	1.0	1.0
Phelps SUD	1.0	1.1	1.1	1.1	1.1	1.1
Pine Village PUD	2.3	2.1	2.1	2.1	2.1	2.1
Pinehurst Decker Prairie WSC	1.0	1.0	1.0	1.0	1.0	1.0
Pinewood Community	1.0	1.0	1.0	1.0	1.0	1.0
Plantation MUD	1.1	1.1	1.1	1.1	1.1	1.1
Point Aquarius MUD	1.0	1.0	1.0	1.0	1.0	1.0
Porter SUD	1.0	1.0	1.0	1.0	1.0	1.0

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Prairie View	1.0	1.0	1.0	1.0	1.0	1.0
Prairie View A&M University	1.0	1.1	1.1	1.1	1.1	1.1
Providence WSC	1.0	1.0	1.0	1.0	1.0	1.0
Quadvest	1.0	1.1	1.0	1.0	1.1	1.1
Quail Valley UD	1.4	1.4	1.4	1.4	1.4	1.4
Ranch Crest Water	1.0	1.0	1.0	1.0	1.0	1.0
Rayford Road MUD	1.0	1.0	1.0	1.0	1.0	1.0
Raywood WSC	1.1	1.1	1.1	1.2	1.2	1.2
Richmond	1.0	1.1	1.1	1.1	1.2	1.2
Richwood	1.5	1.5	1.5	1.5	1.5	1.6
River Plantation MUD	1.0	1.0	1.0	1.0	1.0	1.0
Riverside SUD	1.1	1.1	1.1	1.2	1.2	1.2
Rolling Fork PUD	1.0	1.0	1.0	1.0	1.0	1.0
Roman Forest Consolidated MUD	1.0	1.0	1.0	1.0	1.0	1.0
Rosenberg	1.0	1.1	1.1	1.2	1.2	1.2
Royal Valley Utilities	1.0	1.0	1.0	1.1	1.1	1.1
Sagemeadow UD	1.3	1.3	1.3	1.4	1.3	1.3
San Jacinto SUD	1.0	1.1	1.1	1.1	1.1	1.1
San Leon MUD	2.1	2.5	2.5	2.5	2.5	2.4
Seabrook	1.3	1.3	1.3	1.3	1.3	1.3
Sealy	1.0	1.0	1.0	1.0	1.0	1.0
Sedona Lakes MUD 1	1.1	1.1	1.1	1.1	1.1	1.1
Sequoia Improvement District	1.0	1.0	1.0	1.0	1.0	1.0
Shenandoah	1.0	1.0	1.0	1.0	1.0	1.0
Shepherd	1.0	1.1	1.1	1.1	1.1	1.1
Shoreacres	1.2	1.3	1.3	1.4	1.4	1.4
Sienna Plantation	1.6	1.6	1.5	1.5	1.5	1.5
Soda WSC	1.0	1.1	1.1	1.2	1.2	1.2
South Cleveland WSC	1.0	1.1	1.1	1.4	1.2	1.0
South Houston	2.5	2.5	2.5	2.5	2.5	2.5
Southeast WSC	1.0	1.1	1.1	1.1	1.1	1.1
Southern Montgomery County MUD	1.0	1.0	1.0	1.0	1.0	1.0
Southern Water	1.0	1.0	1.0	1.0	1.0	1.0
Southside Place	1.0	1.1	1.1	1.1	1.1	1.1
Southwest Harris County MUD 1	1.5	1.4	1.4	1.4	1.4	1.4
Splendora	1.3	1.1	1.4	1.1	1.0	1.0
Spring Creek UD	1.0	1.0	1.0	1.0	1.0	1.0
Spring Meadows MUD	1.0	1.1	1.1	1.1	1.1	1.1
Spring Valley	1.5	1.3	1.3	1.3	1.3	1.3

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Stanley Lake MUD	1.0	1.0	1.0	1.0	1.0	1.0
Steam-Electric Power, Austin	1.0	1.0	1.0	1.0	1.0	1.0
Steam-Electric Power, Chambers	1.6	1.6	1.6	1.6	1.6	1.6
Steam-Electric Power, Fort Bend	2.0	2.4	2.4	2.4	2.4	2.4
Steam-Electric Power, Galveston	1.0	1.0	1.0	1.0	1.0	1.0
Steam-Electric Power, Harris	1.0	1.0	1.0	1.0	1.0	1.0
Steam-Electric Power, Montgomery	1.0	1.0	1.0	1.0	1.0	1.0
Suburban Utility	1.0	1.0	1.0	1.0	1.0	1.0
Sugar Land	1.1	1.1	1.1	1.1	1.2	1.2
Sunbelt FWSD	1.6	1.4	1.4	1.5	1.5	1.5
Surfside Beach	1.9	2.0	2.0	2.1	2.2	2.3
Sweeny	1.0	1.0	1.0	1.0	1.0	1.0
T & W Water Service	1.0	1.0	1.0	1.0	1.0	1.0
Tarkington SUD	1.0	1.1	1.1	1.1	1.1	1.1
TDCJ Darrington Unit	1.0	1.0	1.0	1.0	1.0	1.0
TDCJ Ferguson Unit	1.0	1.0	1.0	1.0	1.0	1.0
TDCJ Jester Units	1.0	1.0	1.0	1.0	1.0	1.0
TDCJ Ramsey Area	1.1	1.0	1.0	1.0	1.0	1.0
Tempe WSC 1	1.0	1.1	1.1	1.1	1.1	1.1
Texas City	2.7	2.9	2.9	2.9	2.8	2.8
The Commons Water Supply	1.0	1.0	1.0	1.0	1.0	1.0
The Woodlands	1.0	1.0	1.0	1.0	1.0	1.0
Thunderbird UD	1.0	1.1	1.1	1.1	1.1	1.1
Tomball	1.0	1.0	1.0	1.0	1.0	1.0
Trail of the Lakes MUD	1.0	1.1	1.1	1.1	1.1	1.1
Trinity	2.6	2.8	3.0	3.2	3.4	3.6
Trinity Bay Conservation District	1.3	1.3	1.3	1.3	1.3	1.3
Trinity Rural WSC	2.1	2.3	2.5	2.6	2.7	2.9
Valley Ranch MUD 1	1.0	1.1	1.2	1.3	1.3	1.4
Varner Creek UD	1.0	1.0	1.0	1.0	1.0	1.0
Walker County SUD	1.1	1.1	1.1	1.1	1.1	1.1
Waller	1.0	1.0	1.0	1.0	1.0	1.0
Wallis	1.0	1.1	1.1	1.1	1.1	1.1
Waterwood MUD 1	3.1	3.1	3.2	3.2	3.3	3.4
Webster	1.7	1.7	1.8	1.8	1.8	1.8
West Columbia	1.0	1.0	1.0	1.0	1.0	1.0
West End WSC	1.0	1.1	1.1	1.1	1.2	1.2
West Hardin WSC	1.0	1.0	1.0	1.0	1.0	1.0
West Harris County MUD 6	1.0	1.0	1.0	1.0	1.0	1.0
West Harris County Regional Water Authority	1.1	1.8	1.9	1.8	1.7	1.6
West University Place	1.0	1.1	1.1	1.1	1.1	1.1
Westfield Garden Park	1.0	1.0	1.0	1.0	1.0	1.0

WUG*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Westwood North WSC	1.0	1.0	1.0	1.0	1.0	1.0
Westwood Shores MUD	2.5	2.7	2.9	3.1	3.2	3.4
White Oak WSC	1.0	1.0	1.0	1.0	1.0	1.0
Willis	1.8	1.8	1.7	1.6	1.6	1.6
Willow Creek Farms MUD	1.0	1.0	1.0	1.0	1.0	1.0
Windfern Forest Utility District	1.0	1.0	1.0	1.0	1.0	1.0
Wood Branch Village	1.0	1.0	1.0	1.0	1.0	1.0
Wood Trace MUD 1	1.0	1.0	1.0	1.0	1.0	1.0
Woodcreek MUD	1.0	1.0	1.0	1.0	1.0	1.0
Woodcreek Water Of Liberty	1.0	1.0	1.0	1.0	1.0	1.0
Woodland Oaks Utility	1.0	1.0	1.0	1.0	1.0	1.0
Woodridge MUD	1.0	1.1	1.2	1.3	1.3	1.4

**Reflects only the portions of split WUGs within Region H.*

Table 5-A14 – MWP Management Supply Factors

MWP*	Management Supply Factor					
	2030	2040	2050	2060	2070	2080
Brazos River Authority	1.0	1.0	1.1	1.1	1.1	1.1
Brazosport Water Authority	1.4	1.3	1.3	1.3	1.3	1.3
Chambers-Liberty Counties Navigation District	1.0	1.0	1.0	1.0	1.0	1.0
Dow Inc	1.4	1.4	1.4	1.3	1.3	1.2
Gulf Coast Water Authority	1.3	1.4	1.4	1.4	1.4	1.4
Houston	1.1	1.1	1.3	1.3	1.3	1.3
Huntsville	1.0	1.0	1.0	1.0	1.1	1.0
Lower Neches Valley Authority	1.1	2.1	2.1	2.1	2.1	2.1
Missouri City	1.3	1.3	1.3	1.3	1.3	1.3
North Fort Bend Water Authority	1.2	1.5	1.5	1.4	1.3	1.3
North Harris County Regional Water Authority	1.2	1.5	1.5	1.5	1.4	1.3
NRG	1.0	1.0	1.0	1.0	1.0	1.0
San Jacinto River Authority	1.0	1.0	1.0	1.0	1.0	1.0
Trinity River Authority	1.0	1.0	1.0	1.0	1.0	1.0
West Harris County Regional Water Authority	1.1	1.8	1.9	1.8	1.7	1.6

**The Management Supply Factors shown in this table reflect total MWP-related water supply allocations divided by MWP demand. MWP-level surpluses which remain unassigned to a WUG are excluded from the calculation. Values in this table represent MWP Management Supply Factors within Region H only and do not include demands, supplies, or projects for other regions.*

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Table 5-A15 – Unmet WUG Water Need*

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Alvin	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Ames Minglewood WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0
Anahuac	Chambers	Neches-Trinity	Municipal	0	0	0	0	0	0
Anahuac	Chambers	Trinity	Municipal	0	0	0	0	0	0
Angleton	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Austin County WSC	Austin	Brazos	Municipal	0	0	0	0	0	0
Austin County WSC	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
Bacliff MUD	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Baker Road MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Baybrook MUD 1	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Baytown	Chambers	Trinity	Municipal	0	0	0	0	0	0
Baytown	Chambers	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Baytown	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Baytown	Harris	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Bayview MUD	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Bellaire	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Bellville	Austin	Brazos	Municipal	0	0	0	0	0	0
Blaketree MUD 1 of Montgomery County	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Blue Bell Manor Utility	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Blue Ridge West MUD	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Bolivar Peninsula SUD	Galveston	Neches-Trinity	Municipal	0	0	0	0	0	0
Brazoria	Brazoria	Brazos	Municipal	0	0	0	0	0	0
Brazoria	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
Brazoria County FWSD 1	Brazoria	Brazos	Municipal	0	0	0	0	0	0
Brazoria County FWSD 1	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
Brazoria County MUD 2	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Brazoria County MUD 21	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 22	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 25	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 29	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 3	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 31	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 39	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 55	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brazoria County MUD 6	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Brookshire MWD	Waller	Brazos	Municipal	0	0	0	0	0	0
Buffalo	Leon	Trinity	Municipal	0	0	0	0	0	0
Bunker Hill Village	Harris	San Jacinto	Municipal	0	0	0	0	0	0
C C Water Works	Chambers	Trinity	Municipal	0	0	0	0	0	0
C C Water Works	Chambers	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Cape Royale UD	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Centerville	Leon	Trinity	Municipal	0	0	0	0	0	0
Central Harris County Regional Water Authority	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Chambers County MUD 1	Chambers	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Chateau Woods MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Chimney Hill MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Clear Brook City MUD	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Clear Lake City Water Authority	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Cleveland	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
Clute	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Concord-Robbins WSC	Leon	Brazos	Municipal	0	0	0	0	0	0
Concord-Robbins WSC	Leon	Trinity	Municipal	0	0	0	0	0	0
Conroe	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Conroe Resort Utilities	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Corinthian Point MUD 2	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Country Terrace Water	Harris	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Austin	Austin	Brazos	Municipal	0	0	0	0	0	0
County-Other, Austin	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
County-Other, Austin	Austin	Colorado	Municipal	0	0	0	0	0	0
County-Other, Brazoria	Brazoria	Brazos	Municipal	0	0	0	0	0	0
County-Other, Brazoria	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
County-Other, Brazoria	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
County-Other, Chambers	Chambers	Neches-Trinity	Municipal	0	0	0	0	0	0
County-Other, Chambers	Chambers	Trinity	Municipal	0	0	0	0	0	0
County-Other, Chambers	Chambers	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Fort Bend	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
County-Other, Fort Bend	Fort Bend	Brazos-Colorado	Municipal	0	0	0	0	0	0
County-Other, Fort Bend	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Fort Bend	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
County-Other, Galveston	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
County-Other, Harris	Harris	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Harris	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
County-Other, Harris	Harris	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Leon	Leon	Brazos	Municipal	0	0	0	0	0	0
County-Other, Leon	Leon	Trinity	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	Neches	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	Neches-Trinity	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	Trinity	Municipal	0	0	0	0	0	0
County-Other, Liberty	Liberty	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Madison	Madison	Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
County-Other, Madison	Madison	Trinity	Municipal	0	0	0	0	0	0
County-Other, Montgomery	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Polk	Polk	Trinity	Municipal	0	0	0	0	0	0
County-Other, Polk	Polk	Neches	Municipal	0	0	0	0	0	0
County-Other, San Jacinto	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, San Jacinto	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
County-Other, Trinity	Trinity	Trinity	Municipal	0	0	0	0	0	0
County-Other, Walker	Walker	San Jacinto	Municipal	0	0	0	0	0	0
County-Other, Walker	Walker	Trinity	Municipal	0	0	0	0	0	0
County-Other, Waller	Waller	Brazos	Municipal	0	0	0	0	0	0
County-Other, Waller	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Crosby MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Cut & Shoot	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Daisetta	Liberty	Neches	Municipal	0	0	0	0	0	0
Danbury	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Dayton	Liberty	Trinity	Municipal	0	0	0	0	0	0
Dayton	Liberty	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Deer Park	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Deer Park	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Devers	Liberty	Neches	Municipal	0	0	0	0	0	0
Devers	Liberty	Trinity	Municipal	0	0	0	0	0	0
Dobbin Plantersville WSC	Grimes	Brazos	Municipal	0	0	0	0	0	0
Dobbin Plantersville WSC	Grimes	San Jacinto	Municipal	0	0	0	0	0	0
Dobbin Plantersville WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Dodge Oakhurst WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
Dodge Oakhurst WSC	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Dodge Oakhurst WSC	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Dodge Oakhurst WSC	Walker	Trinity	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Domestic Water	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Douglas Utility	Harris	San Jacinto	Municipal	0	0	0	0	0	0
East Montgomery County MUD 6	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
East Plantation UD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
El Dorado UD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Far Hills UD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
First Colony MUD 9	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
First Colony MUD 9	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Flo Community WSC	Freestone	Trinity	Municipal	0	0	0	0	0	0
Flo Community WSC	Leon	Trinity	Municipal	0	0	0	0	0	0
Forest Hills MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Fort Bend County FWSD 1	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County FWSD 1	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County FWSD 2	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County FWSD 2	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Fort Bend County FWSD 2	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 115	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 116	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 121	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 128	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 129	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 131	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 140	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 149	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 152	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 155	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 158	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 162	Fort Bend	Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Fort Bend County MUD 23	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 24	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 25	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 25	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 26	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Fort Bend County MUD 26	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 42	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 46	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 46	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 47	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 48	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 49	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 49	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 5	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County MUD 81	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fort Bend County WCID 2	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Fort Bend County WCID 2	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fort Bend County WCID 2	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Fort Bend County WCID 3	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Freeport	Brazoria	Brazos	Municipal	0	0	0	0	0	0
Freeport	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
Freeport	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Friendswood	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Friendswood	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Fulshear	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Fulshear	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Fulshear	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
G & W WSC	Grimes	Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
G & W WSC	Grimes	San Jacinto	Municipal	0	0	0	0	0	0
G & W WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
G & W WSC	Waller	Brazos	Municipal	0	0	0	0	0	0
G & W WSC	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Galena Park	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Galveston	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County FWSD 6	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County MUD 12	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County WCID 1	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County WCID 12	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Galveston County WCID 8	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Glendale WSC	Trinity	Trinity	Municipal	0	0	0	0	0	0
Grand Oaks MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Green Trails MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Greenwood UD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Groveton	Trinity	Trinity	Municipal	0	0	0	0	0	0
Groveton	Trinity	Neches	Municipal	0	0	0	0	0	0
Hardin WSC	Liberty	Neches	Municipal	0	0	0	0	0	0
Hardin WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0
Harris County FWSD 1-A	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County FWSD 27	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County FWSD 58	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 106	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 11	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 119	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 122	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 132	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 148	Harris	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County MUD 151	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 152	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 153	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 154	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 180	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 189	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 216	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 221	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 23	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 261	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 278	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 290	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 321	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 342	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 344	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 345	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 36	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 361	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 372	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 400	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 412	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 420	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 46	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 49	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 494	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 5	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 50	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 504	Harris	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Harris County MUD 55	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County MUD 58	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 6	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 8	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County MUD 96	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County UD 14	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County UD 15	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County WCID 1	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County WCID 133	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County WCID 156	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County WCID 161	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County WCID 50	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County WCID 70	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County WCID 74	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County WCID 89	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Harris County WCID 96	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris County WCID-Fondren Road	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Harris-Montgomery Counties MUD 386	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Hempstead	Waller	Brazos	Municipal	0	0	0	0	0	0
High Prairie WSC	Leon	Brazos	Municipal	0	0	0	0	0	0
High Prairie WSC	Madison	Brazos	Municipal	0	0	0	0	0	0
High Prairie WSC	Madison	Trinity	Municipal	0	0	0	0	0	0
Hillcrest Village	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Hilltop Lakes WSC	Leon	Brazos	Municipal	0	0	0	0	0	0
Hilshire Village	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Hitchcock	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
HMW SUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
HMW SUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Houston	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Houston	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Houston	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Houston	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Houston	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Humble	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Huntsville	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Huntsville	Walker	Trinity	Municipal	0	0	0	0	0	0
Irrigation, Austin	Austin	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Austin	Austin	Brazos-Colorado	Irrigation	0	0	0	0	0	0
Irrigation, Brazoria	Brazoria	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Brazoria	Brazoria	Brazos-Colorado	Irrigation	0	0	0	0	0	0
Irrigation, Brazoria	Brazoria	San Jacinto-Brazos	Irrigation	31,996	32,310	32,402	32,480	32,508	32,526
Irrigation, Chambers	Chambers	Neches-Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Chambers	Chambers	Trinity	Irrigation	2,904	2,904	2,904	2,904	2,904	2,904
Irrigation, Chambers	Chambers	Trinity-San Jacinto	Irrigation	1,016	1,016	1,016	1,016	1,016	1,016
Irrigation, Fort Bend	Fort Bend	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Fort Bend	Fort Bend	Brazos-Colorado	Irrigation	0	0	0	0	0	0
Irrigation, Fort Bend	Fort Bend	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Fort Bend	Fort Bend	San Jacinto-Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Galveston	Galveston	Neches-Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Galveston	Galveston	San Jacinto-Brazos	Irrigation	5,376	5,376	5,376	5,376	5,376	5,376
Irrigation, Harris	Harris	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Harris	Harris	Trinity-San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Leon	Leon	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Leon	Leon	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Liberty	Liberty	Neches	Irrigation	0	0	0	0	0	0
Irrigation, Liberty	Liberty	Neches-Trinity	Irrigation	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Irrigation, Liberty	Liberty	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Liberty	Liberty	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Liberty	Liberty	Trinity-San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Madison	Madison	Brazos	Irrigation	45	45	45	45	45	45
Irrigation, Madison	Madison	Trinity	Irrigation	70	70	70	70	70	70
Irrigation, Montgomery	Montgomery	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Polk	Polk	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Polk	Polk	Neches	Irrigation	0	0	0	0	0	0
Irrigation, San Jacinto	San Jacinto	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, San Jacinto	San Jacinto	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Trinity	Trinity	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Walker	Walker	San Jacinto	Irrigation	0	0	0	0	0	0
Irrigation, Walker	Walker	Trinity	Irrigation	0	0	0	0	0	0
Irrigation, Waller	Waller	Brazos	Irrigation	0	0	0	0	0	0
Irrigation, Waller	Waller	San Jacinto	Irrigation	0	0	0	0	0	0
Jacinto City	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Jamaica Beach	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Jersey Village	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Jewett	Leon	Brazos	Municipal	0	0	0	0	0	0
Jewett	Leon	Trinity	Municipal	0	0	0	0	0	0
Johnston Water Utility	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Katy	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Katy	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Katy	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Keenan WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Kendleton	Fort Bend	Brazos-Colorado	Municipal	0	0	0	0	0	0
Kings Manor MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Kings Manor MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Kirkmont MUD	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
La Marque	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
La Porte	Harris	San Jacinto	Municipal	0	0	0	0	0	0
La Porte	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Lake Bonanza WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Lake Conroe Hills MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Lake Jackson	Brazoria	Brazos	Municipal	0	0	0	0	0	0
Lake Jackson	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Lake Livingston WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	Walker	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	Hardin	Trinity	Municipal	0	0	0	0	0	0
Lake Livingston WSC	Polk	Neches	Municipal	0	0	0	0	0	0
Lake MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Lake MUD	Harris	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Lazy River Improvement District	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
League City	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
League City	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Leggett WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Leggett WSC	Polk	Neches	Municipal	0	0	0	0	0	0
Liberty	Liberty	Trinity	Municipal	0	0	0	0	0	0
Liberty County FWSD 1 Hull	Liberty	Neches	Municipal	0	0	0	0	0	0
Livestock, Austin	Austin	Brazos	Livestock	0	0	0	0	0	0
Livestock, Austin	Austin	Brazos-Colorado	Livestock	0	0	0	0	0	0
Livestock, Austin	Austin	Colorado	Livestock	0	0	0	0	0	0
Livestock, Brazoria	Brazoria	Brazos	Livestock	135	140	145	149	152	152
Livestock, Brazoria	Brazoria	Brazos-Colorado	Livestock	21	33	47	55	63	62

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Livestock, Brazoria	Brazoria	San Jacinto-Brazos	Livestock	69	105	115	124	127	129
Livestock, Chambers	Chambers	Neches-Trinity	Livestock	0	0	0	0	0	0
Livestock, Chambers	Chambers	Trinity	Livestock	0	0	0	0	0	0
Livestock, Chambers	Chambers	Trinity-San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	Brazos	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	Brazos-Colorado	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Fort Bend	Fort Bend	San Jacinto-Brazos	Livestock	0	0	0	0	0	0
Livestock, Galveston	Galveston	Neches-Trinity	Livestock	12	12	12	12	12	12
Livestock, Galveston	Galveston	San Jacinto-Brazos	Livestock	184	184	184	184	184	184
Livestock, Harris	Harris	San Jacinto	Livestock	499	665	665	665	665	665
Livestock, Harris	Harris	San Jacinto-Brazos	Livestock	51	51	51	51	51	51
Livestock, Harris	Harris	Trinity-San Jacinto	Livestock	133	133	133	133	133	133
Livestock, Leon	Leon	Brazos	Livestock	0	0	0	0	0	0
Livestock, Leon	Leon	Trinity	Livestock	0	0	0	0	0	0
Livestock, Liberty	Liberty	Neches	Livestock	0	0	0	0	0	0
Livestock, Liberty	Liberty	Neches-Trinity	Livestock	0	0	0	0	0	0
Livestock, Liberty	Liberty	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Liberty	Liberty	Trinity	Livestock	0	0	0	0	0	0
Livestock, Liberty	Liberty	Trinity-San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Madison	Madison	Brazos	Livestock	111	111	111	111	111	111
Livestock, Madison	Madison	Trinity	Livestock	860	860	860	860	860	860
Livestock, Montgomery	Montgomery	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Polk	Polk	Trinity	Livestock	0	0	0	0	0	0
Livestock, Polk	Polk	Neches	Livestock	0	0	0	0	0	0
Livestock, San Jacinto	San Jacinto	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, San Jacinto	San Jacinto	Trinity	Livestock	0	0	0	0	0	0
Livestock, Trinity	Trinity	Trinity	Livestock	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Livestock, Walker	Walker	San Jacinto	Livestock	0	0	0	0	0	0
Livestock, Walker	Walker	Trinity	Livestock	0	0	0	0	0	0
Livestock, Waller	Waller	Brazos	Livestock	0	0	0	0	0	0
Livestock, Waller	Waller	San Jacinto	Livestock	0	0	0	0	0	0
Livingston	Polk	Trinity	Municipal	0	0	0	0	0	0
Longhorn Town UD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Luce Bayou PUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Madisonville	Madison	Trinity	Municipal	0	0	0	0	0	0
Magnolia	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Manufacturing, Austin	Austin	Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Brazoria	Brazoria	Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Brazoria	Brazoria	Brazos-Colorado	Manufacturing	0	0	0	0	0	0
Manufacturing, Brazoria	Brazoria	San Jacinto-Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Chambers	Chambers	Neches-Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, Chambers	Chambers	Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, Chambers	Chambers	Trinity-San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Fort Bend	Fort Bend	Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Fort Bend	Fort Bend	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Fort Bend	Fort Bend	San Jacinto-Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Galveston	Galveston	San Jacinto-Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Harris	Harris	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Harris	Harris	San Jacinto-Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Harris	Harris	Trinity-San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Leon	Leon	Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, Liberty	Liberty	Neches	Manufacturing	0	0	0	0	0	0
Manufacturing, Liberty	Liberty	Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, Montgomery	Montgomery	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Polk	Polk	Trinity	Manufacturing	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Manufacturing, San Jacinto	San Jacinto	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Walker	Walker	San Jacinto	Manufacturing	0	0	0	0	0	0
Manufacturing, Walker	Walker	Trinity	Manufacturing	0	0	0	0	0	0
Manufacturing, Waller	Waller	Brazos	Manufacturing	0	0	0	0	0	0
Manufacturing, Waller	Waller	San Jacinto	Manufacturing	0	0	0	0	0	0
Manvel	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Mason Creek UD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Meadowcreek MUD	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Meadows Place	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Meadows Place	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Memorial Point UD	Polk	Trinity	Municipal	0	0	0	0	0	0
Memorial Villages Water Authority	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Mercy WSC	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
Mercy WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
Mining, Austin	Austin	Brazos	Mining	0	0	0	0	0	0
Mining, Brazoria	Brazoria	San Jacinto-Brazos	Mining	0	0	0	0	0	0
Mining, Chambers	Chambers	Trinity-San Jacinto	Mining	0	0	0	0	0	0
Mining, Fort Bend	Fort Bend	Brazos	Mining	0	0	0	0	0	0
Mining, Harris	Harris	San Jacinto	Mining	0	0	0	0	0	0
Mining, Harris	Harris	San Jacinto-Brazos	Mining	0	0	0	0	0	0
Mining, Leon	Leon	Trinity	Mining	0	0	0	0	0	0
Mining, Liberty	Liberty	San Jacinto	Mining	0	0	0	0	0	0
Mining, Liberty	Liberty	Trinity	Mining	0	0	0	0	0	0
Mining, Madison	Madison	Brazos	Mining	443	443	443	443	443	443
Mining, Madison	Madison	Trinity	Mining	267	267	267	267	267	267
Mining, Montgomery	Montgomery	San Jacinto	Mining	0	0	0	0	0	0
Mining, Polk	Polk	Trinity	Mining	0	0	0	0	0	0
Mining, Polk	Polk	Neches	Mining	0	0	0	0	0	0
Mining, San Jacinto	San Jacinto	San Jacinto	Mining	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Mining, San Jacinto	San Jacinto	Trinity	Mining	0	0	0	0	0	0
Mining, Trinity	Trinity	Trinity	Mining	0	0	0	0	0	0
Mining, Walker	Walker	Trinity	Mining	0	0	0	0	0	0
Mining, Waller	Waller	Brazos	Mining	0	0	0	0	0	0
Missouri City	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Mont Belvieu	Chambers	Trinity	Municipal	0	0	0	0	0	0
Mont Belvieu	Chambers	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Montgomery	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 105	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 112	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 115	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 119	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 126	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 127	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 137	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 139	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 15	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 18	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 19	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 24	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 56	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 8	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 83	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 84	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 88	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 89	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 9	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 94	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 95	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Montgomery County MUD 98	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County MUD 99	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County UD 2	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County UD 3	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County UD 4	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Montgomery County WCID 1	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Morgans Point	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Morgans Point	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Moscow WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Mount Houston Road MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
MSEC Enterprises	Grimes	San Jacinto	Municipal	0	0	0	0	0	0
MSEC Enterprises	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Nassau Bay	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Needville	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Needville	Fort Bend	Brazos-Colorado	Municipal	0	0	0	0	0	0
New Caney MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
New Waverly	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Newport MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Nitsch and Son Utility	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Normangee	Leon	Brazos	Municipal	0	0	0	0	0	0
Normangee	Leon	Trinity	Municipal	0	0	0	0	0	0
Normangee	Madison	Trinity	Municipal	0	0	0	0	0	0
North Belt UD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
North Channel Water Authority	Harris	San Jacinto	Municipal	0	0	0	0	0	0
North Forest MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
North Fort Bend Water Authority	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
North Fort Bend Water Authority	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
North Fort Bend Water Authority	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
North Fort Bend Water Authority	Harris	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
North Fort Bend Water Authority	Waller	San Jacinto	Municipal	0	0	0	0	0	0
North Green MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
North Harris County Regional Water Authority	Harris	San Jacinto	Municipal	0	0	0	0	0	0
North Harris County Regional Water Authority	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
North Zulch MUD	Madison	Brazos	Municipal	0	0	0	0	0	0
North Zulch MUD	Madison	Trinity	Municipal	0	0	0	0	0	0
Northeast Harris County MUD 1	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Northwest Harris County MUD 16	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Oak Hollow Utility	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Oak Ridge North	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Onalaska WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
One Five O WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
One Five O WSC	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Oyster Creek	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
P B & S C WSC	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
P B & S C WSC	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Palmer Plantation MUD 1	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Palmer Plantation MUD 2	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Panorama Village	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Parkway MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Pasadena	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Pasadena	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pattison WSC	Waller	Brazos	Municipal	0	0	0	0	0	0
Patton Village	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Pearland	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pearland	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pearland	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pecan Grove MUD 1	Fort Bend	Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Pecan Grove MUD 1	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Pennington WSC	Trinity	Trinity	Municipal	0	0	0	0	0	0
Phelps SUD	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Phelps SUD	Walker	Trinity	Municipal	0	0	0	0	0	0
Pine Village PUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Pinehurst Decker Prairie WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Pinewood Community	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Plantation MUD	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Point Aquarius MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Porter SUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Prairie View	Waller	Brazos	Municipal	0	0	0	0	0	0
Prairie View	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Prairie View A&M University	Waller	Brazos	Municipal	0	0	0	0	0	0
Prairie View A&M University	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Providence WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Quadvest	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Quadvest	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Quadvest	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Quadvest	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
Quadvest	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Quadvest	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Quadvest	Waller	Brazos	Municipal	0	0	0	0	0	0
Quadvest	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Quadvest	Matagorda	Colorado-Lavaca	Municipal	0	0	0	0	0	0
Quadvest	Jackson	Colorado-Lavaca	Municipal	0	0	0	0	0	0
Quail Valley UD	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Ranch Crest Water	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Rayford Road MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Raywood WSC	Liberty	Trinity	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Richmond	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Richwood	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
River Plantation MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Riverside SUD	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Riverside SUD	Walker	Trinity	Municipal	0	0	0	0	0	0
Rolling Fork PUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Roman Forest Consolidated MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Rosenberg	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Royal Valley Utilities	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Sagemeadow UD	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
San Jacinto SUD	San Jacinto	San Jacinto	Municipal	0	0	0	0	0	0
San Jacinto SUD	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
San Leon MUD	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Seabrook	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sealy	Austin	Brazos	Municipal	0	0	0	0	0	0
Sealy	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
Sedona Lakes MUD 1	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sequoia Improvement District	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Shenandoah	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Shepherd	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Shoreacres	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sienna Plantation	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Sienna Plantation	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Soda WSC	Polk	Trinity	Municipal	0	0	0	0	0	0
Soda WSC	Polk	Neches	Municipal	0	0	0	0	0	0
South Cleveland WSC	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
South Houston	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Southeast WSC	Leon	Brazos	Municipal	0	0	0	0	0	0
Southeast WSC	Leon	Trinity	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Southern Montgomery County MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Southern Water	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Southside Place	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Southwest Harris County MUD 1	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Splendora	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
Splendora	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Spring Creek UD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Spring Meadows MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Spring Meadows MUD	Harris	Trinity-San Jacinto	Municipal	0	0	0	0	0	0
Spring Valley	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Stanley Lake MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Steam-Electric Power, Austin	Austin	Brazos	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Chambers	Chambers	Trinity-San Jacinto	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Fort Bend	Fort Bend	Brazos	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Galveston	Galveston	San Jacinto-Brazos	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Harris	Harris	San Jacinto	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Harris	Harris	San Jacinto-Brazos	Steam Electric Power	0	0	0	0	0	0
Steam-Electric Power, Montgomery	Montgomery	San Jacinto	Steam Electric Power	0	0	0	0	0	0
Suburban Utility	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Sugar Land	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Sugar Land	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Sugar Land	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sunbelt FWSD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Surfside Beach	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Sweeny	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
T & W Water Service	Liberty	San Jacinto	Municipal	0	0	0	0	0	0
T & W Water Service	Liberty	Trinity	Municipal	0	0	0	0	0	0
T & W Water Service	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Tarkington SUD	Liberty	San Jacinto	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
Tarkington SUD	Liberty	Trinity	Municipal	0	0	0	0	0	0
TDCJ Darrington Unit	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
TDCJ Ferguson Unit	Madison	Trinity	Municipal	0	0	0	0	0	0
TDCJ Jester Units	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
TDCJ Jester Units	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
TDCJ Ramsey Area	Brazoria	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Tempe WSC 1	Polk	Trinity	Municipal	0	0	0	0	0	0
Texas City	Galveston	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
The Commons Water Supply	Harris	San Jacinto	Municipal	0	0	0	0	0	0
The Woodlands	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Thunderbird UD	Fort Bend	Brazos	Municipal	0	0	0	0	0	0
Thunderbird UD	Fort Bend	San Jacinto-Brazos	Municipal	0	0	0	0	0	0
Tomball	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Trail of the Lakes MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Trinity	Trinity	Trinity	Municipal	0	0	0	0	0	0
Trinity Bay Conservation District	Chambers	Neches-Trinity	Municipal	0	0	0	0	0	0
Trinity Bay Conservation District	Chambers	Trinity	Municipal	0	0	0	0	0	0
Trinity Bay Conservation District	Jefferson	Neches-Trinity	Municipal	0	0	0	0	0	0
Trinity Rural WSC	Trinity	Trinity	Municipal	0	0	0	0	0	0
Trinity Rural WSC	Walker	Trinity	Municipal	0	0	0	0	0	0
Valley Ranch MUD 1	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Varner Creek UD	Brazoria	Brazos	Municipal	0	0	0	0	0	0
Walker County SUD	Walker	San Jacinto	Municipal	0	0	0	0	0	0
Walker County SUD	Walker	Trinity	Municipal	0	0	0	0	0	0
Waller	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Waller	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Wallis	Austin	Brazos-Colorado	Municipal	0	0	0	0	0	0
Waterwood MUD 1	San Jacinto	Trinity	Municipal	0	0	0	0	0	0
Webster	Harris	San Jacinto-Brazos	Municipal	0	0	0	0	0	0

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)					
				2030	2040	2050	2060	2070	2080
West Columbia	Brazoria	Brazos	Municipal	0	0	0	0	0	0
West Columbia	Brazoria	Brazos-Colorado	Municipal	0	0	0	0	0	0
West End WSC	Washington	Brazos	Municipal	0	0	0	0	0	0
West End WSC	Austin	Brazos	Municipal	0	0	0	0	0	0
West End WSC	Austin	Colorado	Municipal	0	0	0	0	0	0
West End WSC	Fayette	Colorado	Municipal	0	0	0	0	0	0
West Hardin WSC	Liberty	Neches	Municipal	0	0	0	0	0	0
West Harris County MUD 6	Harris	San Jacinto	Municipal	0	0	0	0	0	0
West Harris County Regional Water Authority	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
West Harris County Regional Water Authority	Harris	San Jacinto	Municipal	0	0	0	0	0	0
West University Place	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Westfield Garden Park	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Westwood North WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Westwood Shores MUD	Trinity	Trinity	Municipal	0	0	0	0	0	0
White Oak WSC	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Willis	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Willow Creek Farms MUD	Fort Bend	San Jacinto	Municipal	0	0	0	0	0	0
Willow Creek Farms MUD	Waller	San Jacinto	Municipal	0	0	0	0	0	0
Windfern Forest Utility District	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Wood Branch Village	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Wood Trace MUD 1	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Woodcreek MUD	Harris	San Jacinto	Municipal	0	0	0	0	0	0
Woodcreek Water Of Liberty	Liberty	Trinity	Municipal	0	0	0	0	0	0
Woodland Oaks Utility	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0
Woodridge MUD	Montgomery	San Jacinto	Municipal	0	0	0	0	0	0

**For this table, positive values reflect a projected unmet need. MWP information has been omitted from this table as no MWP was projected to have an unmet need after recommended WMS.*

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Table 5-A16 – Unmet WUG Water Need Summary

Water User Group	County	Basin	Type	Unmet Water Need (ac ft)*					
				2030	2040	2050	2060	2070	2080
Irrigation, Brazoria	Brazoria	San Jacinto-Brazos	Irrigation	31,996	32,310	32,402	32,480	32,508	32,526
Irrigation, Chambers	Chambers	Trinity	Irrigation	2,904	2,904	2,904	2,904	2,904	2,904
	Chambers	Trinity-San Jacinto	Irrigation	1,016	1,016	1,016	1,016	1,016	1,016
Irrigation, Galveston	Galveston	San Jacinto-Brazos	Irrigation	5,376	5,376	5,376	5,376	5,376	5,376
Irrigation, Madison	Madison	Brazos	Irrigation	45	45	45	45	45	45
	Madison	Trinity	Irrigation	70	70	70	70	70	70
Livestock, Brazoria	Brazoria	Brazos	Livestock	135	140	145	149	152	152
	Brazoria	Brazos-Colorado	Livestock	21	33	47	55	63	62
	Brazoria	San Jacinto-Brazos	Livestock	69	105	115	124	127	129
Livestock, Galveston	Galveston	Neches-Trinity	Livestock	12	12	12	12	12	12
	Galveston	San Jacinto-Brazos	Livestock	184	184	184	184	184	184
Livestock, Harris	Harris	San Jacinto	Livestock	499	665	665	665	665	665
	Harris	San Jacinto-Brazos	Livestock	51	51	51	51	51	51
	Harris	Trinity-San Jacinto	Livestock	133	133	133	133	133	133
Livestock, Madison	Madison	Brazos	Livestock	111	111	111	111	111	111
	Madison	Trinity	Livestock	860	860	860	860	860	860
Mining, Madison	Madison	Brazos	Mining	443	443	443	443	443	443
	Madison	Trinity	Mining	267	267	267	267	267	267

**For this table, positive values reflect a projected unmet need. Entities without projected unmet needs are omitted.*

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APPENDIX 5-B

PROJECT AND WATER MANAGEMENT STRATEGY TECHNICAL MEMORANDA

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDA

TABLE OF CONTENTS

Project	Memorandum
Conservation	
Adv. Municipal Conservation and Water Loss Reduction	CNSV-001
Industrial Conservation	CNSV-002
Irrigation Conservation	CNSV-003
Conveyance	
BWA Transmission and Storage Expansion	CONV-001
CHCRWA Transmission and Internal Distribution	CONV-002
City of Houston GRP Transmission	CONV-003
City of Houston Transmission Expansion	CONV-004
CWA Transmission Expansion	CONV-005
East Texas Transfer	CONV-006
LNVA Neches-Trinity Basin Interconnect	CONV-007
Manvel Supply Expansion	CONV-008
NFBWA Phase 2 Distribution Segments	CONV-009
NHCRWA Distribution Expansion	CONV-010
NHCRWA Transmission Lines	CONV-011
Southeast Transmission Line Improvements	CONV-012
WHCRWA Distribution Expansion	CONV-013
WHCRWA/NFBWA Transmission Line	CONV-014
Groundwater Development	
Aquifer Storage and Recovery	GWDV-001
Brackish GW Development and GW Blending	GWDV-002
BWA Brackish Groundwater Development	GWDV-003
City of Houston Area 2 Groundwater Infrastructure	GWDV-004
City of Houston Repump and GW Plant Improvements	GWDV-005
Expanded Use of Groundwater	GWDV-006
Fairchilds Supply Infrastructure	GWDV-007
GCWA Groundwater Well Development	GWDV-008
SJRA Catahoula Aquifer Supplies	GWDV-009
Groundwater Reduction Plans	
CHCRWA GRP	GWRP-001
City of Houston GRP	GWRP-002
City of Missouri City GRP	GWRP-003
City of Richmond GRP	GWRP-004
City of Rosenberg GRP	GWRP-005
City of Sugar Land IWRP	GWRP-006

Project	Memorandum
Fort Bend County MUD 25 GRP	GWRP-007
Fort Bend County WCID 2 GRP	GWRP-008
Montgomery County MUDs 8 and 9 Supply Expansion	GWRP-009
Montgomery County Supply Expansion	GWRP-010
NFBWA GRP	GWRP-011
NHCRWA GRP	GWRP-012
WHCRWA GRP	GWRP-013
Reuse	
City of Houston Reuse	REUS-001
City of Pearland Reuse	REUS-002
League City Effluent Reuse	REUS-003
NFBWA Member District Reuse	REUS-004
NHCRWA Member District Reuse	REUS-005
River Plantation Reuse	REUS-006
San Jacinto Basin Regional Return Flows	REUS-007
Texas City Industrial Complex Reuse	REUS-008
Wastewater Reclamation for Industry	REUS-009
Wastewater Reclamation for Municipal Irrigation	REUS-010
Westwood Shores MUD Reuse	REUS-011
Surface Water Development	
Allens Creek Reservoir	SWDV-001
BWSC Reservoir and Pump Station Expansion	SWDV-002
GCWA Coastal Desalination	SWDV-003
Lake Somerville Augmentation	SWDV-004
Treatment	
BAWA East SWTP Expansion	TRET-001
BWA Conventional Treatment Expansion	TRET-002
City of Houston EWPP Enhancement	TRET-003
Harris County MUD 50 Surface Water Treatment Plant	TRET-004
Northeast Water Purification Plant Expansion	TRET-005
Pearland Surface Water Treatment Plant	TRET-006
SEWPP Expansion	TRET-007
Other	
Brazos Saltwater Barrier	OTHR-001
GCWA Canal Lining and Loss Mitigation	OTHR-002
GCWA Shannon Pump Station Expansion	OTHR-003
LNVA Devers Pump Station Relocation	OTHR-004
Municipal Drought Management	OTHR-005
New and Expanded Contracts	OTHR-006

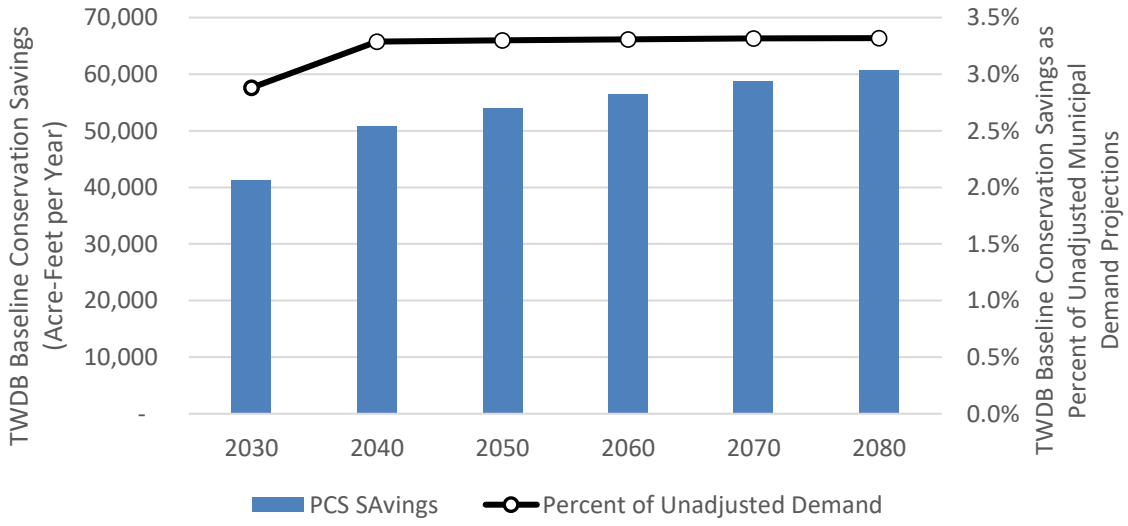
REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Advanced Municipal Conservation and Water Loss Reduction
Project ID:	CNSV-001
Project Type:	Conservation
Potential Supply Quantity (Rounded):	228,912 ac-ft/yr (204.3 mgd)
Implementation Decade:	2030 with ongoing annual expenditures
Development Timeline:	1 year
Project Capital Cost:	$7,362,462,510 over planning horizon (Sept. 2023)
Unit Water Cost (Rounded):	$1,152 per ac-ft (Advanced Conservation) $735 per ac-ft (Water Loss Reduction)

Strategy Description

Water conservation is a demand management project that proactively causes a decrease of future water needs. Conservation facilitates more efficient use of existing water supplies by allowing existing supplies to serve demands for a longer period of time and/or to delay the need to develop new supplies. The current Region H water demands have an embedded quantity of conservation savings. This quantity has been determined based on the assumption that water will be saved as a result of anticipated future, natural installation of plumbing fixtures and appliances as detailed in relevant legislation. These savings were included in the demand projections developed by TWDB. The resulting savings in Region H are described below in *Figure 1* and amount to as much as 3.3 percent of the annual, total (prior to reductions applied by TWDB) municipal water demand.

Figure 1 – TWDB-Applied Baseline Conservation



The use of advanced water conservation projects will accomplish a higher degree of conservation than is already contained within the current demand projections. This technical memorandum illustrates the application of advanced water conservation to Municipal and Municipal County-Other Water User Groups (WUGs) throughout Region H. These projects are recommended for the majority of WUGs in the region, with limited exceptions for those with extremely low existing per-capita demands or leakage losses. Due to the importance of conservation for meeting the growing water demands of the region and as a means to more effectively utilize existing water sources, conservation projects have been applied even for WUGs that do not demonstrate a need throughout the planning period.

For the 2026 round of regional planning, the Region H Water Planning Group (RHWPG) approached the issue of municipal water conservation in two ways. First, the RHWPG reviewed the results of the 2018 through 2022 Water Loss Audit Reports developed by TWDB in order to identify opportunities to implement conservation savings through gradual reduction in water losses. Specific measures for combatting water loss will vary from system to system but may include smart metering, leak detection, line repair, line replacement, or other actions appropriate to an individual system.

The RHWPG also benefitted from a combination of prior analyses and new data and tools in assessing advanced municipal conservation measures beyond embedded plumbing code savings in demand projections. The Texas Water Foundation (TWF), as well as the *Water Conservation by the Yard* report by The Sierra Club, National Wildlife Federation, and Texas Living Water Project, provided valuable insight into conservation practices and savings potential in the Region H area. Also, extremely valuable to Region H's assessment were the Municipal Water Conservation Planning Tool (MWCPT) released by TWDB in 2018 to assist utilities in water conservation planning and reporting, and the Alliance for Water Efficiency (AWE) Conservation Tracking Tool. The MWCPT includes savings, lifespan, cost, and other information on a broad range of conservation measures for single family residential (SFR), multi-family residential (MFR), and industrial, commercial, and institutional (ICI) sectors of municipal water use. The logic and data in the MWCPT and AWE tools, with consideration for other references and knowledge of local water use characteristics, served as the basis for development of the Region H Municipal Regional Conservation Tool (MRCT) used to assess potential savings from advanced municipal conservation practices on a regional scale.

Strategy Analyses

The project analyses for Municipal Conservation include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Estimates of potential savings as a result of water loss reduction were developed using data from the Water Loss Audit Reports prepared by TWDB for the years 2018 through 2022. These reports identified, by utility, the estimated losses of various types calculated from production and sales records, including apparent losses due to unbilled or unmetered usage, metering accuracy limitations, and other causes as well as real losses from line breaks and leakage. For the sake of this analysis, real losses were used as a basis of estimating potential savings.

The utilities identified in the report were associated with either named Municipal WUGs or Municipal County-Other WUGs. On a WUG basis, totals of utility real losses and total system input volume were developed. These totals could then be used to calculate the real loss identified for each unit of system input volume. WUGs with no identified utility records for the years examined were excluded from

the analysis of loss. Real losses were examined by WUG, and WUGs with real losses exceeding ten percent were targeted for potential savings. These WUGs exceeding the ten percent real loss threshold were assumed to reduce the fraction of their demands attributable to real loss by one percent annually throughout the planning period or until they reached the threshold level of ten percent real loss.

It should be noted that the recommended water loss reduction values presented in the 2026 RWP are intended to reflect a conservative estimate of potential savings and are not intended to depict a 10 percent real loss rate or one percent per year reduction in loss rate as ideal system performance. Systems may wish to consider more aggressive implementation of loss reduction programs than the conservative recommendation reflected in the RWP, including higher per-year reductions or implementation or continuation of reduction efforts below a 10 percent real loss rate. More aggressive programs would facilitate greater overall water savings. For example, increasing annual loss reduction from one to two percent per year would result in approximately 22,000 ac-ft in additional savings across the Region for 2080 conditions. It should also be noted that systems may structure water loss targets in many potential ways besides as a percentage-based goal, such as loss per connection; in recent years, TWDB's water loss audit reporting has focused largely on total and per-connection losses, and this data is available to water systems to assist them in their planning. The RHWPG recommends that all utilities perform regular system audits, aggressively strive to reduce the inefficient and costly leakage loss of water, and establish procedures to rapidly address line breaks. For the utilities which were identified as potential targets, reductions in water loss from this methodology would reduce per-capita demands for individual WUGs as shown in *Table 1*.

Table 1 – Impact of Water Loss Reduction on Per-Capita Demands for Individual WUGs

Reduction in Per Capita Demand (gpcd)	2030	2040	2050	2060	2070	2080
Minimum WUG Savings	0.0	0.1	0.1	0.1	0.1	0.1
Median WUG Savings	1.2	3.6	5.8	7.5	8.7	9.5
Average WUG Savings	1.5	4.2	6.6	8.6	10.2	11.5
Maximum WUG Savings	5.6	16.1	25.6	34.3	42.0	49.1

Projections for advanced municipal conservation beyond passive savings and water loss reduction were estimated using the MRCT, which is based largely on the methods and savings and cost assumptions from the MWCPT, with consideration of local water use characteristics and other information. Due to the presence of embedded residential plumbing code implementation savings in the water demand projections for regional planning, the analysis for Region H focused primarily on measures to reduce outdoor water use, which is a major driver of overall local municipal demand. Consideration was also given to some advanced indoor measures for commercial facilities in the decades 2030 through 2050; by 2060, commercial facilities were assumed to have fully converted to more efficient fixtures. Considered measures included (but were not limited to) home water reports, irrigation audits, commercial kitchen pre-rinse valves, rain barrels, and rebate programs including rebates for:

- Commercial general, dishwasher, and food steamer,
- High-efficiency sprinklers,
- Smart irrigation controllers,

- WaterWise landscape program participation, and
- Rainwater harvesting.

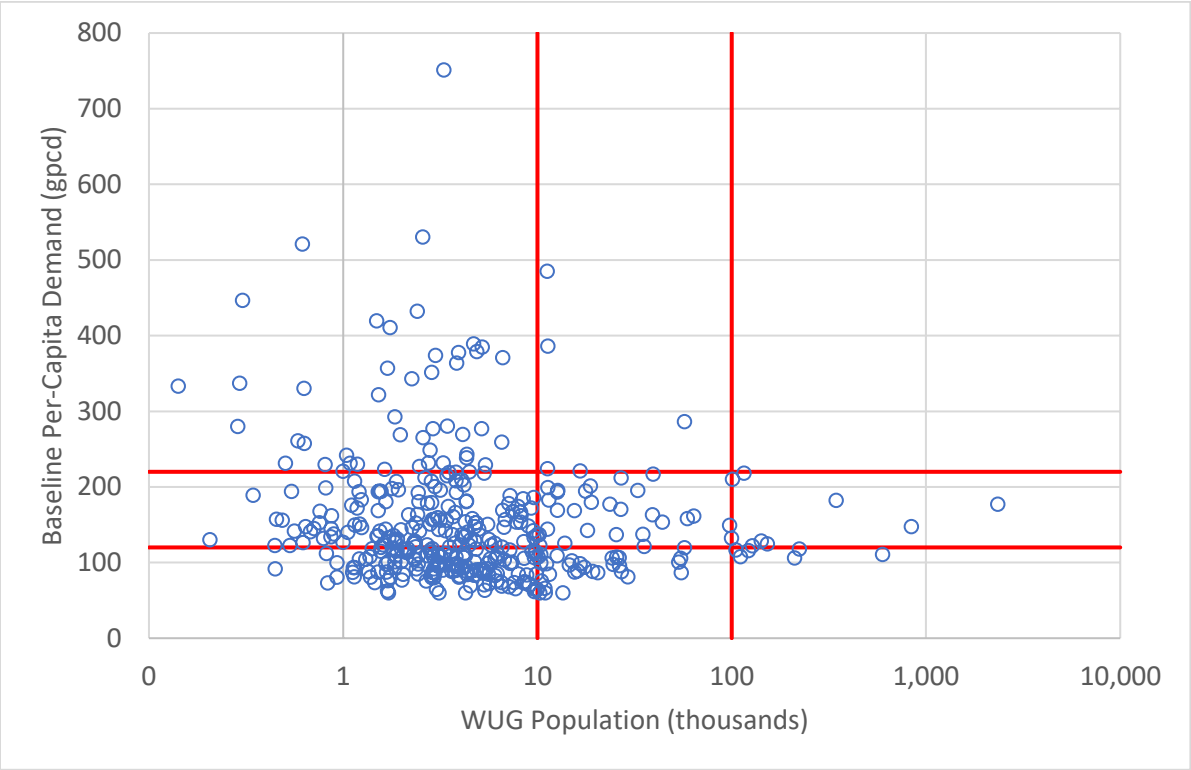
Mandatory outdoor watering restrictions were applied to all municipal WUGs and municipal County-Other WUGs, with the exception of the Woodlands, which already utilizes permanent outdoor watering restrictions. A 2018 report by the Texas Living Waters Project estimates that restrictions on outdoor municipal watering could save 2 percent to 11 percent of total municipal water use, depending on the amount of education and enforcement implemented by a water utility. Projected savings for the 2026 Region H RWP were based on the assumption that all connections would implement a twice-per-week watering restriction, resulting in overall savings of 2 percent of the demand projected by TWDB (already inclusive of TWDB-applied baseline conservation). Due to the possibility that not all systems would necessarily implement immediately, estimates for Region H apply the lower end of the savings spectrum identified by the Texas Living Waters Project; entities which in reality implement conservation programs with a significant amount of education and enforcement could see even greater savings of water.

While mandatory outdoor watering restrictions were applied equally to all municipal WUGs in Region H, other measures were implemented at varying levels for different WUGs. Because the financial resources and savings potential varies widely among WUGs, municipal WUGs were grouped into three categories (small, medium, and large) based upon population, with these further divided into categories of low, mid, and high savings potential based upon per-capita demand after the inclusion of baseline savings assumed by TWDB each decade, in gallons per-capita per day (gpcd). This categorization acknowledges that larger WUGs would likely have greater resources available to implement more measures at a more aggressive rate, while smaller WUGs may be limited to more gradual programs. Additionally, WUGs with higher per-capita demands offer the greatest potential for conservation savings, while those with low per-capita demands may have limited savings potential or, through existing proactive conservation programs, have already substantially reduced water use. Breaks in the per-capita demand classification were determined first by using the Jenks Natural Breaks algorithm to best identify the groups with similar values, and to maximize the differences between classes. These break points were then subjectively modified, for the purpose of placing more WUGs in the mid and high savings potential categories and less WUGs in the low savings potential. It was determined that the break points would be those found in *Table 2* and *Figure 2*, which shows the distribution of Region H WUGs in the categories described in *Table 2*.

Table 2 – Summary of Advanced Conservation Categories

GPCD	Population	Category
<=120	<=10,000	Low Potential Small Utility
<=120	>10,000 & <=100,000	Low Potential Medium Utility
<=120	>100,000	Low Potential Large Utility
>120 & <=220	<=10,000	Mid Potential Small Utility
>120 & <=220	>10,000 & <=100,000	Mid Potential Medium Utility
>120 & <=220	>100,000	Mid Potential Large Utility
>220	<=10,000	High Potential Small Utility
>220	>10,000 & <=100,000	High Potential Medium Utility
>220	>100,000	High Potential Large Utility

Figure 2 – Distribution of Region H WUGs in Municipal WUG Conservation Categories



Detailed utility connection data provided by TWDB was used to estimate the future number of single-family, multi-family, and non-residential connections for each WUG. For each WUG category of size and savings potential, an implementation table was developed indicating the potential conservation measures applied and the percentage of connections participating annually. Aggressiveness of recommendations was based upon the WUG category. More measures and higher implementation rates were recommended for large WUGs with higher per-capita demands, and fewer measures and more gradual implementation rates were recommended for smaller WUGS with lower per-capita demands. Automated Meter Reading (AMR) measures with High implementation were recommended for High and Mid Potential, both Large and Medium Utilities. Specific implementation rates of each measure are found in *Table 3*, *Table 4*, and *Table 5*.

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Table 3 – Implementation Rates of Single-Family Residential (SFR) Measures

SFR Measure	Percentage of SFR Connections Participating Annually								
	High Potential Large Utility	High Potential Medium Utility	High Potential Small Utility	Mid Potential Large Utility	Mid Potential Medium Utility	Mid Potential Small Utility	Low Potential Large Utility	Low Potential Medium Utility	Low Potential Small Utility
	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080
Home Water Reports	35% / 50%	35% / 50%	35% / 50%	30% / 50%	30% / 50%	30% / 50%	25% / 50%	25% / 50%	25% / 50%
Irrigation Audits – High Users	3% / 5%	2% / 3%	-	3% / 5%	2% / 3%	-	3% / 5%	2% / 3%	-
High-Efficiency Sprinkler Nozzle Rebate	3% / 4%	1.5% / 2.0%	1% / 1%	3% / 4%	1.5% / 2%	1% / 1%	3% / 3%	1.5% / 1.5%	1% / 1%
Smart Irrigation Controller Rebate	3% / 4%	1.5% / 2%	1% / 1%	3% / 4%	1.5% / 2%	1% / 1%	3% / 3%	1.5% / 1.5%	1% / 1%
WaterWise Landscape Rebate	0.25% / 1%	0.25% / 1%	0.25% / 1%	0.25% / 1%	0.25% / 1%	0.25% / 1%	0.25% / 1%	0.25% / 1%	0.25% / 1%
Rainwater Harvesting Rebate	0.25% / 1%	0.25% / 1%	-	0.25% / 1%	0.25% / 1%	-	0.25% / 1%	0.25% / 1%	-
Rain Barrel	0.25% / 1%	0.25% / 1%	-	0.25% / 1%	0.25% / 1%	-	0.25% / 1%	0.25% / 1%	-
Automated Meters	35% / 50%	35% / 50%	-	30% / 50%	30% / 50%	-	-	-	-

Table 4 – Implementation Rates of Multi-Family Residential (MFR) Measures

MFR Measure	Percentage of MFR Connections Participating Annually								
	High Potential Large Utility	High Potential Medium Utility	High Potential Small Utility	Mid Potential Large Utility	Mid Potential Medium Utility	Mid Potential Small Utility	Low Potential Large Utility	Low Potential Medium Utility	Low Potential Small Utility
	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080	2030 / 2080
Irrigation Audits – High Users	3% / 3%	3% / 3%	-	3% / 3%	3% / 3%	-	2% / 2%	2% / 2%	-
High-Efficiency Sprinkler Nozzle Rebate	3% / 3%	2% / 2%	1% / 1%	3% / 3%	2% / 2%	1% / 1%	2% / 2%	2% / 2%	1% / 1%
Smart Irrigation Controller Rebate	3% / 3%	2% / 2%	1% / 1%	3% / 3%	2% / 2%	1% / 1%	2% / 2%	2% / 2%	1% / 1%
WaterWise Landscape Rebate	0.5% / 2%	0.5% / 2%	0.25% / 1%	0.5% / 2%	0.5% / 2%	0.25% / 1%	0.5% / 2%	0.5% / 2%	0.25% / 1%
Rainwater Harvesting Rebate	0.25% / 1%	0.25% / 1%	-	0.25% / 1%	0.25% / 1%	-	0.25% / 1%	0.25% / 1%	-
Automated Meters	35% / 50%	35% / 50%	-	30% / 50%	30% / 50%	-	-	-	-

Table 5 – Implementation Rates of Industrial, Commercial, & Institutional (ICI) Measures*

ICI Measure	Percentage of ICI Connections Participating Annually								
	High Potential Large Utility	High Potential Medium Utility	High Potential Small Utility	Mid Potential Large Utility	Mid Potential Medium Utility	Mid Potential Small Utility	Low Potential Large Utility	Low Potential Medium Utility	Low Potential Small Utility
	2030 / 2050	2030 / 2050	2030 / 2050	2030 / 2050	2030 / 2050	2030 / 2050	2030 / 2050	2030 / 2050	2030 / 2050
Commercial General Rebate	1% / 0.8%	1% / 0.8%	1% / 0.8%	0.8% / 0.6%	0.8% / 0.6%	0.8% / 0.6%	0.6% / 0.4%	0.6% / 0.4%	0.6% / 0.4%
Kitchen Pre-Rinse Spray Valve Installation	1% / 0.8%	1% / 0.8%	1% / 0.8%	0.8% / 0.6%	0.8% / 0.6%	0.8% / 0.6%	-	-	-
Irrigation Audits – High Users	1% / 1%	0.5% / 0.5%	-	0.5% / 0.5%	0.5% / 0.5%	-	0.5% / 0.5%	0.5% / 0.5%	-
High-Efficiency Sprinkler Nozzle Rebate	1.5% / 1.5%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%
Smart Irrigation Controller Rebate	1.5% / 1.5%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%	1% / 1%
WaterWise Landscape Rebate	0.25% / 0.5%	0.25% / 0.5%	0.25% / 0.5%	0.25% / 0.5%	0.25% / 0.5%	0.25% / 0.5%	0.25% / 0.5%	0.25% / 0.5%	0.25% / 0.5%
Rainwater Harvesting Rebate	0.25% / 0.5%	0.25% / 0.5%	--	0.25% / 0.5%	0.25% / 0.5%	-	0.25% / 0.5%	0.25% / 0.5%	-
Commercial Dishwasher Rebate	1% / 0.8%	1% / 0.8%	1% / 0.8%	0.8% / 0.6%	0.8% / 0.6%	0.8% / 0.6%	0.6% / 0.4%	0.6% / 0.4%	-
Commercial Food Steamer Rebate	1% / 0.8%	1% / 0.8%		0.8% / 0.6%	-	-	-	-	-

**Implementation rates for industrial, commercial, and institutional measures are shown for 2020 and 2050, as indoor ICI measures were not recommended after 2050.*

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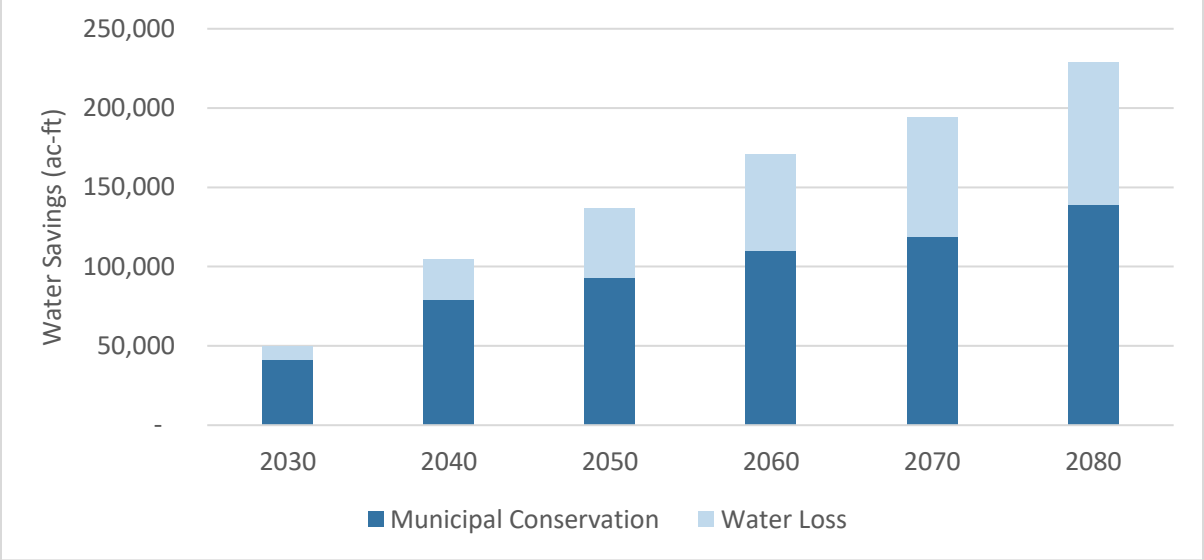
Once the number of units of implementation were determined for each WUG by decade, the applicable water savings assumptions derived from the TWDB MWCPT (per-connection measure savings, measure lifespan and natural replacement rates, cost, etc.) were applied to generate arrays of potential advanced conservation water savings and program cost for each connection type by WUG. Water savings calculations were constrained by a lower boundary of 60 gpcd to prevent recommendation of measures beyond a level feasible for many WUGS; study results indicated that few WUGs would reach this lower threshold even after application of advanced municipal conservation measures. Due to the importance of conservation to meeting the growing water demands of the region and as a means to more effectively utilize existing water sources, municipal conservation measures were applied even for WUGs that do not demonstrate a projected need throughout the planning period.

Table 6 describes the impact on per-capita demands of individual WUGs by the advanced conservation measures recommended by Region H. Resultant savings for water loss reduction and advanced municipal conservation (including mandatory outdoor watering restrictions) beyond embedded savings are illustrated in *Figure 3*.

Table 6 – Impact of Advanced Conservation on Per-Capita Demands

Reduction in Per Capita Demand (gpcd)	2030	2040	2050	2060	2070	2080
Minimum Entity Savings	0.0	0.0	0.0	0.0	0.0	0.0
Median Entity Savings	4.2	6.5	7.0	7.9	8.4	9.5
Average Entity Savings	4.6	7.2	7.9	8.8	9.2	10.3
Maximum Entity Savings	18.9	26.9	31.8	34.9	34.8	39.1

Figure 3 – Advanced Municipal Conservation and Water Loss Reduction Savings



Combined, the water saved through water loss reduction and the advanced conservation methods analyzed in this study represents 12.9 percent of the year 2080 demand demonstrated in the Region H RWP. However, this projected demand is already reduced by 3.3 percent based on baseline

conservation methods applied by TWDB. In total, the effective demand for the region is reduced by a total of 15.8 percent in 2080 compared against the total demand which is represented by the population demand of Region H prior to application of baseline reductions by TWDB. This information is presented in *Table 7*, below.

Table 7 – Summary of Conservation Savings by Decade

Conservation Metric	Basis	2030	2040	2050	2060	2070	2080
Baseline Conservation	% of Total Demand	2.9%	3.3%	3.3%	3.3%	3.3%	3.3%
Water Loss Reduction	% of RWP Net Demand	0.6%	1.7%	2.8%	3.7%	4.4%	5.1%
Advanced Conservation		3.0%	5.3%	5.9%	6.7%	6.9%	7.9%
Total Additional Conservation (Water Loss + Advanced		*3.6%*	*7.0%*	*8.6%*	*10.3%*	*11.4%*	*12.9%*
Total Conservation Methods (Baseline + Water Loss + Advanced	**% of Total Demand**	**6.4%**	**10.1%**	**11.6%**	**13.3%**	**14.3%**	**15.8%**

Environmental Considerations

Generally, there are no significant negative environmental impacts associated with the Municipal Conservation projects outlined herein. Large-scale structural modifications (constructing physical facilities) are not necessary to implement the Municipal Conservation measures found in this WMS. Therefore, construction impacts are not anticipated. Municipal effluent is a critical and substantial component to baseflows in the Houston area and Municipal Conservation measures, particularly those associated with indoor conservation, will reduce these flows below the level that would occur without conservation in place. However, the reduction in return flows in the receiving basins due to Municipal Conservation would, theoretically, be more than offset by the reduced diversions of water from the source basins. Finally, Municipal Conservation would reduce the amount of energy and chemicals needed to distribute water, resulting in a positive impact on the environment.

Permitting and Development

Accomplishing the Municipal Conservation demand reductions, as described herein, requires proactive implementation. Identification of an appropriate utility or political subdivision to facilitate or implement use of the conservation measures in each of the municipal WUGs is one of the critical issues facing the success of this project.

It should be noted that some WUGs are collections of small systems, which may present challenges to a coordinated effort to reduce water consumption. Individual systems will have varying attitudes toward conservation, with some moving forward with conservation plans and others focusing on revenue generation to support water system operation. The implementation of conservation measures for collective groupings of small systems presents challenges due to the lack of a single point of accountability. Further, these systems may lack the leverage to encourage conservation or

lack the economic incentive to reduce billings. However, water conservation does delay the need to build capital-intensive water supply and distribution projects, which can potentially help offset the need for modest rate adjustments that water conservation creates.

It should be noted that the majority of measures in the Region H municipal conservation approach are incentive-based and not education or enforcement-based. This is primarily due to the difficulty in estimating savings from the latter approaches. However, some WUGS may consider education or other conservation approaches not quantified in this analysis as part of a comprehensive municipal conservation program.

Cost Analysis

Costs for implementation of a water loss reduction program were adapted from the analysis applied in the 2021 Region H Regional Water Plan, with values scaled to September 2023 costs using the Engineering News Record (ENR) Construction Cost Index (CCI). Overall water loss reduction strategy costs for Region H are shown in *Table 8*.

Table 8 – Water Loss Reduction Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	PROGRAM COST	1	LS	$1,647,604,552	$1,647,604,552	
	PROJECT CAPITAL COST				$1,647,604,552	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$6,384,029	$19,526,034	$32,466,355	$44,586,191	$55,290,200	$65,076,462
2	YIELD	8,389	25,726	43,579	60,827	75,740	89,637
3	UNIT COST	$761	$759	$745	$733	$730	$726
	TOTAL UNIT COST						$735

Cost estimates for advanced municipal conservation measures were based upon the per-connection cost rates from the TWDB MWCPT, with adjustments for local connection characteristics and multi-family development properties. Overall advanced municipal conservation strategy costs for Region H are shown in *Table 9*. Actual costs will vary by WUG. Generally, unit costs for implementation in smaller communities are more costly. However, these efforts may be made part of a more regional approach that can be accomplished in a more cost-effective manner.

Table 9 – Advanced Municipal Conservation Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	PROGRAM COST	1	LS	$5,714,857,958	$5,714,857,958	
	PROJECT CAPITAL COST				$5,714,857,958	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$151,760,145	$82,628,750	$98,982,220	$103,298,992	$123,867,484	$109,482,048
2	YIELD	41,494	79,224	93,217	109,971	118,599	139,275
3	UNIT COST	$3,657	$1,043	$1,062	$939	$1,044	$786
	TOTAL UNIT COST						$1,152

It should be noted that the costs demonstrated here for municipal water conservation programs represent a total cost for offsetting a unit volume of water at the point of delivery. This sets conservation programs apart from other strategies employed in the RWPs. In other cases, a comprehensive approach to delivering water to an end-user may include one project that provides for development of raw water, one or more raw water transmission project, a treatment project, and one or more treated water transmission projects to finally deliver water to the demand center. In addition, there are also costs associated with distribution of this water to retail customers which is outside of the scope of the RWP. A comprehensive summation of all of these projects in a layered manner is required to provide the same utility as a conservation program. Therefore, the additive nature of these costs must be considered when they are compared with and contrasted against conservation programs.

Water Management Strategy Evaluation

Based on the analysis provided above, the Municipal Conservation project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in *Table 10* below.

Table 10 – Water Management Strategy Evaluation

CRITERIA	RATING	EXPLANATION
Cost	1	Conservation costs are moderate to high in early years but decrease with increased participation over time. Costs vary by WUG characteristics, but in many cases may delay or preclude the need for development of more expensive infrastructure. Costs of conservation strategies are extremely low when compared against the combined cost of raw water development, transmission, treatment, and distribution.
Location	5	Conservation measures generally benefit the WUGs in which they are implemented without need for conveyance but conservation in one WUG may also allow for water to be used by other customers after the demand level is reduced.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	5	No impacts to landform associated with conservation projects.
Environmental Flows	3	No impacts to instream flows. Typically, reductions in return flows are also associated with reduced diversions.
Local Preference	4	No opposition to conservation efforts although local support varies from utility to utility.
Institutional Constraints	5	No permits required for implementation of conservation measures.

CRITERIA	RATING	EXPLANATION
Development Timeline	5	Conservation programs can be implemented in a relatively short period of time.
Sponsorship	3	Although sponsors are identified, commitment to implementation varies considerably.
Vulnerability	5	Conservation has no identifiable risk from natural or man-made disasters.
Regionalization	1	Typically implemented at the individual water system level or for a small number of interconnected systems.
Impacts on Other WMS	2	Conservation may negatively impact the availability of return flows for development into indirect reuse projects.

Municipal Conservation is not anticipated to affect acreage, vulnerable species, or agricultural land and production. The projects may potentially reduce surface water diversions and positively impact instream flows by as much as 228,912 ac-ft/yr depending upon the source of potential alternative supplies. Although this project will potentially result in maintaining instream flows in surface water source basins, reduced return flows in receiving basins (as much as 114,456 ac-ft/yr assuming 50 percent return flows through municipal effluent) may reduce potential benefits to those systems.

Water User Group Application

The Municipal Conservation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served, as shown in *Table 11*.

Table 11 – Suitability of Strategy to Water User Groups

CRITERIA	WUG SUITABILITY
Proximity	Conservation projects do not produce water and only reduce total demand. Therefore, proximity of source and demand is not an issue for implementation.
Size	Conservation projects can generally be scaled to fit the WUG and the need. However, there are limits to how much of the total future need can be offset through conservation alone.
Water Quality	The measure produces no water and only reduces demand. Therefore, water quality of the supply is not impacted.

CRITERIA	WUG SUITABILITY
Unit Cost	The unit cost for this project makes it a viable option for most WUGs aside from those that are already achieving a very low level of per-capita municipal demand.
Other Factors	Successful implementation will ultimately depend on the dedication of individual WUGs to a conservation approach.

References

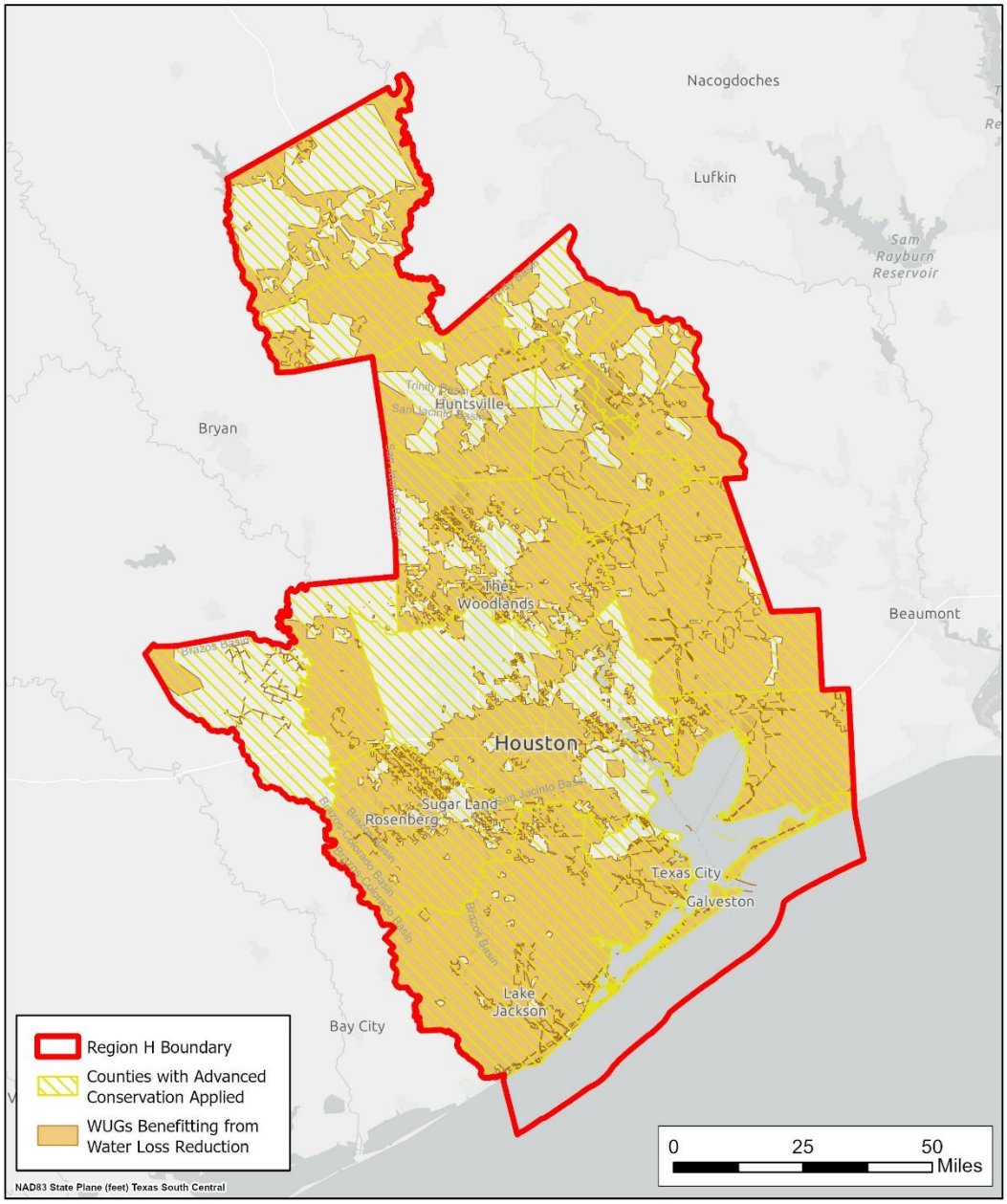
Texas Water Development Board. *Historical Water Loss Audit and Conservation Annual Report Data.* Available at http://www.twdb.texas.gov/conservation/municipal/waterloss/historical-annual-report.asp. Last accessed October 2018.

Texas Water Development Board. *Municipal Water Conservation Planning Tool Version 1*. Available at http://www.twdb.texas.gov/conservation/municipal/plans/index.asp. November 2018.

Texas Water Development Board. *Quantifying the Effectiveness of Various Water Conservation Techniques in Texas*. May 2002.

Texas Living Waters Project. *Water Conservation by The Yard: A Statewide Analysis of Outdoor Water Savings Potential*. Published by the Sierra Club (Lone Star Chapter) and National Wildlife Federation. March 2018.

Location Map



REGION H Water Planning Group

Advanced Municipal Conservation and Water Loss Reduction

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Industrial Conservation
Project ID:	CNSV-002
Project Type:	Conservation
Potential Supply Quantity (Rounded):	3,320-43,892 ac-ft/yr (2.9-39.1 mgd)
Implementation Decade:	2030
Development Timeline:	Varies based on technology
Project Capital Cost:	$305,856,311 over planning horizon (Sept. 2023)
Unit Water Cost (Rounded):	$247 to 540 per ac-ft

Project Description

In Southeast Texas, manufacturing water use represents the greatest non-municipal demand center for water. Almost 94 percent of this demand is centered in Brazoria, Galveston, and Harris Counties where substantial infrastructure has been constructed to provide large volumes of surface water for industrial use. Conservation projects have the benefit of not only enhancing the ability to meet needs through the creation of less developed water but also provides an opportunity to offset expansion of these costly raw water conveyances that are required to deliver these supplies.

Senate Bill 1094, enacted by the Texas Legislature in 2003, created the Water Conservation Implementation Task Force to review, evaluate, and recommend optimum levels of water use efficiency and conservation for the state. Members of the Task Force, which were appointed by the Texas Water Development Board (TWDB), were a volunteer group of persons with experience in and commitment to using water more efficiently. The Task Force developed TWDB Report 362 – Water Conservation Best Management Practices Guide, which outlines specific water conservation best management practices (BMPs) for various water uses. The Task Force was a temporary group, but it has been succeeded by the state Water Conservation Advisory Council, created by the Legislature in 2007. Among its other responsibilities, the Council updates the BMP Guide as needed. The BMP Guide is available online on the TWDB website at the following address: https://www.twdb.texas.gov/conservation/BMPs/index.asp.

Industrial water conservation BMPs, discussed in the TWDB Water Conservation BMP Guide, include the following:

- Industrial Water Audit
- Industrial Water Waste Reduction
- Industrial Submetering
- Cooling Towers
- Cooling Systems (other than cooling towers)

- Industrial Alternative Sources and Reuse of Process Water
- Rinsing/Cleaning BMP
- Water Treatment
- Boiler and Steam Systems
- Refrigeration (including chilled water)
- Once Through Cooling
- Management and Employee Programs
- Industrial Landscape
- Industrial Site Specific Conservation

Project Analyses

The project analyses for Industrial Conservation include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The nature of industrial demands makes the estimation of water demands a difficult task, in turn creating challenges in estimating potential conservation savings. The actual level of water use by industry is related directly to the product produced and the process employed in this manufacture. Accordingly, information regarding water use is often seen as highly proprietary information. Furthermore, detailed information regarding how water is used at each facility is ultimately required to prescribe specific conservation practices. The reality of water use by industry makes the assignment of specific approaches and savings virtually impossible. However, industry within the region already embraces conservation, efficiency, and internal reuse practices, and additional conservation measures are likey to be readily embraced by industry as they become cost-effective. This is especially true as the cost of water is expected to rise over the coming decades.

In order to estimate conservation savings in Region H, a high-level approach was developed based on historic water use records collected by TWDB. For the purpose of developing the 2026 Region H Regional Water Plan (RWP), data from 2010 to 2019 was provided by TWDB and presented according to each industry reporting.

Based on the historical use, an aggregate level of water use per facility was determined. Applying a linear growth pattern to this trend, it was determined that the overall water use was found to reduce at a rate of approximately 0.95 percent annually. Although it is difficult to directly correlate this level of use with level of output, this reduction was recognized over a period of increasing industrial capacity and demand in the greater-Houston area. This was determined to be a conservative representation of conservation across industries in Region H. Over time, this results in an increased level of industrial efficiency when applied on an annual basis. *Table 1*, below represents this increase in efficiency over time. By applying these factors to the manufacturing Water User Groups (WUGs) on a county and basis, the project can be assumed to provide conservation savings at the levels depicted in *Table 2*, below.

Table 1 – Projected Industrial Efficiency Factors and Water Savings

		2030	2040	2050	2060	2070	2080
Efficiency	Factor	0.995	0.986	0.976	0.967	0.957	0.948
	% Savings	0.47%	1.42%	2.36%	3.31%	4.25%	5.20%

Table 2 – Potential Industrial Conservation Savings by County (Ac-Ft/Yr)

COUNTY	2030	2040	2050	2060	2070	2080
Austin	-	-	-	1	1	1
Brazoria	1,127	3,506	6,059	8,797	11,730	14,866
Chambers	170	528	913	1,325	1,767	2,240
Fort Bend	19	62	106	155	205	261
Galveston	219	681	1,178	1,719	2,280	2,889
Harris	1,767	5,582	9,820	14,116	18,639	23,402
Liberty	4	14	24	35	46	59
Leon	1	4	6	9	12	15
Madison	10	31	54	78	104	132
Montgomery	-	-	-	-	-	-
San Jacinto	-	-	-	-	-	-
Walker	2	4	7	10	14	17
Waller	1	2	4	6	8	10
TOTAL	**3,320**	**10,414**	**18,171**	**26,242**	**34,806**	**43,892**

Environmental Considerations

Due to the nature of the project, industrial conservation will occur on an as-appropriate basis in entity-appropriate ways across the region. Actual impacts may result from the way these projects are implemented. However, these projects will generally be employed on existing plant sites and not impact habitat. The most likely impact, if any, from these projects will be the result for reduced return flows. However, since the project will offset a limited portion of the overall demand growth projected for Region H, there will continue to be an overall net increase in return flows associated with industrial water demand despite the conservation measures represented here.

Permitting and Development

There are not permitting issues related to the implementation of these projects aside from those that may be related to the implementation of new production technologies.

Cost Analysis

Costs for implementation of an industrial conservation program were estimated using a generalized assumption of $5,000 in capital infrastructure required per new ac-ft of water-saving infrastructure capacity developed in each decade. This number is intended to be a high-level, conservative estimate;

actual costs would be expected to vary by facility and specific conservation practices implemented. Estimated costs are summarized in *Table 3*.

Table 3: Industrial Conservation Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$219,460,000	$219,460,000	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$76,811,000	$76,811,000	
3	LAND AND EASEMENTS	1	LS	$0	$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$9,585,311	$9,585,311	
	PROJECT CAPITAL COST				$305,856,311	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$1,627,806	$5,106,015	$7,281,490	$7,760,516	$8,156,190	$8,653,848
2	OPERATION AND MAINTENANCE (O&M)	$166,000	$520,700	$908,550	$1,312,100	$1,740,300	$2,194,600
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$1,793,806	$5,626,715	$8,190,040	$9,072,616	$9,896,490	$10,848,448

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$1,793,806	$5,626,715	$8,190,040	$9,072,616	$9,896,490	$10,848,448
2	YIELD	3,320	10,414	18,171	26,242	34,806	43,892
3	UNIT COST	$540	$540	$451	$346	$284	$247
	TOTAL UNIT COST						$332

Project Evaluation

Based on the analysis provided above, the Industrial Conservation project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost		Low cost compared to other regional projects.
Location	5	Conservation is applied at point of water use.
Water Quality		No known impacts to water quality.
Environmental Land and Habitat	5	Virtually no opportunity for land or habitat impacts on existing industrial sites.
Environmental Flows	2	Conservation may reduce return flows in the near term but is offset by growth of industrial demands over the long term.
Local Preference	4	Local support for conservation projects as they become economically viable.

CRITERIA	RATING	EXPLANATION
Institutional Constraints	3	Limited identified permitting obstacles.
Development Timeline	5	Projects can be implemented quickly.
Sponsorship	2	Projects may be sponsored by individual industries, but interest level varies and is uncertain. .
Vulnerability	5	Very limited risk to developed infrastructure.
Regionalization	1	Sponsored by and serving single systems.
Impacts on Other Projects	3	No known impacts to other projects.

Industrial Conservation is not anticipated to affect acreage or vulnerable species. However, actual implementation by project sponsors may require development of infrastructure outside the footprint of existing plant facilities in order to realize the potential savings. The projects may potentially reduce surface water diversions and positively impact instream flows by as much as 43,892 ac-ft/yr depending upon the source of potential alternative supplies. Industrial Conservation is not anticipated to impact agricultural land or production.

Water User Group Application

The Irrigation Conservation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the auditability of the project to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project availability in the same location as industrial use throughout Region H.
Size	The nature of this project makes its yield relative to the size of industrial operations.
Water Quality	This project does not produce new water but reduces need by conservation of other supplies.
Unit Cost	The unit cost for this project depends on technology employed and will depend on the cost for alternative water supplies.
Other Factors	This project is suited only to industrial demand. Actual implementation of projects will be performed by manufacturers.

References

Texas Water Development Board Report 362 – Water Conservation Best Management Practices Guide, November 2004.

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Irrigation Conservation
Project ID:	CNSV-003
Project Type:	Conservation
Potential Supply Quantity (Rounded):	103,799 ac-ft/yr (92.6 mgd)
Implementation Decade:	2030
Development Timeline:	1-3 years
Project Capital Cost:	$2,521,185 for canal lining projects only (Sept. 2023)
Unit Water Cost (Rounded):	$157 per ac-ft (during loan period) $155 per ac-ft (after loan period)

Strategy Description

In Southeast Texas, including Region H, irrigated agriculture is dominated by rice production. Although rice is a water-intensive crop, this high demand for water makes it an ideal opportunity for implementation of water conservation practices.

Senate Bill 1094, enacted by the Texas Legislature in 2003, created the Water Conservation Implementation Task Force to review, evaluate, and recommend optimum levels of water use efficiency and conservation for the state. Members of the Task Force, which were appointed by the Texas Water Development Board (TWDB), were a volunteer group of persons with experience in and commitment to using water more efficiently. The Task Force developed TWDB Report 362 – Water Conservation Best Management Practices Guide, which outlines specific water conservation best management practices (BMPs) for various water uses. The Task Force was a temporary group, but it has been succeeded by the state Water Conservation Advisory Council, created by the Legislature in 2007. Among its other responsibilities, the Council updates the BMP Guide as needed. The BMP Guide is available online on the TWDB website at the following address: https://www.twdb.texas.gov/conservation/BMPs/index.asp. Various BMPs from this report are discussed and outlined in this project.

To supplement the TWDB Report 362, the report *Potential Rice Irrigation Water Conservation Measures, Water Planning Group - Region H* by James W. Stansel of Texas A&M University (TAMU) proposes several conservation methods to reduce irrigation water demand. The study first addresses on-farm conservation practices. Specifically covered are the benefits of land leveling to reduce the water required for each flush, multiple field inlets to reduce overfilling of the higher cuts, reduced levee spacing to reduce the water required for each flush and replacing irrigation ditches with pipes to reduce seepage and evaporation losses. The study also addresses off-farm conservation through the lining of irrigation canals to reduce losses.

Eight Region H counties have notable irrigation demands related to rice irrigation. This project analyzes the potential for implementation of conservation measures and identifies reasonable quantities of water savings and the associated cost of the project.

Strategy Analyses

The project analyses for Irrigation Conservation include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The first step in identifying potential supply volumes associated with conservation practices was to determine the volume of water demand and associated acreage for rice production in each Region H county. Data collected and compiled by TWDB in the development of water demands and application rates for agriculture were used to determine the percentage of the overall demand attributable to rice which could then be used with application rate to determine the number of acres in production.

For the 2016 Region H Regional Water Plan (RWP), a Geographic Information System (GIS) was created containing data on crop locations as well as aerial imagery. CropScape data from the National Agricultural Statistics Service (NASS) was used to identify locations in Region H that are used for rice production. Data from 2010 through 2012 was used for this purpose as rice acreage is rotated over a number of years. Year 2012 imagery from the National Agriculture Imagery Program (NAIP) was used to investigate areas identified as being active for rice irrigation. Visual inspection was used to determine if fields in the vicinity demonstrated characteristics of conservation practices (laser leveling, reduced levee intervals, etc.) or appeared to be unimproved. Farm lands of both varieties were outlined with polygons identifying them as improved or unimproved. Once a review of Region H rice-producing counties was completed, the resulting polygons were analyzed to determine the percentage of rice production acreage in each county and basin that has already received some level of improvement and would not be considered viable for application of additional conservation projects. Improvement percentages from the 2016 Region H RWP were retained for the current analysis of potential conservation savings. On-farm savings were applied to the annual active acreage estimated from the demand projections for the percentage assumed to be unimproved at a rate of 1.4 ac-ft/ac. Off-farm techniques were applied assuming a canal length of 16.5 feet per active acre and a savings rate of 38.0 ac-ft/mile of canal. *Table 1*, below, demonstrates the resulting savings identified for each county in every decade of the planning cycle. Note that the potential savings are level over time, which is consistent with the level nature of projected irrigation demands.

Table 1 – Potential Irrigation Conservation Savings by County (Ac-Ft/Yr)

COUNTY	2030	2040	2050	2060	2070	2080
Austin	2,662	2,662	2,662	2,662	2,662	2,662
Brazoria	29,303	29,303	29,303	29,303	29,303	29,303
Chambers	43,258	43,258	43,258	43,258	43,258	43,258
Fort Bend	4,770	4,770	4,770	4,770	4,770	4,770
Galveston	2,459	2,459	2,459	2,459	2,459	2,459
Harris	125	125	125	125	125	125
Liberty	14,702	14,702	14,702	14,702	14,702	14,702
Waller	6,520	6,520	6,520	6,520	6,520	6,520
TOTAL	**103,799**	**103,799**	**103,799**	**103,799**	**103,799**	**103,799**

Environmental Considerations

Due to the nature of the project, project implementation will occur in areas that are already disturbed through use in rice production or that have already been developed for the use of water conveyance to production land. The reduction in overall application of irrigation water may result in a reduction of return flows when fields are drained prior to harvest. These flushes may occur twice a year after the first and second (ratoon) crops and may beneficially impact downstream habitat during the dry summer season. However, these potential impacts are offset by the reduced diversion of water for irrigation purposes. Greater potential for impacts may exist for improvements made to conveyance channels depending on the specifics of the project application.

Permitting and Development

Based on a preliminary desktop review, the following environmental permits and permitting activities may potentially apply to projects other than on-farm practices:

- U.S. Army Corps of Engineers (USACE) Section 404 Permit – All proposed pipeline rights-of-way (ROW), temporary workspace, and access road locations should be delineated for waters of the U.S., including wetlands. The proposed pipeline construction would likely be permitted under Nationwide Permit (NWP) 12-Utility Line Activities either with or without a Pre-construction Notification (PCN) to the USACE depending on the amount of impacts to waters of the U.S. If pipelines are placed within irrigation canals that are channelized streams (waters of the U.S.), construction would likely be permitted under NWP 12 with a PCN or Section 404 Individual Permit (IP) depending on the amount of impacts to waters of the U.S. If channel lining occurs within irrigation canals that are channelized streams (waters of the U.S.), construction would likely be permitted under NWP 3-Maintenance with or without a PCN or Section 404 IP depending on the amount of impacts to waters of the U.S.
- Texas Historical Commission (THC) Coordination - Projects sponsored by public entities that affect a cumulative area greater than five acres or that disturb more than 5,000 cubic yards require advance consultation with the Texas Antiquities Committee according to Section 191.0525 (d) of the Antiquities Code of Texas. Because the proposed pipeline and/or irrigation canal lining may exceed these thresholds, coordination with the THC would be required. The THC may determine that archeological and/or historical surveys are needed.
- Threatened and Endangered Species – All proposed pipeline ROW, temporary workspace, and access road locations as well as lining projects within channelized streams (waters of the U.S.) should be surveyed for potential threatened and endangered species habitat. If preferred habitat for threatened or endangered species is present, presence/absence surveys for the species would be required.

Cost Analysis

Costs for on-farm conservation measures and canal lining were taken from the report by Stansel (2000) and scaled to September 2013 costs using the Engineering News Record (ENR) Construction Cost Index (CCI). Overall costs for Region H are shown in *Table 2* below.

Table 2 – Irrigation Conservation Project Cost

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$1,751,713	$1,751,713
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$613,099	$613,099
3	LAND AND EASEMENTS	1	LS	$0	$0
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0
5	INTEREST DURING CONSTRUCTION	1	LS	$156,373	$156,373
	PROJECT CAPITAL COST				**$2,521,185**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$177,393	$177,393	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$17,517	$17,517	$17,517	$17,517	$17,517	$17,517
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
5	ON-FARM CONSERVATION MEASURES	$16,076,428	$16,076,428	$16,076,428	$16,076,428	$16,076,428	$16,076,428
	TOTAL ANNUAL COST	**$16,271,339**	**$16,271,339**	**$16,093,946**	**$16,093,946**	**$16,093,946**	**$16,093,946**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$16,271,339	$16,271,339	$16,093,946	$16,093,946	$16,093,946	$16,093,946
2	YIELD	103,799	103,799	103,799	103,799	103,799	103,799
3	UNIT COST	$157	$157	$155	$155	$155	$155
	TOTAL UNIT COST						**$156**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER DISTRIBUTION SYSTEM IMPROVEMENTS	1	LS	$1,751,713	$1,751,713
	PROJECT COST				**$1,751,713**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER DISTRIBUTION SYSTEM IMPROVEMENTS	1.0	%	$1,751,713	$17,517
	ANNUAL OPERATION AND MAINTENANCE COST				**$17,517**

Water Management Strategy Evaluation

Based on the analysis provided above, the Irrigation Conservation project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Low cost compared to other regional projects but may be prohibitive compared to the current cost of water for agriculture.
Location	5	Conservation is applied at point of water use.

CRITERIA	RATING	EXPLANATION
Water Quality		Potential improvement due to reduced downstream runoff.
Environmental Land and Habitat	4	Minimal impacts above existing agricultural operations.
Environmental Flows	3	Conservation may reduce return flows at the end of growing seasons but also reduces the necessary diversions for irrigation use.
Local Preference	3	Support by some proactive growers and those that own their own property and can invest in long-term improvements.
Institutional Constraints	5	Limited identified permitting obstacles.
Development Timeline	5	Projects can be implemented quickly, and even off-farm methods have relatively short timelines.
Sponsorship	3	Projects may be sponsored by local farmers and irrigation water providers, but interest level varies and is uncertain.
Vulnerability	5	Very limited risk to developed infrastructure.
Regionalization	1	Typically implemented at the individual farm level.
Impacts on Other Projects	3	No known impacts to other projects.

Irrigation Conservation will impact over 68,000 acres of rice-producing land in Region H. Reduction in impounded water in rice fields may negatively impact migratory species that rely on the artificially wet areas for habitat. Costs associated with the project may impose burden upon rice production if alternative means of finance are not available. The projects may potentially reduce surface water diversions and positively impact instream flows by as much as 103,799 ac-ft/yr depending upon the source of potential alternative supplies. However, the projects may negatively impact dry-weather base flows that occur as a result of draining excess water from rice fields during harvest.

Water User Group Application

The Irrigation Conservation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the suitability of the project to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The project availability is in the same location as irrigation water use for rice production and is focused in Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, and Waller Counties.
Size	The nature of this project makes its yield relative to the size of irrigation operations.
Water Quality	This project does not produce new water but reduces need by conservation of other supplies.
Unit Cost	The unit cost for this project is relatively expensive for irrigation use but is one of the most cost-competitive alternatives for agriculture.
Other Factors	This project is suited only to irrigation demand. Actual implementation of projects will be performed by growers or water suppliers. This process is complicated by the predominance of rice production in Region H being performed on land leased by the producer, often discouraging the long-term investment necessary to implement these programs.

References

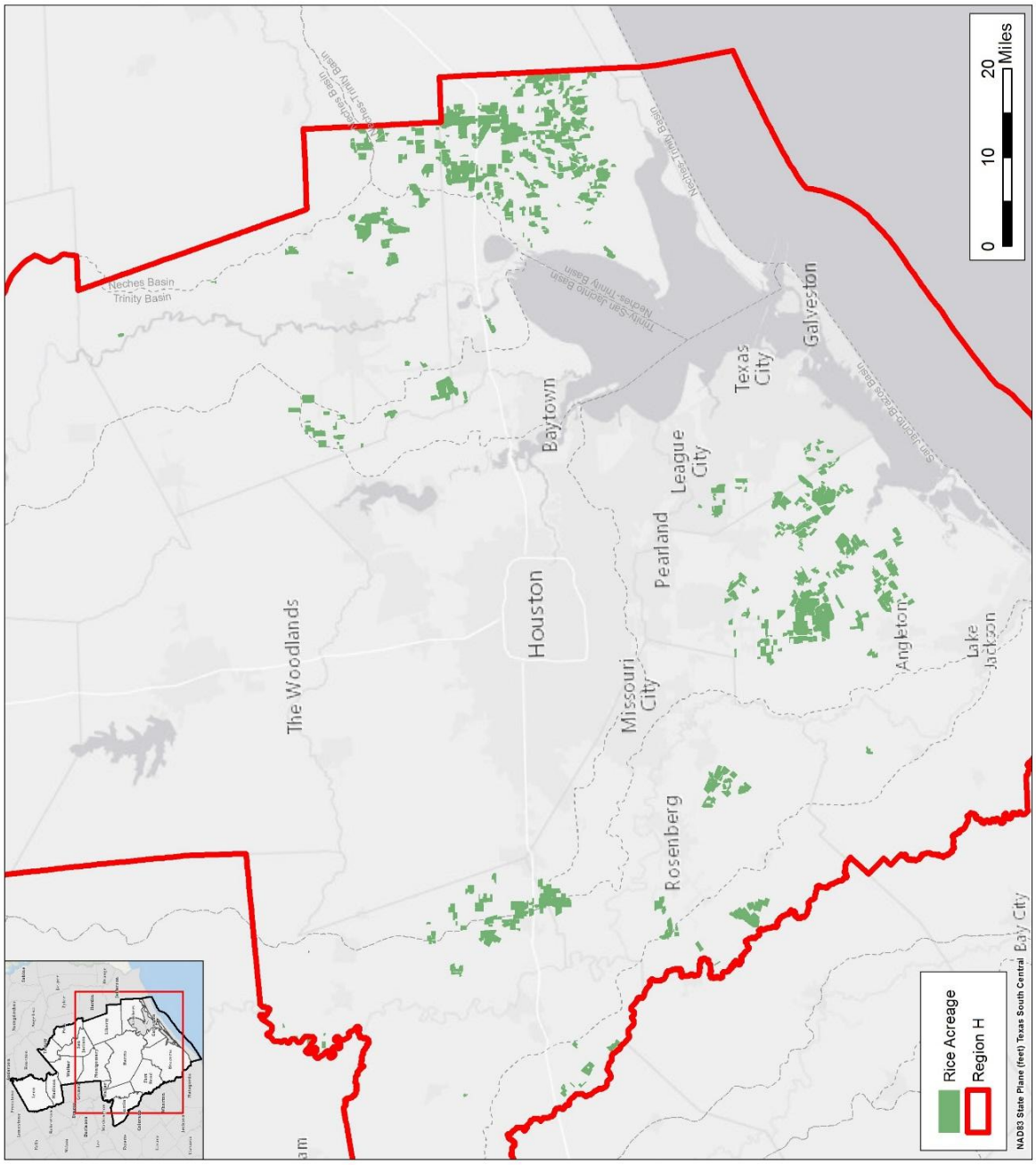
Texas Water Development Board. 2004. *Water Conservation Best Management Practices Guide*, TWDB Report 362.

Stansel, J. W. 2000. *Potential Rice Irrigation Water Conservation Measures, Water Planning Group - Region H*. Texas A&M University System.

Texas Water Development Board. 2001. *Surveys of Irrigation in Texas 1958, 1964, 1969, 1974, 1979, 1984, 1989, 1994, and 2000*. TWDB Report 347.

Texas Parks and Wildlife, https://tpwd.texas.gov/gis/rtest/, accessed December 2024.

Location Map



REGION H
Water Planning Group

Irrigation Conservation Location Map

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	BWA Transmission and Storage Expansion
Project ID:	CONV-001
Project Type:	Various
Potential Supply Quantity (Rounded):	16,800 ac-ft/yr (15 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$84,794,502 (Sept. 2023)
Unit Water Cost (Rounded):	$437 per ac-ft (during loan period) $82 per ac-ft (after loan period)

Strategy Description

The Brazosport Water Authority (BWA) serves seven communities in the southern Brazoria County area and provides potable service to Dow Inc. and two Texas Department of Criminal Justice (TDCJ) units, as well as the City of Rosenberg. In December of 2013, BWA concluded a Texas Water Development Board (TWDB) Regional Facility Planning Grant study to examine the potential for serving the current BWA service area as well as other portions of Brazoria County in the future. This study recommended the development of a reverse osmosis (RO) water treatment plant (WTP) at the site of the current BWA surface water treatment plant, as well as expansion of BWA's surface water treatment plant in order to accommodate additional growth within and surrounding the existing service area of the facility. More recently, BWA has identified a need to increase the capacity of its transmission system to serve the increasing demands of its customers.

Strategy Analyses

The project analyses for the BWA Transmission Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The project concept presented here is adapted from information provided by BWA on anticipated transmission line and storage expansions. BWA expects to construct an additional transmission line of estimated 36 to 48-inch diameter northward from its treatment facility to the Angleton area to tie into the BWA Northern Regional Pipeline, increasing overall conveyance capacity to serve northern customers including the Texas Department of Criminal Justice (TDCJ) Darrington Unit. The expansion would also include development of additional pump station capacity and a five million gallon clearwell. The expansion is anticipated to be online by 2027. BWA additionally anticipates additional

ground storage and pump station capacity development near the City of Clute by 2030.

Environmental Considerations

Environmental issues are expected to be minimal due to the use of existing corridors for development. Further environmental study will be conducted as part of the ongoing study of alternatives and configurations.

Permitting and Development

Permitting issues related to the project will be examined more closely during further phases of study. Infrastructure development may result in some construction disturbance which could require mitigation. However, the development of the project primarily within existing right-of-way in an urbanized setting minimizes potential permitting obstacles.

Cost Analysis

A preliminary planning-level cost estimate was developed for the BWA Transmission and Storage Expansion project using standard regional planning assumptions. Construction costs include the estimated cost of transmission lines and associated booster pump stations, as well as a ground storage tank near Clute to facilitate the delivery of an additional 3.5 mgd to Clute and Freeport. Other estimated capital cost components include engineering services, surveying, environmental studies and mitigation, and interest during construction. It was assumed that pipelines would be developed in existing rights-of-way. Regional planning cost estimating assumptions were also applied to estimate annualized debt service and ongoing costs of operation and maintenance. Project cost estimates are presented in September 2023dollars in *Table 1*.

Table 1 – BWA Transmission and Storage Expansion Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$59,898,207	$59,898,207	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$19,016,080	$19,016,080	
3	LAND AND EASEMENTS	1	LS	$103,896	$103,896	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$517,068	$517,068	
5	INTEREST DURING CONSTRUCTION	1	LS	$5,259,251	$5,259,251	
	PROJECT CAPITAL COST				**$84,794,502**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$5,966,232	$5,966,232	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$840,549	$840,549	$840,549	$840,549	$840,549	$840,549
3	PUMPING ENERGY COSTS	$533,552	$533,552	$533,552	$533,552	$533,552	$533,552
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$7,340,333**	**$7,340,333**	**$1,374,101**	**$1,374,101**	**$1,374,101**	**$1,374,101**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$7,340,333	$7,340,333	$1,374,101	$1,374,101	$1,374,101	$1,374,101
2	YIELD	16,800	16,800	16,800	16,800	16,800	16,800
3	UNIT COST	$437	$437	$82	$82	$82	$82
	TOTAL UNIT COST						**$200**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$16,104,464	$16,104,464
2	PIPELINES	1	LS	$38,965,852	$38,965,852
3	WATER STORAGE TANKS	1	LS	$4,827,890	$4,827,890
	PROJECT COST				**$59,898,207**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$16,104,464	$402,612
2	PIPELINES	1.0	%	$38,965,852	$389,659
3	WATER STORAGE TANKS	1.0	%	$4,827,890	$48,279
	ANNUAL OPERATION AND MAINTENANCE COST				**$840,549**

Water Management Strategy Evaluation

Based on the analysis provided above, the BWA Transmission and Storage Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	While not directly generating supply, the project provides conveyance of treated water with only a limited additional cost.

CRITERIA	RATING	EXPLANATION
Location	4	Project reflects conveyance infrastructure from a treatment facility to demand centers.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	5	Limited impacts associated with construction in existing corridors.
Environmental Flows	3	No impact to environmental flows.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Property availability and limited permitting efforts.
Development Timeline	4	Project to be developed within 5 years.
Sponsorship	4	Brazosport Water Authority is identified as a sponsor and is committed to development.
Vulnerability	5	Minimal risk associated with pipeline infrastructure.
Regionalization	4	Supports multiple customer systems and expands upon existing regionalized supplies.
Impacts on Other WMS	5	Project facilitates the use of treated surface water and treated brackish groundwater from BWA facilities.

Water User Group Application

The BWA Transmission and Storage Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

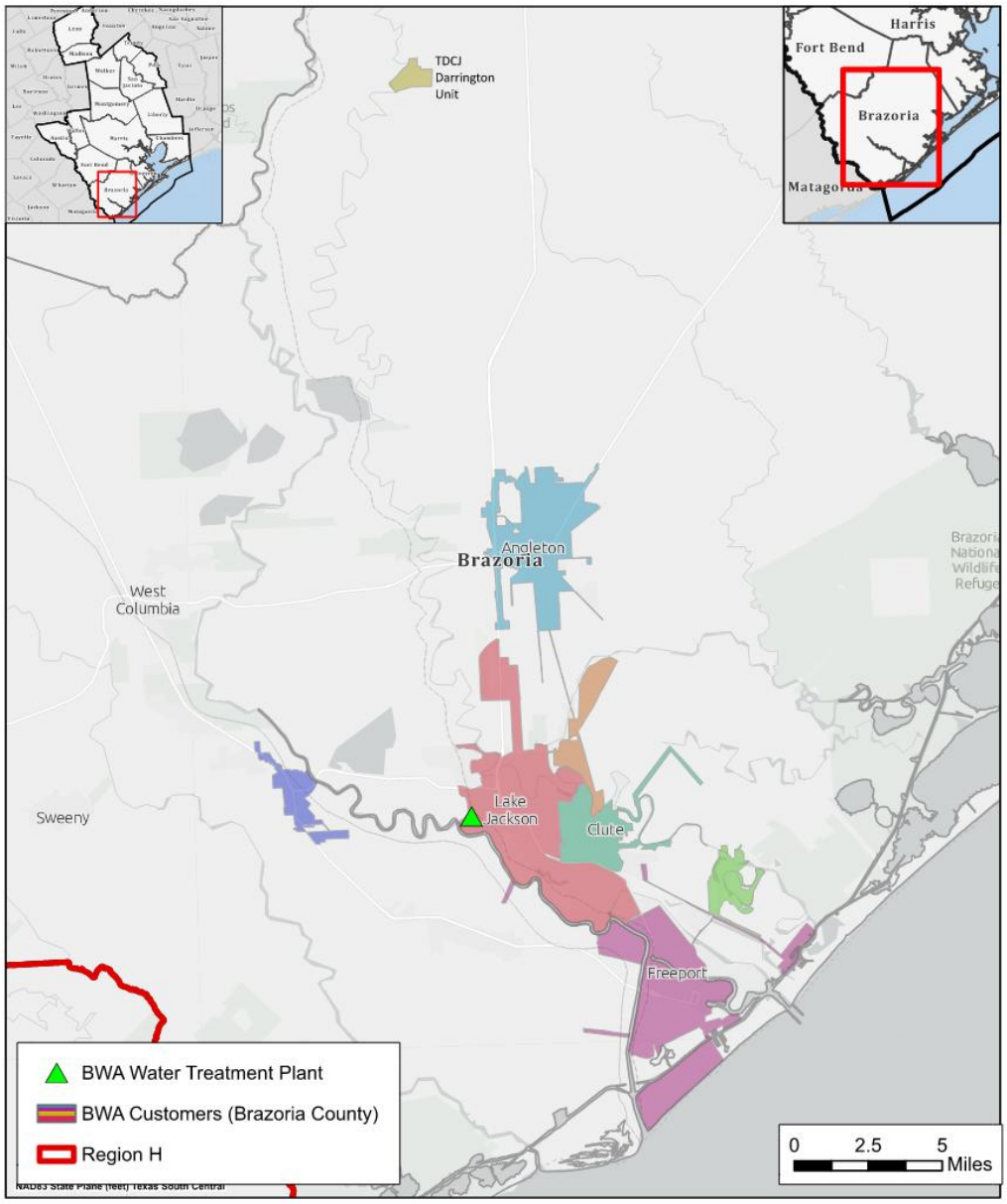
CRITERIA	WUG SUITABILITY
Proximity	This project conveys treated water to BWA customers in southern and northern Brazoria County.
Size	The capacity of this project is based on the projected need of the sponsor's customers.
Water Quality	This project will convey treated, potable water.
Unit Cost	Adds small amount to unit cost of BWA's strategies to provide additional water to wholesale customers.

CRITERIA	WUG SUITABILITY
Other Factors	This project has been identified for a few specific customers of the project sponsor.

References

CDM-Smith. *Brazoria County Regional Water Facility Study*. May 2013.

Location Map



REGION H
Water Planning Group

BWA Transmission and Storage Expansion Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Central Harris County Regional Water Authority Transmission and Internal Distribution
Project ID:	CONV-002
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	5,466 ac-ft/yr (4.88 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	5 years
Project Capital Cost:	$22,717,067 (Sept. 2024)
Unit Water Cost (Rounded):	$314 per ac-ft (during loan period) $22 per ac-ft (after loan period)

Strategy Description

The Harris-Galveston Subsidence District (HGSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the Central Harris County Regional Water Authority (CHCRWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, CHCRWA is developing expansions to its transmission and distribution infrastructure.

Strategy Analyses

The project analyses for CHCRWA Transmission and Internal Distribution include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The CHCRWA will continue to deliver surface water to certain districts within the Authority to meet the requirements of its Groundwater Reduction Plan (GRP). The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its GRP program. The Authority has increased its

supply reservation from COH from an original reservation of 2.12 mgd (2,374 ac-ft/yr) currently applied in the Regional Plan as existing supply to 7.0 mgd (7,840 ac-ft/yr). CHCRWA is developing expanded transmission infrastructure to convey supplies from a new shared pipeline with COH and North Harris County Regional Water Authority (NHCRWA). Transmission facilities include a connection to a NHCRWA pipeline along Hardy Toll Road and another connection along TC Jester Blvd. CHCRWA is also developing an expansion of the infrastructure network through which it supplies its member districts.

Environmental Considerations

Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

CHCRWA is subject to contractual requirements established by COH as well as any relevant permitting required by the State of Texas and HGSD. Development of expanded distribution infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. Infrastructure development is also likely to require acquisition of additional easements or property.

Cost Analysis

Planning-level capital cost estimates for the CHCRWA Transmission and Internal Distribution project were provided by the Authority's engineering consultant; capital costs included estimates for engineering and legal fees, contingency, land acquisition, surveying, environmental studies and mitigation, and cost of bond issuance. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Capital costs for interest during construction and annual cost components such as annualized debt service and operations and maintenance costs were assumed using standard Regional Planning costing assumptions. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1.*

Table 1 – CHCRWA Transmission and Internal Distribution Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$12,010,000	$12,010,000	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$6,330,000	$6,330,000	
3	LAND AND EASEMENTS	1	LS	$930,000	$930,000	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$60,000	$60,000	
5	INTEREST DURING CONSTRUCTION	1	LS	$3,387,067	$3,387,067	
	PROJECT CAPITAL COST				**$22,717,067**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$1,598,397	$1,598,397	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$120,100	$120,100	$120,100	$120,100	$120,100	$120,100
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$1,718,497**	**$1,718,497**	**$120,100**	**$120,100**	**$120,100**	**$120,100**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$1,718,497	$1,718,497	$120,100	$120,100	$120,100	$120,100
2	YIELD	5,466	5,466	5,466	5,466	5,466	5,466
3	UNIT COST	$314	$314	$22	$22	$22	$22
	TOTAL UNIT COST						**$119**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$10,280,000	$10,280,000
2	METER STATIONS	1	LS	$1,730,000	$1,730,000
	PROJECT COST				**$12,010,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$10,280,000	$102,800
2	METER STATIONS	1.0	%	$1,730,000	$17,300
	ANNUAL OPERATION AND MAINTENANCE COST				**$120,100**

Water Management Strategy Evaluation

Based on the analysis provided above, the CHCRWA Transmission and Internal Distribution project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	The CHCRWA Transmission and Internal Distribution, while not directly generating supply, provides conveyance with a reasonable level of additional cost.

CRITERIA	RATING	EXPLANATION
Location	4	Reflects conveyance infrastructure from major transmission pipelines to demand centers.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	4	Project to be developed within five years.
Sponsorship		
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization		Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The CHCRWA Transmission and Internal Distribution includes the construction of several pipeline segments. The majority of this impact will be in urbanized areas with limited impacts to habitat. However, the project will not directly impact environmental flows. The CHCRWA Transmission and Internal Distribution is not anticipated to impact agricultural land or production.

Water User Group Application

The CHCRWA Transmission and Internal Distribution project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve member districts of the CHCRWA.

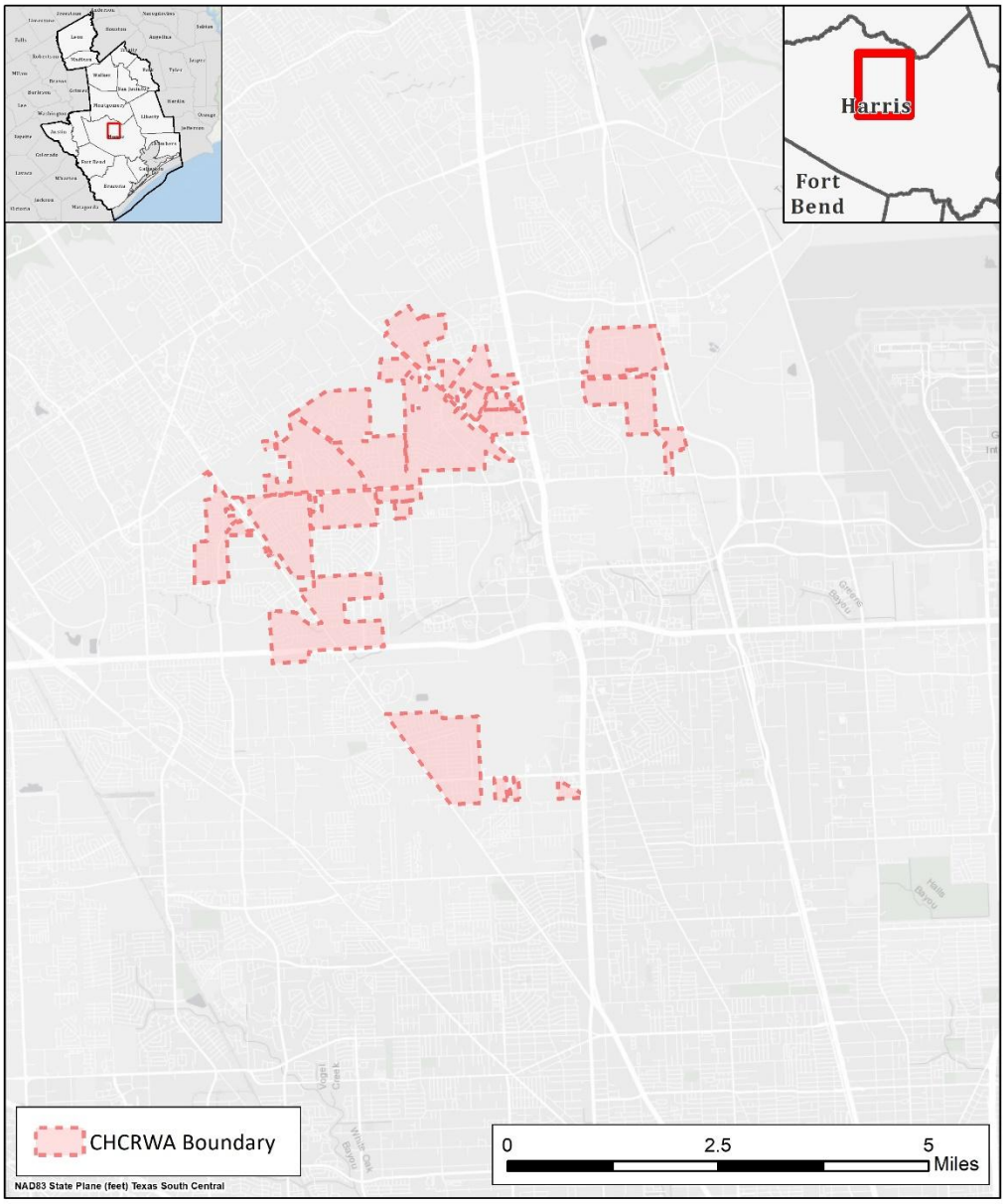
CRITERIA	WUG SUITABILITY
Proximity	Conveyance infrastructure from major transmission pipelines to demand centers.

CRITERIA	WUG SUITABILITY
Size	Conveyance is sized to convey the requisite amount of source water.
Water Quality	Conveys treated water of quality appropriate for municipal use.
Unit Cost	Adds small amount to unit cost of CHCRWA's surface water conversion process.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

Central Harris County Regional Water Authority. *Transmission and Distribution System Expansion Preliminary Planning Report*, prepared by IDS Engineering Group, July 2016.

Location Map



REGION H Water Planning Group

CHCRWA Transmission and Internal Distribution Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Houston GRP Transmission
Project ID:	CONV-003
Project Type:	Conveyance
Potential Supply Quantity (Rounded):	51,789 ac-ft/yr (46.2 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	<5 years
Project Capital Cost:	$260,640,042 (Sept. 2023)
Unit Water Cost (Rounded):	$404 per ac-ft (during loan period) $50 per ac-ft (after loan period)

Strategy Description

The Harris-Galveston Subsidence District (HGSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged heavy pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the City of Houston (COH) has used its surface water rights and treatment capacity to provide an alternative to groundwater pumpage. The COH has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand. In order to utilize sufficient supplies to meet future surface water conversion obligations, COH is developing multiple infrastructure projects related to the treatment and distribution of surface water. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for COH GRP Transmission include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The COH has developed significant infrastructure for the development, treatment, and delivery of surface water supplies. These projects have formed the fundamental basis for much of the region's conversion from groundwater to alternative water sources. In several cases, such as the regional water authorities, COH supplies are already used as an alternative source of water and will continue to be a critical resource in the future.

In addition to providing water to regional authorities for their GRPs, COH maintains compliance with

HGSD rules through its own use of surface water supplies within the City's retail water service area. COH has also made an opportunity available for other water users to join the COH GRP to promote synergy in addressing the region's water supply issues. Of the 92 total participants in the COH GRP, 49 can be identified as named Water User Groups (WUGs) in the Region H Regional Water Plan (RWP).

In most cases, COH does not provide direct surface water supplies to these participants. Instead, COH provides its own over-conversion as a service to these participants to account for their pumpage of groundwater, causing a net reduction in overall groundwater use. In effect, the requirement for groundwater conversion is met jointly across the GRP as is done by other GRP sponsors in the region. However, COH is planning to begin delivery of treated surface water to some of these participants by developing several new pipelines as part of the COH GRP Transmission project. Four transmission lines are considered for development, with three planned for implementation by 2030 and the fourth by 2035. The Kingwood Conversion Water Transmission Line, the Group B Transmission Line, and the Group C Transmission Line, which are scheduled for completion by 2030, are expected to provide supply of 20.0 MGD, 5.24 MGD, and 8 MGD, respectively, for a total increase of 33.24 MGD (37,229 ac-ft/year). The Willowchase Conversion, scheduled for completion by 2035, will provide an estimated supply quantity increase of 13 MGD (14,560 ac-ft/year).

Environmental Considerations

Environmental issues are expected to be limited, as pipelines will primarily be constructed in developed areas in the northern part of the greater Houston area. Further environmental study will be conducted as part of the ongoing study of alternatives and configurations.

Permitting and Development

Permitting issues related to the project will be examined more closely during further phases of study. Infrastructure development may result in some construction disturbance which could require mitigation. However, the development of the project primarily within existing right-of-way in an urbanized setting minimizes potential permitting obstacles.

Cost Analysis

Project costs were provided by COH. Capital costs for engineering, design, construction, and contingency, environmental mitigation, land acquisition, and interest during construction costs were assumed to be included in the costs provided by COH. Standard assumptions for regional planning were applied to determine annualized debt service and annual operating and maintenance costs. Estimated project costs for the COH GRP Transmission project are shown in *Table 1* in September 2023 dollars.

Table 1 – COH GRP Transmission Total Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION AND NON-CONSTRUCTION COSTS (ENGINEERING, LAND ACQUISITION, ETC.)		1	LS	$260,640,042	$260,640,042
	PROJECT CAPITAL COST					$260,640,042

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE (GRP Transmission 2030)	$11,302,806	$11,302,806	$0	$0	$0	$0
2	DEBT SERVICE (GRP Transmission 2040)	$0	$7,036,108	$7,036,108	$0	$0	$0
3	OPERATION AND MAINTENANCE (GRP Transmission 2030)	$1,606,400	$1,606,400	$1,606,400	$1,606,400	$1,606,400	$1,606,400
4	OPERATION AND MAINTENANCE (GRP Transmission 2040)	$0	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
	TOTAL ANNUAL COST	$12,909,207	$20,945,314	$9,642,508	$2,606,400	$2,606,400	$2,606,400

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$12,909,207	$20,945,314	$9,642,508	$2,606,400	$2,606,400	$2,606,400
2	YIELD	37,229	51,789	51,789	51,789	51,789	51,789
3	UNIT COST	$347	$404	$186	$50	$50	$50
	TOTAL UNIT COST						$173

ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY						
1	PIPELINES (GRP Transmission 2030)		1	LS	$160,640,042	$160,640,042
2	PIPELINES (GRP Transmission 2040)		1	LS	$100,000,000	$100,000,000
	PROJECT COST					$260,640,042

ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY						
1	PIPELINES (GRP Transmission 2030)		1.0	%	$160,640,042	$1,606,400
2	PIPELINES (GRP Transmission 2040)		1.0	%	$100,000,000	$1,000,000
	ANNUAL OPERATION AND MAINTENANCE COST					$2,606,400

Water Management Strategy Evaluation

Based on the analysis provided above, the COH GRP Transmission project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	The COH GRP Transmission project, while not directly generating supply, provides conveyance of treated water with moderately low additional cost.
Location	4	Reflects conveyance infrastructure from treatment to demand centers.
Water Quality	3	No impacts to water quality.
Environmental Land and Habitat	3	Limited concerns. Environmental impacts can be mitigated.
Environmental Flows	3	No impact to environmental flows.
Local Preference	4	Minimal local opposition expected.
Institutional Constraints	3	Property available and limited permitting efforts.
Development Timeline	4	Projected may be implemented within 5 years.
Sponsorship	5	Sponsors identified and in the process of developing project.
Vulnerability	5	Minimal risk associated with pipeline infrastructure.
Regionalization	4	Supports existing regional systems across an extensive area.
Impacts on Other WMS	3	No impacts on other WMS are expected.

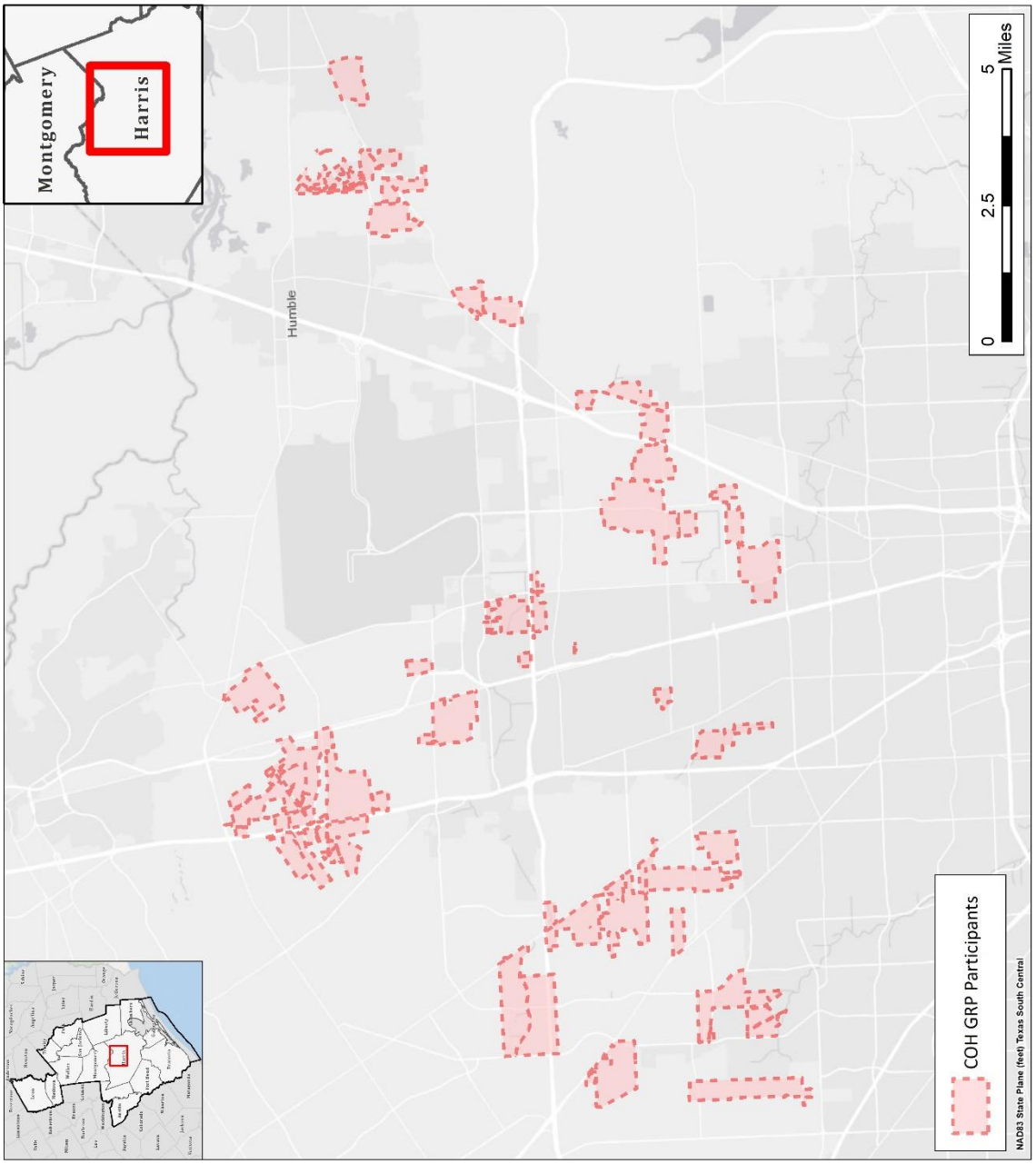
The majority of the impact of this project will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The COH GRP Transmission project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	This project is intended to provide water to participants in the COH GRP.
Size	The capacity of this project is based on needs projected by the project sponsor.
Water Quality	This project will convey treated surface water.
Unit Cost	The unit cost for this project is a reasonable price for transmission of treated water for municipal use.
Other Factors	This project is identified for a few specific potential customers of COH.

Location Map



REGION H
Water Planning Group

City of Houston
GRP Transmission
Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Houston Transmission Expansion
Project ID:	CONV-004
Project Type:	Conveyance
Potential Supply Quantity (Rounded):	483,280 ac-ft/yr (431.4 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$508,742,379 (Sept. 2023)
Unit Water Cost (Rounded):	$85 per ac-ft (during loan period) $11 per ac-ft (after loan period)

Strategy Description

The City of Houston (COH) serves an extensive portion of the region, both within its direct retail service area and as a provider to other water systems. This service area has experienced rapid population growth in recent years, and is additionally a major industrial and commercial center. COH has identified a number of future transmission and large-scale distribution lines to meet the needs of residents and customer systems; it should be noted that the COH Transmission Expansion project described in this memorandum excludes transmission associated more directly with the COH Groundwater reduction Plan (GRP) and with expansion of the Southeast Transmission Line, both of which are described by separate technical memoranda. The COH Transmission Expansion project will increase conveyance capacity. Some segments may offer additional benefits, including increasing water system pressure, supporting resiliency, and improving water quality. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for COH Transmission Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The COH has developed significant infrastructure for the development, treatment, and delivery of surface water supplies, with this infrastructure forming the basis for much of the region's water supply. For the 2026 RWP, COH identified nine major near-term transmission expansion, extension, and construction projects as part of the COH Transmission Expansion project, which are summarized in *Table 1*. Combined peak capacity for these segments is anticipated to be 431.4 mgd, or approximately 483.280 ac-ft/yr. It should be noted that the overall transmission and distribution

expansion activities are not limited to those in the table and may include a large number of associated connections and smaller-scale or shorter length transmission development.

Table 1 – COH Transmission and Distribution Major Segments

Implementation Decade	Project Name
2030	I-45 -AHPS Transmission Line
	Fuqua Extension to SH-288 Transmission Line
	Greenbriar to Southwest Repump Station Transmission Line
	Fuqua Line Extension from SH-288 to Hiram Clark Rd.
	IAH Surface Water Transmission Line
	Westheimer Waterline
	Sims Bayou Extension
	Bellaire Blvd Waterline
2040	Spring Branch Transmission Line

Environmental Considerations

Environmental issues are expected to be limited, as pipelines will primarily be constructed in developed areas in the greater Houston area. Infrastructure development may result in some construction disturbance which could require mitigation.

Permitting and Development

Permitting issues related to the project will be examined more closely during further phases of study. Infrastructure development may result in some construction disturbance which could require mitigation. However, the development of the project primarily within existing right-of-way in an urbanized setting minimizes potential permitting obstacles.

Cost Analysis

Preliminary planning-level costs for identified transmission development were provided by COH. These values were assumed to be inclusive of capital costs for engineering, design, construction, contingency, environmental mitigation, land acquisition, ands interest during construction. Standard assumptions for regional planning were applied to determine annualized debt service and annual operating and maintenance costs. Estimated project costs for the COH Transmission Expansion project are shown in *Table 2* in September 2023 dollars.

Table 2 – COH Transmission and Distribution Total Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	TRANSMISSION EXPANSIONS	1	LS	$508,742,379	$508,742,379	
	PROJECT CAPITAL COST				$508,742,379	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE (TRANSMISSON 2030)	$33,684,829	$33,684,829	$0	$0	$0	$0
2	DEBT SERVICE (TRANSMISSION 2040)	$0	$2,110,832	$2,110,832	$0	$0	$0
3	OPERATION AND MAINTENANCE (TRANSMISSION 2030)	$4,787,424	$4,787,424	$4,787,424	$4,787,424	$4,787,424	$4,787,424
4	OPERATION AND MAINTENANCE (TRANSMISSION 2040)	$0	$534,355	$534,355	$534,355	$534,355	$534,355
5	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
6	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$38,472,253	$41,117,440	$7,432,611	$5,321,779	$5,321,779	$5,321,779

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$38,472,253	$41,117,440	$7,432,611	$5,321,779	$5,321,779	$5,321,779
2	YIELD	465,528	483,336	483,336	483,336	483,336	483,336
3	UNIT COST	$83	$85	$15	$11	$11	$11
	TOTAL UNIT COST						$36

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES (TRANSMISSION 2030)	1	LS	$478,742,379	$478,742,379
2	PIPELINES (TRANSMISSION 2040)	1	LS	$30,000,000	$30,000,000
	PROJECT COST				$508,742,379

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES (TRANSMISSION 2030)	2.5	%	$478,742,379	$4,787,424
2	PIPELINES (TRANSMISSION 2040)	2.5	%	$30,000,000	$300,000
	ANNUAL OPERATION AND MAINTENANCE COST				$5,087,424

Water Management Strategy Evaluation

Based on the analysis provided above, the COH Transmission Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	The COH Transmission Expansion project, while not directly generating supply, provides conveyance of treated water with small additional cost.
Location	4	Reflects conveyance infrastructure from treatment to demand centers.
Water Quality	3	No impacts to water quality.
Environmental Land and Habitat	3	Limited concerns. Environmental impacts can be mitigated.
Environmental Flows	3	No impact to environmental flows.
Local Preference	4	Minimal local opposition expected.
Institutional Constraints	3	Property available and limited permitting efforts.
Development Timeline	4	Individual segments of project may be implemented within 5 years.
Sponsorship	5	Sponsors identified and in the process of developing project.
Vulnerability	5	Minimal risk associated with pipeline infrastructure.
Regionalization	4	Will increase regionalization by decreasing reliance on groundwater and increasing transmission around the greater Houston area
Impacts on Other WMS	3	No impacts on other WMS are expected.

The COH Transmission Expansion project includes approximately 27 miles of pipelines. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The COH Transmission Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	This project is intended to provide water to the retail service area of COH as well as customer.
Size	The capacity of this project is based on needs projected by the project sponsor.
Water Quality	This project will convey treated surface water.
Unit Cost	The unit cost for this project is a reasonable price for transmission of treated water for municipal use.
Other Factors	This project is identified for specific customers of COH but offers a broader overall indirect benefit due to the role of the system to regional water supply.

Location Map

[Location map to be added pending completion of GIS analysis.]

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	CWA Transmission Expansion
Project ID:	CONV-005
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	454,720 ac-ft/yr peak capacity (406 mgd peak capacity)
Implementation Decade:	2040 (2035)
Development Timeline:	5-10 years
Project Capital Cost:	$497,255,512 (Sept. 2023)
Unit Water Cost (Rounded):	$128 per ac-ft (during loan period) $28 per ac-ft (after loan period)

Strategy Description

The City of Houston (COH) operates three major surface water treatment plants in Harris County. Collectively, these facilities provide treated water to the COH distribution system as well as a number of regional partners and contract customers. The facilities provide an important tie between raw water supplies in the Trinity and San Jacinto River Basins to demands as far west as the Brazos River Basin in Fort Bend County.

The East Water Purification Plant (EWPP) is located in eastern Harris County and is currently rated for 350 MGD. The largest share of this capacity is introduced to the COH distribution system for service to the Houston area including contract customers in Harris County. In addition, this facility also provides for the first phases of conversion for the West Harris County Regional Water Authority (WHCRWA) and North Fort Bend Water Authority (NFBWA). The EWPP receives raw water from sources in the Trinity River Basin via pipelines owned and maintained by the Coastal Water Authority (CWA). The COH has identified a need for an additional pipeline to fully utilize supply sources in the Trinity River Basin. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for CWA Transmission Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Identification of potential capacity expansion in the CWA conveyance system was based on information provided by COH. The new transmission line is expected to follow the paths of one of the existing CWA pipelines and will be sized for a peak flow of 406 MGD. The pipeline size, which is larger

than the existing lines, is sufficient to more fully utilize the available supplies in the Trinity Basin and the available treatment capacity at the EWPP, while also providing some redundancy to the existing infrastructure.

Environmental Considerations

Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the project is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

Development of expanded distribution infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. Use of existing rights of way is expected to minimize permitting and mitigation efforts. This project provides conveyance for diversions permitted under existing water rights.

Cost Analysis

A preliminary planning-level cost estimate was developed for the CWA Transmission Expansion project based on standard regional planning assumptions for pipeline construction costs. Interest during construction, annualized debt service, pumping energy costs, and costs of operation and maintenance were also estimated using standard assumptions for Region H. Unit cost estimates were based on estimated average flow assuming a typical peaking factor of 1.3. Costs are presented in September 2023 equivalent costs in *Table 1*.

Table 1 – CWA Transmission Expansion Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$356,595,550	$356,595,550	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$106,978,665	$106,978,665	
3	LAND AND EASEMENTS	1	LS	$2,550,000	$2,550,000	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$289,773	$289,773	
5	INTEREST DURING CONSTRUCTION	1	LS	$30,841,525	$30,841,525	
	PROJECT CAPITAL COST				**$497,255,512**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$34,987,433	$34,987,433	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$3,565,955	$3,565,955	$3,565,955	$3,565,955	$3,565,955
3	PUMPING ENERGY COSTS	$0	$6,377,825	$6,377,825	$6,377,825	$6,377,825	$6,377,825
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$44,931,214**	**$44,931,214**	**$9,943,781**	**$9,943,781**	**$9,943,781**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$44,931,214	$44,931,214	$9,943,781	$9,943,781	$9,943,781
2	YIELD	-	349,785	349,785	349,785	349,785	349,785
3	UNIT COST	$0	$128	$128	$28	$28	$28
	TOTAL UNIT COST						**$68**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$356,595,550	$356,595,550
	PROJECT COST				**$356,595,550**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$356,595,550	$3,565,955
	ANNUAL OPERATION AND MAINTENANCE COST				**$3,565,955**

Water Management Strategy Evaluation

Based on the analysis provided above, the CWA Transmission Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Costs for the project are low compared to other strategies.
Location	4	Project provides raw water conveyance from source location to an existing treatment facility.
Water Quality	3	No known issues related to water quality.

Environmental Land and Habitat	3	Expansion likely to be constructed along existing right of way, so impacts on habitat are expected to be limited and can be mitigated.
Local Preference	3	No known significant opposition.
Development Timeline	4	Project development could be completed in less than 10 years.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Impacts on Other WMS	4	Provides conveyance of surface water to treatment facility to increase surface water supplies to entities served by the COH Groundwater Reduction Plan.

The CWA Transmission Expansion project includes up to 10 miles of pipelines. The majority of this impact will be in existing rights of way with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

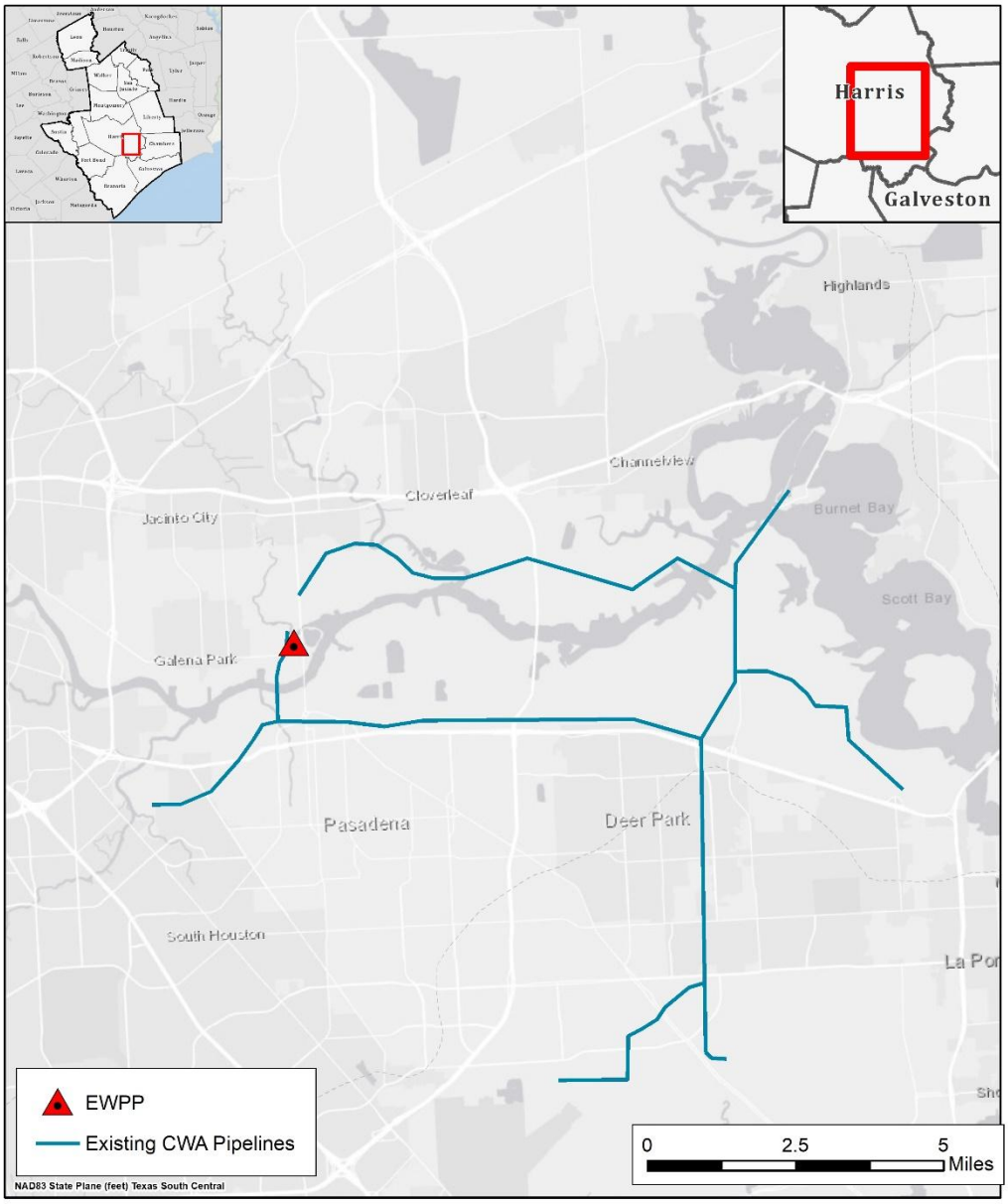
Water User Group Application

The CWA Transmission Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Conveyance infrastructure from raw water source to existing water treatment plant will increase supply availability in the existing service area of the EWPP.
Size	Conveyance is sized based on needs anticipated by project sponsor.

CRITERIA	WUG SUITABILITY
Water Quality	Project will provide raw water which will require treatment for some uses such as municipal supply.
Unit Cost	The project would have a low overall unit cost. However, additional costs may be added to treat and distribute water for municipal uses.

Location Map



REGION H Water Planning Group

CWA Transmission Expansion Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	East Texas Transfer
Project ID:	CONV-006
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	250,000 ac-ft/yr (223 mgd)
Implementation Decade:	2050
Development Timeline:	20 years
Project Capital Cost:	$591,526,599 (Sept. 2023)
Unit Water Cost (Rounded):	$189 per ac-ft (during loan period) $23 per ac-ft (after loan period)

Strategy Description

After the development of identified, in-region projects throughout Region H, additional needs are identified that will require water from a newly developed or transmitted source. Development of water supplies within the Region H basins becomes increasingly difficult as competing water supply interests, along with environmental uses, utilize the remaining, developable supplies.

An alternative to this is the transfer and use of supplies that have already been developed in the eastern basins in the state. Specifically, developed water supplies in Toledo Bend Reservoir in the Sabine River Basin present a viable alternative for meeting future needs in Region H. Conveyance of these supplies to the Trinity River Basin allows for the use of this water through existing conveyance infrastructure. There are additional challenges in utilizing these supplies in the western portion of Region H where routes of transmission are inhibited by the development of the greater Houston area.

This memorandum summarizes a high-level concept for the transmission of water from East Texas through canal and pipeline conveyance to diversion points in the Trinity and Brazos River Basins. The strategy, as applied in the 2026 Regional Water Plan (RWP), focuses on conveyance to the Trinity River. Information related to conveyance from the Trinity River to the Brazos River is included for informational purposes. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for the East Texas Transfer include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

A review of existing project concepts was conducted in order to develop the concept for transmission from Toledo Bend Reservoir to Region H. This includes studies by the Sabine River Authority of Texas (SRA-TX) and Lower Neches Valley Authority (LNVA), as well as the existing Trans-Texas Water Program and a study developed in 2014 for the Gulf Coast Water Authority (GCWA). The conveyance route was divided into three distinct segments for consideration in this project.

- Sabine to Neches – Utilize an improved Gulf Coast Pump Station to convey water released from Toledo Bend along the Sabine River to the Neches River Basin.
- Neches to Trinity – Utilize two canal segment connections to convey water diverted from the Neches River from the LNVA main canal to the LNVA-Devers Canal and then on to the Trinity River near the Coastal Water Authority (CWA) Trinity River Pump Station.
- Trinity to Brazos – Develop a pipeline conveyance from Lake Livingston to convey water to the Brazos River Basin. This route will require a repump station that is located near the existing Lake Conroe Dam which allows for this conveyance to serve needs in the San Jacinto River Basin as well.

In order to execute the full scope of this project, water conveyed from eastern basins will be exchanged with water that will be conveyed farther west. For instance, water entering the Trinity at the Trinity River Pump Station will be utilized in lieu of water released from Lake Livingston in order for that water to be moved to the west and into the San Jacinto and Brazos River Basins. This arrangement requires not only significant infrastructure to accomplish but also cooperation of large water rights holders such as the City of Houston in order to make the exchanges possible.

Environmental Considerations

Any project of this magnitude will include environmental challenges to be resolved during planning, design, and construction. To the extent possible, existing canal conveyances are utilized in order to prevent the disturbance of surrounding habitat. Specific environmental obstacles would be identified during routing studies of the proposed alignments.

Particular focus on environmental impacts was assessed for the Trinity to Brazos River segment, as it crosses a section of the Sam Houston National Forest. Preliminary discussions with the United Stated Forest Service (USFS) indicate that there are opportunities to utilize existing corridors in the area in order to develop a project with minimal impacts. As with other segments, further study in the routing phase of the project will better identify the potential obstacles and approaches to mitigation in order to make this project successful. Further coordination with local, state, and national agencies, such as TPWD and USFWS, is necessary to prevent and mitigate potential environmental impacts.

Project development would also need to consider opportunities to address the potential for introduction of exotic or invasive species into additional basins. For instance, invasive aquatic species, including zebra mussels (*Dreissena polymorpha*), water hyacinth (*Eichhoria crassipes*), giant salvinia (*Salvinia molestaI*), and hydrilla (*Hydrilla verticillata*), have been discovered in Lake Livingston in the Trinity River Basin.

Environmental flows will be impacted through the movement of water from one basin to another. Actual impacts will be determined during the permitting process for the interbasin transfer of water outside of the terms currently granted under permit.

Permitting and Development

Although water rights are currently held for the storage and appropriation of water in the Sabine River Basin, amendments to these permits are required to allow for conveyance to western basins. Furthermore, additional, unappropriated flows may also be permitted in excess of these supplies and conveyed out of the basin for purpose of this project. These steps will require a permit process with the Texas Commission on Environmental Quality (TCEQ) to make water available for the project. Use of this water through interbasin transfer is administered under Section 11.085 of the Texas Water Code which includes several requirements in order to obtain necessary permits:

- Providing the cost of water, category of use, and cost of diverting and conveying water to proposed users.
- Conducting public meetings in the basin of origin and the receiving basin.
- Providing notice of an application to permit holders, county judges, city mayors, groundwater conservation districts, and state legislators associated with each basin.
- Publishing notice of application in newspapers of general circulation.
- Giving consideration to comments received through the permit application's public process.

In granting the permit, consideration shall be given to:

- The need for water in the basin of origin and receiving basin.
- The availability of alternative water supplies to the receiving basin.
- The purpose of use for the water within the receiving basin.
- Methods for avoiding waste and implementing water conservation and also for putting the transferred water to beneficial use.
- The projected economic impacts.
- Impacts to existing rights, instream uses, water quality, aquatic and riparian habitat, and bays and estuaries.
- The proposed mitigation to the basin of origin.

Finally, the commission may grant the application only to the extent that:

- The detriments to the basin of origin are less than the benefits to the receiving basin.
- The applicant has prepared a drought contingency plan and has developed and implemented a water conservation plan that will result in the highest practicable level of conservation and efficiency.

Additional environmental permitting will also be required for the development of infrastructure critical to project development. This includes but is not limited to:

- U.S. Army Corps of Engineers Section 404 Permit and mitigation plan.
- National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS).
- Cultural Resources Survey and National Register of Historic Places (NRHP) testing.
- Ancillary studies as directed by Texas Parks and Wildlife (TPWD) and U.S. Fish and Wildlife Service (USFWS).

Cost Analysis

Costs were developed for the Sabine to Neches and Neches to Trinity segments of the project. These planning-level estimates are shown below in *Table 1*. It should be noted that these costs do not include the cost of purchasing the water since it is subject to negotiation between the seller (SRA) and future buyers.

Table 1 – East Texas Transfer Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$406,455,416	$406,455,416	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$142,259,396	$142,259,396	
3	LAND AND EASEMENTS, ENVIRONMENTAL FEES	1	LS	$6,003,713	$6,003,713	
4	INTEREST DURING CONSTRUCTION	1	LS	$36,688,547	$36,688,547	
5	OTHER (HIDE IF INACTIVE)	1	LS	$0	$0	
	PROJECT CAPITAL COST				**$591,526,599**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$0	$41,620,448	$41,620,448	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$0	$4,752,927	$4,752,927	$4,752,927	$4,752,927
3	PUMPING ENERGY COSTS	$0	$0	$890,642	$890,642	$890,642	$890,642
	TOTAL ANNUAL COST	**$0**	**$0**	**$47,264,018**	**$47,264,018**	**$5,643,569**	**$5,643,569**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$0	$47,264,018	$47,264,018	$5,643,569	$5,643,569
2	YIELD	-	-	250,000	250,000	250,000	250,000
3	UNIT COST	$0	$0	$189	$189	$23	$23
	TOTAL UNIT COST						**$106**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$45,891,514	$45,891,514
2	WATER DISTRIBUTION SYSTEM IMPROVEMENTS	1	LS	$360,563,902	$360,563,902
	PROJECT COST				**$406,455,416**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$45,891,514	$1,147,288
2	WATER DISTRIBUTION SYSTEM IMPROVEMENTS	1.0	%	$360,563,902	$3,605,639
	ANNUAL OPERATION AND MAINTENANCE COST				**$4,752,927**

Water Management Strategy Evaluation

Based on the analysis provided above, the East Texas Transfer project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	The project would have a low overall unit cost.
Location	1	Considerable interbasin transfer between various entities required to convey water from outside of Region H.
Water Quality	3	No known water quality issues identified.
Environmental Land and Habitat	2	Some environmental issues anticipated but may be mitigated through adequate planning and design.
Environmental Flows	2	Project alters environmental flows patterns in each basin although these impacts will be limited through prescribed environmental flows standards.
Local Preference	3	Currently no significant local support or opposition to the project.
Institutional Constraints	1	Significant challenges to pursue permits and acquire required right-of-way.
Development Timeline	3	Estimated development timeline of 20 years.
Sponsorship	3	Sponsors identified based on needs and the required mechanics of the project. Currently, these stakeholders are not actively committed to development.
Vulnerability	2	Substantial risk to infrastructure related to natural disasters along the Gulf Coast that may impact any portion of the project from the Sabine River Basin to Region H.
Regionalization	5	Supports regionalization through conveyance of extensive supply into Region H, potentially supporting multiple regional systems.
Impacts on Other WMS	4	Project enables the use of existing water supplies and may be combined with other projects such as TRA to SJRA Transfer to achieve comprehensive, regional goals.

The East Texas Transfer includes up to 34 miles of new canal construction. The East Texas Transfer will potentially reduce water within the Sabine River Basin below the recently constructed pump station by as much as 250,000 ac-ft/yr. This volume of water is already permitted for full consumptive use within the basin. The project may result in as much as 125,000 ac-ft/yr of additional flow in the receiving basins assuming 50 percent return flows through municipal effluent. Construction will require permanent impacts to agricultural lands in some areas along the corridor of conveyance, but actual impacts will be determined by final configuration.

Water User Group Application

The East Texas Transfer project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the suitability of the project to the WUGs served.

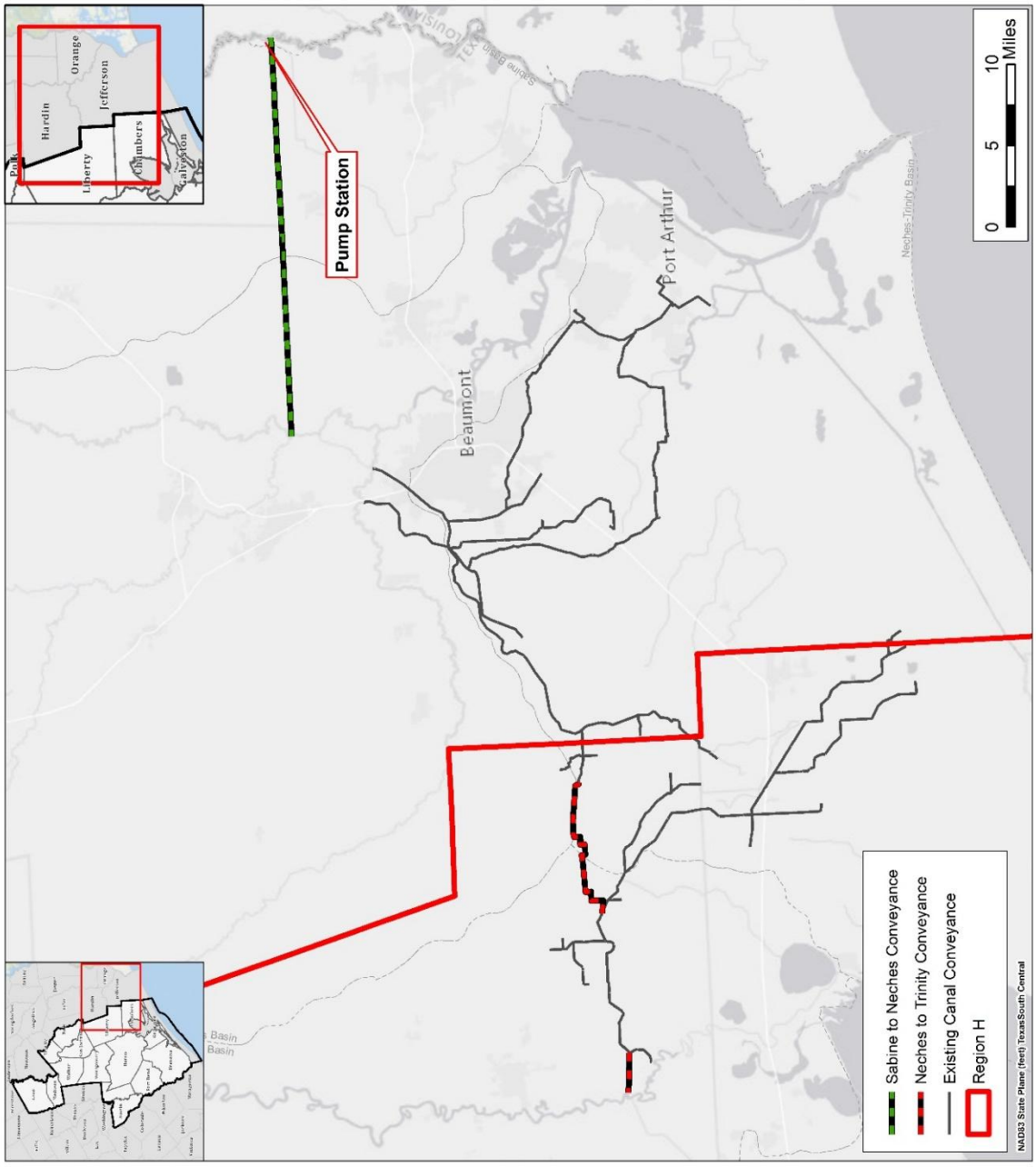
CRITERIA	WUG SUITABILITY
Proximity	This project will deliver water to locations where it may be utilized through existing take points in the Trinity and San Jacinto Basins. The Brazos River Basin may also receive supply through future expansions.
Size	The magnitude of this project dictates that it be accomplished by major water providers in response to large, growing demands among their many customers. In effect, this water may be utilized by WUGs of many sizes that receive water from these major providers.
Water Quality	Project will provide raw water which will require treatment for some uses such as municipal supply.
Unit Cost	The project would have a low overall unit cost. However, additional costs may be added (i.e. treatment costs) for some uses.
Other Factors	This project will be accomplished by specific, regional water providers based on strategic needs when current water supplies become inadequate to meet future needs. Projected needs in the basin of origin and in the receiving basins are summarized in Chapter 4. At the time the IBT is permitted, it will be necessary to demonstrate that permittees have implemented a water conservation plan that will result in the highest practicable levels of water conservation and efficiency achievable within their jurisdiction, per Texas Administrative Code §297.18 and Texas Water Code §11.085. Region H recommends advanced water conservation for all municipal WUGs prior to the application of any strategies, including IBT alternatives.

References

Freese and Nichols, Inc. for Gulf Coast Water Authority. 2014. *Long Range Water Supply Study – Detailed Evaluation of Selected Strategies*.

Sabine River Authority of Texas, Lower Neches Valley Authority, San Jacinto River Authority, City of Houston, Brazos River Authority, and Texas Water Development Board. 1998. *Trans-Texas Water Program, Southeast Area, Final Report*.

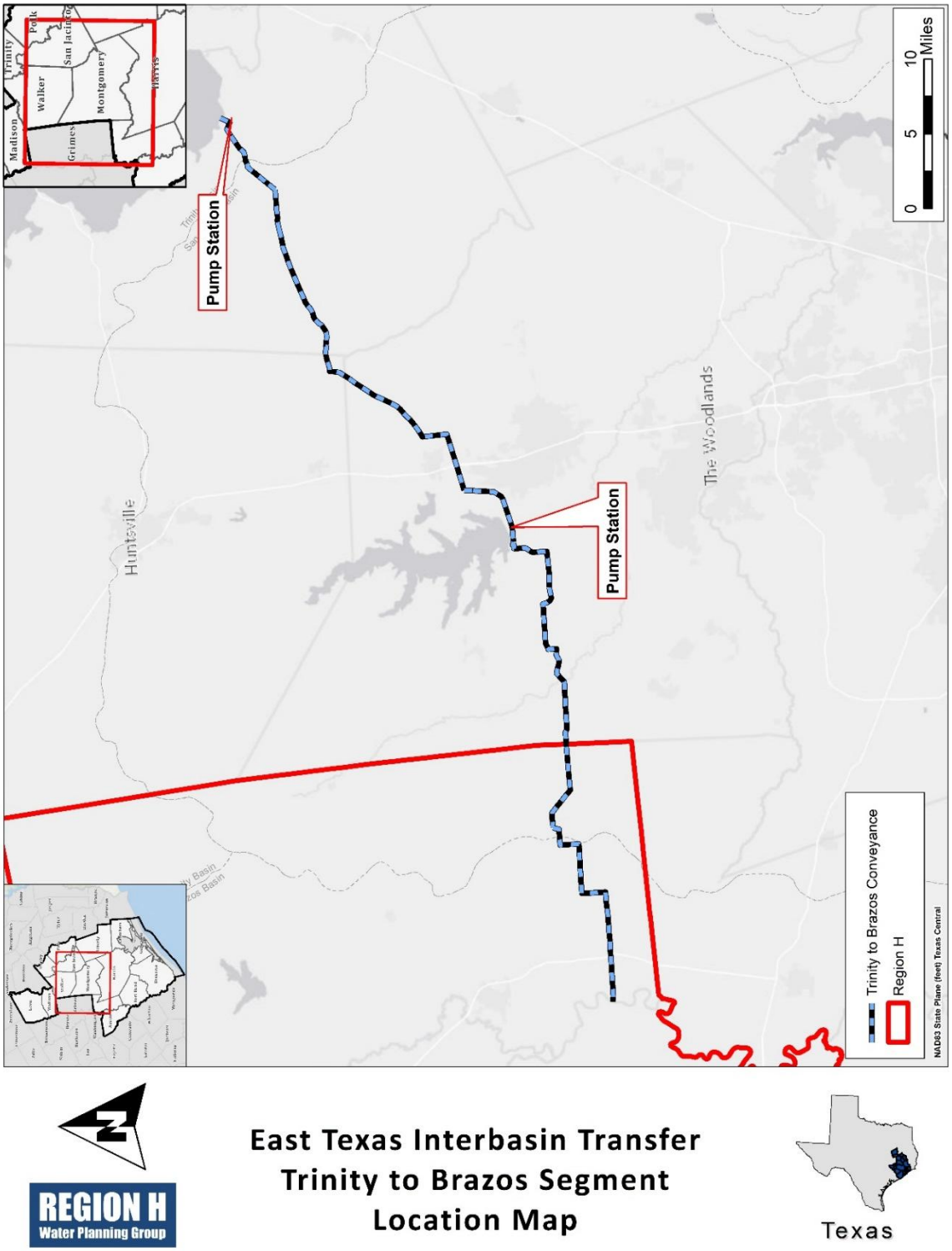
Location Map – Sabine to Trinity



REGION H
Water Planning Group

East Texas Interbasin Transfer
Sabine to Trinity Segments
Location Map

Location Map – Trinity to Brazos



REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	LNVA Neches-Trinity Basin Interconnect
Project ID:	CONV-007
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	67,000 ac-ft/yr (60 MGD)
Implementation Decade:	2040
Development Timeline:	15 years
Project Capital Cost:	$127,821,515 (Sept. 2023)
Unit Water Cost (Rounded):	$165 per ac-ft (during loan period) $31 per ac-ft (after loan period)

Strategy Description

As a part of its long-term strategic water plan, the Lower Neches Valley Authority (LNVA) is planning to construct an approximately 13-mile, 84-inch diameter pipeline and a 62,000 gpm pump station connecting the Freeman Lateral of the LNVA system with the Devers 3rd Main Canal of the Devers system. The connection point to the Freeman Lateral is located within the Neches-Trinity Coastal Basin; however, the intake for this canal is on Pine Island Bayou within the Neches River Basin. The proposed pipeline enables the movement of Neches River water westward toward the upper reaches of the Devers Canal system and potentially back into the Trinity River. The water from this strategy will enable LNVA to provide water for irrigation customers in Region H, as well as to serve new industries as they emerge along the IH-10 corridor.

The cost for this project includes infrastructure and operational costs related to water conveyance. Ultimately, individual water users will make contracts with LNVA to purchase the water supply created by this project. The cost for raw water will need to be negotiated with LNVA and will reflect the wholesale water rates of this entity at the time a contract is made.

Strategy Analyses

The project analyses for the LNVA Neches-Trinity Basin Interconnect project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The quantity of supply from this strategy represents the estimated average volume of water that could be conveyed through the pipeline and was estimated by LNVA as part of its long-term planning. This equates to approximately 67,000 ac-ft/yr beginning in 2040 and continuing through the planning period. The reliability of this water supply is considered high due to the availability of water from the Neches River.

Environmental Considerations

The impact to the environment due to pipeline and pump station construction is expected to be moderate, and the conveyance of water from the Neches River to Liberty County should have minimal impact to environmental water needs in Jefferson County and to the surrounding habitat, and a low impact to cultural resources in the area. Water transfers may also act as a potential route by which exotic or invasive species are introduced into a basin. Potential species impacts and examination of opportunities to avoid or mitigate impacts would be expected to be considered during the detailed project planning and design process. There are no bays or estuaries in close proximity to the project area located in Jefferson and Liberty Counties. Further study in the design phase of the project would identify in greater detail the potential obstacles and approaches to mitigation in order to make the project successful.

Permitting and Development

The development of this strategy is dependent on the long-term planning goals of LNVA and customers in Liberty County. Development of transmission infrastructure may require some permitting.

Cost Analysis

Planning level cost estimates for the LNVA Neches-Trinity Basin Interconnect project are included in the table below. Projected capital cost estimates were provided by LNVA. Capital costs include planning, design, real estate, environmental and permitting, and construction of conveyance infrastructure. The annual cost was estimated assuming a debt service of 3.5% for 20 years, in accordance with standard TWDB regional water planning cost assumptions. Costs are presented in September 2023 equivalent costs in *Table 1*.

Table 1 – LNVA Neches-Trinity Basin Interconnect Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$64,589,549	$64,589,549	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$25,099,000	$25,099,000	
3	PLANNING, DESIGN, AND REAL ESTATE	1	LS	$14,245,919	$14,245,919	
4	ENVIRONMENTAL AND PERMITTING	1	LS	$4,829,125	$4,829,125	
5	INTEREST DURING CONSTRUCTION	1	LS	$19,057,922	$19,057,922	
	PROJECT CAPITAL COST				**$127,821,515**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$8,993,659	$8,993,659	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$894,831	$894,831	$894,831	$894,831	$894,831
3	PUMPING ENERGY COSTS	$0	$1,175,820	$1,175,820	$1,175,820	$1,175,820	$1,175,820
	TOTAL ANNUAL COST	**$0**	**$11,064,310**	**$11,064,310**	**$2,070,651**	**$2,070,651**	**$2,070,651**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$11,064,310	$11,064,310	$2,070,651	$2,070,651	$2,070,651
2	YIELD	-	67,000	67,000	67,000	67,000	67,000
3	UNIT COST	$0	$165	$165	$31	$31	$31
	TOTAL UNIT COST						**$85**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$16,595,710	$16,595,710
2	PIPELINES	1	LS	$47,993,839	$47,993,839
	PROJECT COST				**$64,589,549**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$16,595,710	$414,893
2	PIPELINES	1.0	%	$47,993,839	$479,938
	ANNUAL OPERATION AND MAINTENANCE COST				**$894,831**

Water Management Strategy Evaluation

This LNVA Neches-Trinity Basin Interconnect project benefits irrigators and industrial water users who may become customers of LNVA. This strategy is expected to have a positive impact on the water supply security of these future customers. This project will reduce the demands on other water resources located in Liberty County. From a social and economic perspective, this voluntary redistribution of water will be beneficial because it provides water for economic growth. Based on the analysis provided above, the LNVA Neches-Trinity Basin Interconnect project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

Criteria	Rating	Explanation
Cost	5	The project would have a low overall unit cost. Total costs for customers will also include the contract cost of water.
Location	3	Interbasin transfer between entities is required to convey water from outside of Region H.
Water Quality	3	No known water quality issues identified.
Environmental Land and Habitat	3	Environmental concerns are limited and impacts along the pipeline route can be mitigated during development.
Environmental Flows	2	Project may reduce instream flows within the Neches River Basin, with diversions made within the terms of an existing permit.
Local Preference	3	Currently no significant local support or opposition to the project.
Institutional Constraints	3	Permitting and development expected with minimal problems. Rural property along route is available.
Development Timeline	4	Project to be developed within 15 years.
Sponsorship	5	LNVA is identified as a sponsor and is actively pursuing development.
Vulnerability	5	Minimal risk from natural or man-made disasters related to infrastructure.
Regionalization	3	Supports service to multiple customer entities.
Impacts on Other WMS	3	Project is not anticipated to impact other management strategies.

The LNVA Neches-Trinity Basin Interconnect will include approximately 13 miles of pipeline. The project is not anticipated to affect endangered or vulnerable species or to impact agricultural land or production. This strategy is expected to have a positive impact on the water supply security of agriculture.

Water User Group Application

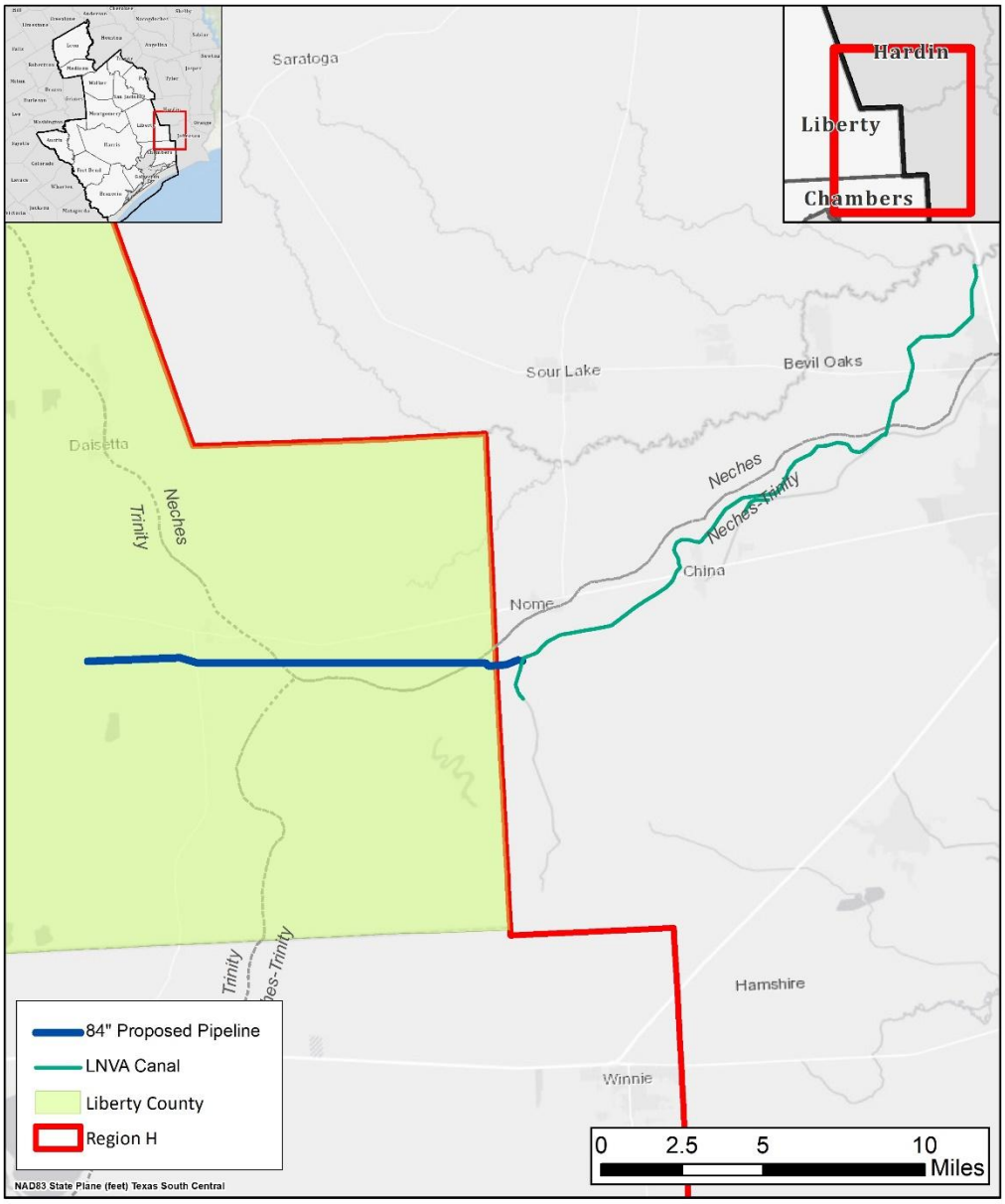
The LNVA Neches-Trinity Basin Interconnect project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

Criteria	WUG Suitability
Proximity	The proposed pipeline enables the transfer of water in Jefferson County (Region I) to Liberty County (Region H). This will enable LNVA to provide water for irrigation customers in Region H, as well as to serve industries along the IH-10 corridor.
Size	The capacity of this project provides supply to meet LNVA's irrigation customer demands, as well as to potentially supply other industries in Region H in Liberty County.
Water Quality	This project will convey raw water, which is suitable for irrigation use. If the water will be used for other industries, treatment may be required.
Unit Cost	The costs of this project are low compared to many other infrastructure projects in the RWP.
Other Factors	This project is identified primarily for irrigation customers in Liberty County but could also potentially supply other customers with future needs. Projected needs in the basin of origin and in the receiving basins are summarized in Chapter 4. At the time the project is permitted, it will be necessary to demonstrate that permittees have implemented a water conservation plan that will result in the highest practicable levels of water conservation and efficiency achievable within their jurisdiction, per Texas Administrative Code §297.18 and Texas Water Code §11.085. Region H recommends advanced water conservation for all municipal WUGs prior to the application of any strategies.

References

Lower Neches Valley Authority. 2020. *30-Year Long Term Strategic Plan.*

Location Map



REGION H Water Planning Group

LNVA Neches-Trinity Basin Interconnect Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Manvel Supply Expansion
Project ID:	CONV-008
Project Type:	Conveyance
Potential Supply Quantity (Rounded):	7,840 ac-ft/yr (7.0 mgd)
Implementation Decade:	2030 (initial phase)
Development Timeline:	5 years
Project Capital Cost:	$62,235,692 (Sept. 2023)
Unit Water Cost (Rounded):	$616 per ac-ft (during loan period) $57 per ac-ft (after loan period)

Strategy Description

The City of Manvel, located in Brazoria County, currently relies on groundwater to meet its customer demands, except for a small amount of direct reuse. In order to address expected growth within its service area, as well as potential expansion of its service area, the City has developed a Master Water Plan. The City has secured a water supply contract from the Brazos River Authority (BRA) for 3,731 ac-ft/yr which is available from BRA's system operation permit. Additionally, the City is exploring options for procurement of treated surface water supplies from the City of Pearland or Gulf Coast Water Authority (GCWA). This increased supply would support water service to areas within the city limits and extraterritorial jurisdiction, including development outside of its current retail water service area.

Strategy Analyses

The project analyses for the Manvel Supply Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The 2022 Master Water Plan for Manvel investigate several options for addressing anticipated future groundwater needs, including balanced surface water and groundwater usage, constraining groundwater to a set percentage of anticipated demand, or development of surface water only. The analyses in the Master Plan recommend utilizing an approach combining surface water and groundwater sources, with treated surface water potentially purchased from the City of Pearland or GCWA. The Master Plan estimates that the initial phase of surface water supply would be 4 million gallons per day (MGD), or 4,480 ac-ft/yr, implemented by 2030; this would need to be increased to 7 MGD (7,840 ac-ft/yr) by 2037.

Environmental Considerations

The primary impact associated with the implementation of this water management project is the increase in diversions from the Brazos River. Increased diversion of water from the Brazos River will result in some minimal decreases in instream flow downstream of the intake point. However, these diversions would be made from existing water rights owned by a wholesale water provider, and no new water rights permits would be required for this project. Some surface disturbance may be associated with development of surface water treatment facilities and transmission infrastructure.

Permitting and Development

Procurement of surface water supplies from the City of Pearland or Gulf Coast Water Authority would require a new supply contract. The addition of surface water supplies is expected to necessitate additional conveyance infrastructure which may involve additional permitting requirements.

Cost Analysis

Capital costs of the surface water treatment plant and transmission expansion were provided in the City's Master Water Plan for a conceptual supply from the City of Pearland and have been scaled to an equivalent September 2023 cost. Additional costs, including cost of interest during construction, annualized debt service, and annual operating costs were also developed based on standard assumptions for regional planning. A total cost estimate for the Manvel Supply project is shown in *Table 1.*

Table 1 – Manvel Supply Expansion Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$44,904,321	$44,904,321	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$13,471,296	$13,471,296	
3	LAND AND EASEMENTS	1	LS	$0	$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$3,860,075	$3,860,075	
	PROJECT CAPITAL COST				**$62,235,692**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE (2030 EXPANSION)	$1,930,375	$1,930,375	$0	$0	$0	$0
2	DEBT SERVICE (2040 EXPANSION)	$0	$2,448,596	$2,448,596	$0	$0	$0
3	OPERATION AND MAINTENANCE (2030 EXPANSION)	$197,951	$197,951	$197,951	$197,951	$197,951	$197,951
4	OPERATION AND MAINTENANCE (2040 EXPANSION)	$0	$251,092	$251,092	$251,092	$251,092	$251,092
5	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
6	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$2,128,326**	**$4,828,014**	**$2,897,639**	**$449,043**	**$449,043**	**$449,043**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$2,128,326	$4,828,014	$2,897,639	$449,043	$449,043	$449,043
2	YIELD	4,480	7,840	7,840	7,840	7,840	7,840
3	UNIT COST	$475	$616	$370	$57	$57	$57
	TOTAL UNIT COST						**$256**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$44,904,321	$44,904,321
	PROJECT COST				**$44,904,321**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$44,904,321	$449,043
	ANNUAL OPERATION AND MAINTENANCE COST				**$449,043**

Water Management Strategy Evaluation

Based on the analysis provided above, the Manvel Supply Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	3	Unit cost of the project, as depicted, moderate and decreases significantly after debt service.
Location	5	Project is located near demand center and includes transmission components for delivery to potential customers.

CRITERIA	RATING	EXPLANATION
Water Quality	3	No known issues regarding water quality.
Environmental Land and Habitat	4	Limited environmental impacts associated with identified site.
Environmental Flows	2	Minor reduction in environmental flows.
Local Preference	4	No known opposition.
Institutional Constraints	4	Surface water must be procured through a contract.
Development Timeline	4	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	4	The City of Manvel has identified the project in its Water Master Plan.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	2	Serves sponsor entity and a limited number of customers.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

Water User Group Application

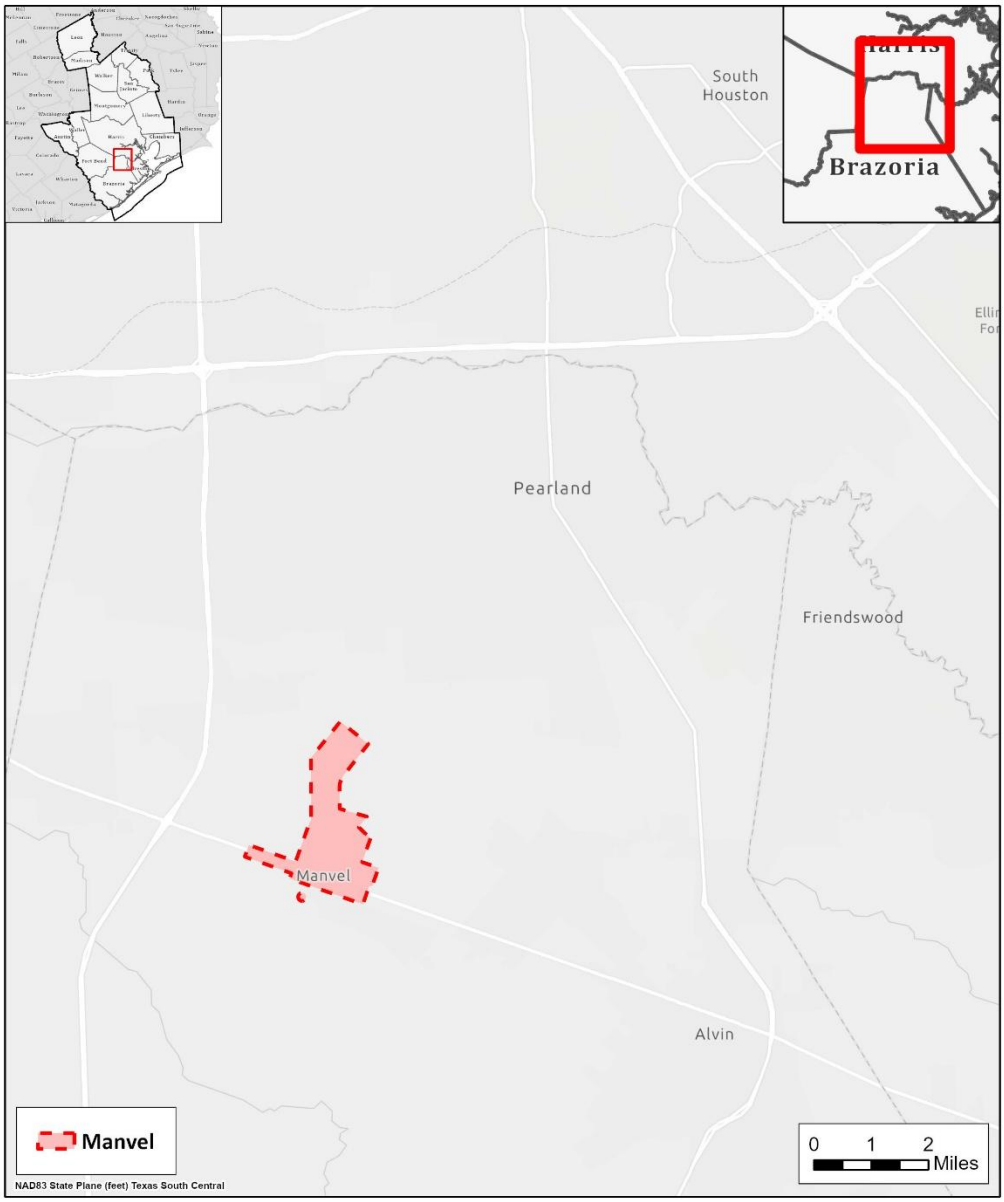
The Manvel Supply Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	The capacity of this project is based on demands projected by the project sponsor.
Water Quality	Project provides treated water suitable for municipal use.
Unit Cost	Near-term and long-term unit costs are reasonable for target uses.
Other Factors	This project is identified for serving the City of Manvel and surrounding areas.

References

HDR Inc. *City of Manvel: 2022 Master Water Plan*. February 2022.

Location Map



REGION H Water Planning Group

Manvel Supply Expansion

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	North Fort Bend Water Authority Phase 2 Distribution Segments
Project ID:	CONV-009
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	62,496 ac-ft/yr (55.8 mgd) (conveyance only – supply generated by other projects)
Implementation Decade:	2030 (2024)
Development Timeline:	5 years
Project Capital Cost:	$129,366,992 (Sept. 2023)
Unit Water Cost (Rounded):	$166 per ac-ft (during loan period) $21 per ac-ft (after loan period)

Strategy Description

The Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) have established requirements for entities within their boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the North Fort Bend Water Authority (NFBWA) and West Harris County Regional Water Authority (WHCRWA) have contracted with the City of Houston (COH) to receive treated surface water. Both Authorities have already developed transmission and distribution infrastructure to meet their initial obligations for reducing groundwater demand and are receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, NFBWA must expand the distribution infrastructure network through which it supplies its member districts.

Strategy Analyses

The project analyses for the NFBWA Phase 2 Distribution Segments include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The NFBWA will deliver surface water to the majority of the MUDs and the City of Fulshear within the Authority to meet the requirements of its Groundwater Reduction Plan (GRP) approved by the FBSD. The NFBWA Phase 2 Distribution Segments will allow for greater overall volume to be conveyed and conversion of additional districts to surface water.

Environmental Considerations

The NFBWA has engaged in a variety of activities and investigations for projects within the Authority, as summarized below. Note that the following descriptions are not limited to studies of the NFBWA Phase 2 Distribution Segments and also include studies related to NFBWA and WHCRWA's proposed future shared transmission infrastructure. The Authority relies on COH and WHCRWA to address the environmental considerations of projects for which those entities are primarily responsible.

- Threatened and Endangered Species Study - There were no threatened and/or endangered species identified at the time of field investigation. This does not eliminate the possibility of threatened and/or endangered species inhabiting the proposed route area at the time of construction. Further, reconnaissance did identify some habitats conducive for threatened and/or endangered species. At the time of final design and construction, an additional investigation of the area will be required to verify these species have not inhabited the construction area.
- Cultural Resources Study – Investigation revealed limited potential for cultural/archeological resources within the portion along Buffalo Bayou. The majority of this route lies within residential development where any cultural/archeological resources have been previously handled by the landowner. It is anticipated that the Texas Historical Commission will require field investigations prior to construction to verify no archeological sites exist along the proposed route.
- Reconnaissance of Potential Wetlands and Waters of the United States - Historical aerial photography and National Wetland Inventory (NWI) maps identified areas displaying characteristics consistent with potential wetland habitats. Field reconnaissance identified these areas and verified that in the opinion of the environmental consultant, the landscape does not appear to contain any potential wetlands. Depending on the amount of time between the investigation and construction, the Authority may reconfirm this assessment. If conditions have changed, then permitting or avoidance (trenchless construction) of these aquatic resources would be decided at that time. Given that the on-site investigation did not reveal any obvious wetland features, any subtle or smaller wetlands determined to be in the construction zone will most likely be avoided via trenchless construction.
- Limited Phase 1 Environmental Site Assessment (ESA) - The Phase 1 ESA investigation documented environmental conditions that could impact future land use or planned development, including installation of water line segments. No known hazardous material sites or oil and gas sites were identified. The proposed alignments are within the vicinity of gas stations; however, the alignment is located to avoid close proximity to these gas stations. Segments have a low potential for presence of hazardous materials or substances based on research conducted for this report.

Permitting and Development

The North Fort Bend Water Authority is subject to requirements imposed by COH as well as the State of Texas. Development of expanded distribution infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. Infrastructure development is also likely to require acquisition of additional easements or property. As indicated above, the Authority relies on the COH and WHCRWA to address the permitting and development requirements of projects for which those entities are primarily responsible.

Cost Analysis

An estimate of capital cost for the NFBWA Phase 2 Distribution Expansion was provided by the sponsor and was assumed to be inclusive of cost components in addition to construction, including those associated with engineering, land acquisition, legal costs, and environmental studies. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Debt service and annual operations and maintenance costs were calculated using standard Regional Planning procedures. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1*.

Table 1 – NFBWA Phase 2 Distribution Segments Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$129,366,992	$129,366,992	
	PROJECT CAPITAL COST				**$129,366,992**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$9,102,401	$9,102,401	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$1,293,670	$1,293,670	$1,293,670	$1,293,670	$1,293,670	$1,293,670
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$10,396,071**	**$10,396,071**	**$1,293,670**	**$1,293,670**	**$1,293,670**	**$1,293,670**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$10,396,071	$10,396,071	$1,293,670	$1,293,670	$1,293,670	$1,293,670
2	YIELD	62,496	62,496	62,496	62,496	62,496	62,496
3	UNIT COST	$166	$166	$21	$21	$21	$21
	TOTAL UNIT COST						**$69**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$129,366,992	$129,366,992
	PROJECT COST				**$129,366,992**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$129,366,992	$1,293,670
	ANNUAL OPERATION AND MAINTENANCE COST				**$1,293,670**

Water Management Strategy Evaluation

Based on the analysis provided above, the NFBWA Phase 2 Distribution Segments project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	The NFBWA Phase 2 Distribution Segments, while not directly generating supply, allow conveyance with small additional cost.
Location	4	Reflects conveyance infrastructure from major transmission pipelines to demand centers.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	5	Project to be developed within 5 years.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The NFBWA Phase 2 Distribution Segments include up to 30 miles of pipelines. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The NFBWA Phase 2 Distribution Segments project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve NFBWA and any entities that it provides with water supply.

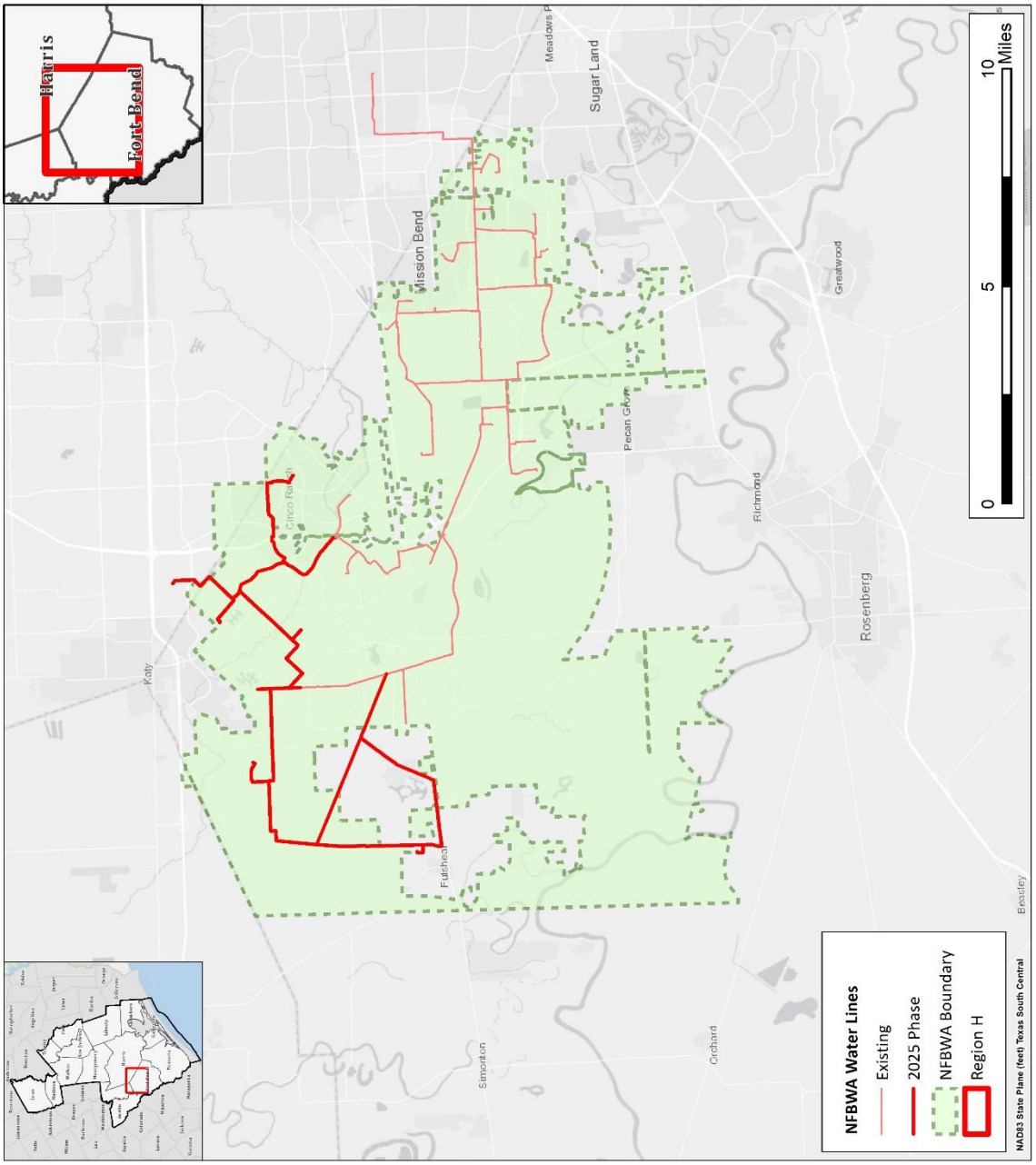
CRITERIA	WUG SUITABILITY
Proximity	Conveyance infrastructure from major transmission pipelines to demand centers.
Size	Conveyance is sized to convey the requisite amount of source water.
Water Quality	Conveys treated water of quality appropriate for municipal use.
Unit Cost	Adds small amount to unit cost of NFBWA's surface water conversion process.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

North Fort Bend Water Authority Groundwater Reduction Plan. 2008. Brown and Gay, Inc.

Location Map



NFBWA Phase 2 Distribution Segments
Location Map

REGION H
Water Planning Group

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	North Harris County Regional Water Authority Distribution Expansion
Project ID:	CONV-010
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	143,360 ac-ft/yr (128 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	<10 years (per phase)
Project Capital Cost:	$1,228,464,604 (Sept. 2023)
Unit Water Cost (Rounded):	$654 per ac-ft (during loan period) $60 per ac-ft (after loan period)

Strategy Description

The Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) have established requirements for entities within their boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged heavy pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the North Harris County Regional Water Authority (NHCRWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to its initial obligations for reducing groundwater demand and are receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, NHCRWA is developing a phased expansion of the distribution infrastructure network through which it supplies its member districts, allowing for greater overall volume conveyed and conversion of additional districts to surface water.

Strategy Analyses

The project analyses for NHCRWA Distribution Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its

Groundwater Reduction Plan (GRP) program, increasing its supply reservation and planning for large scale transmission to its service area. NHCRWA will engage in a phased expansion of the distribution infrastructure network through which it supplies its member districts, allowing for greater overall volume conveyed and conversion of additional districts to surface water. The ongoing year 2025 expansion will include development of an expanded distribution pipeline network and two new pump station facilities, one near the Hardy Toll Road and Richey Road, and the other west of SH 249 near the Heron Lakes subdivision. The existing Louetta Regional Water Plant will be expanded, and two groundwater wells will be added to the system. The year 2025 expansion will bring the total number of districts in the NHCRWA surface water service area to over 100. A subsequent 2035 expansion of the distribution pipeline system will allow surface water to be conveyed to approximately 36 additional districts. Other infrastructure measures implemented in this phase will include three additional wells, a new West Regional Water Plant, and enhancements to the Spears Road Pump Station and Louetta Regional Water Plant. The 2045 conversion phase will involve limited expansion of infrastructure.

Environmental Considerations

Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

NHCRWA is subject to contractual requirements established by COH as well as any relevant permitting required by the State of Texas and HGSD. Development of expanded distribution infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. Infrastructure development is also likely to require acquisition of additional easements or property.

Cost Analysis

Detailed estimates of capital costs for the 2025 phase of the NHCRWA Distribution Expansion were provided by the project sponsor in their associated SWIFT funding application. Construction costs associated with 36-inch and 84-inch transmission lines, which were included in the 2018 SWIFT funding application, are not reflected in this cost estimate but are instead included in the costs associated with the NHCRWA Transmission Line project. For 2035 and 2045 phases of the NHCRWA Distribution Expansion, estimates of capital cost from the NHCRWA GRP were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Other cost components not included in the GRP, such as interest during construction, annualized debt service, and annualized operations and maintenance costs, were assumed using standard Regional Planning costing assumptions. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1*.

Table 1 – NHCRWA Distribution Expansion Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$648,929,028	$648,929,028	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$352,233,354	$352,233,354	
3	LAND AND EASEMENTS	1	LS	$102,340,434	$102,340,434	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$568,238	$568,238	
5	INTEREST DURING CONSTRUCTION	1	LS	$124,393,549	$124,393,549	
	PROJECT CAPITAL COST				$1,228,464,604	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE (2025 PHASE)	$45,388,114	$45,388,114	$0	$0	$0	$0
2	DEBT SERVICE (2035 PHASE)	$0	$39,768,560	$39,768,560	$0	$0	$0
3	DEBT SERVICE (2045 PHASE)	$0	$0	$1,279,417	$1,279,417	$0	$0
4	OPERATION AND MAINTENANCE (2025 PHASE)	$4,266,784	$4,266,784	$4,266,784	$4,266,784	$4,266,784	$4,266,784
5	OPERATION AND MAINTENANCE (2035 PHASE)	$0	$4,275,376	$4,275,376	$4,275,376	$4,275,376	$4,275,376
6	OPERATION AND MAINTENANCE (2045 PHASE)	$0	$0	$96,499	$96,499	$96,499	$96,499
7	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
8	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$49,654,898	$93,698,835	$49,686,637	$9,918,076	$8,638,659	$8,638,659

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$49,654,898	$93,698,835	$49,686,637	$9,918,076	$8,638,659	$8,638,659
2	YIELD	143,360	143,360	143,360	143,360	143,360	143,360
3	UNIT COST	$346	$654	$347	$69	$60	$60
	TOTAL UNIT COST						$256

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS (2035 PHASE)	1	LS	$78,738,687	$78,738,687
2	PIPELINES (2025 PHASE)	1	LS	$319,090,814	$319,090,814
3	PIPELINES (2035 PHASE)	1	LS	$222,356,151	$222,356,151
4	PIPELINES (2045 PHASE)	1	LS	$9,649,879	$9,649,879
5	WATER TREATMENT PLANTS (2025 PHASE)	1	LS	$10,758,757	$10,758,757
5	WELL FIELDS (2035 PHASE)	1	LS	$8,334,740	$8,334,740
	PROJECT COST				$648,929,028

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS (2035 PHASE)	2.5	%	$78,738,687	$1,968,467
2	PIPELINES (2025 PHASE)	1.0	%	$319,090,814	$3,190,908
3	PIPELINES (2035 PHASE)	1.0	%	$222,356,151	$2,223,562
4	PIPELINES (2045 PHASE)	1.0	%	$9,649,879	$96,499
5	WATER TREATMENT PLANTS (2025 PHASE)	10.0	%	$10,758,757	$1,075,876
6	WELL FIELDS (2035 PHASE)	1.0	%	$8,334,740	$83,347
	ANNUAL OPERATION AND MAINTENANCE COST				$8,638,659

Water Management Strategy Evaluation

Based on the analysis provided above, the NHCRWA Distribution Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that

may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	The project unit cost is moderately low during each phase of debt service and declines after debt service completion.
Location	4	Reflects distribution infrastructure from major transmission pipelines to demand centers.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	4	Project to be developed within 10 years.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The NHCRWA Distribution Expansion includes up to 155 miles of pipelines. The majority of this impact will be in urbanized areas with limited impacts to habitat. The NHCRWA Distribution Expansion will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The NHCRWA Distribution Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

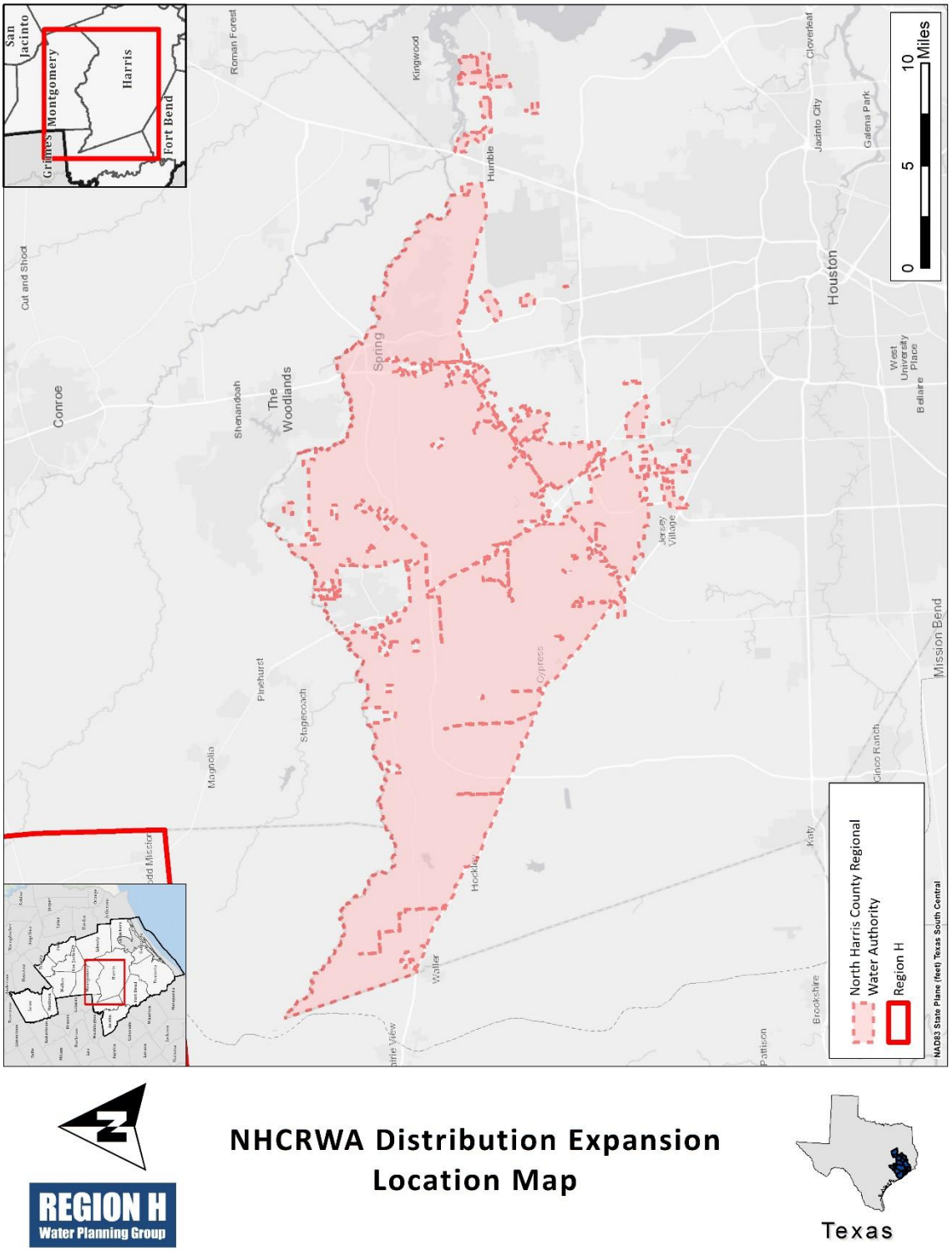
CRITERIA	WUG SUITABILITY
Proximity	Distribution infrastructure from major transmission pipelines to demand centers.
Size	Conveyance is sized to convey the requisite amount of source water.
Water Quality	Conveys treated water of quality appropriate for municipal use.
Unit Cost	Reflects a portion of the overall cost to implement NHCRWA's surface water conversion.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

AECOM. *2014 North Harris County Regional Water Authority Groundwater Reduction Plan*, prepared for NHCRWA, June 2014.

Harris-Galveston Subsidence District. *Harris-Galveston Subsidence District 2013 District Regulatory Plan*, May 2013.

Location Map



NHCRWA Distribution Expansion Location Map

REGION H Water Planning Group

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	North Harris County Regional Water Authority Transmission Lines
Project ID:	CONV-011
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	143,360 ac-ft/yr (128 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$593,071,956 (Sept. 2023)
Unit Water Cost (Rounded):	$323 per ac-ft (during loan period) $32 per ac-ft (after loan period)

Strategy Description

The Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) have established requirements for entities within their boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the North Harris County Regional Water Authority (NHCRWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to its initial obligations for reducing groundwater demand and are receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, NHCRWA is developing transmission infrastructure to convey additional treated surface water to its service area from connections with a large pipeline developed jointly by COH, NHCRWA, and the Central Harris County Regional Water Authority (CHCRWA).

Strategy Analyses

The project analyses for NHCRWA Transmission Lines include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its Groundwater Reduction Plan (GRP) program, increasing its supply reservation and planning for large

scale transmission to its service area. A major 84-inch pipeline jointly sponsored by and serving COH, NHCRWA, and CHCRWA has recently been completed and conveys water from the COH Northeast Water Purification Plant (NEWPP) westward to a point just west of Interstate 45 along a route roughly parallel to Beltway 8. The NHCRWA Transmission Lines will convey this water to the Authority service area in several segments. A 54-inch line will run north from the shared transmission along the Hardy Toll Road to a pump station near Richey Road. Another line of 84-inch diameter will run westward from the terminus of the shared pipeline to a proposed pump station near the Heron Lakes subdivision slightly west of SH 249. A smaller 36-inch line will branch off at TC Jester Blvd and connect to the existing Spears Road Pump Station.

Environmental Considerations

Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the project is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

NHCRWA is subject to contractual requirements established by COH as well as any relevant permitting required by the State of Texas and HGSD. Development of expanded transmission infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. Infrastructure development is also likely to require acquisition of additional easements or property.

Cost Analysis

Planning-level capital cost estimates for the SH 249 pump station and 84-inch pipeline were provided by the project sponsor and were assumed to be inclusive of cost components such as contingency, engineering, land acquisition, legal costs, and environmental studies and mitigation. Construction costs associated with 36-inch and 84-inch transmission lines were included in the sponsor's SWIFT funding application in 2018 and have been included in the estimated cost of the NHCRWA Transmission Lines project; however, other capital costs associated with these pipelines were also associated with distribution infrastructure and are instead reflected as part of the total cost of the NHCRWA Distribution Expansion project in the Regional Plan. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Other cost components not included in the GRP, such as interest during construction, annualized debt service, and annualized operations and maintenance costs, were assumed using standard regional planning costing assumptions. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1*.

Table 1 – NHCRWA Transmission Lines Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$386,194,406	$386,194,406	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$118,451,756	$118,451,756	
3	LAND AND EASEMENTS	1	LS	$0	$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$88,425,793	$88,425,793	
	PROJECT CAPITAL COST				$593,071,956	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$41,729,181	$41,729,181	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$4,639,974	$4,639,974	$4,639,974	$4,639,974	$4,639,974	$4,639,974
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$46,369,156	$46,369,156	$4,639,974	$4,639,974	$4,639,974	$4,639,974

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$46,369,156	$46,369,156	$4,639,974	$4,639,974	$4,639,974	$4,639,974
2	YIELD	143,360	143,360	143,360	143,360	143,360	143,360
3	UNIT COST	$323	$323	$32	$32	$32	$32
	TOTAL UNIT COST						$129

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$51,868,691	$51,868,691
2	PIPELINES	1	LS	$334,325,715	$334,325,715
	PROJECT COST				$386,194,406

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$51,868,691	$1,296,717
2	PIPELINES	1.0	%	$334,325,715	$3,343,257
	ANNUAL OPERATION AND MAINTENANCE COST				$4,639,974

Water Management Strategy Evaluation

Based on the analysis provided above, the NHCRWA Transmission Lines project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	The NHCRWA Transmission Lines, while not directly generating supply, allow conveyance with small additional cost.
Location	4	Reflects conveyance infrastructure from major transmission pipelines to demand centers.
	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	5	Project to be fully developed within 5 years.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The NHCRWA Transmission Lines will include up to 14 miles of large-diameter pipelines. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The NHCRWA Transmission Lines project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

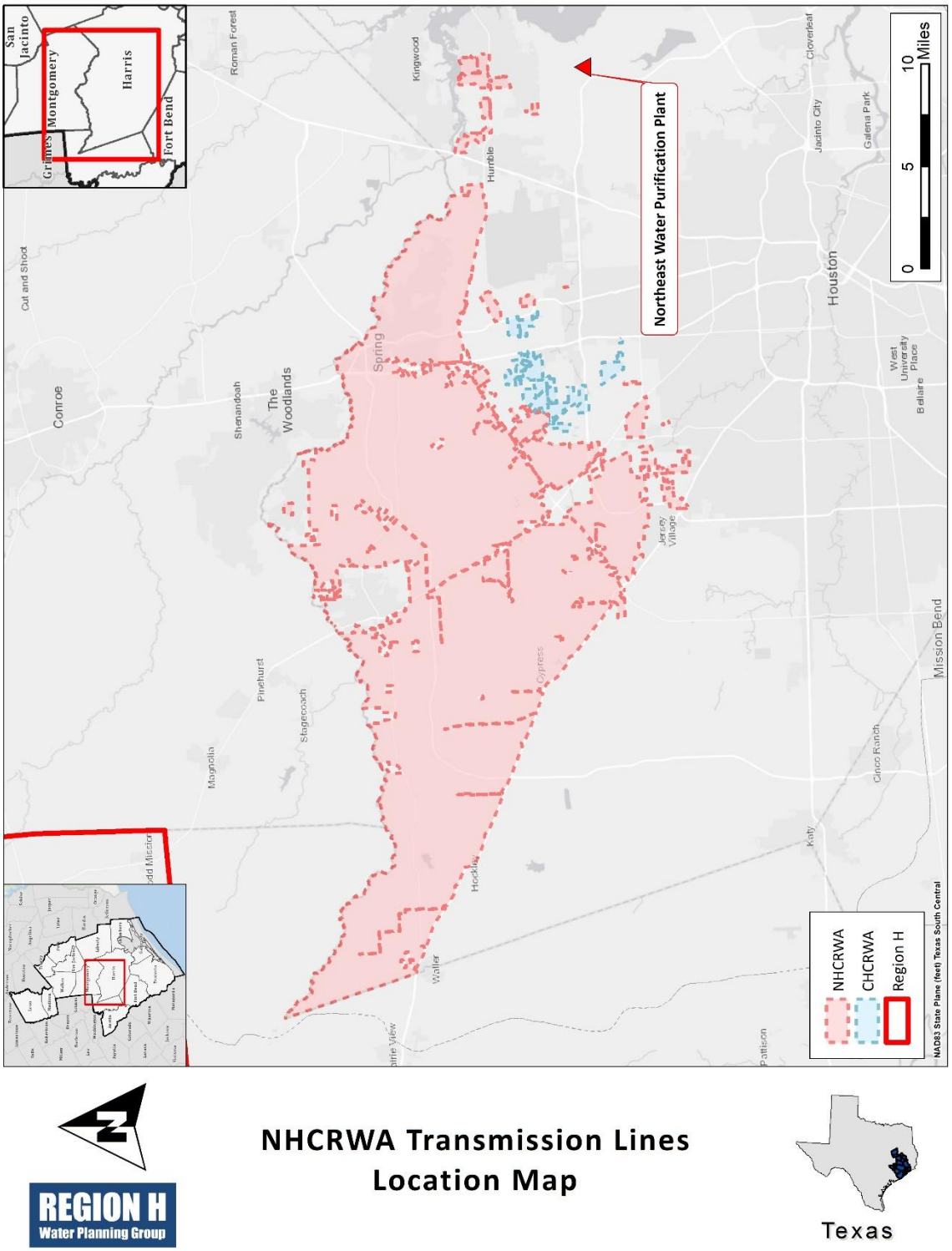
CRITERIA	WUG SUITABILITY
Proximity	Conveyance infrastructure from major transmission pipelines to demand centers.
Size	Conveyance is sized to convey the requisite amount of source water.
Water Quality	Conveys treated water of quality appropriate for municipal use.
Unit Cost	Adds small amount to unit cost of NHCRWA's surface water conversion process.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

AECOM. *2014 North Harris County Regional Water Authority Groundwater Reduction Plan*, prepared for NHCRWA, June 2014.

Harris-Galveston Subsidence District. *Harris-Galveston Subsidence District 2013 District Regulatory Plan*, May 2013.

Location Map



REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Southeast Transmission Line Improvements
Project ID:	CONV-012
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	57,575 ac-ft/yr (51.41 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$159,151,172 (Sept. 2023)
Unit Water Cost (Rounded):	$213 per ac-ft (during loan period) $18 per ac-ft (after loan period)

Strategy Description

The existing Southeast Transmission Line (formerly called the Old Galveston Road line) transmits water from the Southeast Water Purification Plant (SEWPP) to customers of the plant in southeastern Harris County and northwestern Galveston County. In recent years, existing customers have expressed an interest in expanding capacity in the pipeline during a rehabilitation project to be carried out in upcoming years.

Strategy Analyses

The project analyses for Southeast Transmission Line Improvements include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The concept for the project presented here is adapted from information from the City of Houston (COH) and the co-participants in the project. COH and the co-participants are currently considering future needs for water from the pipeline. The project is expected to increase available capacity of the pipeline by approximately 51 mgd. The Southeast Transmission Line Improvements will be constructed as 13 segments. The transmission line begins slightly west of the SEWPP at a connection with an existing line, runs southwest and south for almost 2 miles, then turns southeast and continues for approximately 6.5 miles to the City of Webster. Segments have decreasing diameters along the route as the line reaches delivery points to various customers. Additional segments branch off to the west at a point slightly over a mile from the end of the northwest-to-southeast route. Approximate alignments are shown in the Location Map included with this memorandum.

Environmental Considerations

Environmental issues are expected to be minimal due to the use of existing corridors for development. Further environmental study will be conducted as part of the ongoing study of alternatives and configurations.

Permitting and Development

Permitting issues related to the project will be examined more closely during further phases of study. Infrastructure development may result in some construction disturbance which could require mitigation. However, the development of the project primarily within existing right-of-way in an urbanized setting minimizes potential permitting obstacles.

Cost Analysis

Project costs were provided by COH, including estimated capital costs for engineering, design, real estate acquisition, construction, and contingency. Environmental mitigation costs were assumed to be included in the costs provided by COH. Standard assumptions for regional planning were applied to determine interest during construction, annualized debt service, and annual operating and maintenance costs. Estimated project costs for the Southeast Transmission Line Improvements project are shown in *Table 1* in September 2023 dollars.

Table 1 – Southeast Transmission Line Improvements Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$103,855,364	$103,855,364	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$36,505,301	$36,505,301	
3	LAND AND EASEMENTS	1	LS	$8,919,395	$8,919,395	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$9,871,112	$9,871,112	
	PROJECT CAPITAL COST				**$159,151,172**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$11,198,048	$11,198,048	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$1,038,554	$1,038,554	$1,038,554	$1,038,554	$1,038,554	$1,038,554
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$12,236,601**	**$12,236,601**	**$1,038,554**	**$1,038,554**	**$1,038,554**	**$1,038,554**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$12,236,601	$12,236,601	$1,038,554	$1,038,554	$1,038,554	$1,038,554
2	YIELD	57,575	57,575	57,575	57,575	57,575	57,575
3	UNIT COST	$213	$213	$18	$18	$18	$18
	TOTAL UNIT COST						**$83**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$103,855,364	$103,855,364
	PROJECT COST				**$103,855,364**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$103,855,364	$1,038,554
	ANNUAL OPERATION AND MAINTENANCE COST				**$1,038,554**

Water Management Strategy Evaluation

Based on the analysis provided above, the Southeast Transmission Line Improvements project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	The Southeast Transmission Line Improvements, while not directly generating supply, allow conveyance with small additional cost.
Location	4	Reflects conveyance infrastructure from supply to demand centers.

CRITERIA	RATING	EXPLANATION
Water Quality	3	No impacts to water quality.
Environmental Land and Habitat	5	Limited impacts associated with construction within existing corridors.
Environmental Flows	3	No impact to environmental flows.
Local Preference	5	Significant support from co-participants.
Institutional Constraints	3	Property available and limited permitting efforts.
Development Timeline	5	Projected may be implemented within five years.
Sponsorship	5	Sponsors identified and in the process of developing project.
Vulnerability	5	Minimal risk associated with pipeline infrastructure.
Regionalization	3	Transmission line improvements will serve multiple systems who utilize this line.
Impacts on Other WMS	5	Project helps to facilitate the use of treated surface water from the SEWPP.

The Southeast Transmission Line Improvements will include approximately 11.2 miles of pipelines. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

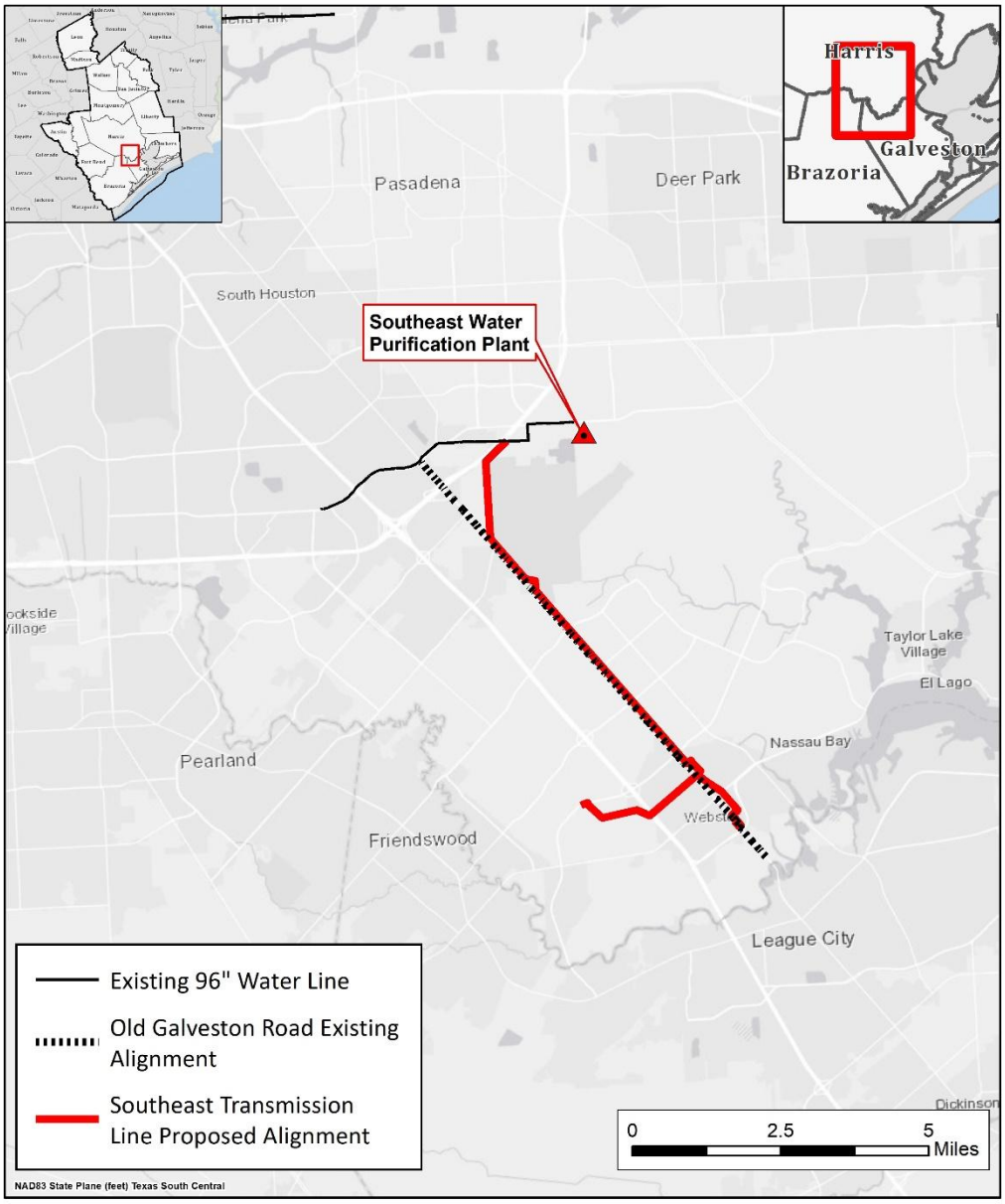
Water User Group Application

The Southeast Transmission Line Improvements project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	This project is intended to provide water to customers in Harris and Galveston Counties along the Interstate 45 corridor.
Size	The capacity of this project is based on projected need of its specific stakeholders.
Water Quality	This project will convey treated surface water.

CRITERIA	WUG SUITABILITY
Unit Cost	The unit cost for this project is a reasonable price for transmission of treated water for municipal, commercial, or industrial uses.
Other Factors	This project is identified for a few specific co-participants in the vicinity of the SEWPP.

Location Map



REGION H Water Planning Group

Southeast Transmission Line Improvements Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	West Harris County Regional Water Authority Distribution Expansion
Project ID:	CONV-013
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	92,288 ac-ft/yr (82.4 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	<5 years
Project Capital Cost:	$391,325,873 (Sept. 2023)
Unit Water Cost (Rounded):	$334 per ac-ft (during loan period) $36 per ac-ft (after loan period)

Strategy Description

The Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) have established requirements for entities within their boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the West Harris County Regional Water Authority (WHCRWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, WHCRWA must expand the distribution infrastructure network through which it supplies its member districts, allowing for greater overall volume to be conveyed and conversion of additional districts to surface water.

Strategy Analyses

The project analyses for WHCRWA Distribution Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its GRP

program by increasing its supply reservation from COH and planning for large scale transmission to its service area. WHCRWA will expand its distribution network by 2025, allowing it to provide a greater volume of treated surface water and to convert additional member districts to surface water supply. As with the currently implemented stage of conversion, some entities will remain on groundwater, while others will rely solely on surface water or utilize groundwater only to meet peak demands. WHCRWA anticipates conversion of additional districts by 2035.

Environmental Considerations

Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

WHCRWA is subject to contractual requirements established by COH as well as any relevant permitting required by the State of Texas and HGSD. Development of expanded distribution infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. Infrastructure development is also likely to require acquisition of additional easements or property.

Cost Analysis

WHCRWA's engineering consultant provided Region H with estimated capital costs for the 2025 and 2035 phases of the WHCRWA Distribution Expansion project. Non-construction capital costs (engineering, land acquisition, and environmental components) were not called out separately and for purposes of the Regional Plan are assumed to be included in the values provided. Interest during construction, debt service, and annual operations and maintenance costs were calculated using standard regional planning procedures, and costs were scaled to a September 2023 equivalent cost in accordance with TWDB guidance. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1*.

Table 1 - WHCRWA Distribution Expansion Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION AND NON-CONSTRUCTION COSTS (ENGINEERING, LAND ACQUISITION, ETC.)	1	LS	$332,980,000	$332,980,000	
2	INTEREST DURING CONSTRUCTION	1	LS	$58,345,873	$58,345,873	
	PROJECT CAPITAL COST				**$391,325,873**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE (2025 Phase)	$15,831,824	$15,831,824	$0	$0	$0	$0
2	DEBT SERVICE (2035 Phase)	$0	$11,702,286	$11,702,286	$0	$0	$0
3	OPERATION AND MAINTENANCE (2025 PHAS	$1,914,600	$1,914,600	$1,914,600	$1,914,600	$1,914,600	$1,914,600
4	OPERATION AND MAINTENANCE (2035 PHAS	$0	$1,415,200	$1,415,200	$1,415,200	$1,415,200	$1,415,200
	TOTAL ANNUAL COST	**$17,746,424**	**$30,863,910**	**$15,032,086**	**$3,329,800**	**$3,329,800**	**$3,329,800**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$17,746,424	$30,863,910	$15,032,086	$3,329,800	$3,329,800	$3,329,800
2	YIELD	69,216	92,288	92,288	92,288	92,288	92,288
3	UNIT COST	$256	$334	$163	$36	$36	$36
	TOTAL UNIT COST						**$139**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES (2025 PHASE)	1	LS	$191,460,000	$191,460,000
2	PIPELINES (2035 PHASE)	1	LS	$141,520,000	$141,520,000
	PROJECT COST				**$332,980,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES (2025 PHASE)	1.0	%	$191,460,000	$1,914,600
2	PIPELINES (2035 PHASE)	1.0	%	$141,520,000	$1,415,200
	ANNUAL OPERATION AND MAINTENANCE COST				**$3,329,800**

Water Management Strategy Evaluation

Based on the analysis provided above, the WHCRWA Distribution Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	The project, while not directly generating supply, provides conveyance with moderately low additional cost.
Location	4	Reflects conveyance infrastructure from major transmission pipelines to demand centers.
	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	4	Project to be developed within 5 years.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The WHCRWA Distribution Expansion includes the construction of several pipeline segments. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The WHCRWA Distribution Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve WHCRWA, participants of the GRP, and any other wholesale customers that WHCRWA provides with water supply.

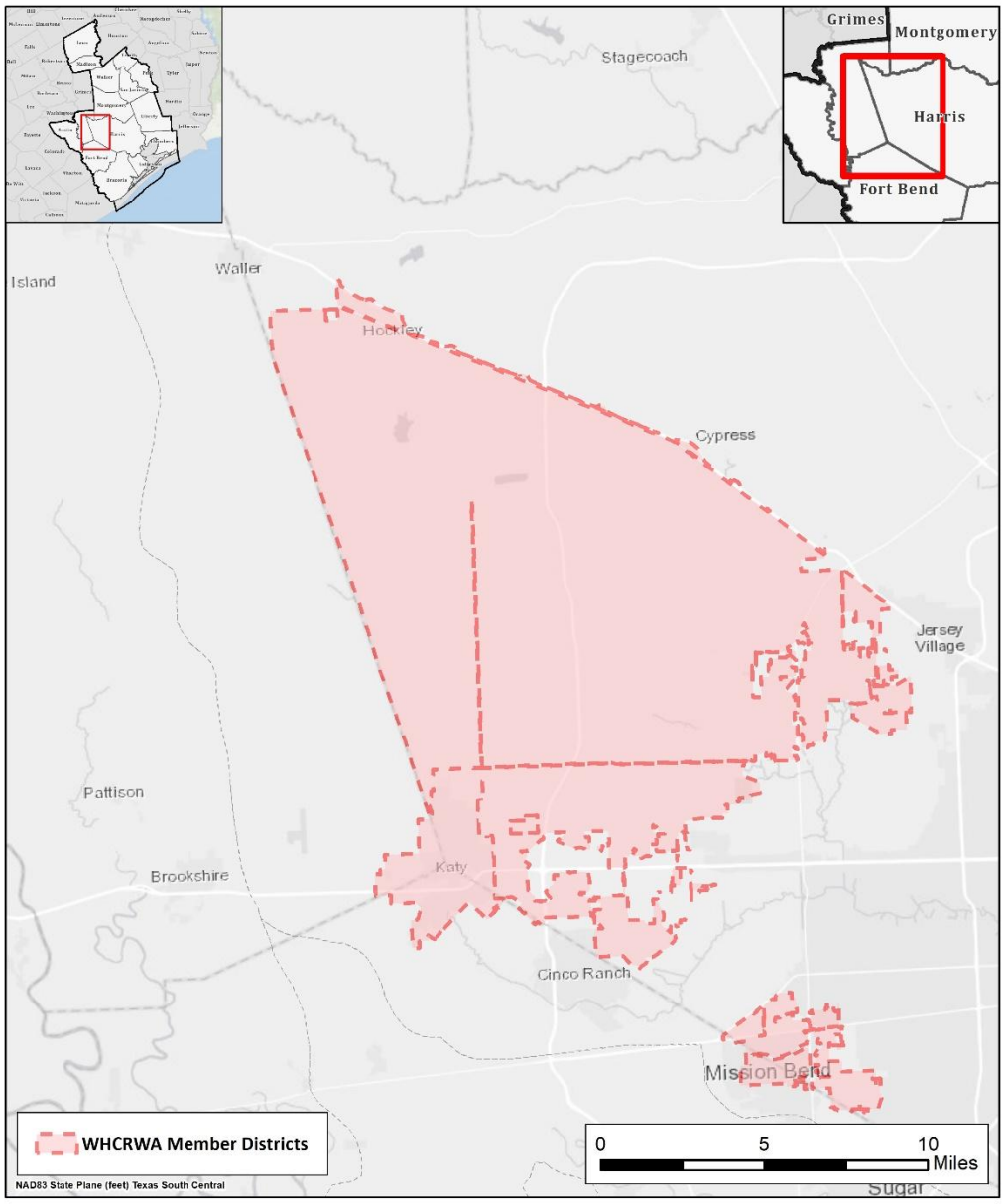
CRITERIA	WUG SUITABILITY
Proximity	Conveyance infrastructure from major transmission pipelines to demand centers.
Size	Conveyance is sized to convey the requisite amount of source water.
Water Quality	Conveys treated water of quality appropriate for municipal use.
Unit Cost	Adds small amount to unit cost of WHCRWA's surface water conversion process.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

Dannenbaum Engineering Corporation. *West Harris County Regional Water Authority Groundwater Reduction Plan*, prepared for WHCRWA, June 2014.

Harris-Galveston Subsidence District. *Harris-Galveston Subsidence District 2013 District Regulatory* Plan, May 2013.

Location Map



REGION H Water Planning Group

WHCRWA Distribution Expansion Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	WHCRWA/NFBWA Transmission Line
Project ID:	CONV-014
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	169,030 ac-ft/yr (150.9 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	<5 years
Project Capital Cost:	$622,459,204 (Sept. 2023)
Unit Water Cost (Rounded):	$297 per ac-ft (during loan period) $38 per ac-ft (after loan period)

Strategy Description

The Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) have established requirements for entities within their boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the North Fort Bend Water Authority (NFBWA) and West Harris County Regional Water Authority (WHCRWA) have contracted with the City of Houston (COH) to receive treated surface water. Both Authorities have already developed transmission and distribution infrastructure to meet their initial obligations for reducing groundwater demand and are receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, the Authorities are jointly sponsoring the development of additional large-scale transmission infrastructure referred to by the sponsors as the Surface Water Supply Project (formerly the Second Source Transmission Line) from the COH Northeast Water Purification Plant (NEWPP) to the Authority distribution areas.

Strategy Analyses

The project analyses for WHCRWA/NFBWA Transmission Line include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

WHCRWA and NFBWA have acquired capacity in the COH Luce Bayou Interbasin Transfer Project and Northeast Water Purification Plant (NEWPP) Expansion to provide treated surface water supply which will be conveyed through the WHCRWA/NFBWA Transmission Line project infrastructure to the Authority service areas. NFBWA and WHCRWA have increased their contracted supply reservation

with COH. In order to convey these supplies, the Authorities are jointly developing shared transmission pipeline infrastructure to convey treated surface water supplies from the NEWPP to the Authority distribution areas. The transmission infrastructure consists of various pipeline segments, beginning with a 96-inch pipeline running from the NEWPP to a repump station just east of Highway 290, where the transmission line transitions to an 84-inch pipeline which continues west to a central pump station in the vicinity of Fry Road. A 66-inch segment continues from the central pump station to a meter station near Katy, TX to serve the southwest portion of WHCRWA and the northern portion of NFBWA. A smaller pipeline, primarily 42-inch diameter, also branches from the 84-inch line slightly west of Beltway 8 and travels south to the NFBWA Bellaire pump station. Construction of the shared transmission project infrastructure is anticipated to be completed by 2025.

Environmental Considerations

The WHCRWA/NFBWA Transmission Line project is required under a nationwide permit to obtain a mitigation site, primarily due to the destruction of forested wetlands. The most significant impact associated with the project is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

The project sponsors have sought funding through the State Water Implementation Fund for Texas (SWIFT) program. SWIFT loan obligations require that environmental clearance for this project be obtained from appropriate regulatory agencies including the United States Army Corps of Engineers, Texas Parks and Wildlife Department, local floodplain managers, Harris County, Texas Historical Commission, and others. Development of expanded transmission infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. Infrastructure development is also likely to require acquisition of additional easements or property.

Cost Analysis

Planning level cost estimates were developed for the Region H Plan based on available information from WHCRWA and NFBWA. WHCRWA and NFBWA plan to cover approximately 55% and 45% of the total project cost, respectively. Capital costs were scaled to a September 2023 equivalent cost in accordance with TWDB guidance. Other cost components not included in the available data, such as interest during construction, annualized debt service, and annualized operations and maintenance costs, were assumed using standard Regional Planning costing assumptions. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1.*

Table 1 – WHCRWA/NFBWA Transmission Line Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$500,794,635	$500,794,635	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$26,768,209	$26,768,209	
3	LAND AND EASEMENTS	1	LS	$1,667,628	$1,667,628	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$421,361	$421,361	
5	INTEREST DURING CONSTRUCTION	1	LS	$92,807,371	$92,807,371	
	PROJECT CAPITAL COST				$622,459,204	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$43,796,900	$43,796,900	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$6,346,068	$6,346,068	$6,346,068	$6,346,068	$6,346,068	$6,346,068
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$50,142,968	$50,142,968	$6,346,068	$6,346,068	$6,346,068	$6,346,068

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$50,142,968	$50,142,968	$6,346,068	$6,346,068	$6,346,068	$6,346,068
2	YIELD	169,030	169,030	169,030	169,030	169,030	169,030
3	UNIT COST	$297	$297	$38	$38	$38	$38
	TOTAL UNIT COST						$124

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$89,208,104	$89,208,104
2	PIPELINES	1	LS	$395,156,531	$395,156,531
3	OTHER	1	LS	$16,430,000	$16,430,000
	PROJECT COST				$500,794,635

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$89,208,104	$2,230,203
2	PIPELINES	1.0	%	$395,156,531	$3,951,565
3	OTHER	1.0	%	$16,430,000	$164,300
	ANNUAL OPERATION AND MAINTENANCE COST				$6,346,068

Water Management Strategy Evaluation

Based on the analysis provided above, the WHCRWA/NFBWA Transmission Line project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that

may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	The shared transmission pipeline will provide conveyance at a moderate additional cost which will decrease substantially after completion of debt services.
Location	4	Reflects conveyance infrastructure from major transmission pipelines to demand centers.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	4	Project to be developed within 5 years.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	5	Serves extensive area and/or multiple WWPs, creates major new regionalization opportunity.
Impacts on Other WMS	5	Provides conveyance of treated water from the Northeast Water Purification Plant Expansion project to demand centers and to other major transmission projects.

WHCRWA/NFBWA Transmission Line improvements include up to 57 miles of pipelines. The majority of this impact will be in urbanized areas with limited impacts to habitat or agricultural land or production. The project will not directly impact environmental flows.

Water User Group Application

The WHCRWA/NFBWA Transmission Line project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the

suitability of the strategy to the WUGs served.

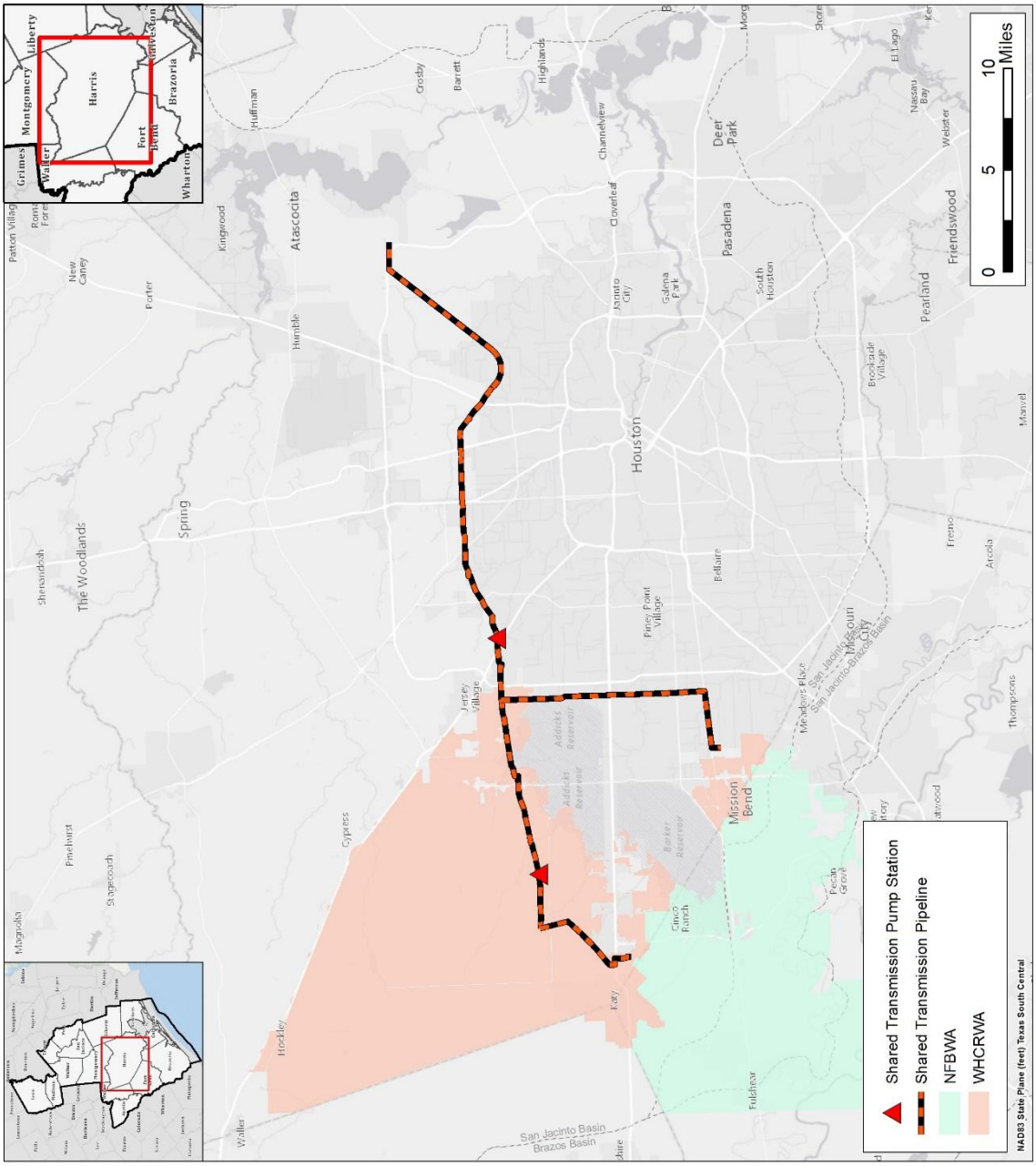
CRITERIA	WUG SUITABILITY
Proximity	Conveyance infrastructure from major transmission pipelines to demand centers.
Size	Conveyance is sized to convey the requisite amount of source water.
Water Quality	Conveys treated water of quality appropriate for municipal use.
Unit Cost	Adds a moderate amount to unit cost of surface water conversion process.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

Dannenbaum Engineering Corporation. *WHCRWA Groundwater Reduction Plan*, prepared for WHCRWA, June 2014.

Harris-Galveston Subsidence District. *HGSD 2013 District Regulatory Plan*, May 2013.

Location Map



WHCRWA/NFBWA Shared Transmission Location Map

REGION H
Water Planning Group

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Aquifer Storage and Recovery
Project ID:	GWDV-001
Project Type:	Existing Groundwater Source
Potential Supply Quantity (Rounded):	Approximately 9,426 ac-ft/yr (varies by application) (8.4 mgd)
Implementation Decade:	2080
Development Timeline:	20-25 years
Project Capital Cost:	$379,102,115 (Sept. 2023; varies by application)
Unit Water Cost (Rounded):	$4,116 per ac-ft (during loan period) $1,287 per ac-ft (after loan period)

Strategy Description

Hydrology in southeast Texas is defined by intervals of high rainfall and extended periods of drought. Traditionally, storage solutions such as reservoirs have been used to capture flows during high-flow events, store water for prolonged periods, and convert what would be an interruptible flow to a reliable, firm water supply that can be utilized throughout periods of drought. However, reservoirs often pose difficulties in development due to their substantial cost and project footprint. Additionally, evaporation from a reservoir can reduce yield, especially in the wide, shallow basins that are typical in this part of the state.

One alternative to the development of a reservoir is the use of aquifer storage and recovery (ASR) to provide firm yield storage. In an ASR concept, water from a variety of sources including surface water, reclaimed water, stormwater, or even other sources of groundwater, may be captured, treated to an appropriate extent to meet the standards of local groundwater, and injected into a groundwater formation for storage. Later, this water can be recovered from the aquifer and used to meet water demands. This approach provides similar benefits to a reservoir by utilizing underground storage.

The concept of ASR has been implemented in a number of locations throughout Texas including the San Antonio Water System (SAWS) Twin Oaks ASR Facility and the City of Kerrville. These projects utilize storage in the Carrizo-Wilcox and Trinity Aquifers, respectively. To date, no successful project has been implemented in the Gulf Coast Aquifer, which is the principal groundwater-bearing formation within Region H. A test well was constructed in Texas City to examine the potential for such a strategy, but this effort was discontinued when the project was met with water quality challenges related to blending of water sources.

A study by the Harris-Galveston Subsidence District (HGSD), *Assessment of Subsidence and Regulatory Considerations for Aquifer Storage and Recovery in the Evangeline and Chicot Aquifers*, examined two potential alternatives for implementing an ASR project in the Gulf Coast Aquifer: (1) a project to provide industrial water supply during a drought of record (DOR) and (2) a project to provide for an annual municipal summer peaking water supply. Each scenario was modeled using MODFLOW to

estimate subsidence that may occur as a result of the injection and withdrawal operations of these conceptual projects located in the Gulf Coast Aquifer. The results of this modeling study indicated the potential for compaction resulting from the withdrawal of water during the production phases of ASR well operation, although the rate of compaction was lower than for projects producing an equivalent volume of water without injection. The study then recommended ways in which impacts of a project could be minimized including maximizing well spacing, decreasing recovery rates, decreasing recovery duration prior to the next recharge cycle, and targeting layers with low clay content and high transmissivity for development.

Strategy Analyses

The Region H Water Planning Group (RHWPG) has designated a value of 25,000 ac-ft/yr as the threshold for significant identified water needs across the region in any given planning decade. This threshold was exceeded in all decades on a region-wide level, as described in ***Chapter 4.*** Thus, as required by Texas Water Code §16.053(e)(10), the RHWPG has conducted a concept-level analysis of ASR. For this cycle of regional planning, environmental and cost aspects of this high-level analysis were focused on a specific project location due to the presence of high need, unappropriated interruptible surface water availability, and potentially viable subsurface conditions. A project site adjacent to Lake Conroe in Montgomery County was chosen to represent the ASR project. This location benefits from interruptible surface water supplies available at Lake Conroe and from Lake Creek, south of Lake Conroe, as well as the opportunity to expand treatment capacity at the SJRA Surface Water Facility (SWF) to prepare water for injection into the groundwater system. Although concepts and costs were analyzed specifically for this alternative, this example provides a range of costs that may represent the potential for such strategies in other similar locations in Region H. The project analyses for Aquifer Storage and Recovery include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

A study was performed to evaluate aquifer characteristics within the vicinity of the proposed project, chiefly in the area east of Lake Conroe and northwest of the City of Conroe. Aquifer parameters from existing large capacity public supply wells were used to estimate the transmissivity and pumping rates utilized in the ASR analytical simulations. Based on this analysis, average transmissivity values for the Jasper and Catahoula Aquifers were found to be 37,500 and 22,500 gpd/ft, respectively. The coefficient of storage in the Jasper formation was adapted from the Houston Area Groundwater Model and was found to be 0.00040. In the Catahoula formation, the coefficient of storage was found to be approximately 0.00030 based on a separate evaluation specific to Montgomery County. Well spacings were determined to be 2,000 feet for a pattern layout or 1,500 feet for a line layout within the Jasper, while a line spacing of 5,280 feet was assumed for the Catahoula. The resulting injection rates for the Jasper and Catahoula aquifers based on these parameters were estimated to be 1,125 gpm (1.6 mgd) and 375 gpm (0.5 mgd), respectively. It should be noted that this modeling was focused on operation of the potential ASR project and did not consider the risk of subsidence related to long-term injection and withdrawal from the aquifers. However, based on this analysis, the Jasper Aquifer was identified as the most likely target formation for development of an ASR project in this area.

A conceptual model was developed to examine the potential firm supply made available through an ASR project. This is based on availability of source water such as an interruptible surface water supply, the capacity of infrastructure to temporarily store, treat, and inject the source water into the aquifer,

losses associated with aquifer storage, and the recovery schedule for supply. Environmental flow needs were considered through the use of the Texas Commission on Environmental Quality (TCEQ) WAM Run 3 scenario, which includes Senate Bill 3 environmental flow criteria, as the basis for interruptible supply availability for input to the ASR conceptual model. The model is capable of projecting the growth of the available storage "bubble" over time and how this supply might be drawn down over the historic drought of record. The firm yield for the proposed project was considered to be the annual depletions that could be made during the historic hydrology that did not result in either the depletion of storage or the inability of the project to end with an equal or greater level of storage than the beginning of the simulation period. Various concepts were considered with the following assumptions and variations:

- Lake Conroe Diversions
    - Alternatives considered with and without source water from excess flows from Lake Conroe
- Lake Creek Diversions
    - Alternatives considered with and without source water from excess flows from Lake Creek
    - Pump station capacities to divert excess flows from Lake Creek of 10, 20, 50, 75, 100, 150, and 200 MGD
    - Off-channel reservoir for temporary storage of diverted surface water prior to treatment and injection with 1,000, 2,000, and 4,000 acre-feet of storage capacity
- ASR Concept and Operation
    - Injection well capacity of 1.6 mgd based on evaluation of the Jasper Aquifer in the vicinity of Lake Conroe Dam
    - Total number of injection wells numbering either 10 or 20
    - Annual loss from ASR storage of 1% of the total volume injected (long-term recovery percentage would vary based on configuration, site, and years of storage development)
    - Total number of years of storage developed before ASR operation of either 10 or 20 years

A total of 109 separate simulations were conducted to evaluate the sensitivity of the project cost per unit volume of supply. From this analysis, no clear trends emerged related to the effect of various assumptions on project costs. This implies the scalability of the strategy based on the investment in infrastructure as well as the sensitivity of the concept to its operation. The most significant factor identified was the volume of temporary storage provided to capture interruptible flows from Lake Creek prior to treatment and injection, with larger capacities supporting a larger volume of injectable water. However, this benefit drops when temporary storage greatly exceeds the capacity of the ASR system to convert this water to underground storage. Additional information related to cost development is included below.

The concept selected for consideration Region H Regional Water Plan (RWP) utilizes captured interruptible surface water supplies from both Lake Conroe and Lake Creek to produce firm supply. A 100-mgd pump station and a 4,000-acre-foot reservoir are used to make water available from Lake Creek. This water is treated using a surface water treatment facility and the water injected through

ten 1.6-mgd wells. The resulting firm yield of this concept was estimated to be 9,426 ac-ft/yr.

Environmental Considerations

Environmental impacts related to the proposed ASR concept include the diversion of surface water for injection and the footprint of pump station, storage, pipeline, treatment, and well infrastructure required to execute the project. Unlike surface water reservoirs, ASR does not require a substantial footprint related to the inundation of land for water storage.

Permitting and Development

Since the enactment of House Bill 655 by the Texas Legislature in 2015, permitting for ASR projects is conducted through the TCEQ. This is conducted through TCEQ's Class V Underground Injection Control (UIC) Program and can be performed through general permit, individual permit, or permit-by-rule. The decision to authorize an ASR well depends upon:

- Compliance with the Safe Drinking Water Act,
- The ability to recover the injected volume,
- Impacts on existing wells, and
- Impacts on native groundwater quality.

Local Groundwater Conservation Districts (GCDs) do not have authority to regulate production from ASR wells unless production exceeds the volume of water deemed recoverable from the injected volume. For the purpose of this strategy concept, it is assumed that production from the project is limited to recoverable injected volumes.

In addition to the permitting of the ASR well, local registration of the well must be conducted through the local GCD or subsidence district even in the absence of production of native groundwater. Furthermore, the unique mission of the subsidence districts may require specific consideration of subsidence factors in TCEQ's decision to grant an ASR permit in Fort Bend, Harris, or Galveston County. It would be expected that this will involve careful coordination between TCEQ and HGSD or Fort Bend Subsidence District (FBSD) throughout the process.

Cost Analysis

Costs were developed for the proposed ASR configuration consisting of a 100-mgd pump station at Lake Creek, a 4,000-ac-ft off-channel reservoir for temporary surface water storage, and ten 1.6-mgd ASR wells. Pipeline and treatment infrastructure were sized appropriately to accommodate the key surface water development and ASR infrastructure required. These costs are shown below in *Table 1*.

Table 1 – Aquifer Storage and Recovery Project Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$274,126,720	$274,126,720	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$92,009,339	$92,009,339	
3	LAND AND EASEMENTS	1	LS	$605,128	$605,128	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$480,147	$480,147	
5	INTEREST DURING CONSTRUCTION	1	LS	$11,880,781	$11,880,781	
	PROJECT CAPITAL COST				**$379,102,115**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$26,674,033	$26,674,033	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$9,508,637	$9,508,637	$9,508,637	$9,508,637	$9,508,637	$9,508,637
3	PUMPING ENERGY COSTS	$2,617,999	$2,617,999	$2,617,999	$2,617,999	$2,617,999	$2,617,999
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$38,800,669**	**$38,800,669**	**$12,126,636**	**$12,126,636**	**$12,126,636**	**$12,126,636**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$38,800,669	$38,800,669	$12,126,636	$12,126,636	$12,126,636	$12,126,636
2	YIELD	-	9,426	9,426	9,426	9,426	9,426
3	UNIT COST	$0	$4,116	$1,287	$1,287	$1,287	$1,287
	TOTAL UNIT COST						**$2,676**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$62,955,598	$62,955,598
2	PIPELINES	1	LS	$78,700,270	$78,700,270
3	WATER TREATMENT PLANTS	1	LS	$95,752,351	$95,752,351
4	OFF-CHANNEL RESERVOIRS	1	LS	$15,578,892	$15,578,892
5	WELL FIELDS	1	LS	$21,139,609	$21,139,609
	PROJECT COST				**$274,126,720**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$62,955,598	$1,573,890
2	PIPELINES	1.0	%	$78,700,270	$787,003
3	WATER TREATMENT PLANTS	1.0	LS	$6,702,665	$6,702,665
4	OFF-CHANNEL RESERVOIRS	1.5	%	$15,578,892	$233,683
5	WELL FIELDS	1.0	%	$21,139,609	$211,396
	ANNUAL OPERATION AND MAINTENANCE COST				**$9,508,637**

Water Management Strategy Evaluation

Based on the analysis provided above, the Aquifer Storage and Recovery project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Costs are generally high but decline after debt service.

CRITERIA	RATING	EXPLANATION
Location	5	Project can provide supply in close proximity to identified needs.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Limited environmental impacts expected.
Environmental Flows	2	Project develops water from excess surface water.
Local Preference	3	Project has local interest.
Institutional Constraints	2	Project requires a permitting process that is relatively untested. Some property acquisition required.
Development Timeline	3	Project will require 10-15 years of development and 10 years to develop storage volume.
Sponsorship	4	Project is included in SJRA Raw Water Supply Master Plan.
Vulnerability	4	Some risks associated with this project.
Regionalization	3	Project would be anticipated to serve multiple water systems.
Impacts on Other WMS	3	No major impacts to other projects identified.

Aquifer Storage and Recovery is not anticipated to affect vulnerable species or to impact agricultural land or production. This project may reduce instream flows during periods of excess flow availability.

Water User Group Application

The Aquifer Storage and Recovery project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project located near center of significant future water needs.
Size	Project provides a significant water supply.
Water Quality	It is intended that this strategy will provide water of quality similar to native groundwater.
Unit Cost	Costs are high but comparable for many late-term water strategies.
Other Factors	Availability dependent upon future hydrology.

References

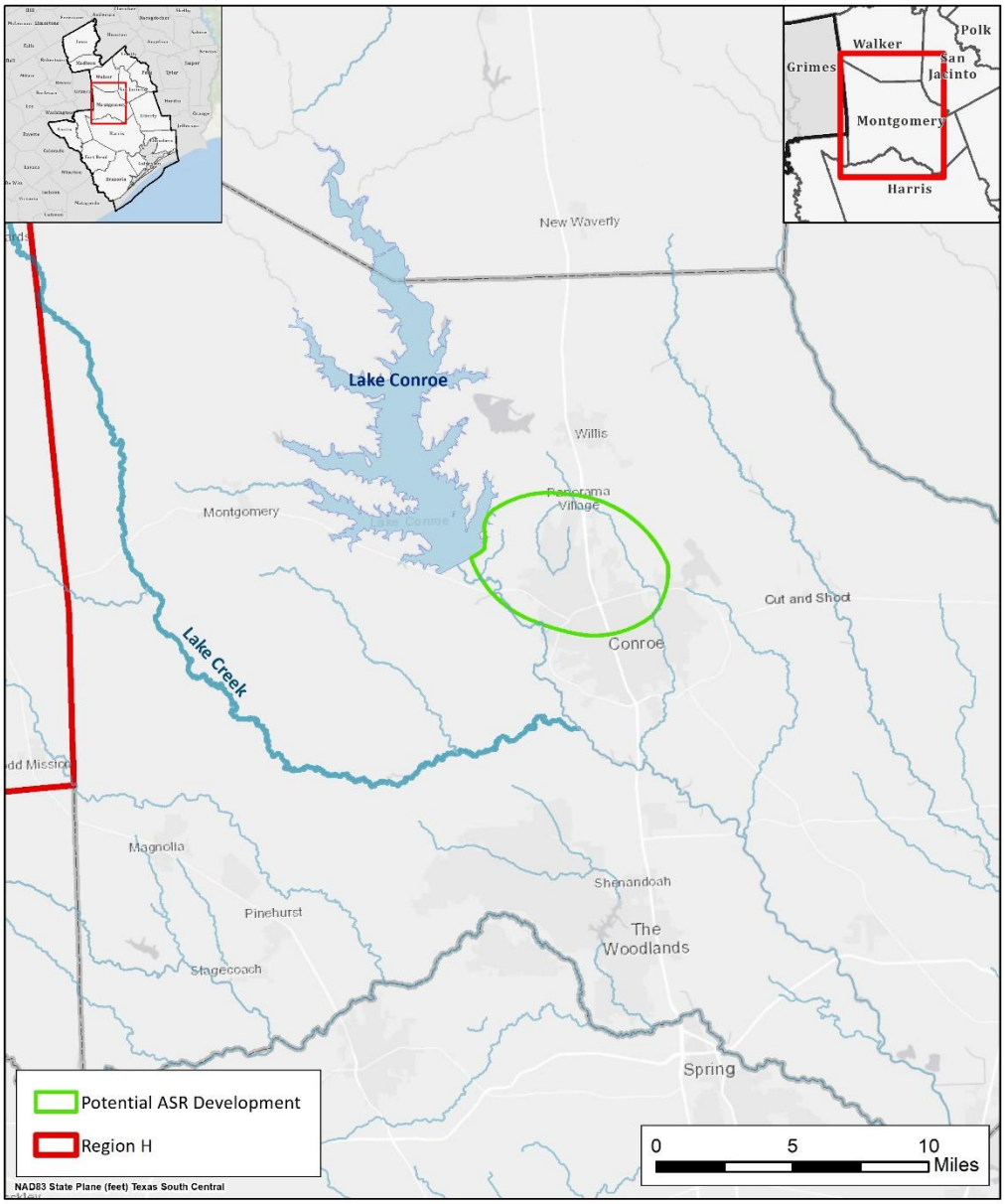
Freese and Nichols, Inc. 2018. *Raw Water Supply Master Plan*. Prepared for San Jacinto River Authority.

INTERA, Inc. 2019. *Assessment of Subsidence and Regulatory Considerations for Aquifer Storage and Recovery in the Evangeline and Chicot Aquifers*. Prepared for Harris-Galveston Subsidence District.

Kasmarek, M.C. 2012. *Hydrogeology and simulation of groundwater flow and land-surface subsidence in the northern part of the Gulf Coast aquifer system, Texas, 1891–2009 (ver. 1.1, December 2013)*. U. S. Geological Survey Scientific Investigations Report 2012–5154.

LBG-Guyton Associates. 2012. *Catahoula Aquifer Characterization and Modeling Evaluation in Montgomery County*. Prepared for Lone Star Groundwater Conservation District.

Location Map



REGION H Water Planning Group

Aquifer Storage and Recovery Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Brackish Groundwater Development and Groundwater Blending
Project ID:	GWDV-002
Project Type:	Existing Groundwater Source
Potential Supply Quantity	Varies
Implementation Decade:	Varies
Development Timeline:	1-2 years
Project Capital Cost:	Varies by specific project
Unit Water Cost (Rounded):	$689 to 11,024 per ac-ft (during loan period) $320 to 7,107 per ac-ft (after loan period)

Strategy Description

As growth occurs throughout Region H there is a need to provide alternative supplies to a number of WUGs that may not be within close proximity to conventional water supply sources. In addition, regulatory requirements by groundwater conservation districts (GCD) and subsidence districts in Region H restrict the use of fresh groundwater in some areas, encouraging the development of unconventional sources of water. Brackish groundwater may be a viable source of water in some areas. In Montgomery County, the Catahoula Aquifer is considered by the Lone Star GCD to be an acceptable alternative water supply source to the commonly developed aquifers in the Gulf Coast Aquifer System. Studies have also shown potential for brackish groundwater development in Brazoria, Fort Bend, and Harris Counties. Additionally, the cost of brackish groundwater desalination is far less than seawater desalination. In some cases, raw brackish groundwater may be blended with conventional supplies to produce an acceptable supply without advanced treatment. Within Region H, several communities within Montgomery County have successfully employed this project for water supplies and it is also being investigated in other parts of the region. This memorandum describes the potential for Brackish Groundwater Development and Groundwater Blending as water supply strategies in Region H. However, due to regulatory constraints and limited interest by potential sponsors, this water management strategy (WMS) is currently only recommended to meet needs of water user groups (WUGs) that have already developed supplies in fresh to slightly brackish aquifers.

Strategy Analyses

The project analyses for Brackish Groundwater Development and Groundwater Blending include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The 2016 Region H Regional Water Plan (RWP) included a review of aquifer conditions within Region

H in order to identify potential areas of brackish groundwater development. Water of quality ranging from 1,000 to 3,000 mg/l of Total Dissolved Solids (TDS) is generally considered slightly brackish, and water of 3,000 to 10,000 mg/l of TDS is considered brackish water. An update to the study of brackish groundwater development and a review of the potential for groundwater blending has primarily focused on the Gulf Coast Aquifer System, which includes the Chicot, Evangeline, Jasper, and Catahoula Aquifers. Water quality varies with depth and geography within the same geologic formations, so brackish groundwater sources are typically found in the deeper portions of a formation that is also used for freshwater supplies in other areas. In the Gulf Coast Aquifer System, which is a major source of fresh groundwater in Region H, as individual formations dip from outcrops in the northwest toward the coast in the southeast, these formations increase in depth, thickness, and generally in TDS. Thus, more brackish or slightly brackish water typically occurs in the southeastern extent of individual Gulf Coast aquifers. The estimated extent of brackish groundwater availability in each aquifer is illustrated in the exhibits attached to this memorandum. Available information on potential brackish groundwater supplies are provided below, based on the studies by the Region H Water Planning Group (RHWPG) in the previous and current regional planning cycles.

- **Simsboro Aquifer:** The Simsboro outcrops north of Region H. Brackish water supplies may be found in the downdip extent of this aquifer across Madison County where the quality ranges from 1,000 mg/l of TDS to 10,000 mg/l.
- **Carrizo-Wilcox Aquifer:** The outcrop of the Carrizo Wilcox in Region H occurs in the northwestern portion of Leon County. The downdip portion approaches saline conditions in southern Madison County with quality transitioning to approximately 3,000 mg/l of TDS at the Madison and Walker County line. A thin band of water between 3,000 and 10,000 mg/l of TDS can be found extending approximately five miles into northwestern Walker County.
- **Sparta Aquifer:** The outcrop of the Sparta Aquifer in Region H occurs in Leon County. Saline portions of the aquifer occur in Walker County north of Huntsville and central Trinity County along a line between the cities of Trinity and Groveton.
- **Chicot Aquifer of the Gulf Coast Aquifer System:** The Chicot Aquifer is the shallowest aquifer within the Gulf Coast Aquifer System and outcrops in a wide band from Austin County toward southern Polk County. Supplies are generally fresh except close to the coast where water quality quickly declines from fresh water to brackish within a span of approximately 10 miles. Future wells in the brackish zone of the Chicot Aquifer are estimated to be capable of producing from 500 gpm to more than 1,000 gpm. Current development of brackish supplies in the Chicot Aquifer is limited to an ongoing project by the Brazosport Water Authority, which is detailed in a separate technical memorandum.
- **Evangeline Aquifer of the Gulf Coast Aquifer System:** The Evangeline Aquifer lies beneath the Chicot Aquifer and outcrops in Montgomery, Walker, San Jacinto, and Polk Counties within Region H. Water quality remains fresh throughout most of the region. However, water from the aquifer is slightly brackish to brackish except in these areas: the northern portion of Brazoria County, most of Galveston County, the northwest portion of Chambers County, and the southeastern portion of Liberty County. This segment contains water of varying salinity until reaching the coast, where TDS climbs well above 10,000 mg/l. Little to no development has occurred in the brackish portion of the Evangeline Aquifer. It is estimated that well production rates in the slightly brackish and brackish zones could range from 500 to more than 1,200 gpm.
- **Jasper Aquifer of the Gulf Coast Aquifer System:** The outcrop of the Jasper Aquifer in Region

H crosses northern Austin County and cuts through central Walker County and around the junction of Trinity, Polk, and San Jacinto Counties. This aquifer lies beneath the Evangeline and is a source of fresh water for Austin and Waller Counties, northern Harris County, and northward. A band of brackish water reaches its greatest width across almost the entirety of Fort Bend County with the majority of that supply being in the 3,000 to 10,000 mg/l of TDS range. Brackish groundwater in the Jasper Aquifer is also found in the southern portions of Harris County and the central portion of Liberty County. A public water supplier in northern Fort Bend County has drilled a test well in the slightly brackish zone of the Jasper Aquifer and plans to blend this water with an existing fresh groundwater source. Otherwise, development of brackish water from the Jasper has been limited, and a 2018 study has indicated that such development could pose a subsidence risk. Although pumping rates are highly dependent on local conditions, it is estimated that pumping rates of approximately 1,000 to 1,500 gpm could be obtained in the slightly brackish and brackish zones of the Jasper Aquifer in Fort Bend County.

- **Catahoula Aquifer of the Gulf Coast Aquifer System:** The outcrop of the Catahoula Aquifer in Region H occurs in Walker, Trinity, and Polk Counties, and water quality in the downdip maintains freshwater conditions as far south as central Montgomery, San Jacinto, and Polk Counties. Water of slightly brackish to brackish quality extends southward in a band that reach the Woodlands in Montgomery County, crosses south of Coldspring and Livingston to the northeast and south of Hempstead and Bellville to the southwest, making it available as a potential supply in Austin, Waller, Montgomery, San Jacinto, and Polk Counties. This aquifer is currently being developed as a supply in Montgomery County, and a study by the RHWPG indicates that additional wells in that county could likely produce between 1,000 and 2,000 gpm in the slightly brackish zone of the aquifer.

Typically, the depth of the brackish portions of these aquifers is far greater than the more commonly developed aquifers. However, these confined systems often have shallow static water levels that are far above the top of the aquifer, making pumping costs more consistent with other groundwater supplies, although capital costs to develop deep wells are correspondingly higher than for typical groundwater applications.

The brackish supplies identified in these areas are relatively undocumented compared to the typical supply aquifers in Region H. Therefore, the question of long-term availability will remain uncertain until the level of use increases to the point that adequate information can be collected to fully evaluate these resources. However, it is known that pumpage in these aquifers may alter the geographic distribution of brackish water. For example, four public supply wells in the freshwater portion of the Catahoula Aquifer in Montgomery County have experienced increases in the TDS of produced water over a relatively short lifetime of less than 10 years, such that produced water is approaching the slightly brackish threshold of 1,000 mg/l of TDS. Therefore, the location of waters of various qualities may change over time. Developed groundwater supplies in these aquifers that are initially fresh or only slightly brackish may eventually need additional treatment or even be deemed unreliable as a long-term supply without adequate blending or treatment.

Direct use of brackish or slightly brackish groundwater as a supply source requires treatment through a reverse osmosis (RO) process to reduce TDS to at least the TCEQ-defined secondary contaminant level (SCL) of 1,000 mg/l. Some utilities which have begun producing water from the Catahoula Aquifer or Jasper Aquifer have experienced high levels of customer complaints for TDS levels above 500 mg/l. To alleviate treatment costs, water providers may also consider a blending strategy, in which a slightly brackish source water is blended with a higher quality water source to increase total

supply volume without exceeding the TCEQ drinking water standard. For source waters with TDS concentrations only slightly over 1,000 mg/L, this strategy has the potential to provide a supply of acceptable quality without additional treatment. Alternately, blending fresh water with a lower quality brackish water may produce a blended supply that requires some treatment but is still more economical to treat than a strictly brackish supply.

Environmental Considerations

In general, environmental concerns for development of brackish groundwater are site-specific and similar to the concerns associated with conventional groundwater projects. Additional concern may arise from the disposal of brine concentrate from RO treatment processes, which are used to lower the levels of TDS in the produced water stream. Disposal may be performed through deep well injection, which forces the brine into deep aquifers away from environmentally sensitive features, such as fish and wildlife habitat resources. In some cases, conditions permitting, this disposal may be alternately be discharged into a natural water course. However, surface water discharge may only be performed in cases where the receiving water body already experiences high levels of TDS (such as in coastal areas) or where species and habitat would not be impacted.

In the Gulf Coast area and particularly in Region H, concerns regarding subsidence are critical to all decisions made in groundwater development. A 2018 study by the Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) found that substantial groundwater development in the Jasper Aquifer, which contains brackish water in most of Harris and Fort Bend Counties, would likely result in subsidence. While additional studies and data collection have been recommended, this study indicates that pumpage from deeper aquifers of the Gulf Coast Aquifer System may pose a similar risk for subsidence as that of over-pumping in the shallower aquifers, which may limit the potential for the development of brackish groundwater projects in this part of the region.

Permitting and Development

In Region H, permitting of groundwater supplies may be managed by a Groundwater Conservation District (GCD) or one of the subsidence districts. Each of these entities has a different means to address the availability and development of brackish groundwater, so it is important to address these issues on a project by project basis. Furthermore, many brackish groundwater resources are encompassed within the extent of traditional supply aquifers throughout the region. For those aquifers which have a Desired Future Condition (DFC) adopted by the local Groundwater Management Area (GMA), availability for the purposes of regional water planning is limited to the Modeled Available Groundwater (MAG) for that aquifer, plus any additional availability provided by the application of a MAG Peak Factor. If the current use of fresh groundwater from these aquifers is already equal to the defined source availability, the regional plan may not allocate any additional brackish groundwater supplies from that aquifer.

Currently, the Catahoula Aquifer does not have a DFC in any county. The Lone Star GCD in Montgomery County permits pumping from this aquifer. Groundwater development in Fort Bend, Galveston, and Harris Counties is subject to subsidence district regulations, which currently limit pumping from any aquifer to a percentage of demand. Thus, brackish groundwater is a feasible supply option in these counties but must still be used in conjunction with non-groundwater sources. In Brazoria County, pumping is not currently limited by Brazoria County GCD rules; however, source availability for regional planning purposes is limited due to the existence of DFCs for both readily

accessible aquifers in this county (Chicot and Evangeline Aquifers).

In addition to the production well, permitting is also required for the development of an injection well typically used for brine disposal associated with the RO treatment process. In most cases, this is a matter of permitting a Class I non-hazardous injection well with the Texas Commission on Environmental Quality (TCEQ). This process typically takes a year to complete.

Cost Analysis

In addition to well construction and development, it may be necessary to treat water from fresh to slightly brackish aquifers in order to reduce the TDS to a level considered acceptable by end users. This may be performed through RO desalination. In addition to the cost of treatment, the cost of brine disposal must also be considered. This is typically performed through deep well injection which deposits the concentrated brine in a deep layer that is safely separated from water sources. Alternatively, disposal to surface water may be performed when conditions warrant such an arrangement.

Unit cost analyses were based on the development of a single 1,000-gpm production well. Three cost scenarios were developed to pump and treat brackish groundwater of 1,000, 2,000, and 3,000 mg/l TDS. RO treatment was assumed to remove 99 percent of the influent TDS and reject 25 percent of the overall input stream as concentrated brine. A blending approach was employed such that a portion of the brackish water supply would be treated and then blended with the remaining brackish water to produce a finished water with a TDS concentration of 500 mg/l. These planning level cost estimates assume the development of one brackish well and one injection well for disposal of RO concentrate.

In addition, a planning level cost estimate was developed for a scenario in which blending with existing fresh water sources was a viable alternative. This option only included the cost for development of a single well in a brackish aquifer and the construction of collection lines to receive water from the well site. This scenario assumes that the freshwater source is of sufficient quality and quantity that no RO treatment would be required for the blended supply.

Costs for all four scenarios assume drilling a 2,000-ft deep supply well that would be in operation 80% of the year and would have a peaking factor of 1.5. All cost estimates are based on standard regional planning cost estimation assumptions. A summary of costs is shown below in *Table 1*.

Table 2*, Table 3,* and *Table 4* contain detailed cost information for the three scenarios requiring treatment, and the blending option is shown in *Table 5*. Costs for these scenarios are intended to be representative of a typical well at various potential TDS levels. RWP costing for individual WUG-level brackish groundwater projects applies a similar methodology for WUG-specific TDS and well sizing. For WUG-specific brackish groundwater projects utilizing blending without RO treatment, costs are calculated in the same manner as the Region H Expanded Use of Groundwater WMS and vary by WUG type and size of project.

Table 1 – Cost Summary for Brackish Groundwater Development and Groundwater Blending Options

Supply Well Capacity (gpm)	Brackish Water Quality (mg/l TDS)	Percent Treated in RO Process	Finished Water Quality (mg/l TDS)	Capital Cost (Sept. 2023 $)	Unit Cost During Debt Service (Sept. 2023 $)	Long Term Unit Cost (Sept. 2023 $)
1,000	1,000	50.0%	504	$31,141,750	$7,959	$5,037
1,000	2,000	75.5%	501	$38,556,795	$10,038	$6,421
1,000	3,000	84.0%	499	$41,753,756	$11,024	$7,107
1,000				$3,937,418	$689	$320

Table 2 – One Well and Treatment at 1,000 mg/l Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$22,320,108	$22,320,108	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$7,802,205	$7,802,205	
3	LAND AND EASEMENTS	1	LS	$21,222	$21,222	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$22,256	$22,256	
5	INTEREST DURING CONSTRUCTION	1	LS	$975,959	$975,959	
	PROJECT CAPITAL COST				$31,141,750	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$2,191,167	$2,191,167	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$3,512,998	$3,512,998	$3,512,998	$3,512,998	$3,512,998	$3,512,998
3	PUMPING ENERGY COSTS	$265,049	$265,049	$265,049	$265,049	$265,049	$265,049
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$5,969,213	$5,969,213	$3,778,046	$3,778,046	$3,778,046	$3,778,046

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$5,969,213	$5,969,213	$3,778,046	$3,778,046	$3,778,046	$3,778,046
2	YIELD	750	750	750	750	750	750
3	UNIT COST	$7,959	$7,959	$5,037	$5,037	$5,037	$5,037
	TOTAL UNIT COST						$6,011

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$196,662	$196,662
2	WATER TREATMENT PLANTS	1	LS	$18,731,538	$18,731,538
3	WELL FIELDS	1	LS	$3,391,908	$3,391,908
	PROJECT COST				$22,320,108

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$196,662	$1,967
2	WATER TREATMENT PLANTS	1.0	LS	$3,477,112	$3,477,112
3	WELL FIELDS	1.0	%	$3,391,908	$33,919
	ANNUAL OPERATION AND MAINTENANCE COST				$3,512,998

Table 3 – One Well and Treatment at 2,000 mg/l Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$27,638,757	$27,638,757	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$9,663,732	$9,663,732	
3	LAND AND EASEMENTS	1	LS	$22,524	$22,524	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$23,440	$23,440	
5	INTEREST DURING CONSTRUCTION	1	LS	$1,208,342	$1,208,342	
	PROJECT CAPITAL COST				$38,556,795	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$2,712,898	$2,712,898	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$4,525,887	$4,525,887	$4,525,887	$4,525,887	$4,525,887	$4,525,887
3	PUMPING ENERGY COSTS	$289,642	$289,642	$289,642	$289,642	$289,642	$289,642
	TOTAL ANNUAL COST	$7,528,427	$7,528,427	$4,815,530	$4,815,530	$4,815,530	$4,815,530

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$7,528,427	$7,528,427	$4,815,530	$4,815,530	$4,815,530	$4,815,530
2	YIELD	750	750	750	750	750	750
3	UNIT COST	$10,038	$10,038	$6,421	$6,421	$6,421	$6,421
	TOTAL UNIT COST						$7,626

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$196,662	$196,662
2	WATER TREATMENT PLANTS	1	LS	$23,694,011	$23,694,011
3	WELL FIELDS	1	LS	$3,748,084	$3,748,084
	PROJECT COST				$27,638,757

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$196,662	$1,967
2	WATER TREATMENT PLANTS	1.0	LS	$4,486,440	$4,486,440
3	WELL FIELDS	1.0	%	$3,748,084	$37,481
	ANNUAL OPERATION AND MAINTENANCE COST				$4,525,887

Table 4 – One Well and Treatment at 3,000 mg/l Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$29,929,899	$29,929,899
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$10,465,632	$10,465,632
3	LAND AND EASEMENTS	1	LS	$24,477	$24,477
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$25,216	$25,216
5	INTEREST DURING CONSTRUCTION	1	LS	$1,308,532	$1,308,532
	PROJECT CAPITAL COST				**$41,753,756**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$2,937,839	$2,937,839	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$5,032,402	$5,032,402	$5,032,402	$5,032,402	$5,032,402	$5,032,402
3	PUMPING ENERGY COSTS	$297,840	$297,840	$297,840	$297,840	$297,840	$297,840
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$8,268,081**	**$8,268,081**	**$5,330,242**	**$5,330,242**	**$5,330,242**	**$5,330,242**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$8,268,081	$8,268,081	$5,330,242	$5,330,242	$5,330,242	$5,330,242
2	YIELD	750	750	750	750	750	750
3	UNIT COST	$11,024	$11,024	$7,107	$7,107	$7,107	$7,107
	TOTAL UNIT COST						**$8,413**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$196,662	$196,662
2	WATER TREATMENT PLANTS	1	LS	$25,866,429	$25,866,429
3	WELL FIELDS	1	LS	$3,866,808	$3,866,808
	PROJECT COST				**$29,929,899**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$196,662	$1,967
2	WATER TREATMENT PLANTS	1.0	LS	$4,991,767	$4,991,767
3	WELL FIELDS	1.0	%	$3,866,808	$38,668
	ANNUAL OPERATION AND MAINTENANCE COST				**$5,032,402**

Table 5 – One Well for Blending Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$2,816,854	$2,816,854	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$976,066	$976,066	
3	LAND AND EASEMENTS	1	LS	$9,501	$9,501	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$11,601	$11,601	
5	INTEREST DURING CONSTRUCTION	1	LS	$123,396	$123,396	
	PROJECT CAPITAL COST				**$3,937,418**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$277,041	$277,041	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$28,169	$28,169	$28,169	$28,169	$28,169	$28,169
3	PUMPING ENERGY COSTS	$211,760	$211,760	$211,760	$211,760	$211,760	$211,760
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$516,970**	**$516,970**	**$239,929**	**$239,929**	**$239,929**	**$239,929**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$516,970	$516,970	$239,929	$239,929	$239,929	$239,929
2	YIELD	750	750	750	750	750	750
3	UNIT COST	$689	$689	$320	$320	$320	$320
	TOTAL UNIT COST						**$443**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$196,662	$196,662
2	WELL FIELDS	1	LS	$2,620,193	$2,620,193
	PROJECT COST				**$2,816,854**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$196,662	$1,967
2	WELL FIELDS	1.0	%	$2,620,193	$26,202
	ANNUAL OPERATION AND MAINTENANCE COST				**$28,169**

Water Management Strategy Evaluation

Based on the analysis provided above, the Brackish Groundwater Development and Groundwater Blending project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

Criteria	Rating	Explanation
Cost	3	The costs of this project vary greatly from one application to another. Cost is primarily dependent upon the quality of local supplies and the opportunity to blend with fresh sources.
Location	5	Where water is available, it may be developed in the immediate vicinity of demand.
Water Quality	3	When treated or blended responsibly, there are no known issues related to water quality.
Environmental Land and Habitat	4	Minimal impacts related to development of well sites and treatment facilities.
Environmental Flows	4	The project produces return flows from deep groundwater supplies.
Local Preference	3	No local preference identified.
Institutional Constraints	3	Regulation varies by specific application. However, where supply development is within the limits of the regulating authority, pathways are available for development.
Development Timeline	5	Projects may be identified and implemented in a short period of time.
Sponsorship	3	Sponsorship varies by specific application. Some WUGs are proceeding with development and others have had the project applied through the planning process.
Vulnerability	4	Supplies are generally more drought-tolerant than surface water resources and have limited risk from human impacts.
Regionalization	1	Typically implemented at the individual water system level or for a small number of interconnected systems.
Impacts on Other WMS	4	Slight increase in return flows associated with groundwater development.

Brackish Groundwater Development and Groundwater Blending projects are not anticipated to affect acreage or vulnerable species. However, certain approaches to brine disposal, should they be pursued, may impact water quality. The projects may increase return flows to streams by approximately 50 percent of the project yield through municipal return flows. This strategy is not anticipated to impact agricultural land or production.

Water User Group Application

The Brackish Groundwater Development and Groundwater Blending project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied.

Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

Criteria	WUG Suitability
Proximity	This project may be developed as a supply in the vicinity of brackish groundwater zones identified in this technical memorandum.
Size	This project is scalable to fit local demands. However, little is known regarding the long-term sustainability of these brackish supplies and availability may be limited through physical constraints or regulation in the future.
Water Quality	Supplies from this project can be developed in such a way to provide water at a number of quality levels.
Unit Cost	The unit cost for the project varies based on magnitude and the specifics of each application. Generally, the range of costs limit the application of brackish groundwater development projects to municipal and industrial applications, but the use of brackish groundwater in a blended supply may be an affordable option.
Other Factors	Brackish groundwater supplies are currently in use from the Catahoula Aquifer in Montgomery County and are being developed in the Chicot Aquifer in Brazoria County.

References

Harris-Galveston Subsidence District and Fort Bend Subsidence District. (2018). *Investigation of the Brackish Groundwater Resources in the Gulf Coast Aquifer and the Determination of Potential Subsidence Risk Due to Resource Development.* Prepared by INTERA, Ewing, T. E., Banerji, D., LBG-Guyton & Associates / WSP, Sheng, Z., and HDR.

Lone Star Groundwater Conservation District. (2019). Montgomery County Catahoula Aquifer Pumping and Permitting Data.

Smith, David K. *Brazosport Water Authority Brackish Groundwater Development.* Texas Desalinization Association, Texas Desal 2017 Conference, 23 September 2017, Hyatt Regency, Austin, TX.

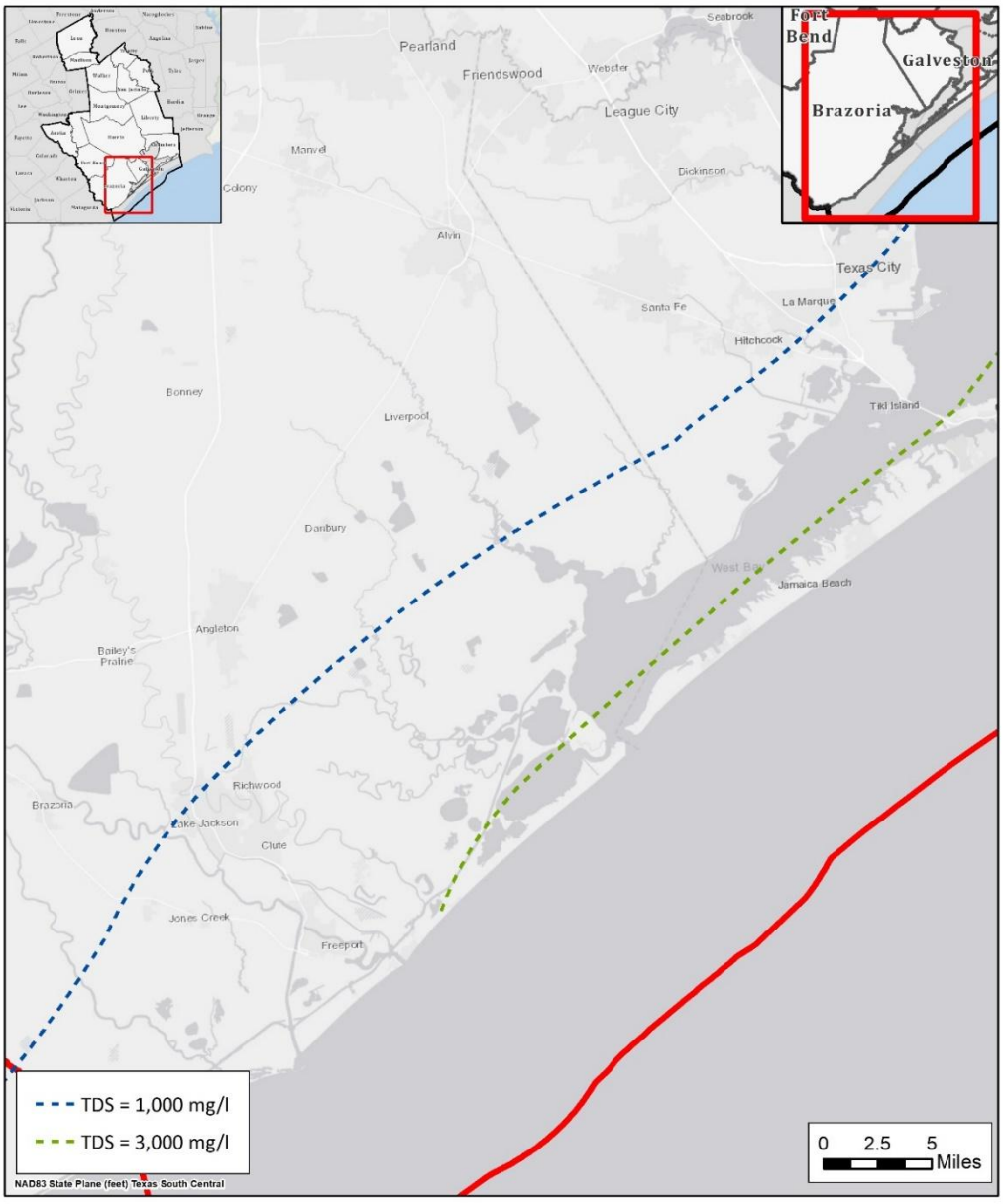
Texas Commission on Environmental Quality Texas Drinking Water Watch. https://dww2.tceq.texas.gov/DWW/

Texas Water Development Board Groundwater Database. http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp

Texas Water Development Board. (2016). *Final Report: Identification of Potential Brackish Groundwater Production Areas – Gulf Coast Aquifer System.* Prepared by TWDB, INTERA, Ewing, T. E., and Banerji, D.

United States Geological Survey. *USGS Groundwater Data for Texas.* https://waterdata.usgs.gov/tx/nwis/gw

Exhibits

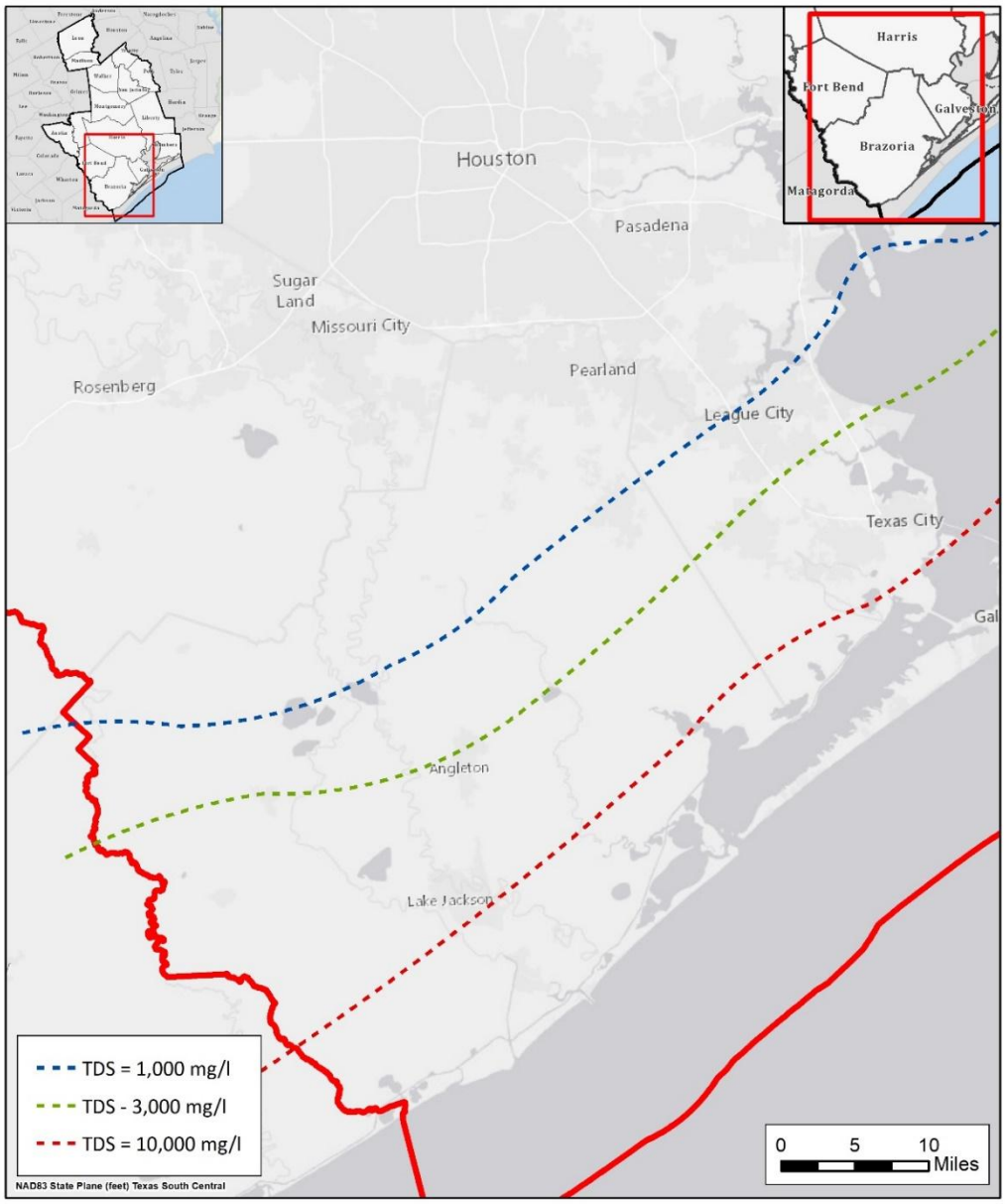


REGION H Water Planning Group

Chicot Aquifer

Estimated Delineation of Fresh to Brackish Groundwater

Texas

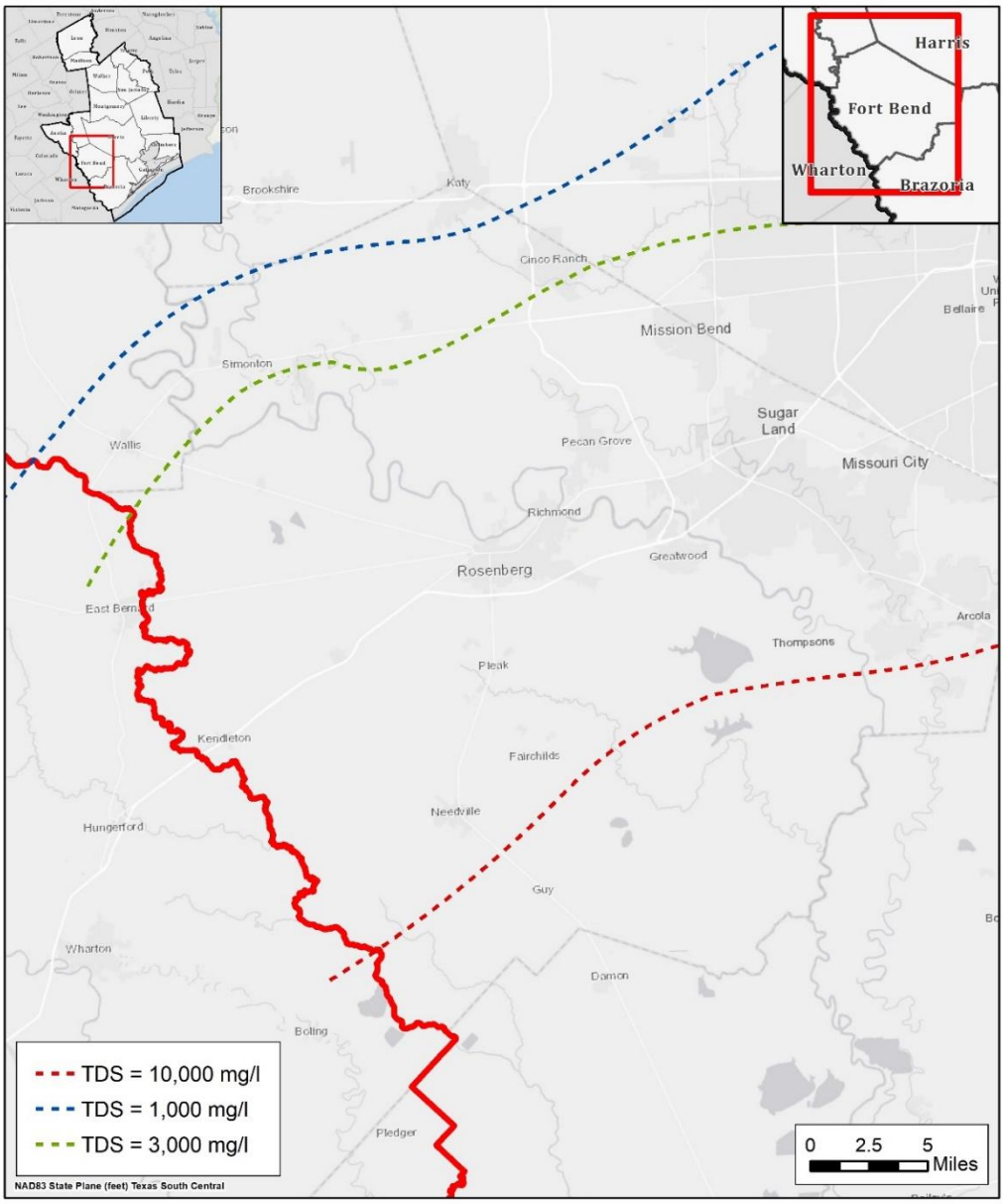


REGION H Water Planning Group

Evangeline Aquifer

Estimated Delineation of Fresh to Brackish Groundwater

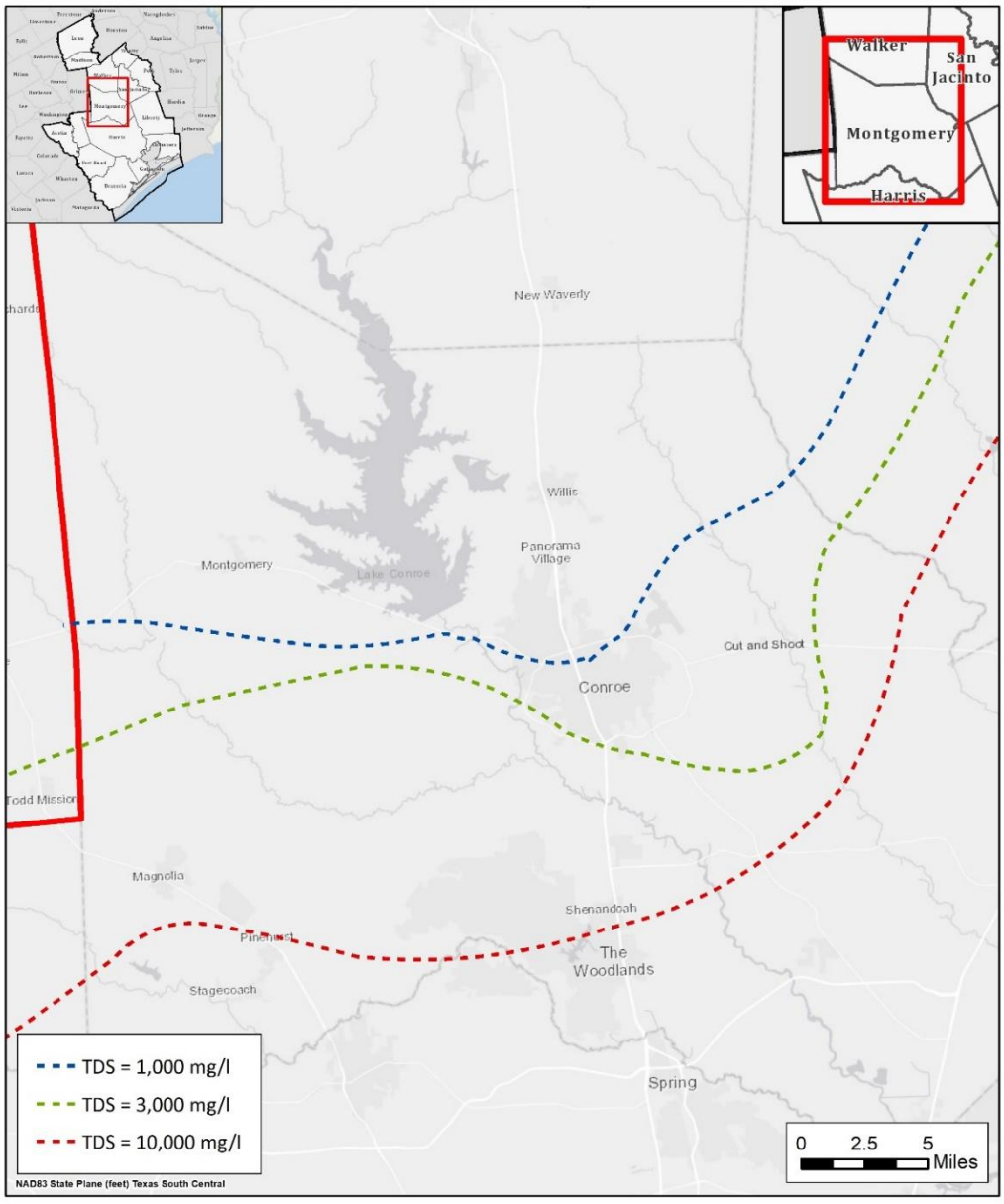
Texas



REGION H Water Planning Group

Jasper Aquifer
Fort Bend County
Estimated Delineation of
Fresh to Brackish Groundwater

Texas



REGION H
Water Planning Group

Catahoula Aquifer

Estimated Delineation of Fresh to Brackish Groundwater

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Brazosport Water Authority Brackish Groundwater Development
Project ID:	GWDV-003
Project Type:	New Groundwater Source
Potential Supply Quantity (Rounded):	13,440 ac-ft/yr (peak) (12 mgd)
Implementation Decade:	2030
Development Timeline:	2 years
Project Capital Cost:	$74,055,688 (Sept. 2023)
Unit Water Cost (Rounded):	$830 per ac-ft (during loan period) $442 per ac-ft (after loan period)

Strategy Description

The Brazosport Water Authority (BWA) serves seven communities in the southern Brazoria County area and provides potable service to Dow Inc. and two Texas Department of Criminal Justice (TDCJ) units, as well as the City of Rosenberg. In December of 2013, BWA concluded a Texas Water Development Board (TWDB) Regional Facility Planning Grant study to examine the potential for serving the current BWA service area as well as other portions of Brazoria County in the future. The study included several recommendations including the development of a reverse osmosis (RO) water treatment plant (WTP) at the site of the current BWA surface water treatment plant to be fed by a brackish groundwater well field in the vicinity of the current plant site. The RO WTP would function in two basic modes:

1. When the Brazos River has sufficient flow, including Harris and Brazoria Reservoir diversions, the RO WTP would provide a minimal baseline potable water flow, supplementing the primary, lower cost portable water from the BWA surface water treatment plant.
2. When the Brazos River has insufficient flow, the RO WTP would operate up to its peak capacity to meet the potable water demands.

Strategy Analyses

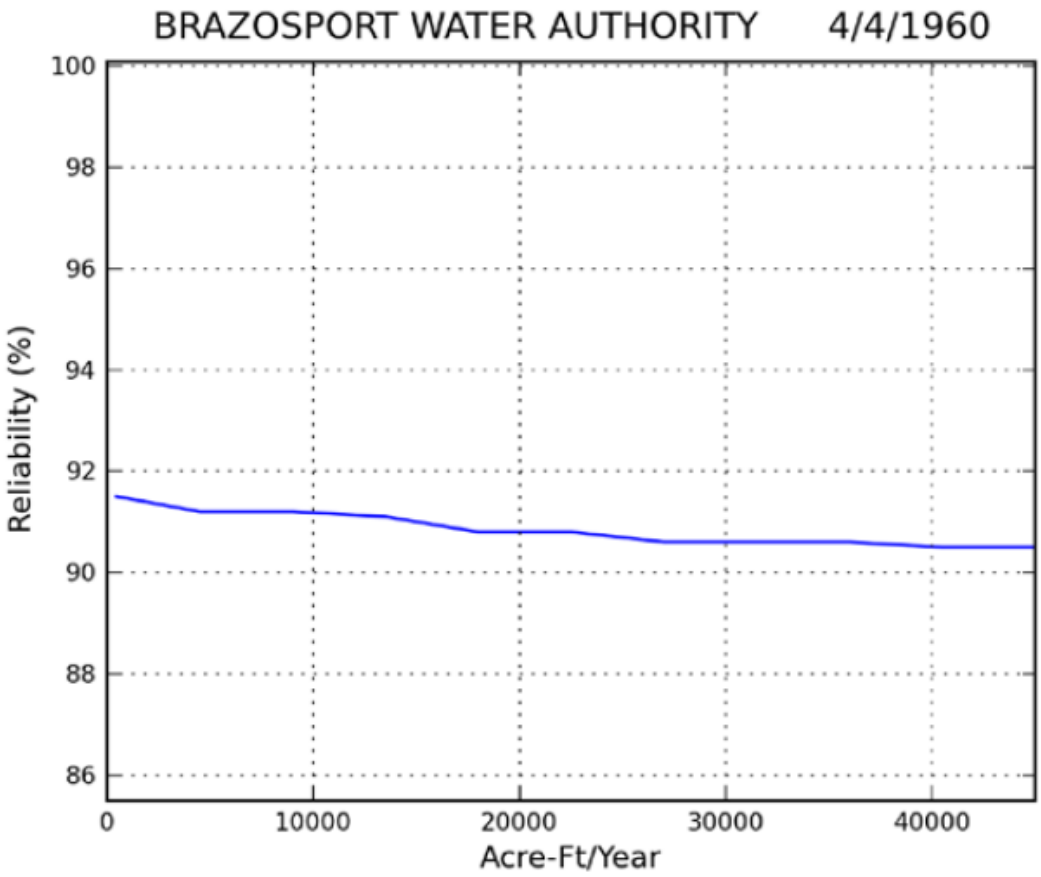
The project analyses for BWA Brackish Groundwater Development include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Existing surface water supplies were evaluated using the Texas Commission on Environmental Quality

(TCEQ) Brazos River Basin and San Jacinto-Brazos Coastal Basin Water Availability Model (WAM). For the purposes of this exercise, the full authorization version of the model (bwam3) was employed to evaluate availability from BWA's water right, 5366. As shown in *Figure 1*, this right of 45,000 ac-ft/yr was found to have a time reliability of approximately 90.5 percent. That is, 100 percent of the diversion target is available in 90.5 percent of the monthly simulation periods. *Figure 1* also shows that even a dramatically reduced target of only one percent of the permit value has limited improvement in reliability. In effect, the WAM indicates that availability for this right is subject to dramatic swings in river conditions resulting in conditions where either the entirety of or none of the right is available for diversion at any given time. This reliability is depicted below in *Figure 1*.

Figure 1 – Simulated Reliability of BWA Water Right 5366



As part of the regional study, various approaches were considered to close the water supply gap. These include the purchase of surface water from wholesale providers in the Brazos River Basin, brackish groundwater desalination, and seawater desalination. Brackish groundwater desalination was selected as the preferred alternative for meeting supply shortages in supply due to availability and cost of water considerations.

Although the RO WTP's initial phase capacity is rated at 6 MGD, actual operation of the facility would result in a lower long-term average rate of production. The study indicates that Phase 1 of the facility will operate at peak capacity (6.0 MGD) 10 percent of the time to mitigate shortages in surface water supply. The plant would normally operate at just 2.0 MGD 90 percent of the time. This results in an average rate of production of 2.40 MGD. In order to produce the peak rate of 6.0 MGD a feed rate of 6.7 MGD is anticipated. This is based on blending 4.0 MGD of membrane permeate with 2.0 MGD of

bypass flow. Similar permeate and bypass blending for the 2.40 MGD average flow will require a long-term groundwater production rate of 2.7 MGD or approximately 3,000 ac-ft/yr.

The proposed brackish groundwater facilities would consist of three closely located wells and collection lines ranging from 12-in. to 36-in. diameter. The WTP would provide cartridge filter pretreatment, chemical additives, and final treatment through three RO membrane racks.

Phase 2 of the strategy includes an increase of 6 MGD peak capacity, bringing the facility to an overall peak capacity of 12 MGD. An additional two wells will be incorporated into the overall well field to reach the Phase 2 capacity of 12 MGD connected by additional 12-in. and 36-in. piping. Pretreatment will be accomplished in the same manner as Phase 1.

Environmental Considerations

Construction within the vicinity of the Waters of the U.S. found along the Brazos River may be subject to Section 404 of the Clean Water Act (CWA) and crossing of the Brazos River to install collection line to the remote well across the river would be subject to a Section 10 permit from the U.S. Army Corps of Engineers. These issues may be covered under Nationwide Permit (NWP) 39 assuming certain conditions are met such as limitation of disturbance to no more than 0.5 acres. Also, construction of a pipeline across the CR 2004 bridge would be considered a bridge under Section 9 of the River and Harbors Act and require authorization.

The Brazos River in the project vicinity is a State-owned riverbed. Any activity within or beneath the confines of the Brazos River would require an easement from the GLO prior to proceeding with construction.

The development of groundwater production may potentially increase the risk of subsidence and saltwater intrusion, especially for sites near the coast. To address these concerns, BWA has performed investigations into the potential for subsidence and drawdown occurring in the vicinity of the well field. To accomplish this, BWA utilized both the Houston Area Groundwater Model (HAGM) and the Lower-Colorado River Basin (LCRB) Groundwater Flow Model, both of which models simulate flow in formations of the Gulf Coast Aquifer System. Maximum incremental subsidence was determined for various scenarios. In a scenario similar to the proposed well field configuration, the subsidence predicted by the HAGM reached a maximum of 1.25 feet at the well field under a constant pumping scenario of 4,000 gpm (5.76 MGD) between 2005 and 2050. A scenario splitting pumpage stratigraphically across the Beaumont and Lissie formations in the LCRB demonstrated subsidence of 0.43 feet between the same time period. Note that this pumping rate of 5.76 MGD is greater than the anticipated long-term average pumping rates for Phases 1 and 2 discussed above. In addition to this desktop analysis, BWA has installed subsidence monitoring equipment for use in tracking long-term trends in proximity of the well field.

RO concentrate disposal to the Brazos River will be accomplished in a way to minimize potential environmental impacts. Discharge is anticipated to occur below State Highway (SH) 332 where there is no limit set for Total Dissolved Solids (TDS). At this point, the salinity of RO concentrate is expected to be below the ambient levels of the Brazos River. Similar discharge strategies have been employed for other projects in the Brazos River Basin. This discharge will require permitting under the Texas Pollutant Discharge Elimination System (TPDES).

Permitting and Development

The groundwater well components of this project will require permitting through the Brazoria County

Groundwater Conservation District (BCGCD) to drill and operate the planned wells. Brine discharge from the facility will also require permitting through TCEQ. Additional permitting activities may be required to facilitate construction activities, as described above.

Cost Analysis

Costs for the proposed project were estimated based upon information provided by BWA in conjunction with detailed infrastructure and operation and maintenance cost projections. Sponsor costs were scaled to September 2023 equivalent cost in accordance with TWDB guidance. Other components such as interest during construction and annualized debt service were estimated using standard regional planning assumptions. Costs for Phases 1 and 2 of the project have been combined into one overall capital cost as it is expected that both phases will be developed in the 2030 planning period. These costs are summarized below in *Table 1*.

Table 1 – BWA Brackish Groundwater Development Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$60,000,000	$60,000,000	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$9,399,360	$9,399,360	
3	LAND AND EASEMENTS	1	LS	$16,120	$16,120	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$47,016	$47,016	
5	INTEREST DURING CONSTRUCTION	1	LS	$4,593,193	$4,593,193	
	PROJECT CAPITAL COST				**$74,055,688**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$5,210,638	$5,210,638	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$5,090,768	$5,090,768	$5,090,768	$5,090,768	$5,090,768	$5,090,768
3	PUMPING ENERGY COSTS	$852,000	$852,000	$852,000	$852,000	$852,000	$852,000
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$11,153,406**	**$11,153,406**	**$5,942,768**	**$5,942,768**	**$5,942,768**	**$5,942,768**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$11,153,406	$11,153,406	$5,942,768	$5,942,768	$5,942,768	$5,942,768
2	YIELD	13,440	13,440	13,440	13,440	13,440	13,440
3	UNIT COST	$830	$830	$442	$442	$442	$442
	TOTAL UNIT COST						**$571**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER TREATMENT PLANTS	1	LS	$60,000,000	$60,000,000
	PROJECT COST				**$60,000,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER TREATMENT PLANTS	1.0	LS	$5,090,768	$5,090,768
	ANNUAL OPERATION AND MAINTENANCE COST				**$5,090,768**

Water Management Strategy Evaluation

Based on the analysis provided above, the BWA Brackish Groundwater Development project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	3	Relatively low project cost for a desalination alternative.
Location	3	Conveyance required to provide water to diverse BWA service area.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts may be easily mitigated.
Environmental Flows	4	Slight increase in instream flows due to brine return to stream course.
Local Preference	4	Local support from BWA customers.
Institutional Constraints	4	Permitting efforts under way.
Development Timeline	5	Project can be implemented in a relatively short time period.
Sponsorship	5	Project is under development.
Vulnerability	4	No substantial risk from natural and man-made disasters. Potential for subsidence being monitored to prevent detrimental impacts.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	5	Project works in conjunction with BWA surface water rights to provide a reliable water supply.

The BWA Brackish Groundwater Development project is not anticipated to affect vulnerable species and will not reduce instream flows. This project is not anticipated to impact agricultural land or production.

Water User Group Application

The BWA Brackish Groundwater Development project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to

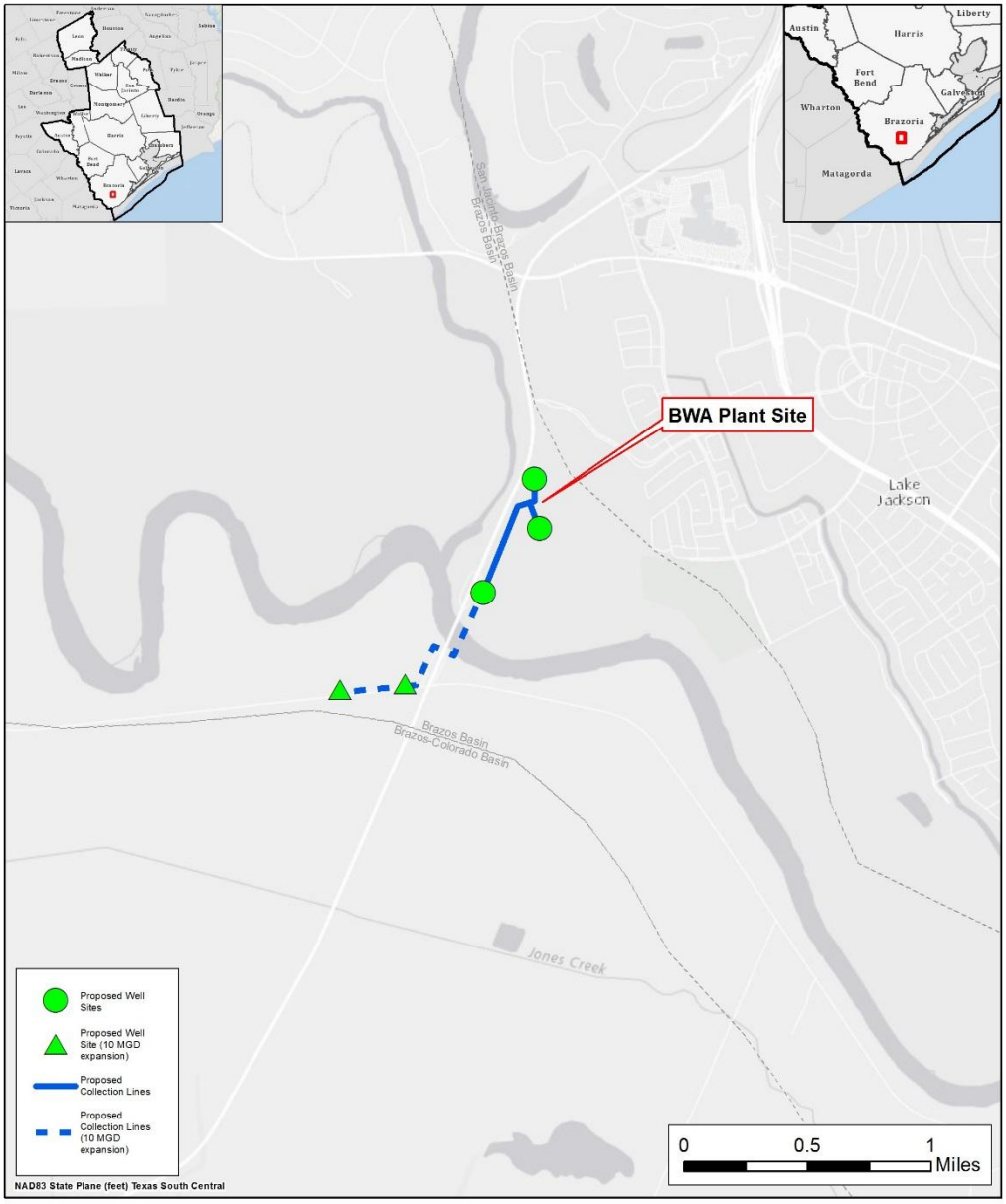
the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is positioned to provide water within the current BWA customer service area.
Size	Project is sized to provide adequate dry-year supply for BWA customer use.
Water Quality	Project will provide treated water for potable municipal and industrial use.
Unit Cost	Unit cost is suited to use in municipal supply. Long-term costs are also mitigated by use of traditionally treated surface water supplies when available.
Other Factors	Project is identified for BWA service area.

References

CDM-Smith. *Brazoria County Regional Water Facility Study*. May 2013.

Location Map



REGION H Water Planning Group

Brazosport Water Authority Brackish Groundwater Location Map

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Houston Area 2 Groundwater Infrastructure
Project ID:	GWDV-004
Project Type:	Existing Groundwater Source
Potential Supply Quantity (Rounded):	50,400 ac-ft/yr (45 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$150,754,783 (Sept. 2023)
Unit Water Cost (Rounded):	$482 per ac-ft (during loan period) $271 per ac-ft (after loan period)

STRATEGY DESCRIPTION

The Harris-Galveston Subsidence District (HGSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer. Within HGSD Regulatory Area 2, groundwater production is limited to 20 percent of total water use for a water system or for an aggregation of systems under a common Groundwater Reduction Plan (GRP). The City of Houston (COH) has identified a need to develop additional well capacity within Area 2 in order to utilize its estimated future allowable groundwater capacity within the regulatory limits established by HGSD. Remaining demands beyond allowable groundwater production will be met by alternate sources. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

STRATEGY ANALYSES

The project analyses for COH Area 2 Groundwater Infrastructure include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

SUPPLY DEVELOPMENT

In order to meet the requirements of the HGSD, the COH has used its surface water rights and treatment capacity to provide an alternative to groundwater pumpage for the city itself as well as other entities in a broad geographic area. The COH has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is developing multiple infrastructure projects related to the treatment and distribution of surface water to facilitate continued compliance as water demands grow in the future. While groundwater makes up only a limited percentage of the overall supply portfolio, the COH has determined that its existing groundwater infrastructure capacity within HGSD Regulatory Area 2 is below the projected allowable

production amount based on HGSD regulation and anticipated water demand. In order to better utilize groundwater resources within the limits established by HGSD, the COH has identified the need to develop an additional 45 mgd in groundwater production capacity within Area 2.

ENVIRONMENTAL CONSIDERATIONS

Development of this project may impact environmental conditions in the immediate vicinity of the well field or fields and associated conveyance infrastructure. While some surface disturbance is likely for construction of groundwater infrastructure, due to the urbanized nature of the COH within Area 2, construction impacts would be expected to occur primarily within previously disturbed areas. Groundwater production in the greater Houston area has been associated with historical subsidence; however, the supplies associated with the COH Area 2 Groundwater Infrastructure project are within the regulatory allowable production limits of the HGSD. Groundwater levels and subsidence are both monitored throughout Harris County by HGSD. It is also noted that well pumping may increase return flows to surface water bodies and to the Galveston Bay system.

PERMITTING AND DEVELOPMENT

Development of the project would be required to comply with the HGSD rules regarding permitting, production, well spacing, and other factors. Infrastructure development may also require minor construction permitting related to surface disturbance for well field, treatment, and pipeline infrastructure.

COST ANALYSIS

A preliminary planning-level cost estimate was developed for the COH Area 2 Groundwater Infrastructure project based on standard regional planning assumptions. Construction costs were estimated for groundwater production and treatment capacity as well as associated storage. Interest during construction, annualized debt service, pumping energy costs, and costs of operation and maintenance were also estimated using standard assumptions for Region H. Costs are presented in September 2023 equivalent costs in *Table 1*.

Table 1 – City of Houston Area 2 Groundwater Infrastructure Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$88,560,481	$88,560,481	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$30,996,168	$30,996,168	
3	LAND AND EASEMENTS	1	LS	$2,406,690	$2,406,690	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$24,066,900	$24,066,900	
5	INTEREST DURING CONSTRUCTION	1	LS	$4,724,544	$4,724,544	
	PROJECT CAPITAL COST				**$150,754,783**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$10,607,269	$10,607,269	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$7,107,466	$7,107,466	$7,107,466	$7,107,466	$7,107,466	$7,107,466
3	PUMPING ENERGY COSTS	$6,553,116	$6,553,116	$6,553,116	$6,553,116	$6,553,116	$6,553,116
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$24,267,851**	**$24,267,851**	**$13,660,582**	**$13,660,582**	**$13,660,582**	**$13,660,582**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$24,267,851	$24,267,851	$13,660,582	$13,660,582	$13,660,582	$13,660,582
2	YIELD	50,400	50,400	50,400	50,400	50,400	50,400
3	UNIT COST	$482	$482	$271	$271	$271	$271
	TOTAL UNIT COST						**$341**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER TREATMENT PLANTS	1	LS	$19,443,317	$19,443,317
2	WATER STORAGE TANKS	1	LS	$15,271,826	$15,271,826
3	WELL FIELDS	1	LS	$53,845,339	$53,845,339
	PROJECT COST				**$88,560,481**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER TREATMENT PLANTS	1.0	LS	$6,416,294	$6,416,294
2	WATER STORAGE TANKS	1.0	%	$15,271,826	$152,718
3	WELL FIELDS	1.0	%	$53,845,339	$538,453
	ANNUAL OPERATION AND MAINTENANCE COST				**$7,107,466**

WATER MANAGEMENT STRATEGY EVALUATION

Based on the analysis provided above, the City of Houston Area 2 Groundwater Infrastructure project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	Costs are moderately low and decline considerably after debt service.

CRITERIA	RATING	EXPLANATION
Location	5	Well development would be located near points of use or in the vicinity of the City of Houston's existing water distribution system.
Water Quality		No known water quality issues.
Environmental Land and Habitat	3	Limited concerns. Environmental impacts can be avoided or mitigated.
Environmental Flows		Potential increases to instream flows.
Local Preference	4	Project expected to encounter minimal opposition.
Institutional Constraints		Minimal permitting challenges anticipated.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship	5	Sponsor has identified project and intends to develop infrastructure over time.
Vulnerability	4	No substantial risk from natural and man-made disasters. Potential for subsidence is limited by compliance with HGSD regulation and conversion of large portions of Area 2 to surface water sources.
Regionalization	3	Serves primarily the sponsor and limited number of customers directly but provides indirect support and diversification to existing regional supply systems.
Impacts on Other Projects	3	Project is not expected to impact other water management strategies.

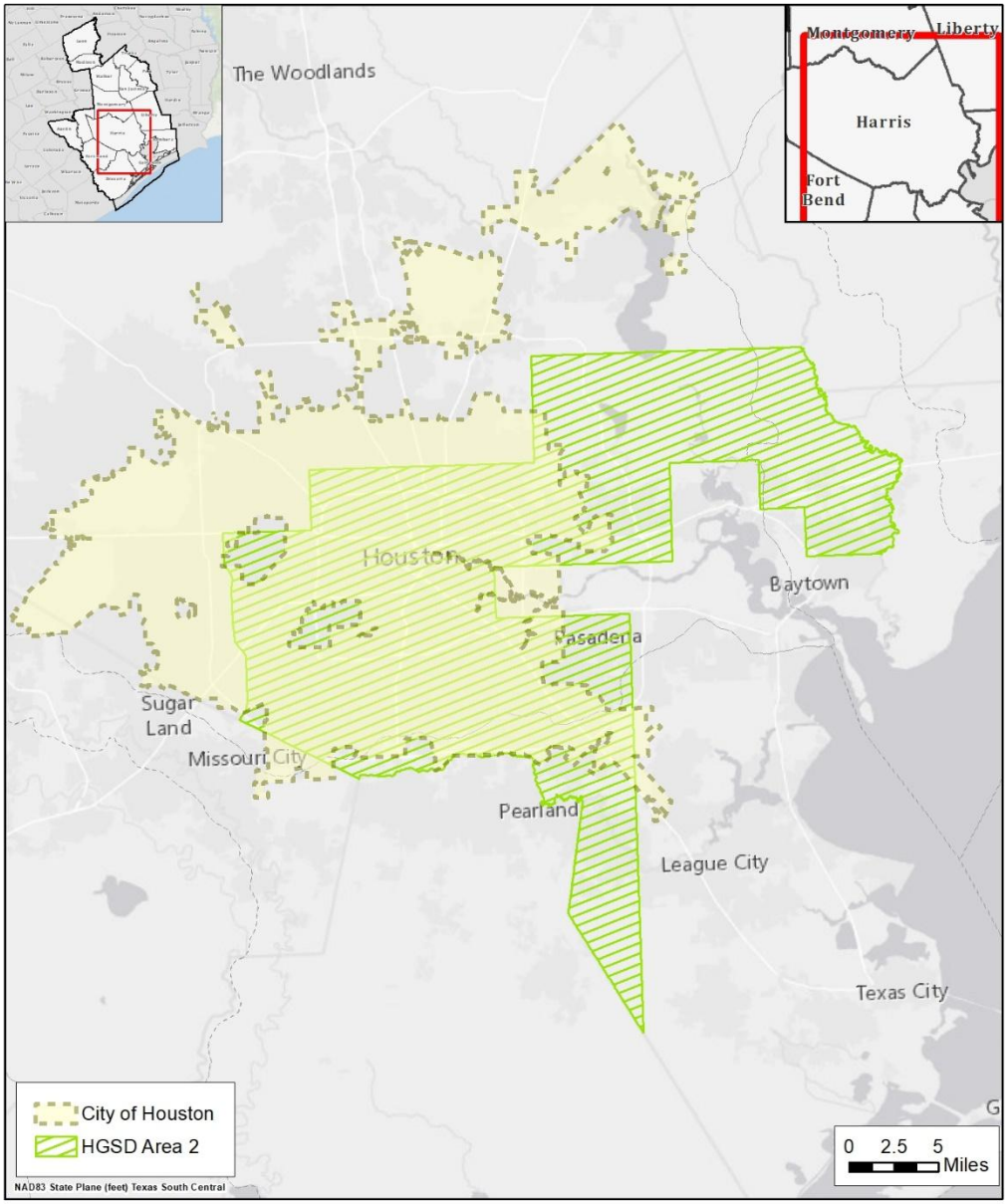
The COH Area 2 Groundwater Infrastructure project is not anticipated to affect vulnerable species and may increase return flows to streams. The project is not anticipated to impact agricultural land or production.

WATER USER GROUP APPLICATION

The COH Area 2 Groundwater Infrastructure project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the suitability of the project to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Wells or well field infrastructure would be located near points of use within the City of Houston service area or in close proximity to the existing water distribution system.
Size	The project sizing is consistent with allowable groundwater production under HGSD regulation.
Water Quality	Water generated by the project is anticipated to be of good quality and suitable for multiple uses within the City of Houston service area.
Unit Cost	Project unit costs are moderately low during debt service and decline after debt service.
Other Factors	Availability constrained by relevant local groundwater regulations.

LOCATION MAP



REGION H Water Planning Group

COH Area 2 Groundwater Infrastructure Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Houston Repump and Groundwater Plant Improvements
Project ID:	GWDV-005
Project Type:	Existing Groundwater Source
Potential Supply Quantity (Rounded):	97,440 ac-ft/yr (87 mgd)
Implementation Decade:	2030
Development Timeline:	<10 years
Project Capital Cost:	$173,600,899 (Sept. 2023)
Unit Water Cost (Rounded):	$287 per ac-ft (during loan period) $45 per ac-ft (after loan period)

STRATEGY DESCRIPTION

The City of Houston (COH) provides water supply to its own extensive service area as well as to a number of contract customers and regional partners. While COH predominantly utilizes surface water sources, groundwater production within applicable regulatory limits remains an important element of its supply portfolio and provides operational flexibility during periods of peak demand. The City of Houston is planning capacity expansions and other enhancements at multiple groundwater plants and repump stations to help address water demands and support compliance with Texas Commission on Environmental Quality (TCEQ) regulations. COH is also investigating redevelopment of its IAH 3 Ground Water Plant into a repump station that will reliably supply surface water and adequate water pressure to the George Bush Intercontinental Airport. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

STRATEGY ANALYSES

The project analyses for COH Repump and Groundwater Plant Improvements include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

SUPPLY DEVELOPMENT

The COH Repump and Groundwater Plant Improvements project is in the conceptual study phase. For the purposes of the 2026 Region H Regional Water Plan (RWP), the capacity increase associated with the IAH 3 facility conversion to a repump role is estimated at 7 mgd (7,840 ac-ft/yr), with completion estimated by 2030. Other upgrades and enhancements to groundwater and repump facilities are estimated to increase system conveyance and production capacity by up to 80 MGD (89,600 ac-ft/yr) by 2035.

ENVIRONMENTAL CONSIDERATIONS

Infrastructure development may result in some construction disturbance which could require mitigation. Due to the highly urbanized nature of much of the COH area, construction impacts would be expected to occur primarily within previously disturbed areas.

PERMITTING AND DEVELOPMENT

The project primarily involves expansions and enhancements for existing facilities, reducing the need for land acquisition or extensive permitting. Infrastructure development may require minor construction permitting related to surface disturbance.

COST ANALYSIS

A preliminary planning-level cost estimate was developed for the COH Repump and Groundwater Plant Improvements project. Capital costs were based upon data provided by COH; for purposes of the 2026 RWP, these estimates were assumed to be inclusive of all capital cost components including engineering, land acquisition, environmental studies and mitigation, and interest during construction. Annual costs including annualized debt service, pumping energy costs, and costs of operation and maintenance were estimated using standard regional planning assumptions. Costs are presented in September 2023 equivalent costs in *Table 1*.

Table 1 – COH Repump and Ground Water Enhancement Total Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT>						
1	CONSTRUCTION AND NON-CONSTRUCTION COSTS (ENGINEERING, LAND ACQUISITION, ETC.)	1	LS	$173,600,899	$173,600,899	
	PROJECT CAPITAL COST				$173,600,899	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE (IAH 2030)	$1,660,585	$1,660,585	$0	$0	$0	$0
2	DEBT SERVICE (Repump GW 2040)	$0	$10,554,162	$10,554,162	$0	$0	$0
3	OPERATION AND MAINTENANCE (IAH 2030)	$590,022	$590,022	$590,022	$590,022	$590,022	$590,022
4	OPERATION AND MAINTENANCE (Repump GW 2040)	$0	$3,750,000	$3,750,000	$3,750,000	$3,750,000	$3,750,000
5	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
6	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$2,250,607	$16,554,769	$14,894,184	$4,340,022	$4,340,022	$4,340,022

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$2,250,607	$16,554,769	$14,894,184	$4,340,022	$4,340,022	$4,340,022
2	YIELD	7,840	97,440	97,440	97,440	97,440	97,440
3	UNIT COST	$287	$170	$153	$45	$45	$45
	TOTAL UNIT COST						$94

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS (IAH 2030)	1	LS	$23,600,899	$23,600,899
2	PUMP STATIONS (Repump GW 2040)	1	LS	$150,000,000	$150,000,000
	PROJECT COST				$173,600,899

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS (IAH 2030)	2.5	%	$23,600,899	$590,022
2	PUMP STATIONS (Repump GW 2040)	2.5	%	$150,000,000	$3,750,000
	ANNUAL OPERATION AND MAINTENANCE COST				$4,340,022

WATER MANAGEMENT STRATEGY EVALUATION

Based on the analysis provided above, the COH Repump and Groundwater Plant Improvements project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below. The project is not anticipated to impact agricultural land or production.

CRITERIA	RATING	EXPLANATION
Cost	5	Project increases system supply and conveyance capacity at a low additional unit cost.

CRITERIA	RATING	EXPLANATION
Location	5	Project development would be located near points of use or in the vicinity of the City of Houston's existing water distribution system.
Water Quality		No known water quality issues.
Environmental Land and Habitat	4	Limited concerns. Environmental impacts can be avoided or mitigated as upgrades will occur at facilities already constructed.
Environmental Flows	3	Project is not anticipated to significantly impact environmental flows.
Local Preference	3	Limited opposition expected.
Institutional Constraints	3	Permits expected with minimal problems.
Development Timeline	5	Project can be developed within 5 years per phase.
Sponsorship	3	The project sponsor, COH, has identified the project and is engaged in concept studies.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	3	Serves primarily the sponsor and limited number of customers directly but provides indirect support and diversification to existing regional supply systems.
Impacts on Other WMS	3	Project is not expected to impact other water management strategies.

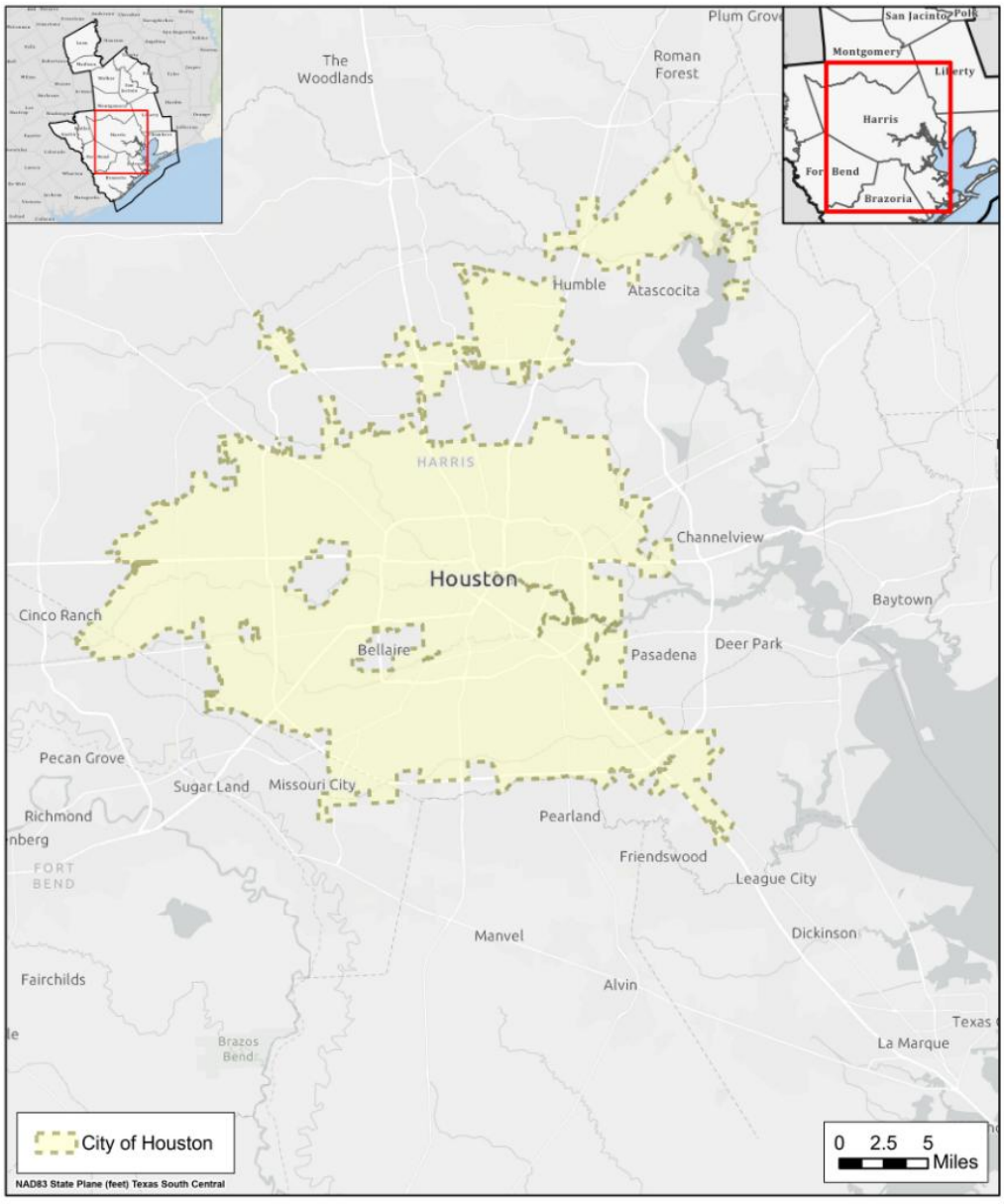
WATER USER GROUP APPLICATION

The COH Repump and Groundwater Plant Improvements project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is positioned to provide more reliable supply at various locations around Houston.
Size	The project is sized in accordance with the needed improvements in the system which will increase deliverable supply.

CRITERIA	WUG SUITABILITY
Water Quality	Project is not anticipated to impact water quality.
Unit Cost	Project cost is low relative to a number of other projects.
Other Factors	Project increases delivery capacity and overall system reliability and supports adequate delivery and system pressures.

LOCATION MAP



City of Houston
Repump Enhancement Location Map

REGION H
Water Planning Group

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Expanded Use of Groundwater
Project ID:	GWDV-006
Project Type:	Existing Groundwater Source
Potential Supply Quantity (Rounded):	Approximately 13,500 – 41,200 ac-ft/yr (12.1 – 36.8 mgd)
Implementation Decade:	2030 (varies by WUG)
Development Timeline:	<5 years
Project Capital Cost:	Varies by WUG type and projected need
Unit Water Cost (Rounded):	Varies by WUG type and projected need

STRATEGY DESCRIPTION

A number of Water User Groups (WUGs) within Region H, particularly those with limited access to other supply sources, will likely meet a portion of their projected needs by developing or expanding infrastructure to utilize available groundwater within the limits established by groundwater conservation district (GCD) and subsidence district (SD) rules or local water quality concerns.

STRATEGY ANALYSES

The project analyses for Expanded Use of Groundwater include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

SUPPLY DEVELOPMENT

The Region H Water Plan anticipates the continued use of available groundwater to meet demands, unless such use is limited by GCD or SD rules or local water quality concerns. By utilizing this supply, a number of WUGs with projected needs would be able to defer or avoid implementation of more costly and logistically difficult options. Groundwater use from the Gulf Coast, Carrizo-Wilcox, Sparta, Queen City, and Yegua-Jackson Aquifers is projected to increase in certain counties during the planning period. Due to GCD and SD regulations or low remaining groundwater availability, the Expanded Use of Groundwater project was generally not applied in Brazoria, Fort Bend, Galveston, Harris, or Montgomery Counties; there are a limited number of exceptions, which generally reflect increased production by entities exempt from regulations limiting groundwater production (portions of County-Other and other WUGs reflecting small private household wells, water for oil and gas production, etc.). For the remaining counties within Region H, remaining groundwater availability was assigned to WUGs which already utilize groundwater or have limited other options.

ENVIRONMENTAL CONSIDERATIONS

Environmental impacts of developing additional groundwater infrastructure are dependent on the project location, source aquifer, and project size. Generally, in the locations in Region H where Expanded Use of Groundwater is feasible and allowable under groundwater district and subsidence district regulations, it is not anticipated to have significant negative environmental impacts. Portions of Region H have been subject to land surface subsidence due to long-term excessive groundwater withdrawals, which should be considered when developing groundwater infrastructure in or near these areas. Groundwater within the region is generally of good quality and available at or near the point of use. Some surface disturbance is likely for construction of groundwater infrastructure but would be expected to occur primarily on previously disturbed areas. Site-specific evaluations of wildlife habitats, wetlands (including mitigation by wetlands offsets) and cultural resources must be considered in the overall development plan. There are no major springs in Region H, but well pumping supplies return flows to all river basins within the region, and ultimately to Galveston Bay. These flows will increase proportionally with the increased groundwater use.

PERMITTING AND DEVELOPMENT

Permitting requirements will vary with the location and intended use of groundwater development. In areas within the jurisdiction of a GCD or SD, projects would be required to comply with the appropriate District rules regarding permitting, registration, production, well spacing, and other factors. Some groundwater development projects may also require minor construction permitting related to surface disturbance for well field, treatment facility, and pipeline infrastructure.

COST ANALYSIS

Costs for WUGs to implement Expanded Use of Groundwater vary by WUG type and size of project. Costs for each WUG were calculated using a set of standardized assumptions by use type (Sept. 2023 equivalent cost). Agricultural wells, which are typically shallower than municipal wells and are normally used heavily for a small portion of the year, tended to have lower costs than municipal wells. Similarly, municipal and industrial wells in rural areas tended to be shallower and lower cost than wells developed in more urbanized areas. Typical capital costs estimated for agricultural groundwater development range from $443,938 for a 100 ac-ft/yr supply to $10,586,276 for a 6,000 ac-ft/yr supply. Estimates for municipal wells ranged from $3,294,122 for a 100 ac-ft/yr rural supply to $54,435,387 for an 10,000 ac-ft/yr urban supply. Representative costs for a 500 ac-ft/yr project for various user categories are shown in ***Tables 1*** through ***3***. It should be noted that the annualized supply volume for a particular well size may vary by usage type due to differences in duty cycles and demand peaking.

Table 1 – 1,000 gpm Agricultural Well Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$715,436	$715,436	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$250,403	$250,403	
3	LAND AND EASEMENTS	1	LS	$592	$592	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$31,267	$31,267	
	PROJECT CAPITAL COST				**$997,698**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$70,199	$70,199	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$7,154	$7,154	$7,154	$7,154	$7,154	$7,154
3	PUMPING ENERGY COSTS	$35,504	$35,504	$35,504	$35,504	$35,504	$35,504
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$112,857**	**$112,857**	**$42,658**	**$42,658**	**$42,658**	**$42,658**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$112,857	$112,857	$42,658	$42,658	$42,658	$42,658
2	YIELD	500	500	500	500	500	500
3	UNIT COST	$226	$226	$85	$85	$85	$85
	TOTAL UNIT COST						**$132**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WELL FIELDS	1	LS	$715,436	$715,436
	PROJECT COST				**$715,436**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WELL FIELDS	1.0	%	$715,436	$7,154
	ANNUAL OPERATION AND MAINTENANCE COST				**$7,154**

Table 2 – 1,000 gpm Municipal (Urban) Well Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$3,633,887	$3,633,887	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$1,251,835	$1,251,835	
3	LAND AND EASEMENTS	1	LS	$77,412	$77,412	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$49,499	$49,499	
5	INTEREST DURING CONSTRUCTION	1	LS	$162,175	$162,175	
	PROJECT CAPITAL COST				**$5,174,807**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$364,105	$364,105	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$420,601	$420,601	$420,601	$420,601	$420,601	$420,601
3	PUMPING ENERGY COSTS	$42,010	$42,010	$42,010	$42,010	$42,010	$42,010
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$826,716**	**$826,716**	**$462,611**	**$462,611**	**$462,611**	**$462,611**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$826,716	$826,716	$462,611	$462,611	$462,611	$462,611
2	YIELD	500	500	500	500	500	500
3	UNIT COST	$1,653	$1,653	$925	$925	$925	$925
	TOTAL UNIT COST						**$1,168**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$400,515	$400,515
2	WATER TREATMENT PLANTS	1	LS	$1,200,819	$1,200,819
3	WATER STORAGE TANKS	1	LS	$1,128,579	$1,128,579
4	WELL FIELDS	1	LS	$903,974	$903,974
	PROJECT COST				**$3,633,887**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$400,515	$4,005
2	WATER TREATMENT PLANTS	1.0	LS	$396,270	$396,270
3	WATER STORAGE TANKS	1.0	%	$1,128,579	$11,286
4	WELL FIELDS	1.0	%	$903,974	$9,040
	ANNUAL OPERATION AND MAINTENANCE COST				**$420,601**

Table 3 – 1,000 gpm Municipal (Rural) Well Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$4,138,679	$4,138,679	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$1,418,376	$1,418,376	
3	LAND AND EASEMENTS	1	LS	$2,848,272	$2,848,272	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$1,284,338	$1,284,338	
5	INTEREST DURING CONSTRUCTION	1	LS	$313,492	$313,492	
	PROJECT CAPITAL COST				**$10,003,157**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$703,833	$703,833	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$425,649	$425,649	$425,649	$425,649	$425,649	$425,649
3	PUMPING ENERGY COSTS	$64,792	$64,792	$64,792	$64,792	$64,792	$64,792
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$1,194,274**	**$1,194,274**	**$490,441**	**$490,441**	**$490,441**	**$490,441**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$1,194,274	$1,194,274	$490,441	$490,441	$490,441	$490,441
2	YIELD	500	500	500	500	500	500
3	UNIT COST	$2,389	$2,389	$981	$981	$981	$981
	TOTAL UNIT COST						**$1,450**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$603,245	$603,245
2	WATER TREATMENT PLANTS	1	LS	$1,200,819	$1,200,819
3	WATER STORAGE TANKS	1	LS	$1,128,579	$1,128,579
4	WELL FIELDS	1	LS	$1,206,037	$1,206,037
	PROJECT COST				**$4,138,679**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PIPELINES	1.0	%	$603,245	$6,032
2	WATER TREATMENT PLANTS	1.0	LS	$396,270	$396,270
3	WATER STORAGE TANKS	1.0	%	$1,128,579	$11,286
4	WELL FIELDS	1.0	%	$1,206,037	$12,060
	ANNUAL OPERATION AND MAINTENANCE COST				**$425,649**

WATER MANAGEMENT STRATEGY EVALUATION

Based on the analysis provided above, the Expanded Use of Groundwater project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Costs are generally high but decline considerably after debt service. Agricultural groundwater production is less expensive than that for municipal use.

CRITERIA	RATING	EXPLANATION
Location	5	Typically located near points of use.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	4	Limited environmental impacts expected.
Environmental Flows	4	Minor increases to instream flows.
Local Preference	4	Projects typically encounter minimal opposition.
Institutional Constraints	3	Minimal permitting challenges anticipated.
Development Timeline	5	Typically <5 years.
Sponsorship	3	Level of sponsor commitment unknown for most WUGs.
Vulnerability	5	Minimal risks associated with this project.
Regionalization	1	Typically implemented at the individual water system level or for a small number of interconnected systems.
Impacts on Other Projects	3	No major impacts to other projects identified.

Expanded Use of Groundwater is not anticipated to affect vulnerable species and may increase return flows to streams. The projects are not anticipated to impact agricultural land or production.

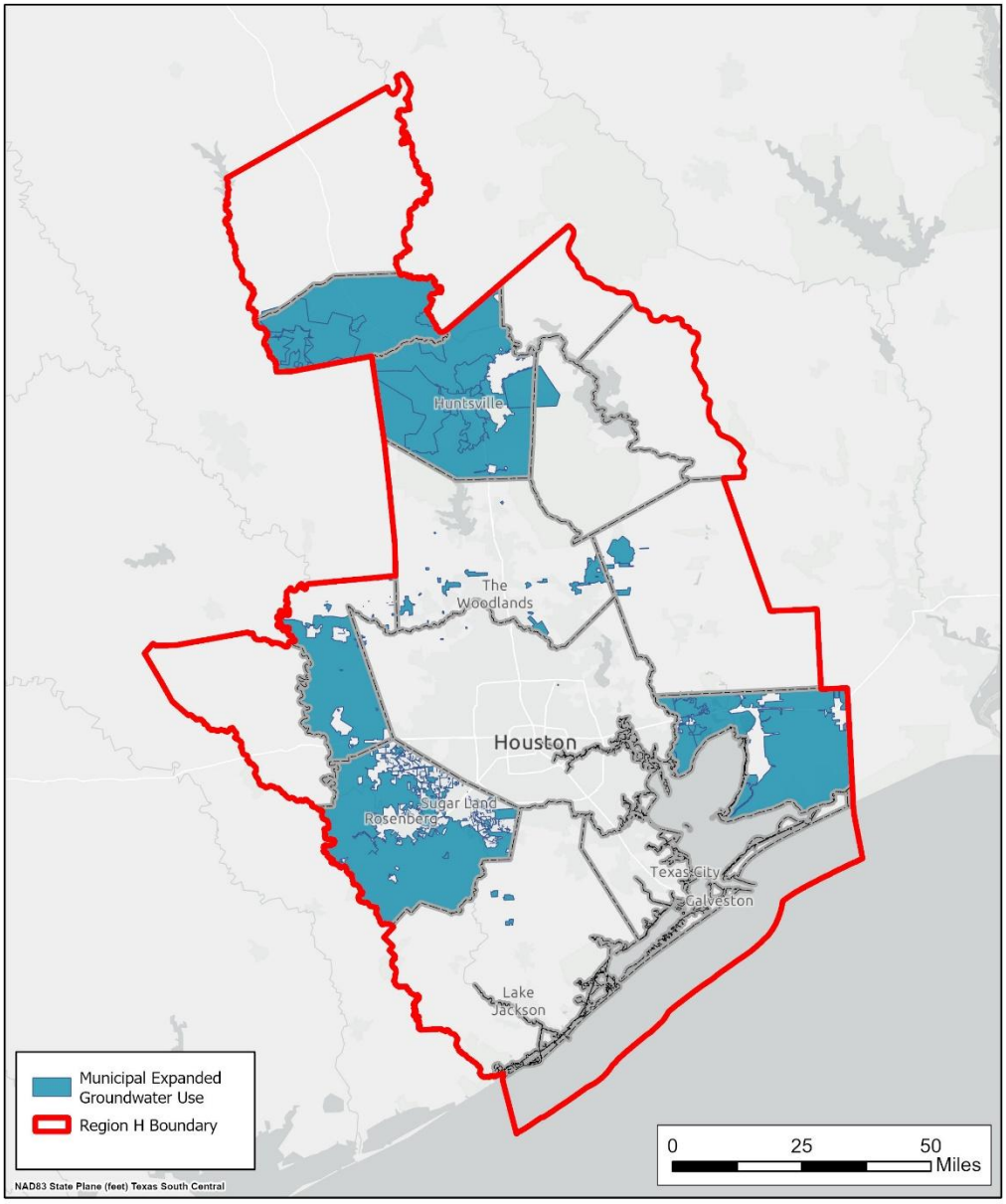
WATER USER GROUP APPLICATION

The Expanded Use of Groundwater project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the suitability of the project to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Wells fields typically collocated with or near to demand centers.
Size	Projects sized for sponsoring community.
Water Quality	Typically good in most areas of Region H.
Unit Cost	Costs are generally high for municipal use and smaller projects but decline considerably after debt service.

CRITERIA	WUG SUITABILITY
Other Factors	Availability constrained by relevant local groundwater regulations.

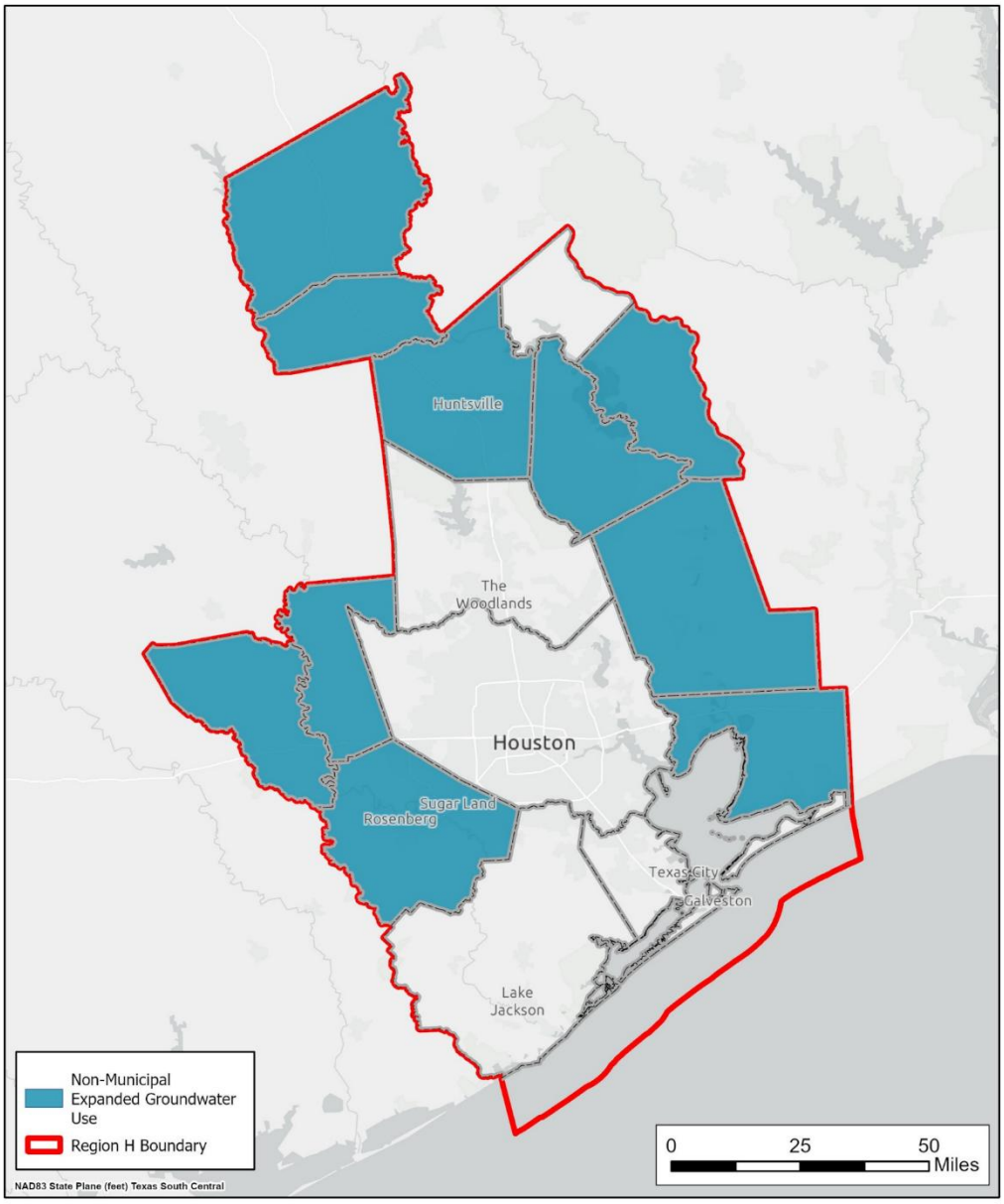
LOCATION MAP – MUNICIPAL USE



REGION H Water Planning Group

Municipal Expanded Use of Groundwater

LOCATION MAP – NON-MUNICIPAL USE



REGION H Water Planning Group

Non-Municipal Expanded Use of Groundwater

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Fairchilds Supply Infrastructure
Project ID:	GWDV-007
Project Type:	Existing Groundwater Source
Potential Supply Quantity (Rounded):	2,128 ac-ft/yr (1.9 MGD)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$103,900,000 (Sept. 2023)
Unit Water Cost (Rounded):	$4,298 per ac-ft (during loan period) $862 per ac-ft (after loan period)

Strategy Description

The Village of Fairchilds is located in the south-central Fort Bend County. While historically a predominantly rural community, the village and surrounding areas have experienced recent growth as part of the rapid population expansion of Fort Bend County. In light of this growth, the Village of Fairchilds has identified the need to develop regional water treatment and distribution infrastructure to address future development within its existing boundary as well as other adjacent areas of what are currently unincorporated Fort Bend County. The project is intended to be developed in a manner which would allow for future expansion of both treatment and distribution capacity, and would support the needs of a rapidly developing area in an efficient and resilient manner.

Strategy Analyses

The project analyses for the Fairchilds Supply Infrastructure project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The Village of Fairchilds anticipates developing regional supply infrastructure in a phased manner. The first phase, estimated for development by 2030, includes a 0.4 mgd (448 ac-ft/yr) water treatment plant and pipeline infrastructure to serve approximately 525 acres of new development. The second phase, anticipated by 2035, would add an additional 1.5 mgd (1,680 ac-ft/yr) of treatment capacity and pipeline conveyance for approximately 2,370 acres of additional future development. Initial supplies are anticipated to be sourced from local groundwater, with supplies produced within the regulatory framework established by the Fort Bend Subsidence District.

Environmental Considerations

Development of this project may impact environmental conditions in the immediate vicinity of the

well field and associated treatment and conveyance infrastructure through disturbance of habitat. Treatment and production infrastructure would likely occur in currently developed areas, reducing overall project impacts.

Permitting and Development

The development of this strategy may require some permitting due to surface disturbance from the construction of infrastructure. The groundwater well components of this project will require permitting through the Fort Bend Subsidence District.

Cost Analysis

Planning level capital cost estimates for this strategy are estimated based upon values provided by the project sponsor; for purposes of the 2026 RWP, these estimates were assumed to be inclusive of all capital cost components including engineering, land acquisition, environmental studies and mitigation, and interest during construction Annual costs including annualized debt service, pumping energy costs, and costs of operation and maintenance were estimated using standard assumptions for Region H. Estimated costs are presented in *Table 1* and are shown in September 2023 dollars in accordance with TWDB guidance.

Table 1 – Fairchilds Supply Infrastructure Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	FAIRCHILDS REGIONAL WATER TREATMENT AND DISTRIBUTION (PHASE 1)	1	LS	$17,400,000	$17,400,000	
2	FAIRCHILDS REGIONAL WATER TREATMENT AND DISTRIBUTION (PHASE 2)	1	LS	$86,500,000	$86,500,000	
	PROJECT CAPITAL COST				$103,900,000	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE (PHASE 1)	$1,224,283	$1,224,283	$0	$0	$0	$0
2	DEBT SERVICE (PHASE 2)	$0	$6,086,233	$6,086,233	$0	$0	$0
3	OPERATION AND MAINTENANCE (PHASE 1)	$260,498	$260,498	$260,498	$260,498	$260,498	$260,498
4	OPERATION AND MAINTENANCE (PHASE 2)	$0	$1,103,184	$1,103,184	$1,103,184	$1,103,184	$1,103,184
5	PUMPING ENERGY COSTS	$10,183	$471,222	$471,222	$471,222	$471,222	$471,222
6	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$1,494,963	$9,145,419	$7,921,136	$1,834,903	$1,834,903	$1,834,903

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$1,494,963	$9,145,419	$7,921,136	$1,834,903	$1,834,903	$1,834,903
2	YIELD	448	2,128	2,128	2,128	2,128	2,128
3	UNIT COST	$3,337	$4,298	$3,722	$862	$862	$862
	TOTAL UNIT COST						$2,170

Water Management Strategy Evaluation

Based on the analysis provided above, the Fairchilds Supply Infrastructure project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the

table below.

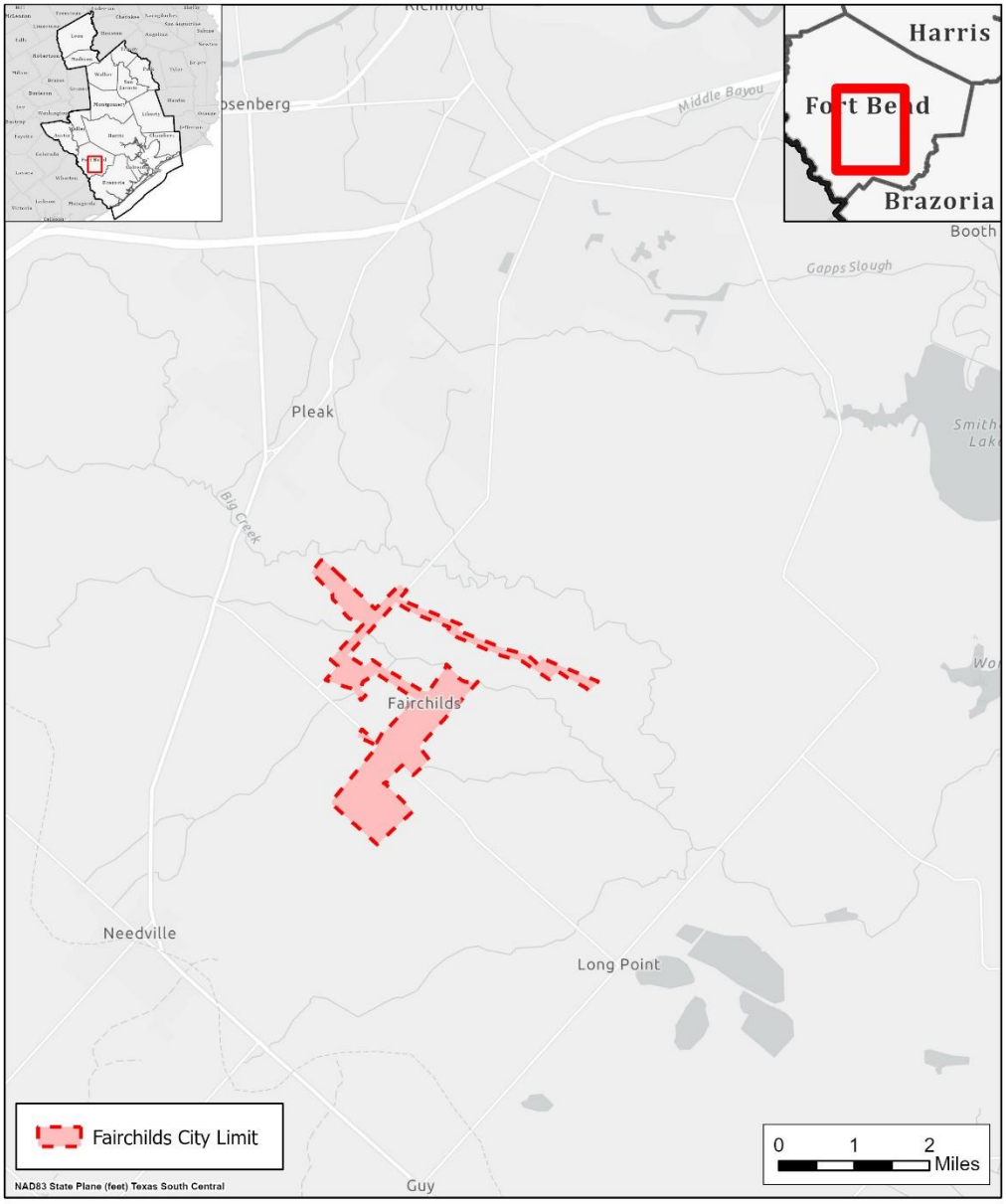
CRITERIA	RATING	EXPLANATION
Cost	1	Initial costs are high due but decrease significantly after debt service.
Location	4	Some conveyance infrastructure required to deliver supply to future development.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Limited concerns. Environmental impacts can be avoided or mitigated.
Environmental Flows	4	Minor increases to instream flows.
Local Preference	4	No known significant opposition.
Institutional Constraints	3	Minimal permitting challenges anticipated.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship	4	Sponsor is actively engaged in project planning activities.
Vulnerability	4	No substantial risk from natural and man-made disasters. Potential for subsidence is limited by compliance with FBSD regulation.
Regionalization	3	Would potentially serve multiple future water systems or preclude the need for smaller separate systems through regionalization.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

Water User Group Application

The Fairchilds Supply Infrastructure project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	The project is sized in accordance with the treatment and conveyance infrastructure needs identified by the project sponsor.
Water Quality	Water generated by the project is anticipated to be of good quality and suitable for municipal use.
Unit Cost	Costs are relatively high during debt service, but the project provides a coordinated supply solution to a growing area with few current strategy options.
Other Factors	This project meets demands in a growing area and provides a more efficient solution through a regional facility.

Location Map



REGION H Water Planning Group

Fairchilds Supply Infrastructure

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Gulf Coast Water Authority Groundwater Well Development
Project ID:	GWDV-008
Project Type:	Existing Groundwater Source
Potential Supply Quantity (Rounded):	Up to 35,840 ac-ft/yr (32 mgd)
Implementation Decade:	2040
Development Timeline:	<5 years
Project Capital Cost:	$28,564,015 (Sept. 2023)
Unit Water Cost (Rounded):	$118 per ac-ft (during loan period) $62 per ac-ft (after loan period)

STRATEGY DESCRIPTION

Gulf Coast Water Authority (GCWA) supplies a number of industrial and agricultural customers in Brazoria and Galveston Counties with surface water from the Brazos River Basin and San Jacinto-Brazos Coastal Basin. GCWA holds several water rights in these basins and supplies its customers with surface water from these rights as well as contractual supplies purchased from the Brazos River Authority (BRA). In order to meet continually increasing customer demands, GCWA is considering developing groundwater wells to pump from the Gulf Coast Aquifer in the San Jacinto-Brazos Coastal Basin in Brazoria County to provide additional supply, as well as developing groundwater production capacity for the City of Galveston, one of GCWA's major municipal customers within the region.

STRATEGY ANALYSES

The project analyses for GCWA Groundwater Well Development include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

SUPPLY DEVELOPMENT

GCWA is investigating options for two groundwater production projects within its service area to meet the needs of current and future customers. The first, located in Brazoria County and anticipated for completion in the early 2030s, would develop up to 20 mgd (22,400 ac-ft/yr) of groundwater production capacity. It is anticipated that well field facilities would be developed in close proximity to GCWA's canal system, which provides service to multiple GCWA customers. The second project would include development of up to 12 mgd (13,440 ac-ft/yr) of groundwater production capacity on behalf of the City of Galveston, with completion in approximately 2035. Production from these City of Galveston wells would be in compliance with regulatory limits for Harris-Galveston Subsidence

District (HGSD) Area 1, which allow water systems or aggregated groups of systems to meet up to 10 percent of their demand from groundwater.

ENVIRONMENTAL CONSIDERATIONS

Development of this project may impact environmental conditions in the immediate vicinity of the well field and associated conveyance infrastructure through disturbance of habitat. Due to the nature of the project, surface disturbance is expected to be limited. Brazoria County infrastructure is anticipated to be developed in close proximity to the GCWA canal system, limiting disturbances associated with transmission development. Wells developed for the City of Galveston would be developed within an already urbanized setting, limiting construction impacts. The development of groundwater production may potentially increase the risk of subsidence and saltwater intrusion, especially for sites near the coast. Installation of subsidence monitoring equipment to track long-term trends may be required as part of permitting or developed in conjunction with Brazoria County Groundwater Conservation District (BCGCD) or the Harris-Galveston Subsidence District (HGSD). Groundwater production developed by GCWA for the City of Galveston would be within the allowable regulatory pumping limits specified by HGSD and is therefore not currently anticipated to cause substantial subsidence impacts.

PERMITTING AND DEVELOPMENT

The groundwater well components of this project will require permitting through the BCGCD to drill and operate the planned Brazoria County wells. Additional permitting activities may be required to facilitate construction activities. Development of wells in Galveston County will require permitting through HGSD.

COST ANALYSIS

Preliminary planning-level cost estimates were developed for the GCWA Groundwater Well Development project. Construction costs were based upon project cost data provided by GCWA. Provided values were assumed to reflect construction costs, with remaining capital cost elements estimated based on standard regional planning assumptions. Annual costs including annualized debt service, pumping energy costs, and costs of operation and maintenance were also estimated using standard assumptions for Region H. Costs are presented in September 2023 equivalent costs in *Table 1* for well development in Brazoria County and in *Table 2* for development in the City of Galveston.

Table 1 – GCWA Brazoria County Well Development Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$14,024,004	$14,024,004	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$4,908,401	$4,908,401	
3	LAND AND EASEMENTS	1	LS	$4,736	$4,736	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$47,356	$47,356	
5	INTEREST DURING CONSTRUCTION	1	LS	$1,255,346	$1,255,346	
	PROJECT CAPITAL COST				**$20,239,843**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$1,424,097	$1,424,097	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$140,240	$140,240	$140,240	$140,240	$140,240
3	PUMPING ENERGY COSTS	$0	$1,408,689	$1,408,689	$1,408,689	$1,408,689	$1,408,689
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$2,973,026**	**$2,973,026**	**$1,548,929**	**$1,548,929**	**$1,548,929**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$2,973,026	$2,973,026	$1,548,929	$1,548,929	$1,548,929
2	YIELD	-	22,400	22,400	22,400	22,400	22,400
3	UNIT COST	$0	$133	$133	$69	$69	$69
	TOTAL UNIT COST						**$95**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WELL FIELDS	1	LS	$14,024,004	$14,024,004
	PROJECT COST				**$14,024,004**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WELL FIELDS	1.0	%	$14,024,004	$140,240
	ANNUAL OPERATION AND MAINTENANCE COST				**$140,240**

Table 2 – GCWA City of Galveston Well Development Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$5,769,143	$5,769,143	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$2,019,200	$2,019,200	
3	LAND AND EASEMENTS	1	LS	$1,776	$1,776	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$17,759	$17,759	
5	INTEREST DURING CONSTRUCTION	1	LS	$516,294	$516,294	
	PROJECT CAPITAL COST				**$8,324,172**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$585,698	$585,698	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$57,691	$57,691	$57,691	$57,691	$57,691
3	PUMPING ENERGY COSTS	$0	$608,501	$608,501	$608,501	$608,501	$608,501
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$1,251,890**	**$1,251,890**	**$666,192**	**$666,192**	**$666,192**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$1,251,890	$1,251,890	$666,192	$666,192	$666,192
2	YIELD	-	13,440	13,440	13,440	13,440	13,440
3	UNIT COST	$0	$93	$93	$50	$50	$50
	TOTAL UNIT COST						**$67**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WELL FIELDS	1	LS	$5,769,143	$5,769,143
	PROJECT COST				**$5,769,143**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WELL FIELDS	1.0	%	$5,769,143	$57,691
	ANNUAL OPERATION AND MAINTENANCE COST				**$57,691**

WATER MANAGEMENT STRATEGY EVALUATION

Based on the analysis provided above, the GCWA Groundwater Well Development project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below. The project is not anticipated to impact agricultural land or production.

CRITERIA	RATING	EXPLANATION
Cost	5	Project cost is low relative to a number of other projects.
Location	4	Project is positioned to provide water within the current GCWA customer service area.

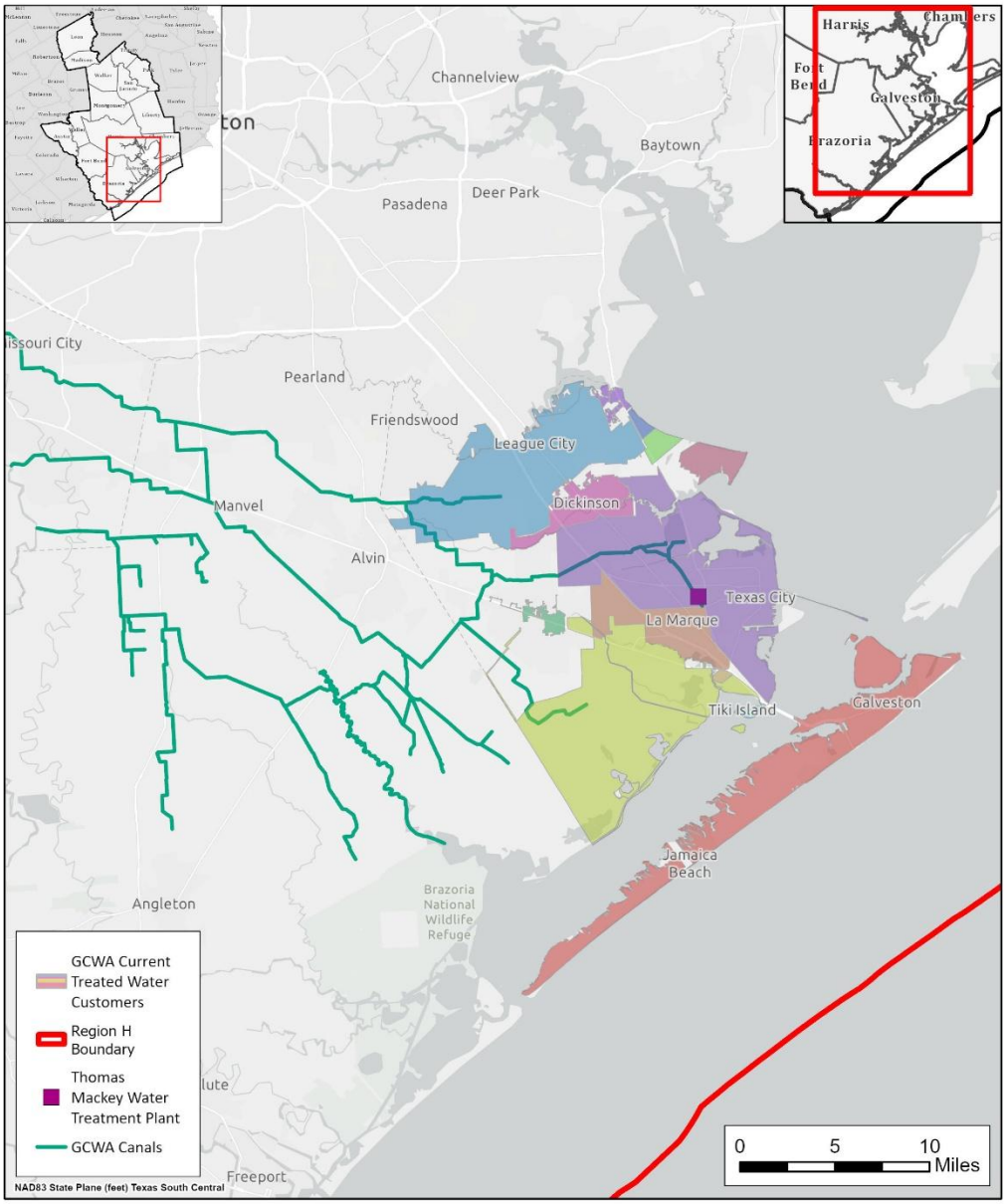
CRITERIA	RATING	EXPLANATION
Water Quality	3	No known water quality issues. Ultimate location of well field could result in production of slightly brackish water.
Environmental Land and Habitat	3	Limited concerns. Environmental impacts can be avoided or mitigated.
Environmental Flows	4	Utilization of groundwater may allow for reduced surface water diversions and increased instream flows.
Local Preference	3	Limited opposition expected.
Institutional Constraints	2	Project will require permitting with BCGCD and HGSD and may entail minor land acquisition.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship	4	The project sponsor, GCWA, has identified and is pursuing the project.
Vulnerability	4	No substantial risk from natural and man-made disasters. Potential for subsidence.
Regionalization	3	Project would support the City of Galveston and multiple GCWA customers in Brazoria County.
Impacts on Other WMS	3	Project is not expected to impact other water management strategies.

WATER USER GROUP APPLICATION

The GCWA Groundwater Well Development project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is positioned to provide water within the current GCWA customer service area.
Size	The project is sized in accordance with customer needs.
Water Quality	Water quality is not expected to dramatically change the quality of existing GCWA sources it is blended with.
Unit Cost	Project cost is low relative to a number of other projects.
Other Factors	Project supply is subject to BCGCD and GMA 14 Desired Future Conditions for the Gulf Coast Aquifer and HGSD regulation.

LOCATION MAP



REGION H Water Planning Group

GCWA Well Development

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	SJRA Catahoula Aquifer Supplies
Project ID:	GWDV-009
Project Type:	New Groundwater Source
Potential Supply Quantity (Rounded):	10,500 ac-ft/yr (9.4 mgd)
Implementation Decade:	2080
Development Timeline:	<5 years
Project Capital Cost:	$22,386,712 (Sept. 2023)
Unit Water Cost (Rounded):	$486 per ac-ft (during loan period) $336 per ac-ft (after loan period)

Strategy Description

The San Jacinto River Authority (SJRA) is a wholesale water provider for various municipal, industrial, and irrigation retail customers in the San Jacinto River Basin, including numerous customers in Montgomery County. In order to address demand growth and protect groundwater resources, SJRA has implemented surface water infrastructure to meet a portion of customer needs. Projected future demand growth in Montgomery County is anticipated to require the introduction of additional water strategy alternatives before the end of the planning horizon.

One potential alternative supply exists in the form of groundwater from the Catahoula aquifer. The Catahoula aquifer underlays and is not considered part of the Gulf Coast aquifer system which includes the Chicot, Evangeline, and Jasper layers. Water from the Catahoula aquifer has significant variations in salinity. The aquifer is currently being used by a small number of public water systems near Lake Conroe through blending with fresher sources.

Alternative sources, such as the Catahoula aquifer, may be used in conjunction with the existing Lake Conroe supply as an alternative to Gulf Coast aquifer supplies. This project considers the use of the Catahoula aquifer to provide an alternative groundwater supply for meeting Montgomery County needs.

Strategy Analyses

The project analyses for SJRA Catahoula Aquifer Supplies include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

As part of the development of the SJRA Raw Water Supply Master Plan (RWSMP, 2018), various options were considered for the development of groundwater wells in the Catahoula aquifer in Montgomery County. Some approaches to the development of this supply require implementation by SJRA customers within the county, while others require active participation by SJRA. For the

purposes of the 2026 Region H RWP, one option has been recommended based on cost-effectiveness and total yield. In the selected approach, Catahoula aquifer supplies are developed by SJRA. Groundwater pumped from the Catahoula aquifer would be discharged directly into Lake Conroe, becoming blended with raw surface water prior to treatment.

Supply Development

The proposed project considers installing four wells in the Catahoula aquifer near but outside of the Sam Houston National Forest. The concentration of total dissolved solids (TDS) found in the Catahoula aquifer is lower near the Sam Houston National Forest than in other parts of the county to the south and east, so locating wells in this area is expected to minimize the impact on the water quality of the receiving body due to the discharge of Catahoula groundwater into Lake Conroe. Additionally, the depth to water is less in the vicinity of the national forest, allowing for shallower wells. It is assumed that SJRA can produce 10,500 ac-ft/yr from the Catahoula aquifer.

In order to produce the assumed available yield of 10,500 ac-ft/yr, two production wells have been sited on the east side of Lake Conroe and two wells on the west side. The wells were located in close proximity to Lake Conroe to minimize the transmission required to discharge the aquifer supplies into the lake. Given that the volumes of available groundwater are substantially less than the capacity of Lake Conroe, the rate at which Catahoula water is blended with the raw surface water was not considered to be of concern. Groundwater would be directly discharged into the lake with minimal transmission needs. An additional benefit of discharging into Lake Conroe is that this approach addresses the issue of the heat load of the Catahoula groundwater, precluding the need for cooling towers or other water quality infrastructure.

Environmental Considerations

Development of this project may impact environmental conditions in the immediate vicinity of the wells and associated conveyance infrastructure. While some surface disturbance is likely for construction of groundwater infrastructure, due to the suburbanized nature of the project area, construction impacts would be expected to occur primarily within previously disturbed areas.

Permitting and Development

To develop Catahoula aquifer supplies, permits must be sought from the LSGCD to allow for drilling a test bore in the Catahoula formation and then to permit the production from any completed wells. A bed and banks permit from the Texas Commission on Environmental Quality (TCEQ) is needed for direct blending of Catahoula water with Lake Conroe. A Texas Pollutant Discharge Elimination System permit from TCEQ may also be required.

Due the presence of streams, wetlands and ponds that could be deemed WOTUS and jurisdictional to Section 404 of the Clean Water Act (CWA) throughout distribution system alignments, acquiring a permit(s) through the U.S. Army Corps of Engineers (USACE) would be required prior to beginning construction activities. Pending the level of potential WOTUS impacts, project activities could likely be covered by a Nationwide Permit. Nationwide Permits are typically obtained within 45 to 60 calendar days, but acquiring an Individual Permit typically requires a minimum of 180 calendar days and a public comment period.

If no federal funding or assistance would be used for construction of the proposed project, the need to complete a National Environmental Policy Act (NEPA) process would not be required. However,

coordination with the USACE to obtain a CWA Section 404 permit, particularly an Individual Permit, could trigger the need to comply with the NEPA review process.

Cost Analysis

A preliminary planning-level cost estimate was prepared for the SJRA Catahoula Aquifer Supplies project using default costing methods for regional plan development. Estimated costs for the installation and annual operation and maintenance of four wells in the Catahoula aquifer are presented in *Table 1*.

Table 1 – SJRA Catahoula Aquifer Supplies Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$15,988,985	$15,988,985	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$5,596,145	$5,596,145	
3	LAND AND EASEMENTS	1	LS	$0	$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$100,000	$100,000	
5	INTEREST DURING CONSTRUCTION	1	LS	$701,583	$701,583	
	PROJECT CAPITAL COST				**$22,386,712**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$0	$0	$0	$0	$1,575,153
2	OPERATION AND MAINTENANCE (O&M)	$0	$0	$0	$0	$0	$159,890
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$3,364,044
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$0**	**$0**	**$0**	**$0**	**$5,099,087**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$0	$0	$0	$0	$5,099,087
2	YIELD	-	-	-	-	-	10,500
3	UNIT COST	$0	$0	$0	$0	$0	$486
	TOTAL UNIT COST						**$486**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WELL FIELDS	1	LS	$14,988,985	$14,988,985
2	CONNECTION TO EXISTING RAW SUPPLY	1	LS	$1,000,000	$1,000,000
	PROJECT COST				**$15,988,985**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WELL FIELDS	1.0	%	$14,988,985	$149,890
2	CONNECTION TO EXISTING RAW SUPPLY	1.0	%	$1,000,000	$10,000
	ANNUAL OPERATION AND MAINTENANCE COST				**$159,890**

Water Management Strategy Evaluation

Based on the analysis provided above, the SJRA Catahoula Aquifer Supplies project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	Moderately low cost compared to other new raw water projects.
Location	5	Project location places it within easy reach of prospective users.
Water Quality	2	Catahoula Aquifer supplies are of lower quality than existing surface water.
Environmental Land and Habitat	5	Minimal impacts identified from project development.
Environmental Flows	4	Project will provide a slight improvement in instream flows.
Local Preference	3	Some local support for Catahoula Aquifer projects.
Institutional Constraints	3	Obstacles to development fairly well-identified and understood.
Development Timeline	5	Short development timeline associated with wells.
Sponsorship	3	SJRA is considering this alternative for meeting future demands.
Vulnerability	3	Uncertainty of the long-term viability of the Catahoula Aquifer a risk factor involved in the project.
Regionalization	4	Supports current regionalization and potential expanded future regionalized expansion.
Impacts on Other WMS	5	Project may provide water for the Montgomery County Supply Expansion WMS.

Water User Group Application

The SJRA Catahoula Aquifer Supplies project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located near Lake Conroe where it may serve existing and future SJRA customers.
Size	Project is sized in accordance with estimated source availability. May be combined with other sources to meet regional needs.
Water Quality	This project provides raw water that may be treated through existing infrastructure in order to provide water for municipal and other uses.
Unit Cost	The unit cost of the project is highly competitive with options for developing raw surface water.
Other Factors	This project reduces dependence on freshwater formations in the Gulf Coast Aquifer.

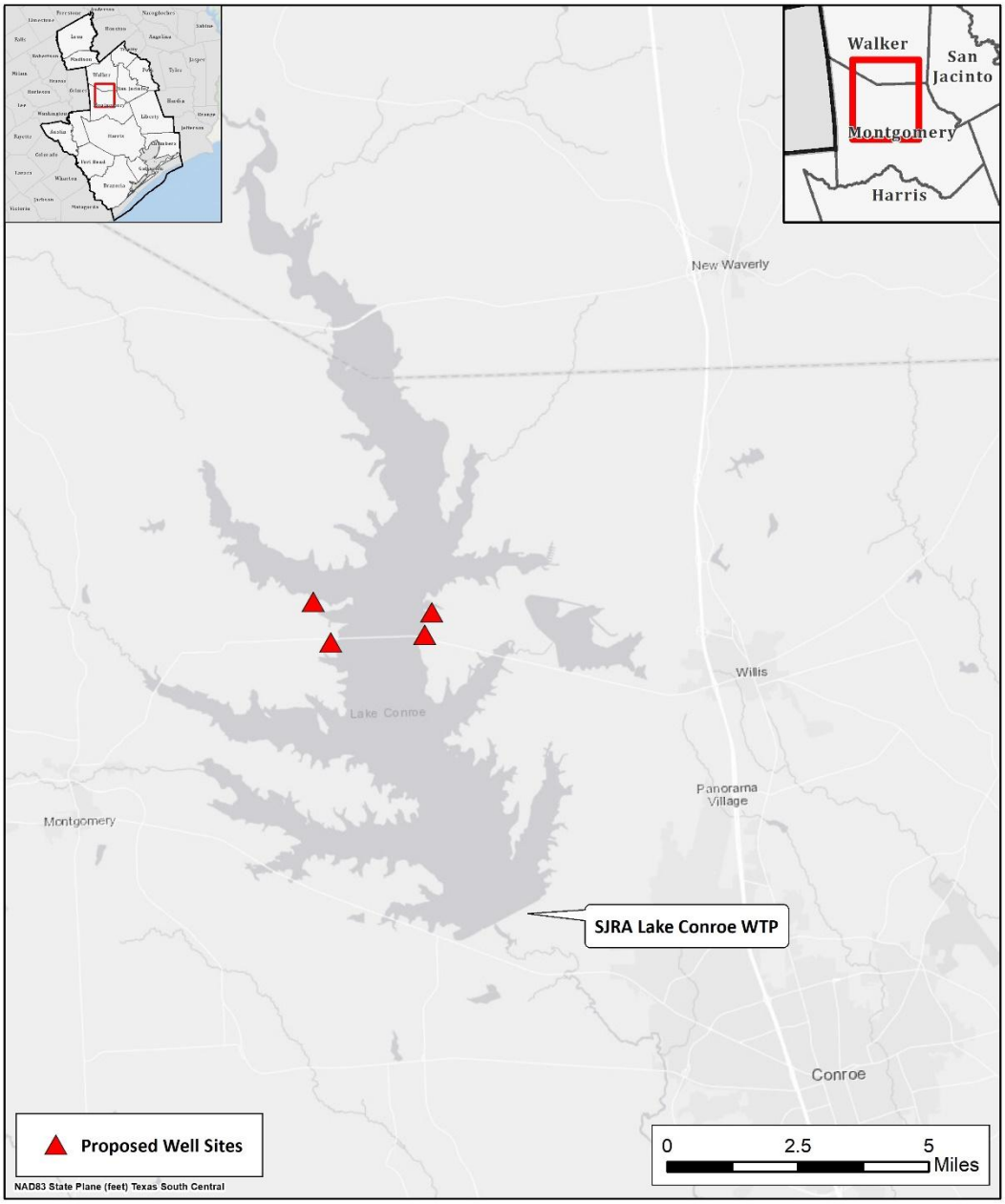
References

Freese and Nichols, Inc. 2012. *Catahoula Aquifer Evaluation*. Prepared for San Jacinto River Authority.

Freese and Nichols, Inc. 2015. *Catahoula Aquifer Phase II Feasibility Study*. Prepared for San Jacinto River Authority.

Freese and Nichols, Inc. 2018. *Raw Water Supply Master Plan*. Prepared for San Jacinto River Authority.

Location Map



REGION H Water Planning Group

SJRA Catahoula Aquifer Supplies Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Central Harris County Regional Water Authority Groundwater Reduction Plan
Project ID:	GWRP-001
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	5,466 ac-ft/yr (4.88 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	5 years
Project Capital Cost:	Included under associated infrastructure projects
Unit Water Cost (Rounded):	Included under associated infrastructure projects

Strategy Description

The Harris-Galveston Subsidence District (HGSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the Central Harris County Regional Water Authority (CHCRWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, CHCRWA is participating in multiple infrastructure projects related to the treatment and distribution of surface water.

Strategy Analyses

The project analyses for the CHCRWA Groundwater Reduction Plan (GRP) include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The CHCRWA will continue to deliver surface water to certain districts within the Authority to meet the requirements of its GRP. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its GRP program. CHCRWA has partnered with other Regional Water Authorities

and COH in development of the Luce Bayou Interbasin Transfer Project to convey supplies from the Trinity River to Lake Houston and is also a participant in the expansion of the treatment capacity of the COH Northeast Water Purification Plant (NEWPP). The Authority has also increased its supply reservation from these facilities from an original reservation of 2.12 mgd (2,374 ac-ft/yr) currently applied in the Regional Plan as existing supply to 7.0 mgd (7,840 ac-ft/yr). CHCRWA is also developing an expansion of the infrastructure network through which it supplies its member districts.

Environmental Considerations

Any environmental impacts related to the GRP project are a factor of the associated source and infrastructure projects. Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

The permitting and development requirements necessary for implementation of the CHCRWA GRP are associated with the source supply and infrastructure projects. CHCRWA is subject to contractual requirements established by COH as well as any relevant permitting required by the State of Texas and HGSD. Much of the permitting associated with implementation of large-scale shared infrastructure is primarily being addressed by COH.

Cost Analysis

The costs associated with developing this project are included under other infrastructure projects.

Water Management Strategy Evaluation

Based on the analysis provided above, the CHCRWA GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Costs for project are related to the infrastructure projects which allow physical implementation of the GRP.
Location	3	Source supply requires an interbasin transfer of surface water and extensive conveyance infrastructure.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.

CRITERIA	RATING	EXPLANATION
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available and some infrastructure already under development.
Development Timeline	5	Project to be developed within 5 years.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The CHCRWA GRP is not anticipated to affect vulnerable species and will not directly impact environmental flows. The project is not anticipated to impact agricultural land or production.

Water User Group Application

The CHCRWA GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

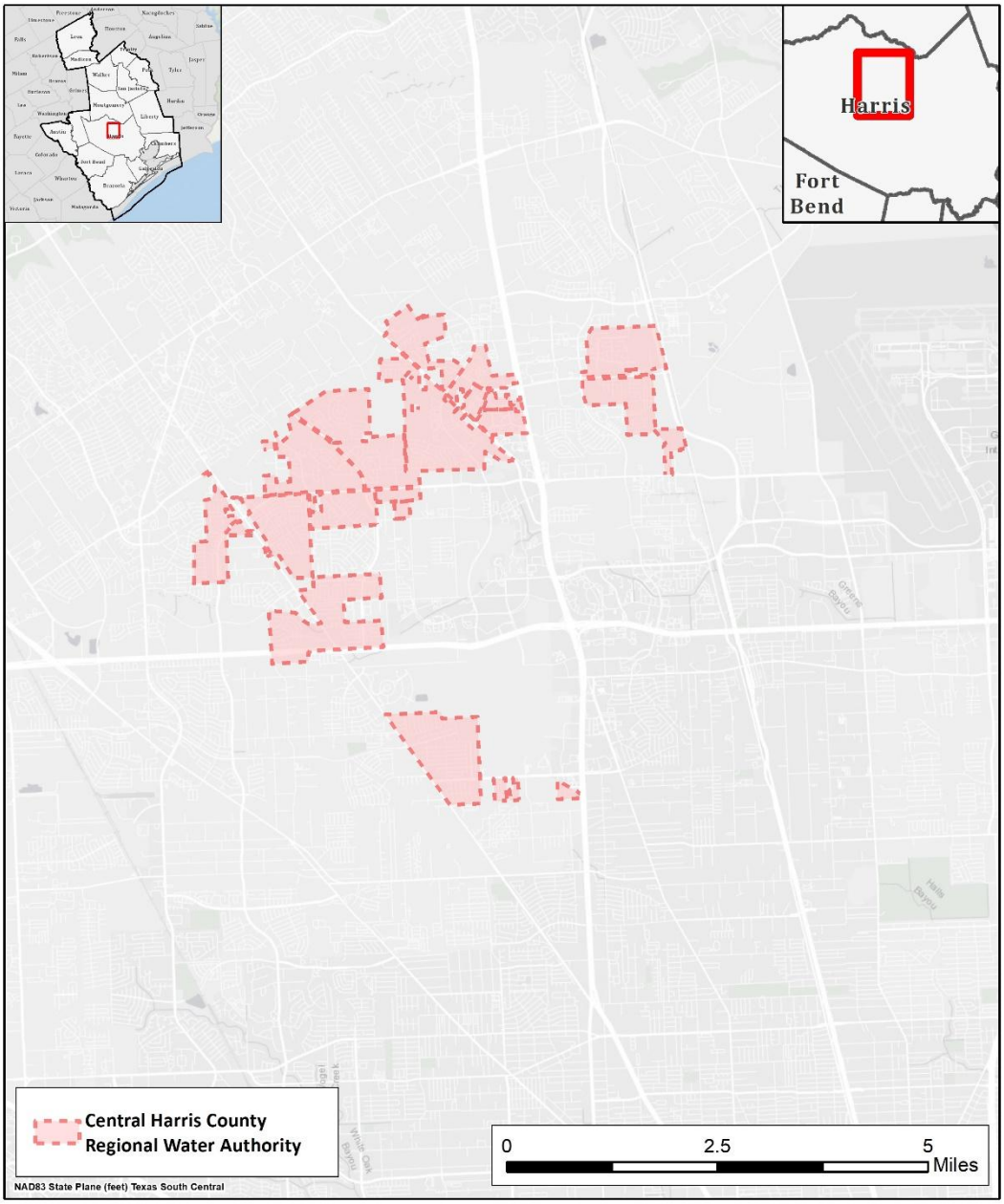
CRITERIA	WUG SUITABILITY
Proximity	Strategy is suited to serving WUGs located in the CHCRWA service area.
Size	Sized to convey the requisite amount of source water.
Water Quality	Treated water of quality appropriate for municipal use.
Unit Cost	Included under other infrastructure projects.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

Central Harris County Regional Water Authority. *Central Harris County Water Users Consortium Ground Water Reduction Plan*, prepared by Pate Engineers, December 2003.

Harris-Galveston Subsidence District. *Harris-Galveston Subsidence District 2013 District Regulatory Plan*, May 2013.

Location Map



REGION H Water Planning Group

CHCRWA GRP Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Houston Groundwater Reduction Plan
Project ID:	GWRP-002
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	60,766 ac-ft/yr (54.2 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	In progress
Project Capital Cost:	Included under associated infrastructure projects
Unit Water Cost (Rounded):	Included under associated infrastructure projects

Strategy Description

The Harris-Galveston Subsidence District (HGSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged heavy pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the City of Houston (COH) has used its surface water rights and treatment capacity to provide an alternative to groundwater pumpage. The COH has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand. In order to utilize sufficient supplies to meet future surface water conversion obligations, COH is developing multiple infrastructure projects related to the treatment and distribution of surface water. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for the COH Groundwater Reduction Plan (GRP) include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The COH has developed significant infrastructure for the development, treatment, and delivery of surface water supplies. These projects have formed the fundamental basis for much of the region's conversion from groundwater to alternative water sources. In several cases, such as the regional water authorities, COH supplies are already used as an alternative source of water and will continue to be a critical resource in the future.

In addition to providing water to regional authorities for their GRPs, COH maintains compliance with

HGSD rules through its own use of surface water supplies within the City's retail water service area. COH has also made an opportunity available for other water users to join the COH GRP to promote synergy in addressing the region's water supply issues. A total of 6 participants reside within HGSD Areas I and II. Another 89 participants are located in HGSD Area III. Of these total participants, 45 can be identified as named Water User Groups (WUGs) in the Region H Regional Water Plan (RWP).

In most cases, COH does not provide direct surface water supplies to these participants. Instead, COH provides its own over-conversion as a service to these participants to account for their pumpage of groundwater, causing a net reduction in overall groundwater use. In effect, the requirement for groundwater conversion is met jointly across the GRP as is done by other GRP sponsors in the region.

Environmental Considerations

Any environmental impacts related to the GRP strategy are a factor of the associated source and infrastructure projects. Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

The permitting and development requirements necessary for implementation of the COH GRP are associated with the source supply and infrastructure projects. The permitting associated with implementation of infrastructure, such as the Northeast Water Purification Plant Expansion, is primarily addressed under specific projects in the RWP.

Cost Analysis

The costs associated with developing this project are included under other infrastructure projects.

Water Management Strategy Evaluation

Based on the analysis provided above, the COH GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Costs for project are related to the infrastructure projects which allow physical implementation of the GRP.
Location	3	Source supply requires an interbasin transfer of surface water and extensive conveyance infrastructure.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.

CRITERIA	RATING	EXPLANATION
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	5	Widespread support for project.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	5	Project ongoing along with development of additional surface water infrastructure projects.
Sponsorship	5	Sponsor identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

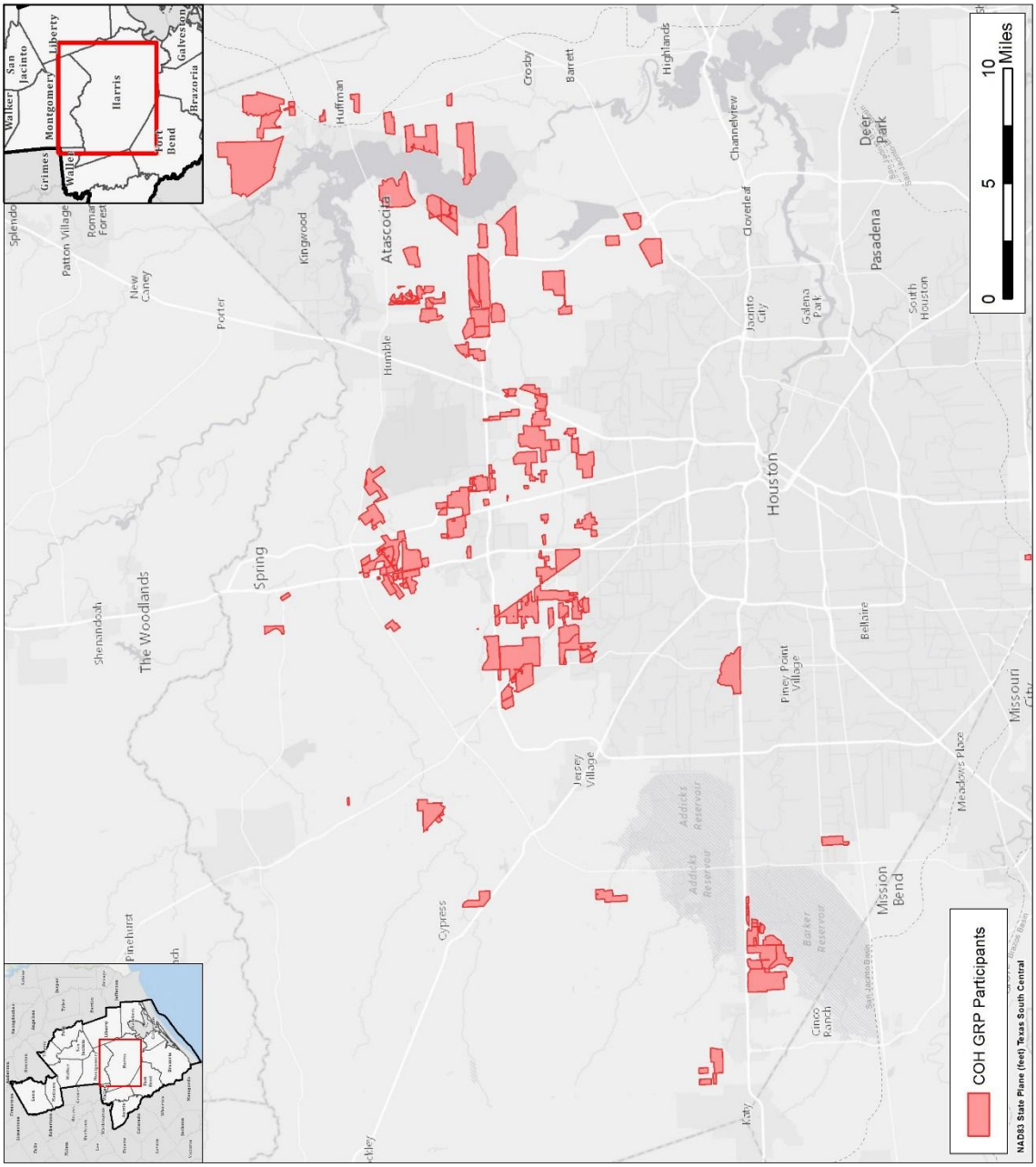
The COH GRP is not anticipated to affect acreage or vulnerable species and will not directly impact environmental flows. The project is not anticipated to impact agricultural land or production.

Water User Group Application

The COH GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Requires conveyance infrastructure from source basin pipelines to demand centers.
Size	Sized to provide the requisite amount of source water.
Water Quality	Treated water of quality appropriate for municipal use.
Unit Cost	Included under other infrastructure projects.
Other Factors	Facilitates HGSD groundwater reduction compliance for multiple entities.

Location Map



City of Houston GRP
Location Map

REGION H
Water Planning Group

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Missouri City Groundwater Reduction Plan
Project ID:	GWRP-003
Project Type:	Various
Potential Supply Quantity (Rounded):	11,200 ac-ft/yr (10 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	5 years
Project Capital Cost:	$58,835,350 (Sept. 2023)
Unit Water Cost (Rounded):	$608 per ac-ft (during loan period) $239 per ac-ft (after loan period)

Strategy Description

The Fort Bend Subsidence District (FBSD) and Harris-Galveston Subsidence District (HGSD), in order to address the issue of land surface subsidence due to groundwater use within the counties under their jurisdiction, have enacted regulations limiting the percentage of overall supply that water users in certain portions of the county may produce from the Gulf Coast Aquifer. In order to meet this requirement, the City of Missouri City has developed a Groundwater Reduction Plan (GRP) to reduce groundwater use by implementing phased surface water conversion and direct reuse.

Strategy Analyses

The project analyses for the City of Missouri City GRP include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The City of Missouri City has partnered with 29 surrounding entities for purposes of meeting the required groundwater reduction. The primary approach for meeting the required reduction is phased conversion to surface water, with additional direct reuse supplies contributing as well. Due to the physical and logistic challenges associated with converting all participants to partial surface water supply, the GRP specifies overconversion of a portion of the Missouri City service area, allowing other co-participants to continue growth on groundwater while allowing the aggregate water use of partnering entities to meet FBSD and HGSD requirements.

The City of Missouri City has contracted with the Gulf Coast Water Authority (GCWA) for 20 mgd (22,400 ac-ft) of raw surface water supply conveyed through GCWA's canal system as well as additional option water. The 20 mgd surface water treatment facility and associated transmission infrastructure identified by the GRP for meeting the initial phase of conversion has been constructed

and is operational; this portion of Missouri City's surface water supply is reflected as an existing supply in the Regional Plan. Additional treatment capacity (potentially up to a total facility capacity of 30 mgd) is anticipated by 2030. The City of Missouri City and its GRP co-participants have also developed direct reuse infrastructure, with additional utilization of this source anticipated to increase total reuse to between 3 and 4 mgd in the near future.

Environmental Considerations

One impact associated with the implementation of this project is the increase in GCWA diversions from the Brazos River. Increased diversion of water from the Brazos River will result in some decreases in instream flow downstream of the GCWA pump stations. However, these diversions will be made from existing water rights currently owned by the GCWA, contracted by the City of Missouri City, and no new water rights permits are required for this project. Otherwise, implementation of this project should produce minimal environmental impacts.

The direct reuse of the effluent source supply would be expected to have some degree of impact in terms of reduction of instream flows downstream of the wastewater treatment plant discharge point for any portion of the source supply originating from current levels of return flow. Any reuse from the portion of return flow generated from future demand growth would not be expected to create additional instream flow reductions, as this portion of potential supply is not yet generated or discharged.

Permitting and Development

Because the surface water supply source for this project is from existing water rights and would be delivered through GCWA's canal system, permitting of new surface water rights or modification of existing rights to add a diversion point will not be required. Construction of surface water treatment facility expansions will be required to utilize portions of the source supply, which may entail minor permitting.

Development of reuse supplies would require infrastructure development and, if in amounts exceeding current authorizations, permitting through TCEQ. Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 TAC §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week.

Cost Analysis

Capital costs for future infrastructure phases of surface water treatment were estimated using standard regional planning costing assumptions for an estimated ultimate treatment capacity of up to 30 mgd (a 10 mgd expansion) as indicated in the GRP. It was assumed for the Regional Plan that increased reuse development would be within the capability of existing infrastructure or facilities currently under development. It was also assumed that development of direct reuse infrastructure would not require land or easement purchase or development of new transmission capacity. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1*.

Table 1 – City of Missouri City GRP Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$38,216,649	$38,216,649	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$13,375,827	$13,375,827	
3	LAND AND EASEMENTS	1	LS	$326,700	$326,700	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$3,267,000	$3,267,000	
5	INTEREST DURING CONSTRUCTION	1	LS	$3,649,174	$3,649,174	
	PROJECT CAPITAL COST				**$58,835,350**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$4,139,719	$4,139,719	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$2,675,165	$2,675,165	$2,675,165	$2,675,165	$2,675,165
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$6,814,884**	**$6,814,884**	**$2,675,165**	**$2,675,165**	**$2,675,165**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$6,814,884	$6,814,884	$2,675,165	$2,675,165	$2,675,165
2	YIELD	-	11,200	11,200	11,200	11,200	11,200
3	UNIT COST	$0	$608	$608	$239	$239	$239
	TOTAL UNIT COST						**$387**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER TREATMENT PLANTS	1	LS	$38,216,649	$38,216,649
	PROJECT COST				**$38,216,649**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER TREATMENT PLANTS	1.0	LS	$2,675,165	$2,675,165
	ANNUAL OPERATION AND MAINTENANCE COST				**$2,675,165**

Water Management Strategy Evaluation

Based on the analysis provided above, the City of Missouri City GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	3	Cost is moderate and decreases significantly after debt service.
Location	4	Some additional transmission infrastructure may be required.
Water Quality	3	No known water quality issues.

CRITERIA	RATING	EXPLANATION
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Some decrease in environmental flows below diversion point. Diversion is from an existing water right.
Local Preference	4	No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	4	Sponsor has identified project and is committed to meeting conversion requirements.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The City of Missouri City GRP includes construction of additional surface water treatment capacity. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The City of Missouri City GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	Project is of appropriate size to utilize the City of Missouri City's surface water contracts.
Water Quality	This project is expected to provide water of acceptable quality.
Unit Cost	The cost of this project is relatively low.

CRITERIA	WUG SUITABILITY
Other Factors	This project reduces groundwater dependence.

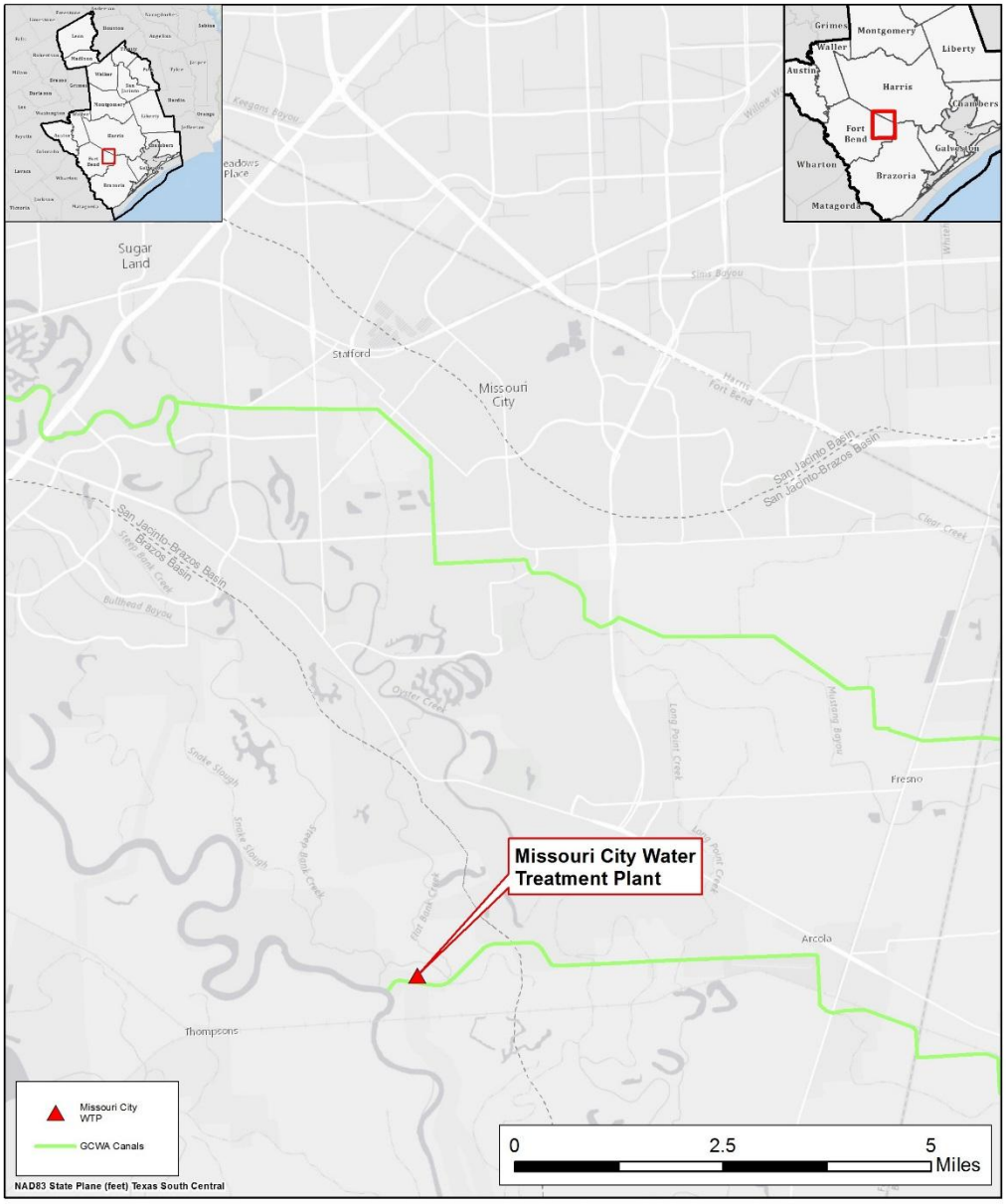
References

Water Resources Management, LP. *City of Missouri City Joint Groundwater Reduction Plan*, prepared for City of Missouri City, October 2008.

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

Harris-Galveston Subsidence District. *Harris-Galveston Subsidence District 2013 District Regulatory Plan*, May 2013.

Location Map



REGION H Water Planning Group

Missouri City Groundwater Reduction Plan Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Richmond Groundwater Reduction Plan
Project ID:	GWRP-004
Project Type:	Various
Potential Supply Quantity (Rounded):	6,720 ac-ft/yr (6 mgd)
Implementation Decade:	2030 (2028)
Development Timeline:	2 – 5 years
Project Capital Cost:	$85,626,919 (Sept. 2023)
Unit Water Cost (Rounded):	$1,252 per ac-ft (during loan period) $355 per ac-ft (after loan period)

Strategy Description

The Fort Bend Subsidence District (FBSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the City of Richmond has developed a Groundwater Reduction Plan (GRP) to reduce ground water use by implementing phased surface water conversion and direct reuse.

Strategy Analyses

The project analyses for the City of Richmond GRP include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The City of Richmond has partnered with 15 surrounding entities for purposes of meeting the required groundwater reduction. The primary approach for meeting the required reduction is phased conversion to surface water, with additional direct reuse supplies contributing as well. Due to the physical and logistic challenges associated with converting all participants to partial surface water supply, the GRP specifies over-conversion of a portion of the Richmond service area, allowing other co-participants to continue growth on groundwater while allowing the aggregate water use of partnering entities to meet FBSD requirements.

The City of Richmond has contracted with the Brazos River Authority (BRA) for 5,705 ac-ft/yr of raw surface water supply conveyed through the Brazos River. The initial 2 mgd surface water treatment facility and associated transmission infrastructure identified by the GRP has been constructed and is

operational; this portion of Richmond's surface water supply is reflected as an existing supply in the Regional Plan. The GRP indicates that an additional 4 mgd in surface water treatment capacity and additional transmission infrastructure will be required by 2028, as well as a new 2 mgd groundwater disinfection plant to serve potential future GRP participants that will continue to grow on groundwater.

Environmental Considerations

One impact associated with the implementation of this project is the increase in diversions from the Brazos River. Increased diversion of water from the Brazos River will result in some minimal decreases in instream flow downstream of the City of Richmond diversion point. However, these diversions will be made from existing water rights currently owned by the BRA, contracted by Richmond, and no new water rights permits are required for this project. Some surface disturbance may be associated with development of expanded water plant facilities and transmission infrastructure. However, this construction would occur primarily on existing plant sites or in previously urbanized area and would cause little disturbance to undeveloped habitat. Some land disturbance may be associated with the construction of a new groundwater treatment plant in the eastern portion of Richmond's extraterritorial jurisdiction.

Permitting and Development

Because the surface water supply source for this project is from existing water rights and would be delivered through the bed and banks of the Brazos River to an authorized take point, permitting of new surface water rights or modification of existing rights to add a diversion point will not be required. Construction of surface water treatment facility and distribution system expansions will be required to utilize portions of the source supply, which may entail minor permitting.

Cost Analysis

Capital and engineering costs for the projects associated with the City of Richmond GRP were summarized in the GRP and explained in detail in Appendix B of the Integrated Utility Master Plan and Financial Plan (2019). Costs associated with land acquisition, easements, environmental studies and mitigation, and interest during construction were not identified as part of this analysis; for purposes of the regional plan these components of capital cost were estimated using standard regional planning assumptions. Sponsor-provided costs were originally provided in 2023 dollars. The costs presented in this memorandum do not include the purchase cost of water. Total estimated costs for all project phases are presented in *Table 1*.

Table 1 – Richmond Groundwater Reduction Plan Project Costs

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$38,858,463	$38,858,463
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$29,875,383	$29,875,383
3	LAND AND EASEMENTS	1	LS	$2,302,784	$2,302,784
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$5,099,129	$5,099,129
5	INTEREST DURING CONSTRUCTION	1	LS	$9,491,161	$9,491,161
	PROJECT CAPITAL COST				**$85,626,919**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$6,024,802	$6,024,802	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$2,129,095	$2,129,095	$2,129,095	$2,129,095	$2,129,095	$2,129,095
3	PUMPING ENERGY COSTS	$259,603	$259,603	$259,603	$259,603	$259,603	$259,603
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$8,413,501**	**$8,413,501**	**$2,388,698**	**$2,388,698**	**$2,388,698**	**$2,388,698**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$8,413,500	$8,413,500	$2,388,699	$2,388,699	$2,388,699	$2,388,699
2	YIELD	6,720	6,720	6,720	6,720	6,720	6,720
3	UNIT COST	$1,252	$1,252	$355	$355	$355	$355
	TOTAL UNIT COST						**$654**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PIPELINES	1	LS	$9,597,586	$9,597,586
1	WATER TREATMENT PLANTS	1	LS	$20,716,947	$20,716,947
1	WATER STORAGE TANKS	1	LS	$2,583,582	$2,583,582
1	GROUNDWATER PLANT	1	LS	$5,960,348	$5,960,348
	PROJECT COST				**$38,858,463**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS (INCLUDED IN SWTP)	2.5	%	$3,580,796	$89,520
1	PIPELINES	1.0	%	$9,673,266	$96,733
1	WATER TREATMENT PLANTS	1.0	LS	$1,886,004	$1,886,004
1	WATER STORAGE TANKS	1.0	%	$2,583,582	$25,836
1	OFF-CHANNEL RESERVOIRS	1.5	%	$905,461	$13,582
1	WELL FIELDS	1.0	%	$1,742,107	$17,421
	ANNUAL OPERATION AND MAINTENANCE COST				**$2,129,095**

Water Management Strategy Evaluation

Based on the analysis provided above, the City of Richmond GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Cost is high but decreases after completion of debt service.

CRITERIA	RATING	EXPLANATION
Location	4	Some transmission infrastructure required.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Some decrease in environmental flows below diversion point. Diversion is from an existing water right.
Local Preference	4	No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	5	Sponsor has identified project and is in development.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The City of Richmond GRP is not anticipated to affect vulnerable species or agricultural land or production. Implementation of the project may result in some minimal decreases in instream flow, but these diversions will be made from existing water rights.

Water User Group Application

The City of Richmond GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	Project is of appropriate size to utilize the City of Richmond's surface water contracts.
Water Quality	This project is expected to provide water of acceptable quality.

CRITERIA	WUG SUITABILITY
Unit Cost	The cost of this project is high but decreases after completion of debt service.
Other Factors	This project reduces groundwater dependence.

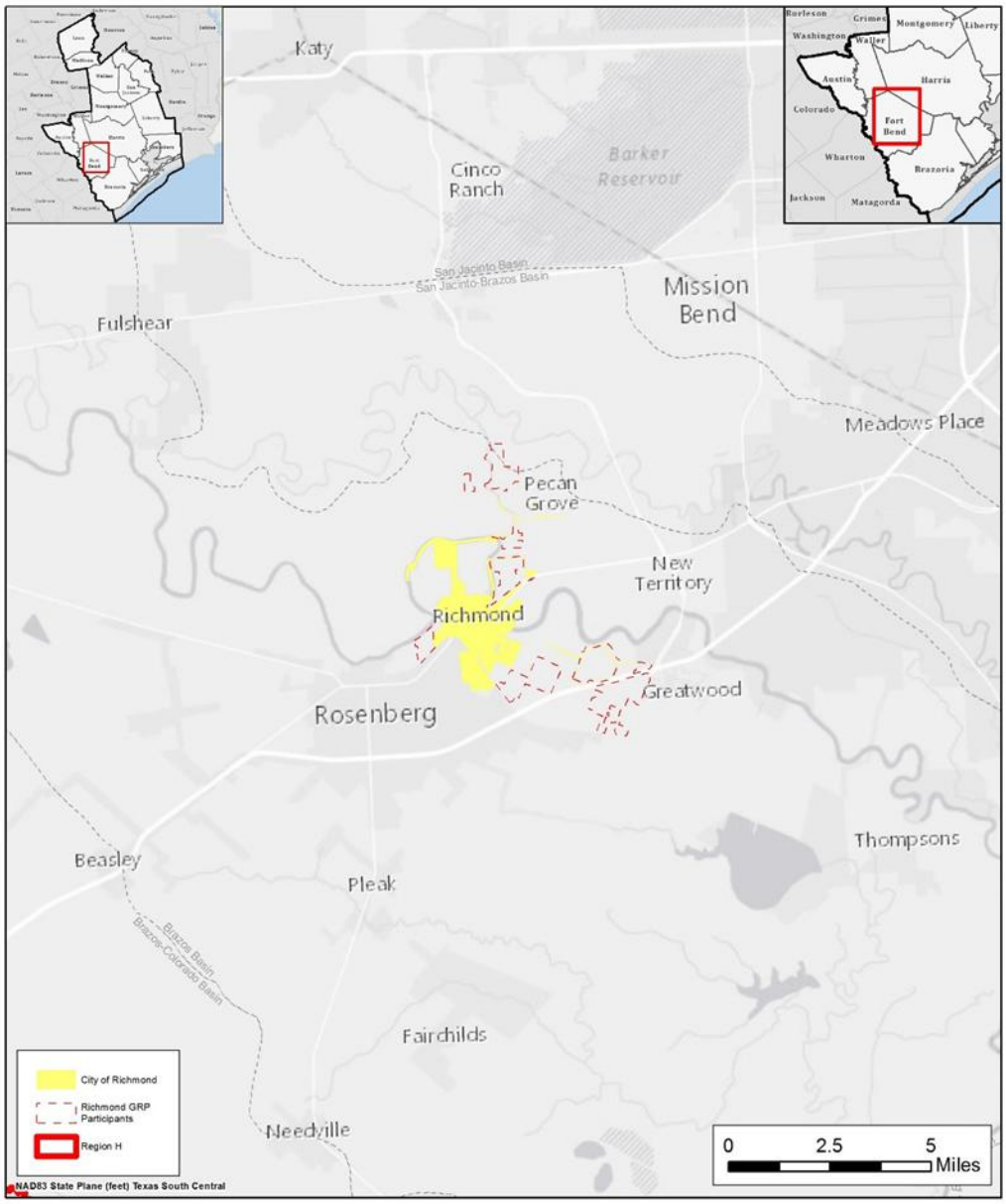
References

City of Richmond, TX. City of Richmond Groundwater Reduction Plan 2019 Update, August 2019.

City of Richmond, TX. City of Richmond Integrated Utility Master Plan & Financial Plan, March 2019.

Fort Bend Subsidence District. Fort Bend Subsidence District 2013 Regulatory Plan, August 2013.

Location Map



REGION H Water Planning Group

City of Richmond Groundwater Reduction Plan Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Rosenberg Groundwater Reduction Plan
Project ID:	GWRP-005
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	3,920 ac-ft/yr (3.5 mgd)
Implementation Decade:	2030 (2027)
Development Timeline:	5 years
Project Capital Cost:	$17,081,984 (Sept. 2023)
Unit Water Cost (Rounded):	$344 per ac-ft (during loan period) $37 per ac-ft (after loan period)

Strategy Description

The Fort Bend Subsidence District (FBSD), in order to address the issue of land surface subsidence due to groundwater use within Fort Bend County, has enacted regulations limiting the percentage of overall supply that water users in certain portions of the county may produce from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet this requirement, the City of Rosenberg has developed a Groundwater Reduction Plan (GRP) to reduce groundwater use by implementing surface water conversion.

Strategy Analyses

The project analyses for the City of Rosenberg GRP include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The City of Rosenberg has partnered with five surrounding entities for purposes of meeting the required groundwater reduction for the participating entities and their water supply customers. The primary approach for meeting the required reduction is phased conversion to surface water. Due to the physical and logistic challenges associated with converting all participants to partial surface water supply, the GRP specifies overconversion of some co-participants, allowing other co-participants to continue growth on groundwater while ensuring that the aggregate water use of partnering entities meets FBSD requirements. Rosenberg receives treated surface water from a 5.7-mgd contract with the Brazosport Water Authority (BWA), which is treated at the BWA facility in Lake Jackson and is conveyed via pipeline to the GRP participants' service area. The City of Rosenberg has also contracted with the Brazos River Authority (BRA) for 4,500 ac-ft/yr of raw surface water supply which could be

treated through current and future BWA facilities and conveyed to Rosenberg. The City of Rosenberg has developed expanded transmission infrastructure sufficient to meet its initial conversion goal of 3 mgd (3,360 ac-ft/yr) of surface water. Additional transmission and distribution infrastructure will be required for the 2027 conversion phase to increase surface water supplies by 3.5 mgd (3,920 ac-ft/yr); these expansions are reflected in the Regional Plan as conversion of additional demands within the City of Rosenberg and partnering entities supplied by the City's water system.

Environmental Considerations

One impact associated with the implementation of this project is the increase in diversions from the Brazos River. Increased diversion of water from the Brazos River will result in some decreases in instream flow downstream of the diversion point. However, these diversions will be made from existing water rights currently owned by BWA or BRA, contracted by Rosenberg, and no new water rights permits are required for this project. Some surface disturbance may be associated with development of expanded water plant facilities and transmission infrastructure. However, this construction would occur primarily on existing plant sites or in previously urbanized areas and would cause little disturbance to undeveloped habitat.

Permitting and Development

The surface water supply source for this project is from existing water rights. Expansion of the BWA treatment water treatment facility and distribution system expansions will be required to utilize portions of the source supply, which may entail minor permitting.

Cost Analysis

Capital and engineering costs for future expansion of transmission capacity are summarized in the City of Rosenberg GRP. Capital costs associated with land acquisition, environmental studies, and mitigation are not identified as separate items in the GRP and are assumed to be included in the capital cost specified. Interest during construction and annualized costs (debt service, operations and maintenance, and energy) are not identified in the GRP and were estimated using standard Regional Planning costing reference data. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. The costs presented in this memorandum do not include the purchase cost of water. Water treatment costs are covered separately under the RWP analysis for expansion of BWA treatment facilities. Estimated costs for the City of Rosenberg GRP are presented in *Table 1*.

Table 1 – City of Rosenberg GRP Project Cost

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$12,150,000	$12,150,000
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$3,872,500	$3,872,500
3	LAND AND EASEMENTS	1	LS	$0	$0
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0
5	INTEREST DURING CONSTRUCTION	1	LS	$1,059,484	$1,059,484
	PROJECT CAPITAL COST				**$17,081,984**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$1,201,907	$1,201,907	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$144,900	$144,900	$144,900	$144,900	$144,900	$144,900
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$1,346,807**	**$1,346,807**	**$144,900**	**$144,900**	**$144,900**	**$144,900**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$1,346,807	$1,346,807	$144,900	$144,900	$144,900	$144,900
2	YIELD	3,920	3,920	3,920	3,920	3,920	3,920
3	UNIT COST	$344	$344	$37	$37	$37	$37
	TOTAL UNIT COST						**$139**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$1,560,000	$1,560,000
2	PIPELINES	1	LS	$7,600,000	$7,600,000
3	WATER STORAGE TANKS	1	LS	$2,990,000	$2,990,000
	PROJECT COST				**$12,150,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$1,560,000	$39,000
2	PIPELINES	1.0	%	$7,600,000	$76,000
3	WATER STORAGE TANKS	1.0	%	$2,990,000	$29,900
	ANNUAL OPERATION AND MAINTENANCE COST				**$144,900**

Water Management Strategy Evaluation

Based on the analysis provided above, the City of Rosenberg GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	Project expands delivery capacity at a relatively low cost.
Location	3	Substantial existing transmission infrastructure required from treatment location to point of use.

CRITERIA	RATING	EXPLANATION
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Limited impacts anticipated.
Environmental Flows	2	Some decrease in environmental flows below diversion point. Diversion is from an existing water right.
Local Preference	4	No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	5	Sponsor has identified project and is in development.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The City of Rosenberg GRP includes minor additional pipeline construction for subsequent phases of conversion. The majority of this impact will be in developed areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The Rosenberg GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project requires limited expansion of conveyance infrastructure from treatment facilities to points of use.
Size	Project is of appropriate size to utilize the City of Rosenberg's surface water contracts.
Water Quality	This project is expected to provide water of acceptable quality.

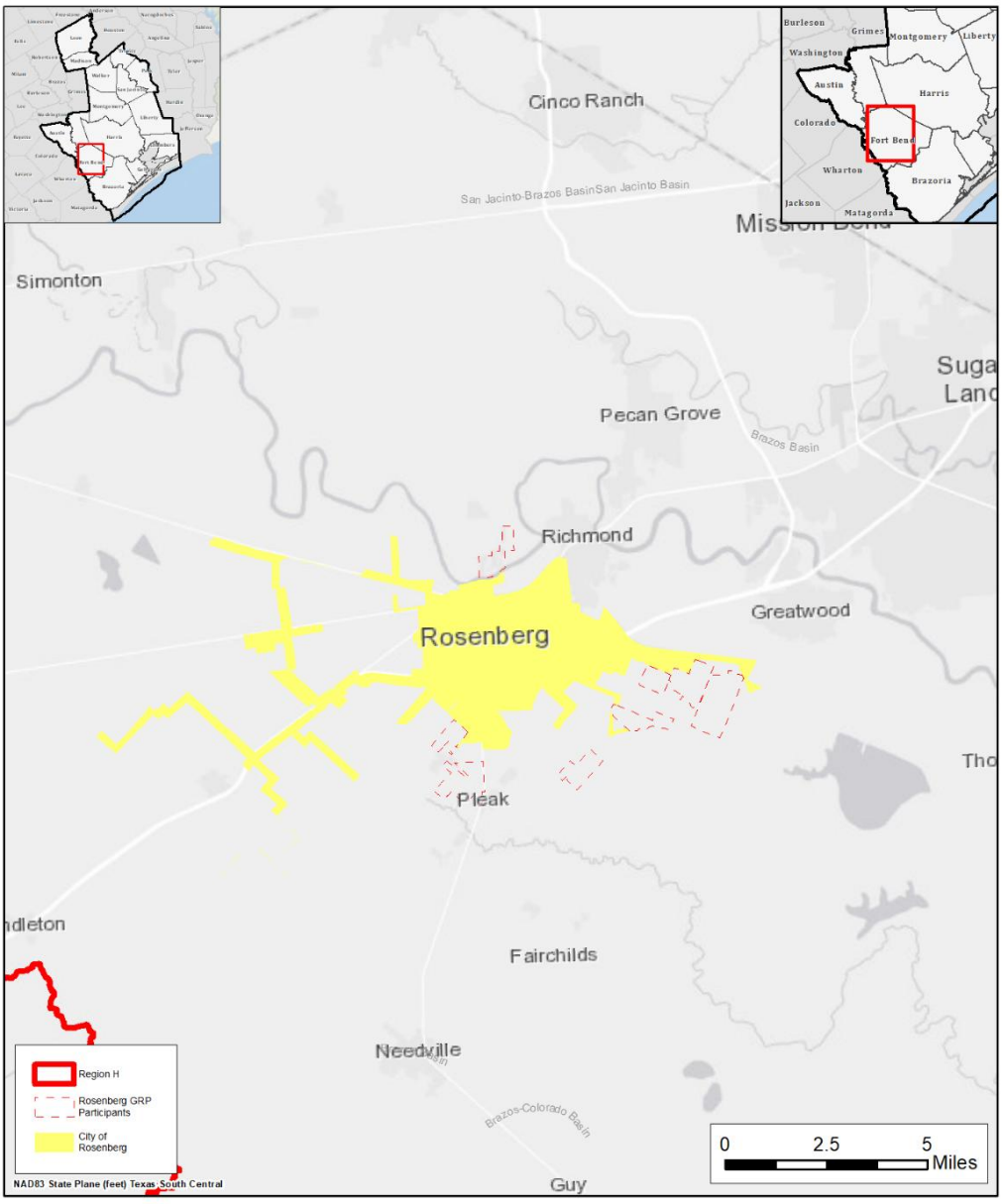
CRITERIA	WUG SUITABILITY
Unit Cost	The cost of this project is high but decreases after completion of debt service.
Other Factors	This project reduces groundwater dependence.

References

Jones and Carter, Inc. *City of Rosenberg Amended Groundwater Reduction Pla*n, prepared for City of Rosenberg, TX, September 2014.

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

Location Map



REGION H Water Planning Group

City of Rosenberg
Groundwater Reduction Plan
Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Sugar Land Integrated Water Resource Plan
Project ID:	GWRP-006
Project Type:	Various
Potential Supply Quantity (Rounded):	16,724 ac-ft/yr (14.9 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years per project phase
Project Capital Cost:	$205,801,341 (Sept. 2023)
Unit Water Cost (Rounded):	$1,716 per ac-ft (during loan period) $511 per ac-ft (after loan period)

Strategy Description

The Fort Bend Subsidence District (FBSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the City of Sugar Land has developed a Groundwater Reduction Plan (GRP) to reduce groundwater use by implementing phased conversion to alternative water sources. In 2019, Sugar Land completed a new Integrated Water Resource Plan (IWRP) which details the City's plans for alternative water supply sources and infrastructure enhancements to meet growing demands and the required reduction in groundwater use. The strategies recommended in the IWRP include surface water conversion, direct reuse, and demand management.

Strategy Analyses

The project analyses for City of Sugar Land IWRP include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The City of Sugar Land has partnered with 18 surrounding entities for purposes of meeting the required groundwater reduction. The primary approach for meeting the required reduction is phased conversion to surface water, with additional direct reuse supplies and advanced demand management approaches contributing as well. Due to the physical and logistic challenges associated with converting all participants to partial surface water supply, the City's plans specify over-conversion of Fort Bend County MUD 128 and a portion of the Sugar Land service area, allowing other

co-participants to continue growth on groundwater while ensuring that the aggregate water use of partnering entities meets FBSD requirements.

Sugar Land owns a water right on Oyster Creek, part of the Brazos River Basin, for 5,638 ac-ft/yr (approximately 5 mgd), some of which is used to meet demands for non-potable water in the City's service area. Sugar Land has contracted with the Gulf Coast Water Authority (GCWA) for 20 mgd (22,400 ac-ft/yr) of raw surface water supply conveyed through GCWA's canal system. Sugar Land has also contracted with the Brazos River Authority (BRA) for an additional 14.9 mgd (16,667 ac-ft/yr) of raw surface water. The initial 10.85 mgd surface water treatment facility and associated transmission infrastructure identified by the GRP has been constructed and is operational; this portion of Sugar Land's surface water supply is reflected as an existing supply in the Regional Plan. The IWRP indicates that an additional 11.15 mgd in treatment capacity and additional transmission infrastructure will be required to meet long-term demand projections. The expansion in surface water infrastructure will be developed in multiple phases, providing an additional 5.65 MGD and subsequent 5.5 MGD expansion in treatment capacity. The first phase will also include expanded transmission infrastructure to convey treated surface water to four existing groundwater plants in the City's service area. One of these plants, located in the New Territory development, will also require a treatment plant conversion project to accommodate the chloramine-treated surface water.

Additionally, the IWRP identified opportunities to expand reclaimed water infrastructure at the South WWTP, North WWTP, and in the Greatwood and Tara Subdivision area to meet non-potable needs in Sugar Land's service area.

Finally, Sugar Land plans to implement advanced demand management measures beyond those recommended in the Region H Advanced Municipal Conservation and Water Loss Reduction Strategies. Ongoing installation and management of advanced metering infrastructure is estimated to provide up to 0.94 MGD of additional savings, and advanced loss reduction measures will provide an anticipated 0.24 MGD in additional savings beginning in 2030.

Environmental Considerations

One impact associated with the implementation of this project is the increase in GCWA and BRA diversions from the Brazos River. Increased diversion of water from the Brazos River will result in some minimal decreases in instream flow downstream of the GCWA pump stations. However, these diversions will be made from existing water rights currently owned by the GCWA and BRA, contracted by Sugar Land, and no new water rights permits are required for this project.

The direct reuse of the effluent source supply would be expected to have some degree of impact in terms of reduction of instream flows downstream of the WWTP discharge point for any portion of the source supply originating from current levels of return flow. Any reuse from the portion of return flow generated from future demand growth would not be expected to create additional instream flow reductions, as this portion of potential supply is not yet generated or discharged. Otherwise, implementation of this project should produce minimal environmental impacts.

Permitting and Development

Because the surface water supply source for this project is from existing water rights and would be delivered through GCWA's canal system, permitting of new surface water rights or modification of existing rights to add a diversion point will not be required. Construction of surface water treatment facility expansions will be required to utilize portions of the source supply, which may entail minor

permitting.

The development of expanded reuse supplies would require infrastructure development and permitting through the Texas Commission on Environmental Quality (TCEQ). Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 TAC §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week.

Cost Analysis

The Sugar Land IWRP includes planning-level cost estimates for engineering and design, contingency, sitework, and construction for each of the recommended projects, as well as annual operation and maintenance costs. Additional information was provided by the Sugar Land Capital Improvement Program report. Standard regional planning assumptions were applied to estimate the cost of interest during construction, and all cost estimates were scaled to a September 2023 equivalent cost in accordance with TWDB requirements. Costs associated with environmental studies and mitigation are not identified as separate items, but for purposes of the regional plan it is assumed that these values are included in the estimates for other capital cost components. The costs presented in this memorandum do not include the purchase cost of water. Total estimated costs for all projects associated with the Sugar Land GRP are presented in *Table 1*.

Table 1 – Sugar Land Integrated Water Resource Plan Project Costs

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$142,111,121	$142,111,121
2	ENGINEERING, FINANCIAL, AND LEGAL SERVICES AND CONTINGENCIES	1	LS	$37,662,704	$37,662,704
3	LAND AND EASEMENTS	1	LS	$317,800	$317,800
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0
5	INTEREST DURING CONSTRUCTION	1	LS	$11,908,520	$11,908,520
6	ADVANCED LOSS REDUCTION AND AMI	1	LS	$13,801,196	$13,801,196
	PROJECT CAPITAL COST				$205,801,341

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE (2030 PHASE)	$10,420,078	$10,420,078	$0	$0	$0	$0
2	DEBT SERVICE (2040 PHASE)	$0	$2,395,473	$2,395,473	$0	$0	$0
3	DEBT SERVICE (2050 PHASE)	$0	$0	$1,664,853	$1,664,853	$0	$0
4	OPERATION AND MAINTENANCE (2030 PHASE)	$4,722,389	$4,722,389	$4,722,389	$4,722,389	$4,722,389	$4,722,389
5	OPERATION AND MAINTENANCE (2040 PHASE)	$0	$3,375,668	$3,375,668	$3,375,668	$3,375,668	$3,375,668
6	OPERATION AND MAINTENANCE (2050 PHASE)	$0	$0	$444,990	$444,990	$444,990	$444,990
7	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
8	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$15,142,466	$20,913,607	$12,603,373	$10,207,900	$8,543,047	$8,543,047

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$15,142,466	$20,913,607	$12,603,373	$10,207,900	$8,543,047	$8,543,047
2	YIELD	8,827	15,492	16,724	16,724	16,724	16,724
3	UNIT COST	$1,716	$1,350	$754	$610	$511	$511
	TOTAL UNIT COST						$833

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS (2030 PHASE - SURFACE WATER SYSTEM)	1	LS	$5,980,500	$5,980,500
2	PUMP STATIONS (2030 PHASE - RECLAIMED SYSTEM)	1	LS	$1,888,198	$1,888,198
3	PUMP STATIONS (2040 PHASE - SURFACE WATER SYSTEM)	1	LS	$764,493	$764,493
4	PUMP STATIONS (2040 PHASE - RECLAIMED SYSTEM)	1	LS	$1,022,273	$1,022,273
5	PUMP STATIONS (2050 PHASE - RECLAIMED SYSTEM)	1	LS	$1,888,198	$1,888,198
6	PIPELINES (2030 PHASE - SURFACE WATER SYSTEM)	1	LS	$14,131,000	$14,131,000
7	PIPELINES (2030 PHASE - GROUNDWATER SYSTEM)	1	LS	$11,971,775	$11,971,775
8	PIPELINES (2030 PHASE - RECLAIMED SYSTEM)	1	LS	$7,741,458	$7,741,458
9	PIPELINES (2040 PHASE - RECLAIMED SYSTEM)	1	LS	$3,891,137	$3,891,137
10	PIPELINES (2050 PHASE - RECLAIMED SYSTEM)	1	LS	$7,741,458	$7,741,458
11	WATER TREATMENT PLANTS (2030 PHASE - SURFACE WATER SYSTEM)	1	LS	$53,824,500	$53,824,500
12	WATER TREATMENT PLANTS (2030 PHASE - GROUNDWATER SYSTEM)	1	LS	$9,873,000	$9,873,000
13	WATER TREATMENT PLANTS (2040 PHASE - SURFACE WATER SYSTEM)	1	LS	$10,943,094	$10,943,094
14	WATER STORAGE TANKS (2030 PHASE - RECLAIMED SYSTEM)	1	LS	$565,257	$565,257
15	WATER STORAGE TANKS (2040 PHASE - RECLAIMED SYSTEM)	1	LS	$300,669	$300,669
16	WATER STORAGE TANKS (2050 PHASE - RECLAIMED SYSTEM)	1	LS	$565,257	$565,257
17	WASTEWATER RECLAMATION PLANTS (2030 PHASE - RECLAIMED SYSTEM)	1	LS	$1,022,273	$1,022,273
18	WASTEWATER RECLAMATION PLANTS (2040 PHASE - RECLAIMED SYSTEM)	1	LS	$1,082,407	$1,082,407
19	WASTEWATER RECLAMATION PLANTS (2050 PHASE - RECLAIMED SYSTEM)	1	LS	$1,022,273	$1,022,273
20	SITE CIVIL, MEP, AND INSTUMENTATION (2030 PHASE - RECLAIMED SYSTEM)	1	LS	$2,356,039	$2,356,039
21	SITE CIVIL, MEP, AND INSTUMENTATION (2040 PHASE - RECLAIMED SYSTEM)	1	LS	$1,179,823	$1,179,823
22	SITE CIVIL, MEP, AND INSTUMENTATION (2050 PHASE - RECLAIMED SYSTEM)	1	LS	$2,356,039	$2,356,039
23	2030 PHASE - ADVANCED LOSS REDUCTION AND AMI	1	LS	$13,801,196	$13,801,196
	PROJECT COST				$155,912,317

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	2030 PHASE - SURFACE WATER SYSTEM	1.0	LS	$3,127,907	$3,127,907
2	2030 PHASE - GROUNDWATER SYSTEM	1.0	LS	$119,718	$119,718
3	2030 PHASE - RECLAIMED SYSTEM	1.0	LS	$444,990	$444,990
4	2030 PHASE - ADVANCED LOSS REDUCTION AND AMI	1.0	LS	$1,029,774	$1,029,774
5	2040 PHASE - SURFACE WATER SYSTEM	1.0	LS	$3,131,525	$3,131,525
6	2040 PHASE - RECLAIMED SYSTEM	1.0	LS	$244,143	$244,143
7	2050 PHASE - RECLAIMED SYSTEM	1.0	LS	$444,990	$444,990
	ANNUAL OPERATION AND MAINTENANCE COST				$8,543,047

Water Management Strategy Evaluation

Based on the analysis provided above, the City of Sugar Land GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Cost is relatively high but decreases substantially after completion of debt service.
Location	4	Some transmission infrastructure required.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Some decrease in environmental flows below diversion point. Diversion is from an existing water right.
Local Preference	4	No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less per project phase.
Sponsorship	5	Sponsor has identified project and is in development.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The City of Sugar Land GRP includes up to 9 miles of pipelines. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The City of Sugar Land GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.

CRITERIA	WUG SUITABILITY
Size	Project is of appropriate size to utilize the City of Sugar Land's surface water and reuse supplies.
Water Quality	This project is expected to provide water of acceptable quality for municipal use.
Unit Cost	The cost of this project is moderately high but decreases substantially after completion of debt service.
Other Factors	This project reduces groundwater dependence.

References

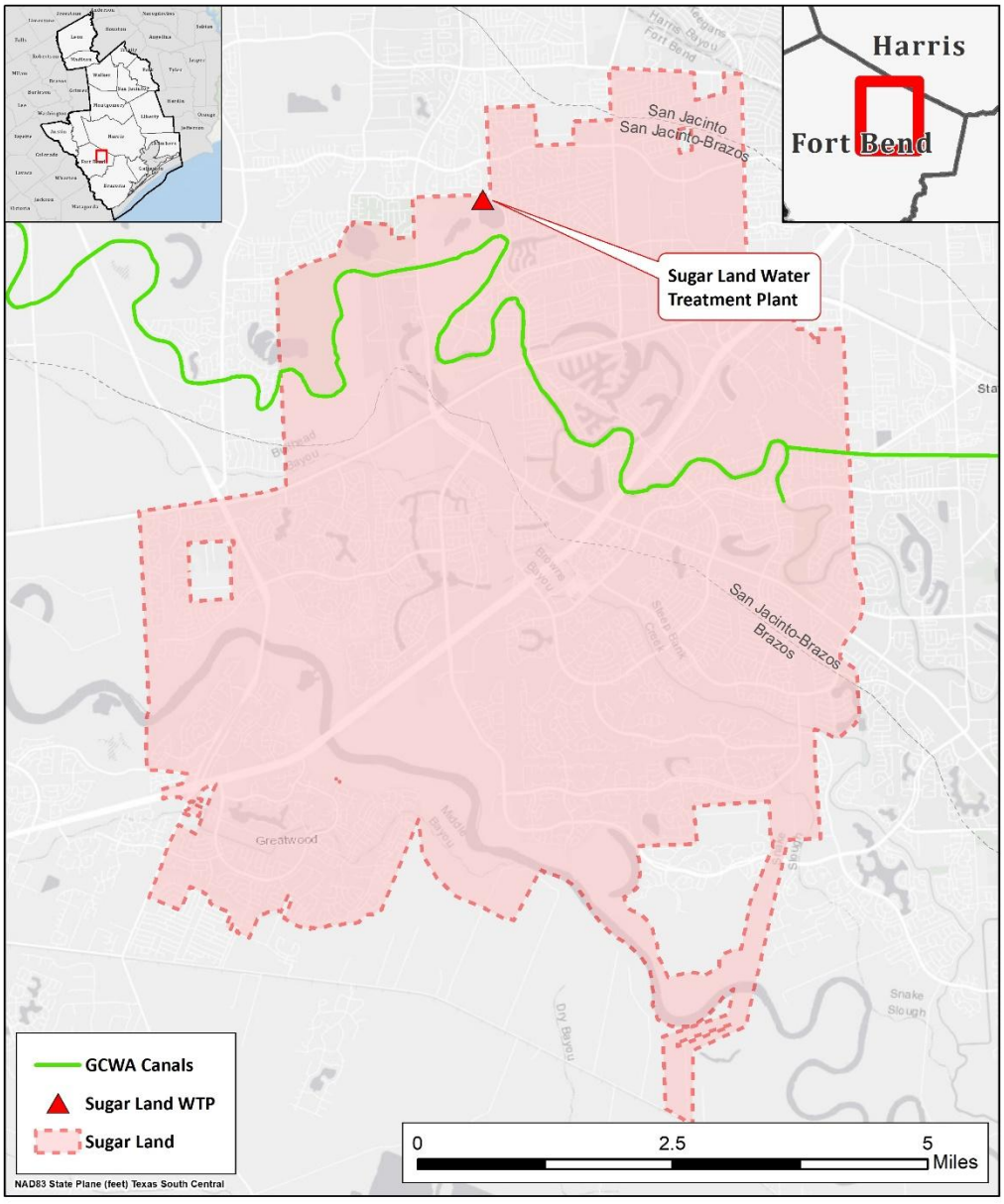
City of Sugar Land, TX. *City of Sugar Land Groundwater Reduction Plan*, March 2008.

City of Sugar Land, TX. *City of Sugar Land Integrated Water Resource Plan*, March 2019.

City of Sugar Land, TX. *2023-2027 Capital Improvement Program*, 2023.

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

Location Map



REGION H Water Planning Group

Sugar Land IWRP Location Map

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Fort Bend County MUD 25 Groundwater Reduction Plan
Project ID:	GWRP-007
Project Type:	Various
Potential Supply Quantity (Rounded):	1,120 ac-ft/yr (1 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$11,567,244 (Sept. 2023)
Unit Water Cost (Rounded):	$784 per ac-ft (during loan period) $58 per ac-ft (after loan period)

Strategy Description

The Fort Bend Subsidence District (FBSD), in order to address the issue of land surface subsidence due to groundwater use within Fort Bend County, has enacted regulations limiting the percentage of overall supply that water users in certain portions of the county may produce from the Gulf Coast Aquifer. In order to meet this requirement, Fort Bend Municipal Utility District No. 25 (MUD 25) developed a Groundwater Reduction Plan (GRP) in 2008 that outlined a plan to reduce groundwater use by implementing reuse, with considerations for supplemental surface water use as well. More recently, MUD 25 has proposed a plan to seek a contract for 1 MGD (1,120 ac-ft/yr) of surface water from local wholesale water providers.

Strategy Analyses

The project analyses for Fort Bend County MUD 25 GRP include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Fort Bend County MUD No. 25 has partnered with the Shadow Hawk Golf Course and the Orchard Lakes Development for purposes of meeting the required groundwater reduction. The primary approach for meeting the required reduction is direct reuse of effluent from MUD No. 25's WWTP for irrigation and filling of amenity lakes in the Shadow Hawk Golf Course and the Orchard Lakes Development instead of existing groundwater wells.

The GRP analysis examined historical groundwater use along with per-capita usage rates and growth projections. Reuse potential was analyzed using best case (low demand, high reuse availability), worst case (high demand, low reuse availability), and realistic scenarios. Under worst case conditions, surface water conversion would be required beginning in 2015 and over-conversion credits would be

depleted by 2029, requiring an additional 100 million gallons of surface water conversion credits per year beginning in 2029. For the best case scenario, over-conversion and other credits would meet requirements through 2030, with no need for surface water conversion. For the realistic case, surface water conversion credits would have to begin in 2026 for FBSD requirements to be met through 2030. MUD No. 25 also has surface water conversion credit agreements with the City of Sugar Land.

The reuse infrastructure associated with the GRP has been developed and is actively producing direct reuse supply. Based on historical levels of production from 2010 to 2022, MUD 25 has used up to 521 ac-ft/yr of reclaimed water, which is reflected in the Region H Plan as an existing water supply. Direct reuse in MUD 25 is expected to increase to a maximum of 589 ac-ft/yr by 2030.

MUD 25 does not currently have access to any surface water sources but is seeking contracts, potentially with the City of Sugar Land, for up to 1 MGD (1,120 ac-ft/yr). This strategy assumes the successful negotiation for this supply with Sugar Land for MUD 25's next phase of conversion. It is also assumed that this agreement would be for treated water supply.

Environmental Considerations

The primary impact associated with the implementation of this water management project is the increase in diversions from the Brazos River. Increased diversion of water from the Brazos River will result in some minimal decreases in instream flow downstream of the intake point. However, these diversions would be made from existing water rights owned by a wholesale water provider, contracted by Fort Bend County MUD 25, and no new water rights permits would be required for this project.

Permitting and Development

Because the reuse system infrastructure for the GRP is already developed, no additional permitting is anticipated for that supply source. Procurement of surface water supplies from the City of Sugar Land or an alternative supplier would require a new supply contract. The addition of surface water supplies is expected to necessitate minor additional conveyance infrastructure which may involve additional permitting requirements.

Cost Analysis

The GRP does not include a detailed estimate of cost for the project. It was assumed that additional direct reuse beyond existing levels would not generate additional costs as the necessary infrastructure is active. A preliminary planning estimate of cost associated with a contractual surface water supply was developed using standard cost estimate procedures for Region H. As the contract and associated intake facilities have not yet been determined, this cost estimate includes such components as a pump station as well as 1 mile of pipeline for conveyance from the intake point to the MUD 25 system. The costs presented in this memorandum do not include the purchase cost of water. *Table 1* summarizes the costs of key facilities, which are presented in September 2023 dollars.

Table 1 – Fort Bend County MUD 25 GRP Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$2,526,652	$2,526,652	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$815,351	$815,351	
3	LAND AND EASEMENTS	1	LS	$5,299,800	$5,299,800	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$2,208,000	$2,208,000	
5	INTEREST DURING CONSTRUCTION	1	LS	$717,441	$717,441	
	PROJECT CAPITAL COST				**$11,567,244**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$813,884	$813,884	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$42,473	$42,473	$42,473	$42,473	$42,473	$42,473
3	PUMPING ENERGY COSTS	$22,052	$22,052	$22,052	$22,052	$22,052	$22,052
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$878,409**	**$878,409**	**$64,526**	**$64,526**	**$64,526**	**$64,526**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$878,409	$878,409	$64,526	$64,526	$64,526	$64,526
2	YIELD	1,120	1,120	1,120	1,120	1,120	1,120
3	UNIT COST	$784	$784	$58	$58	$58	$58
	TOTAL UNIT COST						**$300**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$1,147,100	$1,147,100
2	PIPELINES	1	LS	$1,379,552	$1,379,552
	PROJECT COST				**$2,526,652**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$1,147,100	$28,678
2	PIPELINES	1.0	%	$1,379,552	$13,796
	ANNUAL OPERATION AND MAINTENANCE COST				**$42,473**

Water Management Strategy Evaluation

Based on the analysis provided above, the Fort Bend County MUD 25 GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	3	The cost of this project is moderate and decreases significantly after completion of debt service.

CRITERIA	RATING	EXPLANATION
Location	4	Some conveyance infrastructure may be necessary to access contractual supplies.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	5	Limited or no known impacts.
Environmental Flows	2	Minor reduction in environmental flows.
Local Preference	4	Project identified in participant's Joint GRP. No known opposition.
Institutional Constraints	3	Reuse system is complete. Surface water must be procured through a contract.
Development Timeline	5	Minimal development time (<5 years) required.
Sponsorship	4	Sponsor identified and project partially implemented.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	2	Project serves sponsor and limited number of co-participants.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The Fort Bend County MUD 25 GRP project is not anticipated to affect vulnerable species. Additionally, the project will not directly impact environmental flows or agricultural land and production.

Water User Group Application

The Fort Bend County MUD 25 GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The project is located in close proximity to intended points of use.
Size	Overall project supply volume is appropriate to the target demands.
Water Quality	This project provides supplies of appropriate quality for intended uses.

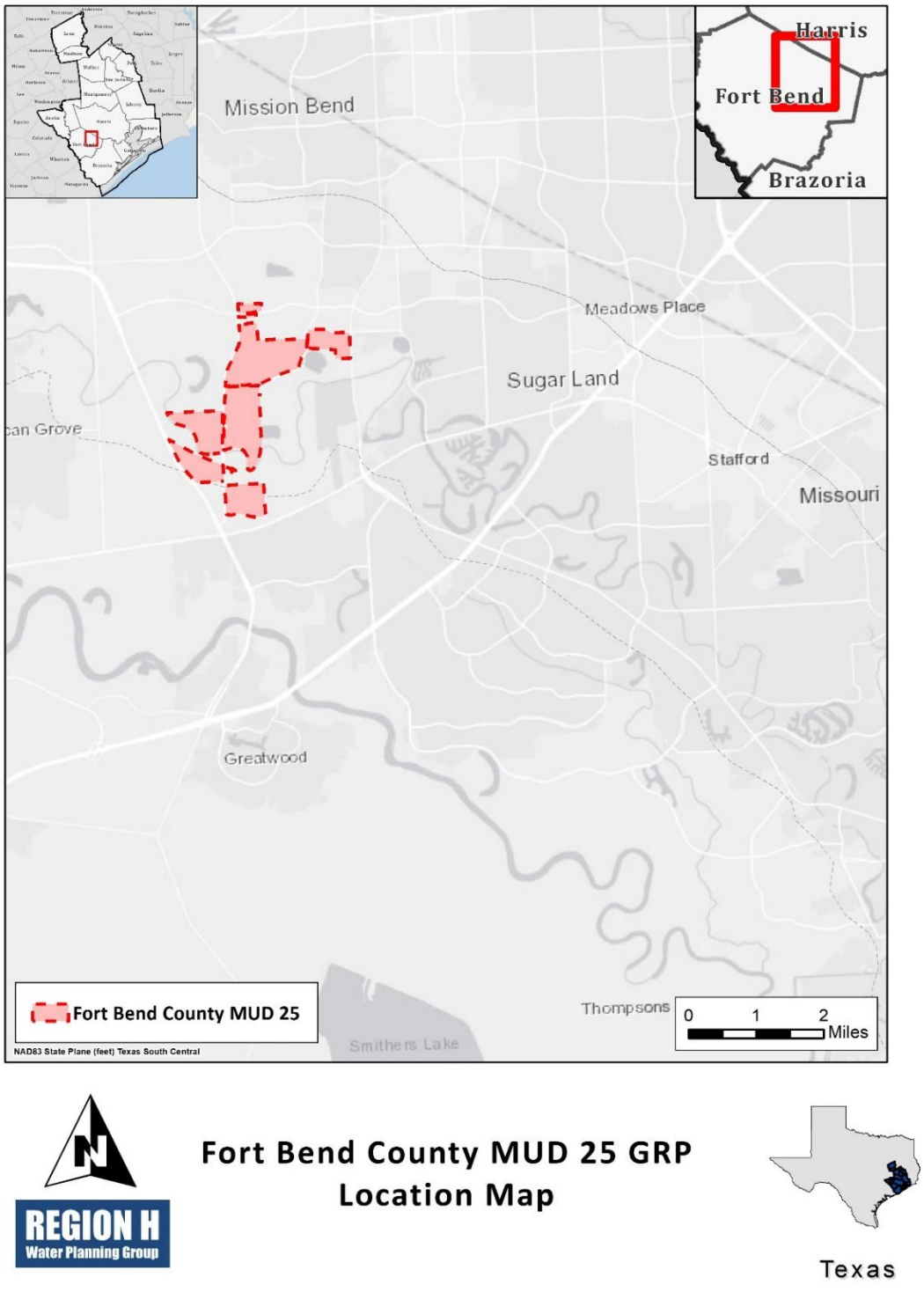
CRITERIA	WUG SUITABILITY
Unit Cost	The cost of this project is moderate and decreases after completion of debt service.
Other Factors	This project is partially implemented but may require limited infrastructure for future contractual supplies.

References

CDM. *Fort Bend County MUD No. 25 Groundwater Reduction Plan*, prepared for Fort Bend County MUD No. 25, October 2008.

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

Location Map



REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Fort Bend County WCID 2 Groundwater Reduction Plan
Project ID:	GWRP-008
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	3,360 – 6,720 ac-ft/yr (3 – 6 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	<5 years
Project Capital Cost:	$71,687,468 (Sept. 2023)
Unit Water Cost (Rounded):	$1,144 per ac-ft (during loan period) $393 per ac-ft (after loan period)

Strategy Description

The Fort Bend Subsidence District (FBSD), in order to address the issue of land surface subsidence due to groundwater use within Fort Bend County, has enacted regulations limiting the percentage of overall supply that water users in certain portions of the county may produce from the Gulf Coast Aquifer. In order to meet this requirement, Fort Bend Water Control & Improvement District No. 2 (WCID 2) has developed a Groundwater Reduction Plan (GRP) to reduce groundwater use by implementing phased conversion to surface water.

Strategy Analyses

The project analyses for Fort Bend County WCID 2 GRP include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The WCID 2 GRP summarizes the planned projects for meeting the Fort Bend Subsidence District's timeline for partial conversion to non-groundwater sources. WCID 2, which provides retail water supply service to the City of Stafford and portions of the City of Missouri City, is partnering in this endeavor with Harris County MUD 122, Fifth Street Water Supply Corporation, and City of Meadows Place. WCID 2 has contracted with Gulf Coast Water Authority (GCWA) for 10.5 mgd (11,760 ac-ft/yr) of raw surface water supply delivered through GCWA's canal system. WCID 2 has also obtained 80 acres of land adjacent to the GCWA canal for treatment plant development.

The initial 3 mgd surface water treatment facility identified by the GRP has been constructed and is operational; this portion of WCID 2's surface water supply is reflected as an existing supply in the Regional Plan. The GRP indicates that an additional 3 mgd in treatment capacity will be required by 2025. A second 3 mgd expansion is anticipated by 2032.

Environmental Considerations

One impact associated with the implementation of this water management project is the increase in GCWA diversions from the Brazos River. Increased diversion of water from the Brazos River will result in some decreases in instream flow downstream of the GCWA pump stations. However, these diversions will be made from existing water rights currently owned by the GCWA, contracted by Fort Bend County WCID 2, and no new water rights permits are required for this project. Otherwise, implementation of this project should produce minimal environmental impacts.

Permitting and Development

Because the water supply source for this project is from existing water rights and will be delivered through GCWA's canal system, permitting of new surface water rights or modification of existing rights to add a diversion point will not be required. Construction of treatment facility expansions will be required to utilize portions of the source supply, which may entail minor permitting.

Cost Analysis

A preliminary planning estimate of project cost for the two planned expansions has been developed using standard regional planning assumptions. Estimated costs reflect a 3 mgd (3,360 ac-ft/yr) expansion in 2025 and an additional 3 mgd expansion reflected in 2032, which are included in the Regional Plan in the 2030 and 2040 planning decades. It was assumed for both phases that all construction could be accommodated in existing easements, with minor costs for additional surveying. The costs presented in this memorandum do not include the purchase cost of water. Total costs for both phases are presented in *Table 1*. All costs, including debt service and costs for operations and maintenance, were calculated using standard cost estimation procedures for Region H and are presented in September 2023 equivalent costs in accordance with TWDB guidance.

Table 1 – Fort Bend WCID 2 GRP Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$44,912,252	$44,912,252	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$15,511,829	$15,511,829	
3	LAND AND EASEMENTS	1	LS	$1,094,280	$1,094,280	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$5,722,800	$5,722,800	
5	INTEREST DURING CONSTRUCTION	1	LS	$4,446,307	$4,446,307	
	PROJECT CAPITAL COST				**$71,687,468**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE (2025 PHASE)	$2,522,004	$2,522,004	$0	$0	$0	$0
2	DEBT SERVICE (2032 PHASE)	$0	$2,522,004	$2,522,004	$0	$0	$0
3	OPERATION AND MAINTENANCE (2025 PHASE)	$1,257,282	$1,257,282	$1,257,282	$1,257,282	$1,257,282	$1,257,282
4	OPERATION AND MAINTENANCE (2032 PHASE)	$0	$1,257,282	$1,257,282	$1,257,282	$1,257,282	$1,257,282
5	PUMPING ENERGY COSTS	$64,247	$128,494	$128,494	$128,494	$128,494	$128,494
6	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$3,843,533**	**$7,687,065**	**$5,165,061**	**$2,643,058**	**$2,643,058**	**$2,643,058**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$3,843,533	$7,687,066	$5,165,062	$2,643,058	$2,643,058	$2,643,058
2	YIELD	3,360	6,720	6,720	6,720	6,720	6,720
3	UNIT COST	$1,144	$1,144	$769	$393	$393	$393
	TOTAL UNIT COST						**$666**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS (2025 PHASE)	1	LS	$8,127,000	$8,127,000
2	PIPELINES (2025 PHASE)	1	LS	$2,074,595	$2,074,595
3	WATER TREATMENT PLANTS (2025 PHASE)	1	LS	$12,254,530	$12,254,530
4	PUMP STATIONS (2032 PHASE)	1	LS	$8,127,000	$8,127,000
5	PIPELINES (2032 PHASE)	1	LS	$2,074,595	$2,074,595
6	WATER TREATMENT PLANTS (2032 PHASE)	1	LS	$12,254,530	$12,254,530
	PROJECT COST				**$44,912,252**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS (2025 PHASE)	2.5	%	$8,127,000	$203,175
2	PIPELINES (2025 PHASE)	1.0	%	$2,074,595	$20,746
3	WATER TREATMENT PLANTS (2025 PHASE)	1.0	LS	$1,033,361	$10,334
4	PUMP STATIONS (2032 PHASE)	2.5	%	$8,127,000	$203,175
5	PIPELINES (2032 PHASE)	1.0	%	$2,074,595	$20,746
6	WATER TREATMENT PLANTS (2032 PHASE)	1.0	LS	$1,033,361	$10,334
	ANNUAL OPERATION AND MAINTENANCE COST				**$468,509**

Water Management Strategy Evaluation

Based on the analysis provided above, the Fort Bend County WCID 2 GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	2	Cost is moderately high but reduces considerably after debt service completion.
Location	5	Relatively near demand centers.
Water Quality	3	No known issues regarding water quality.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Some decrease in environmental flows below diversion point. Diversion is from an existing water right.
Local Preference	4	No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	5	Sponsor identified and project is in development.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	2	Project serves sponsor and limited number of co-participants.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The Fort Bend WCID 2 GRP is not anticipated to affect vulnerable species and will not directly impact environmental flows. The project is not anticipated to impact agricultural land or production.

Water User Group Application

The Fort Bend County WCID 2 GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

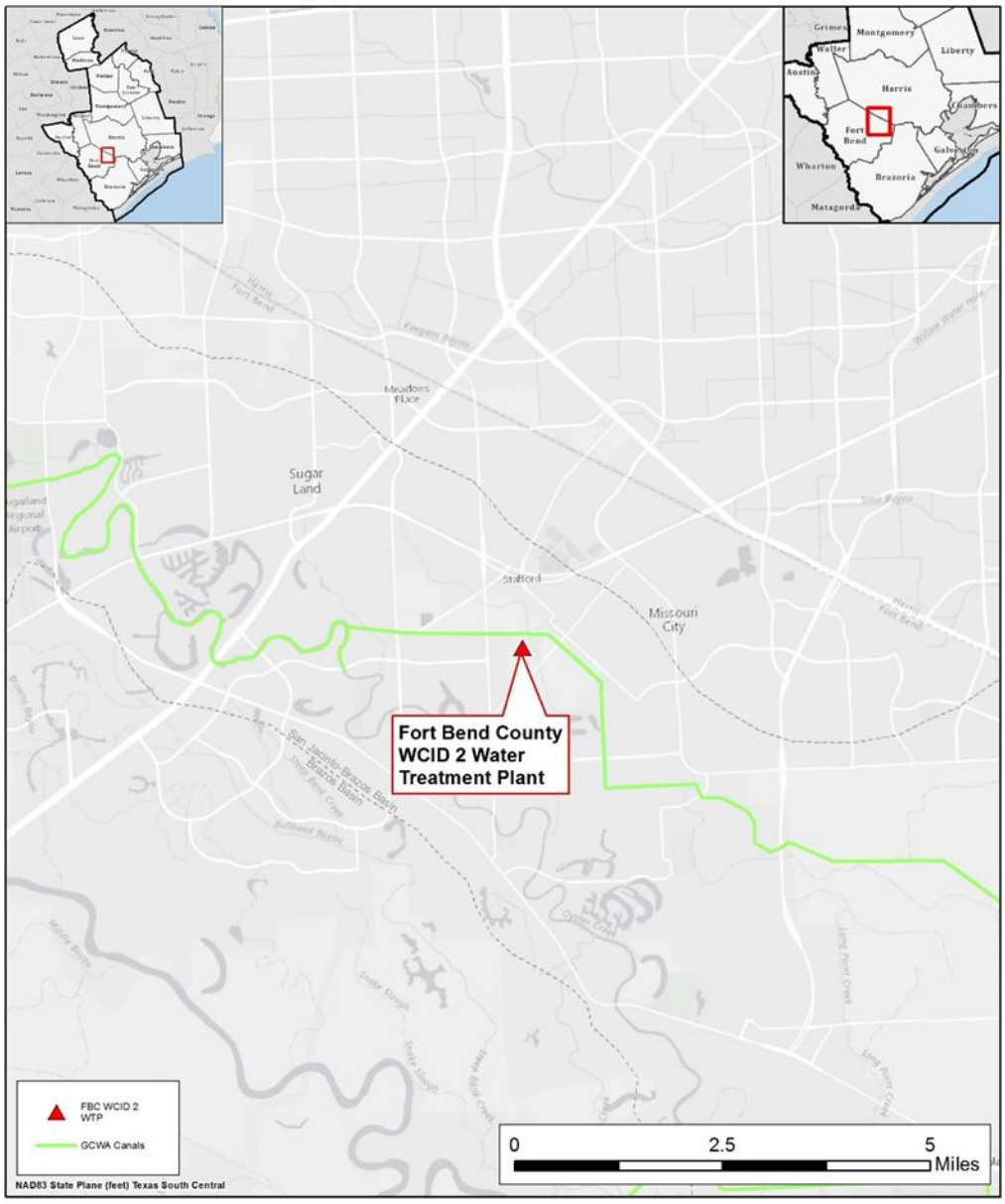
CRITERIA	WUG SUITABILITY
Proximity	The project is located in close proximity to intended points of use.
Size	The project is of appropriate size to utilize WCID 2's surface water contracts.
Water Quality	This project is expected to provide water of acceptable quality.
Unit Cost	The cost of this project is moderately high but decreases substantially after completion of debt service.
Other Factors	This project reduces groundwater dependence.

References

Jones and Carter, Inc. *Groundwater Reduction Plan: Fort Bend County W.C. and I.D. No. 2, prepared for Fort Bend County WC&ID No. 2*, February 2008.

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

Location Map



REGION H Water Planning Group

Fort Bend County WCID 2 Groundwater Reduction Plan Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Montgomery County MUDs 8 and 9 Supply Expansion
Project ID:	GWRP-009
Project Type:	Various
Potential Supply Quantity (Rounded):	2,240 ac-ft/yr (2.0 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$53,547,608 (Sept. 2023)
Unit Water Cost (Rounded):	$3,061 per ac-ft (during loan period) $1,379 per ac-ft (after loan period)

Strategy Description

Montgomery County MUDs 8 and 9 have undertaken various measures in order to expand and diversify their available supplies, including production of groundwater from the Catahoula Aquifer and development of water treatment infrastructure to treat supplies from the Catahoula Aquifer and other supplies. The MUDs have also applied for and received from the Texas Commission on Environmental Quality (TCEQ) a bed-and-banks permit for conveyance of their own effluent as well as contracted effluent supplies purchased from the City of Huntsville. Additional measures previously examined by the MUDS in their Joint Groundwater Reduction Plan (GRP) could be used to address a portion of the projected demand growth for Montgomery County

Strategy Analyses

The project analyses for the Montgomery County MUDs 8 and 9 Supply Expansion project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Montgomery County MUDs 8 and 9 have developed and are currently utilizing water supplies from the Catahoula Aquifer as a means of reducing dependence on overlying formations of the Gulf Coast Aquifer. The Joint GRP for the MUDs indicates development of additional conjunctive use of brackish groundwater supplies. Montgomery County MUDs 8 and 9 have also entered into a contract with the City of Huntsville for up to 2 mgd (2,240 ac-ft/yr) of effluent produced by Huntsville and conveyed to the MUDs through the West Fork of the San Jacinto River and Lake Conroe; additionally, the MUDs have obtained TCEQ authorization for reuse of a portion of their own wastewater discharges less amounts credited to other entities through agreements. The MUDs have obtained a bed-and-banks permit to convey these supplies to the point of diversion.

Environmental Considerations

The diversion of the effluent source supply would be expected to have some degree of impact in terms of reduction of instream flows downstream of the diversion point for any portion of the source supply originating from current levels of return flow. Any impacts would be anticipated to occur from reuse of effluent generated from current levels of discharge; diversion of the portion attributable to future growth would not be expected to cause additional impact. Treatment facility construction is associated with an existing residential development.

Permitting and Development

Increased use of Catahoula Aquifer supplies would require permitting through the Lone Star Groundwater Conservation District. Montgomery County MUDs 8 and 9 have received a bed-and-banks permit from TCEQ for conveyance of their own effluent as well as contracted effluent supplies purchased from the City of Huntsville. The MUDs and the City of Huntsville have additionally reached agreements with the San Jacinto River Authority and the City of Houston regarding commitment of a portion of these return flows to those entities. These additional supplies are identified in the analysis of the Regional Return Flows strategy included in this RWP.

Cost Analysis

The estimated costs for the project are presented in *Table 1*. The values presented in the table were developed from standard regional planning costing reference data and assume construction of a small pump station with intake, short pipeline, conventional treatment facility, and additional groundwater treatment capacity. The costs presented in this memorandum do not include the purchase cost of water.

Table 1 – Montgomery County MUDs 8 and 9 Supply Expansion Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$36,503,689	$36,503,689	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$12,710,559	$12,710,559	
3	LAND AND EASEMENTS	1	LS	$276,260	$276,260	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$735,890	$735,890	
5	INTEREST DURING CONSTRUCTION	1	LS	$3,321,210	$3,321,210	
	PROJECT CAPITAL COST				**$53,547,608**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$3,767,667	$3,767,667	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$3,057,940	$3,057,940	$3,057,940	$3,057,940	$3,057,940	$3,057,940
3	PUMPING ENERGY COSTS	$31,706	$31,706	$31,706	$31,706	$31,706	$31,706
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$6,857,313**	**$6,857,313**	**$3,089,646**	**$3,089,646**	**$3,089,646**	**$3,089,646**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$6,857,313	$6,857,313	$3,089,646	$3,089,646	$3,089,646	$3,089,646
2	YIELD	2,240	2,240	2,240	2,240	2,240	2,240
3	UNIT COST	$3,061	$3,061	$1,379	$1,379	$1,379	$1,379
	TOTAL UNIT COST						**$1,940**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$5,732,400	$5,732,400
2	PIPELINES	1	LS	$1,314,639	$1,314,639
3	WATER TREATMENT PLANTS	1	LS	$29,456,650	$29,456,650
	PROJECT COST				**$36,503,689**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$5,732,400	$143,310
2	PIPELINES	1.0	%	$1,314,639	$13,146
3	WATER TREATMENT PLANTS	1.0	LS	$2,901,483	$2,901,483
	ANNUAL OPERATION AND MAINTENANCE COST				**$3,057,940**

Water Management Strategy Evaluation

Based on the analysis provided above, the Montgomery County MUDs 8 and 9 Supply Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	This project provides water at a high cost, particularly during debt service, but generates treated rather than raw supply.

CRITERIA	RATING	EXPLANATION
Location	4	Bed and banks conveyance to treatment facility required
Water Quality	3	The project takes advantage of existing and future discharges in the San Jacinto basin.
Environmental Land and Habitat	4	Majority of projects would be constructed in already-developed areas or existing rights-of-way.
Environmental Flows	2	Diversion of discharges would create reduction in environmental flows.
Local Preference	3	Limited opposition to project.
Institutional Constraints	5	Bed-and-banks permit has been granted
Development Timeline	5	Permit could be developed in a relatively short period of time.
Sponsorship	4	Sponsors are identified and have initiated permitting efforts.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	2	Direct service limited to sponsor systems but potentially benefits broader area by offsetting groundwater demands.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

Montgomery County MUDs 8 and 9 Supply Expansion is not anticipated to affect vulnerable species or agricultural land and production. The project may potentially reduce future return flows to the San Jacinto River Basin. However, this reduction in return flows may also correlate to a reduction in diversions of other surface water from within the basin and reduces dependence on groundwater resources.

Water User Group Application

Determination of the Water User Groups (WUGs) to which the project may be applied was evaluated based on the factors below. Currently, the only identified users are Montgomery County MUDs 8 and 9.

CRITERIA	WUG SUITABILITY
Proximity	Reuse diversion point located in close proximity to intended points of use.
Size	Overall project supply volume is appropriate to the conversion target demands identified by contract recipients.

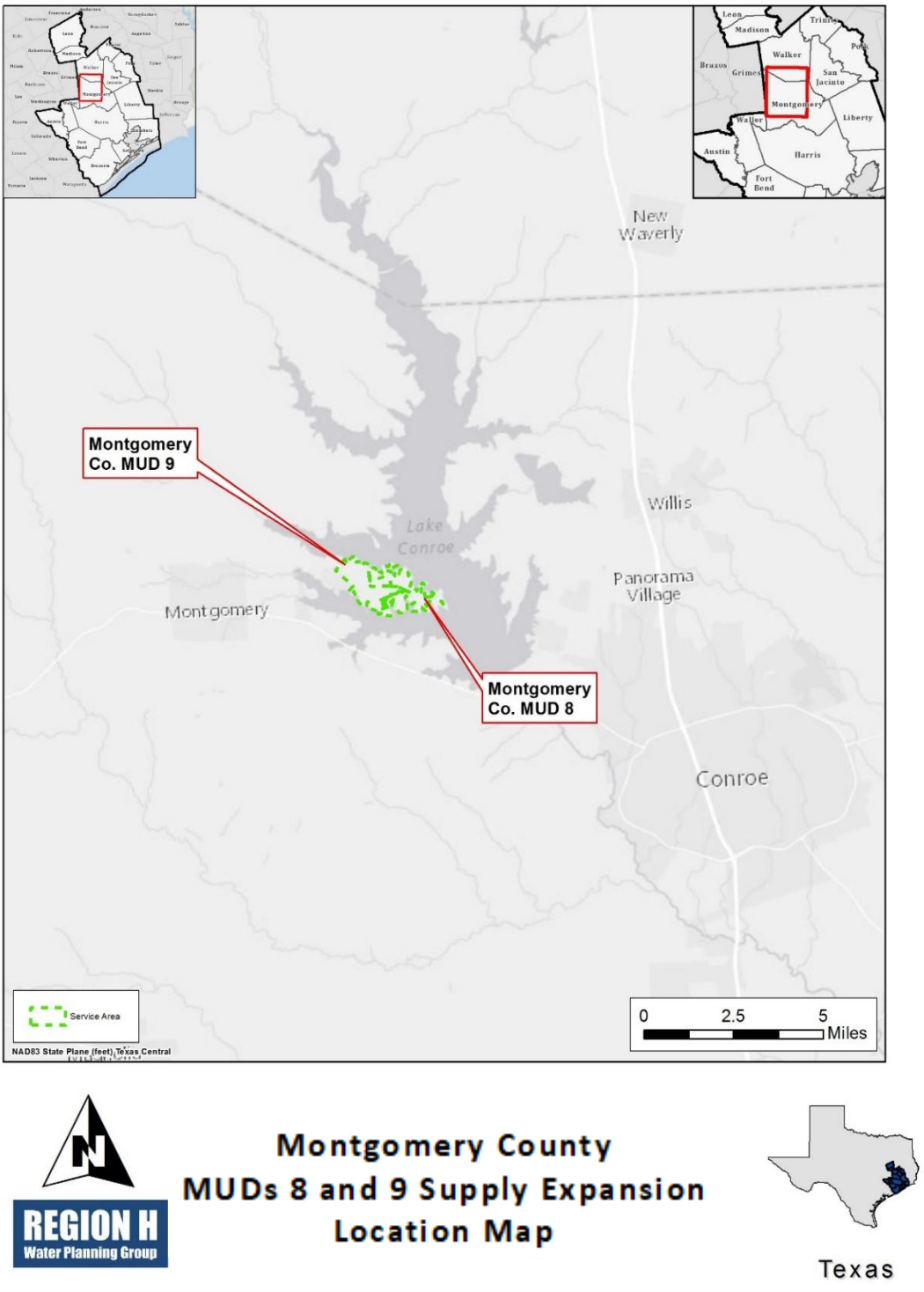
CRITERIA	WUG SUITABILITY
Water Quality	This project provides a treated water supply to meet municipal demands.
Unit Cost	This project provides water at a high cost, particularly during debt service, but generates treated rather than raw supply.
Other Factors	Implementation of reuse supply from this project requires a bed-and-banks permit for downstream use, which has been approved.

References

NRS Consulting Engineers, Inc., *Joint Groundwater Reduction Plan, Montgomery County Municipal Utility District No. 8 and Montgomery County Municipal Utility District No. 9*, prepared for Montgomery County MUD Nos. 8 and 9, April 2011.

Jones and Carter, Inc, *Amendment to the Joint Groundwater Reduction Plan for Montgomery County MUD Nos. 8 & 9*, Montgomery County MUD Nos. 8 and 9, April 2014.

Location Map



REGION H Water Planning Group

Montgomery County MUDs 8 and 9 Supply Expansion Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Montgomery County Supply Expansion
Project ID:	GWRP-010
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	75,000 ac-ft/yr (67 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years per phase
Project Capital Cost:	$779,670,291 (Sept. 2023)
Unit Water Cost (Rounded):	$550-$1,262 per ac-ft (during loan period) $387 per ac-ft (after loan period)

Strategy Description

Montgomery County has experienced rapid population growth in recent decades, with estimates from the Regional Water Planning (RWP) process indicating the continuation of growth and urbanization into the future. Water demands within the county are currently met primarily with groundwater from the Gulf Coast Aquifer. Other existing supply sources include brackish groundwater from the Catahoula aquifer, reuse of treated wastewater effluent, and surface water from Lake Conroe provided by the San Jacinto River Authority (SJRA) to its customers within the county. Demand projections for the 2026 RWP indicate that dry year water demands for Montgomery County would exceed the Modeled Available Groundwater (MAG) value for the county as early as the 2030 planning timestep. While the MAG is not applied by the Texas Water Code or local Groundwater Conservation District (GCD) regulations as a maximum value of allowable groundwater production in the county, it does represent an estimate of long-term average sustainable groundwater production, indicating that additional water supplies will be needed to meet future needs within Montgomery County. One option to address projected Montgomery County needs is increased use of surface water from Lake Conroe by existing surface water users and phased conversion of additional water systems to surface water.

Strategy Analyses

The project analyses for Montgomery County Supply Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Lake Conroe is located on the West Fork of the San Jacinto River in Montgomery County, approximately seven miles west of the City of Conroe. The reservoir, which was completed in 1973

by COH and the San Jacinto River Authority (SJRA), is impounded by an earthen dam and concrete spillway and has a drainage area of 450 square miles. At the conservation pool elevation of 201 feet above MSL, the reservoir has a volume of 417,605 acre-feet and a water surface area of 19,894 acres (approximately 31.1 square miles). Lake Conroe is operated by SJRA. Certificate of Adjudication 10-4963 authorizes 100,000 ac-ft/yr in permitted water rights from the Lake, with one third (33,333 ac-ft/yr) owned by SJRA and the remaining two thirds owned by the COH. SJRA holds an option contract to purchase water from the COH's portion of the yield of Lake Conroe. The reservoir is permitted for municipal, industrial, irrigation, mining, and recreation uses. Modeling of the reservoir for the 2026 RWP indicates a reliable supply for year 2030 conditions of 80,000 acre-feet per year (ac-ft/yr), decreasing slightly to 76,850 ac-ft/yr by year 2080 due to reservoir sedimentation; it should be noted that surface water modeling for the RWP process incorporates conservative conditions which exclude return flows and assume all water rights attempting to divert their maximum permitted amounts.

In order to address demand growth and protect groundwater resources, SJRA has implemented surface water infrastructure through its Groundwater Reduction Plan (GRP) Division to meet a portion of customer needs. This infrastructure, which includes a raw water intake, 30 million gallon per day (mgd) surface water treatment plant, and over 50 miles of pipeline, serves seven local water providers. The SJRA GRP study considered possible future expansion stages of this surface water infrastructure to meet additional water demands within the county through increased surface water usage by current customers and phased conversion of additional water systems to partial use of surface water. Due to the logistical and financial hurdles to connecting all water systems within the county to surface water, the SJRA GRP examined conversion of some entities with surface water in order to create flexibility for more remote systems to continue growth on groundwater supplies.

The Montgomery County Supply Expansion water management strategy (WMS) recommended in the 2026 RWP applies similar phased surface water conversion concepts as those from the SJRA GRP and other GRPs within the Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD). Due to differences in projected demands, MAG values, and other parameters since the SJRA GRP study, the timing, magnitude, and potential converted entities vary from those in the GRP. The concept applied for the RWP estimates additional conversion of existing surface water recipients to 50 percent surface water source by approximately 2030 utilizing remaining capacity from existing infrastructure. By 2040, infrastructure expansion and an increase in surface water blend to 80 percent would be applied. Subsequent treatment and transmission expansions in 2050 and 2060 would allow for additional entities to convert partially to surface water, with the surface water source percentage for all converted entities increasing though 2080. Treatment capacity expansions are estimated as 25 mgd capacity modules.

Environmental Considerations

One impact associated with the implementation of this project is the increase in diversions from the San Jacinto River and Lake Conroe. Increased diversion of water will result in some decreases in instream flow downstream of the Lake Conroe diversion point. However, these diversions will be made from existing water rights currently owned by the SJRA and the City of Houston, and no new water rights permits are required for this project. Some surface disturbance may be associated with development of expanded water plant facilities and transmission infrastructure. However, this construction would occur primarily on existing plant sites or in previously urbanized areas and would cause little disturbance to undeveloped habitat. Implementation of this project should produce limited additional environmental impacts.

Permitting and Development

Because the surface water supply source for this project is from existing water rights, permitting of new surface water rights or modification of existing rights to add a diversion point will not be required. Permitting efforts specific to additional water supply sources, which may be incorporated in later decades, are considered in the analysis of projects specific to those sources. Construction of expansions of the surface water treatment facility and distribution system will be required to utilize portions of the source supply, which may entail minor permitting.

Cost Analysis

Capital costs for phased expansion of surface water treatment plant and transmission capacity were based upon prior estimates of several phased 25 mgd expansions from the SJRA GRP, adjusted for differing timing and more recent cost indices. Capital costs for engineering and legal services, land acquisition, environmental studies, mitigation, and interest during construction were estimated using standard regional water planning costing assumptions. Annualized costs for debt service and operations and maintenance were estimated using standard Regional Planning costing reference data. Capital costs were scaled to a September 2023 equivalent cost in accordance with TWDB guidance. Estimated costs are presented in *Table 1*.

Table 1 – Montgomery County Supply Expansion Project Cost

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$528,890,119	$528,890,119
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$181,109,882	$181,109,882
3	LAND AND EASEMENTS	1	LS	$19,837,752	$19,837,752
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$1,474,661	$1,474,661
5	INTEREST DURING CONSTRUCTION	1	LS	$48,357,877	$48,357,877
	PROJECT CAPITAL COST				**$779,670,291**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$12,268,260	$42,590,181	$42,590,181	$12,268,260	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$8,465,824	$18,946,046	$27,411,870	$27,411,870	$27,411,870
3	PUMPING ENERGY COSTS	$0	$0	$1,581,777	$1,581,777	$1,581,777	$1,581,777
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$20,734,084**	**$63,118,004**	**$71,583,829**	**$41,261,907**	**$28,993,648**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$20,734,084	$63,118,004	$71,583,828	$41,261,907	$28,993,647
2	YIELD	-	25,000	50,000	75,000	75,000	75,000
3	UNIT COST	$0	$829	$1,262	$954	$550	$387
	TOTAL UNIT COST						**$752**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$23,580,402	$23,580,402
2	PIPELINES	1	LS	$80,033,188	$80,033,188
3	WATER TREATMENT PLANTS	1	LS	$362,821,048	$362,821,048
4	WATER STORAGE TANKS	1	LS	$62,455,480	$62,455,480
	PROJECT COST				**$528,890,119**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$23,580,402	$589,510
2	PIPELINES	1.0	%	$80,033,188	$800,332
3	WATER TREATMENT PLANTS	1.0	LS	$25,397,473	$25,397,473
4	WATER STORAGE TANKS	1.0	%	$62,455,480	$624,555
	ANNUAL OPERATION AND MAINTENANCE COST				**$27,411,870**

Water Management Strategy Evaluation

Based on the analysis provided above, the Montgomery County Supply Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Costs are moderate to high but decrease substantially in later decades after debt service completion.
Location	4	Transmission infrastructure required to convert additional entities to surface water.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Some decrease in environmental flows below diversion point. Diversion is from an existing water right.
Local Preference	3	Some local support. .
Institutional Constraints	3	Minimal permitting challenges or opposition expected for future conversion infrastructure.
Development Timeline	5	Individual phases of project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	3	Potential sponsor has been identified.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

Water User Group Application

The Montgomery County Supply Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

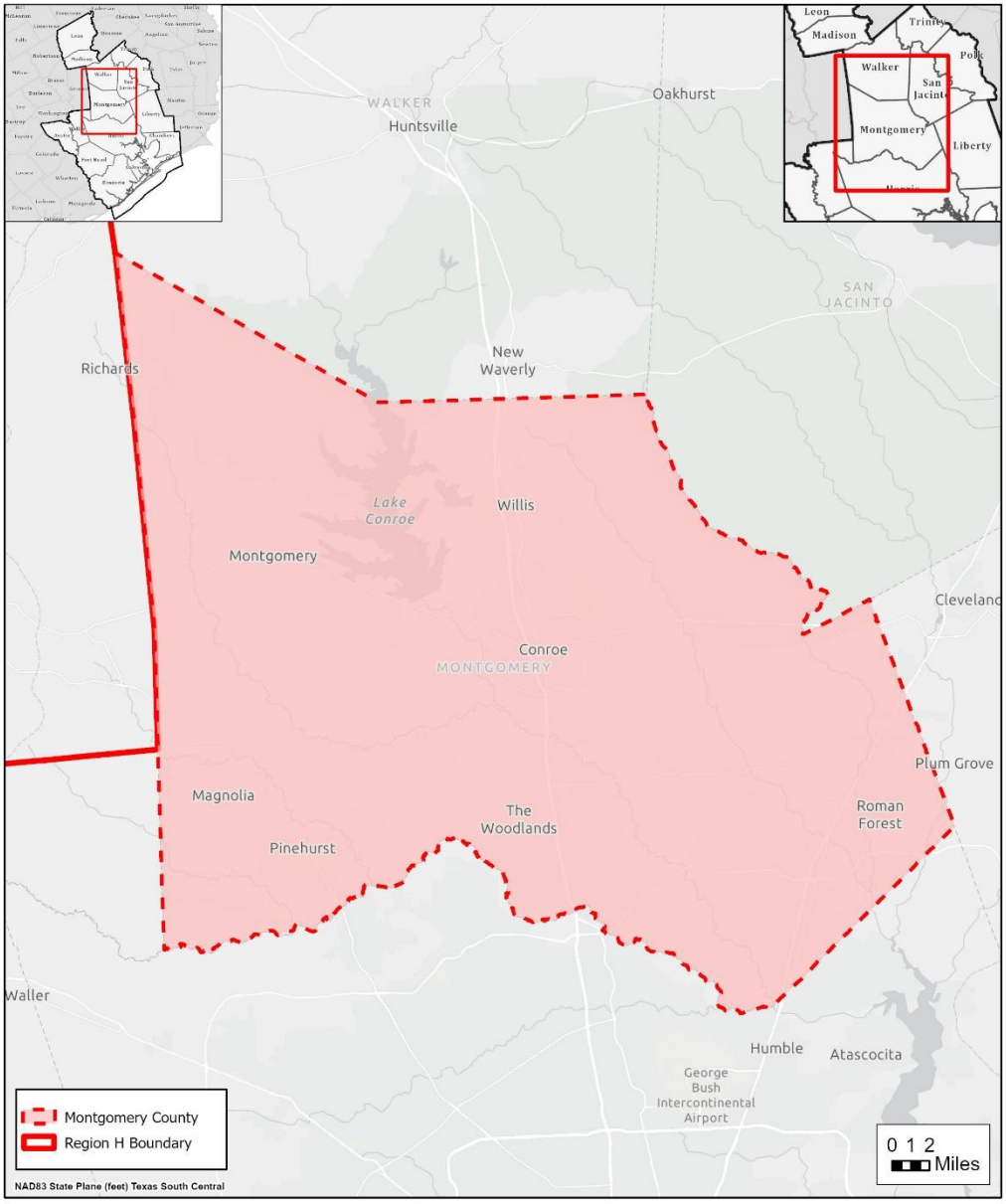
CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use. Some major transmission infrastructure is required.
Size	Project is of appropriate size to meet customer demands.

CRITERIA	WUG SUITABILITY
Water Quality	This project is expected to provide water of acceptable quality.
Unit Cost	The cost of this project is initially moderate to high but decreases substantially after completion of debt service.
Other Factors	This project reduces groundwater dependence.

References

Brown and Gay Engineers, Inc. *San Jacinto River Authority Joint Groundwater Reduction Plan*, prepared for SJRA, March 2011.

Location Map



REGION H Water Planning Group

Montgomery County Supply Expansion

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	North Fort Bend Water Authority Groundwater Reduction Plan
Project ID:	GWRP-011
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	62,496 ac-ft/yr (55.8 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	5 years
Project Capital Cost:	Included under associated infrastructure projects
Unit Water Cost (Rounded):	Included under associated infrastructure projects

Strategy Description

The Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) have established requirements for entities within their boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the North Fort Bend Water Authority (NFBWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, NFBWA is participating in multiple infrastructure projects related to the treatment and distribution of surface water.

Strategy Analyses

The project analyses for the NFBWA Groundwater Reduction Plan (GRP) include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The NFBWA will deliver surface water to the majority of the MUDs and the City of Fulshear within the Authority to meet the requirements of its GRP approved by the FBSD. The Authority has already developed transmission and distribution infrastructure to its initial obligations for reducing groundwater demand and are receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its GRP program. NFBWA partnered

with other Regional Water Authorities and COH in development of the Luce Bayou Interbasin Transfer Project to convey supplies from the Trinity River to Lake Houston and is also a participant in the expansion of the treatment capacity of the COH Northeast Water Purification Plant (NEWPP). The Authority has also increased its supply reservation from these facilities from an original reservation of 19.5 mgd (21,840 ac-ft/yr) currently applied in the Regional Plan as existing supply to 75.3 mgd (84,336 ac-ft/yr). NFBWA is partnering with West Harris County Regional Water Authority (WHCRWA) to develop a new shared transmission pipeline system, referred to by the sponsors as the Surface Water Supply Project (formerly the Second Source Transmission Line), which will convey increased treated surface water supplies from the NEWPP. NFBWA is also developing its Phase 2 Distribution Expansion to extend the infrastructure network through which it supplies its member districts, allowing for greater overall volume conveyed and conversion of additional districts to surface water.

Environmental Considerations

Any environmental impacts related to the GRP project are a factor of the associated source and infrastructure projects. Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

The North Fort Bend Water Authority is subject to requirements imposed by the City of Houston as well as the State of Texas. As indicated above, the Authority relies on the City of Houston and West Harris County Regional Water Authority to address the permitting and development requirements of projects for which those entities are primarily responsible. For the Authority's expansion of distribution infrastructure, at least some level of construction permitting would be anticipated.

For shared transmission with WHCRWA, environmental clearance has been received from TWDB and the Authority has received USACE clearance under a nationwide permit. Some mitigation for construction in forested wetlands is required for the shared transmission.

Cost Analysis

The costs associated with developing this project are included under other infrastructure projects.

Water Management Strategy Evaluation

Based on the analysis provided above, the NFBWA GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Costs for project are related to the infrastructure projects which allow physical implementation of the GRP.
Location	3	Source supply requires an interbasin transfer of surface water and extensive conveyance infrastructure.

CRITERIA	RATING	EXPLANATION
Water Quality		No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Some permits already obtained. Property available.
Development Timeline	5	Project to be developed by 2025, with some portions active earlier.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The NFBWA GRP is not anticipated to affect vulnerable species. Additionally, the project will not directly impact environmental flows or agricultural land and production.

Water User Group Application

The NFBWA GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve NFBWA, its wholesale customers, and GRP participants.

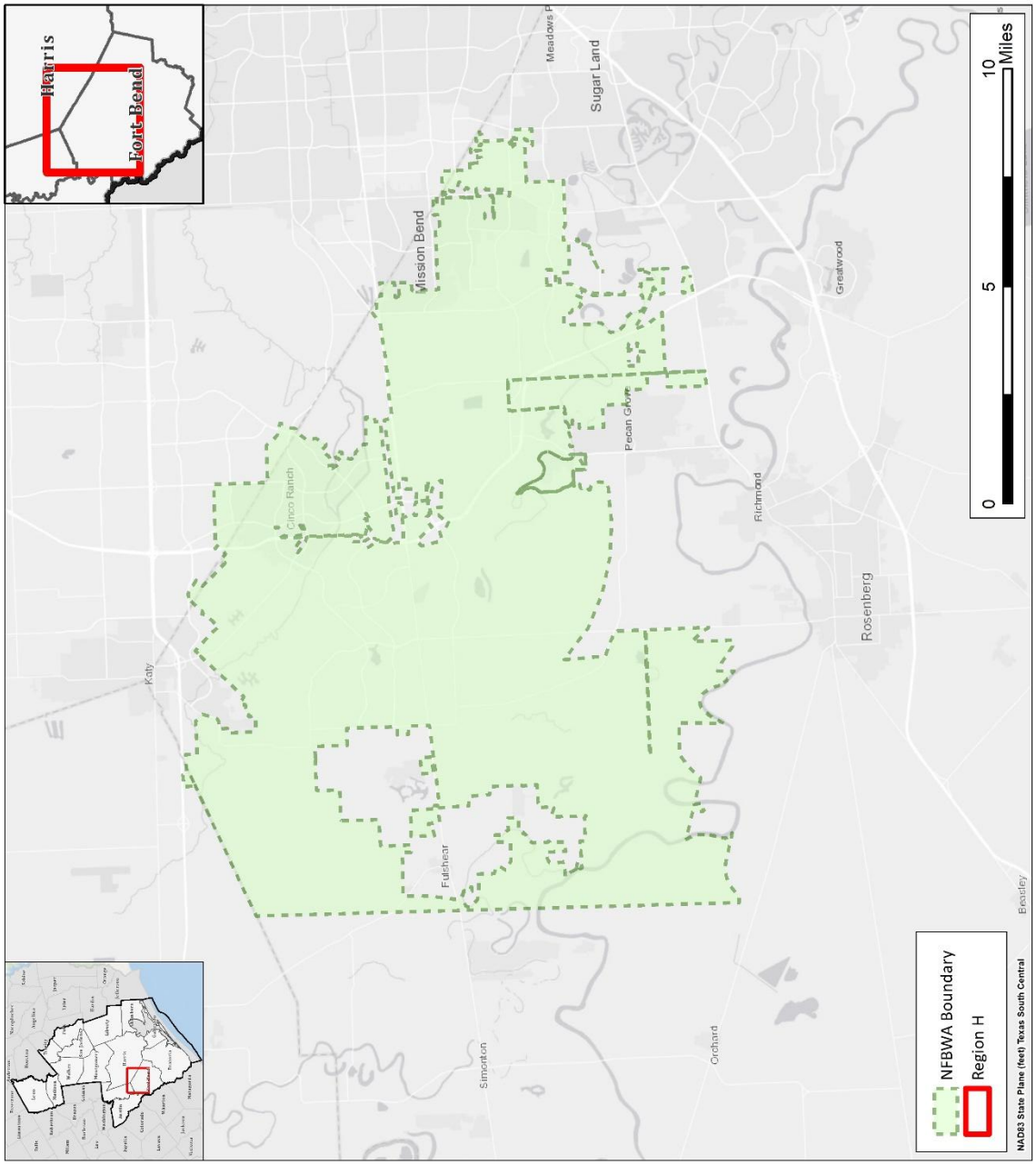
CRITERIA	WUG SUITABILITY
Proximity	Strategy is suited to serving WUGs located in northern Fort Bend County.
Size	Sized to convey the requisite amount of source water.
Water Quality	Treated water of quality appropriate for municipal use.
Unit Cost	Included under other infrastructure projects.

CRITERIA	WUG SUITABILITY
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

Location Map



NFBWA GRP
Location Map

REGION H
Water Planning Group

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	North Harris County Regional Water Authority Groundwater Reduction Plan
Project ID:	GWRP-012
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	143,360 ac-ft/yr (128 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	5 years
Project Capital Cost:	Included under associated infrastructure projects
Unit Water Cost (Rounded):	Included under associated infrastructure projects

Strategy Description

The Harris-Galveston Subsidence District (HGSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the North Harris County Regional Water Authority (NHCRWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, NHCRWA is participating in multiple infrastructure projects related to the treatment and distribution of surface water.

Strategy Analyses

The project analyses for the NHCRWA Groundwater Reduction Plan (GRP) include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The NHCRWA will continue to deliver surface water to districts within the Authority to meet the requirements of its GRP. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its GRP program. NHCRWA partnered with other Regional Water Authorities and COH in development of the Luce Bayou Interbasin Transfer Project to convey supplies from the Trinity

River to Lake Houston, and the Authority is also a participant in the expansion of the treatment capacity of the COH Northeast Water Purification Plant (NEWPP). The Authority has also increased its supply reservation from these facilities from an original reservation of 31 mgd (34,720 ac-ft/yr), currently applied in the Regional Plan as existing supply, to 159 mgd (178,080 ac-ft/yr), and has partnered with Central Harris County Regional Water Authority (CHCRWA) and COH to develop shared transmission of treated surface water supplies from the NEWPP; NHCRWA continues to develop expansion of the infrastructure network through which it supplies its member districts.

Environmental Considerations

Any environmental impacts related to the GRP project are a factor of the associated source and infrastructure projects. Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

The permitting and development requirements necessary for implementation of the NHCRWA GRP are associated with the source supply and infrastructure projects. NHCRWA is subject to contractual requirements established by COH as well as any relevant permitting required by the State of Texas and HGSD. Much of the permitting associated with implementation of large-scale shared infrastructure is primarily being addressed by COH.

Cost Analysis

The costs associated with developing this project are included under other infrastructure projects.

Water Management Strategy Evaluation

Based on the analysis provided above, the NHCRWA GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Costs for project are related to the infrastructure projects which allow physical implementation of the GRP.
Location	3	Source supply requires an interbasin transfer of surface water and extensive conveyance infrastructure.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.

CRITERIA	RATING	EXPLANATION
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Property available.
Development Timeline	5	Project to be developed by 2025, with some portions active earlier.
Sponsorship	5	Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The NHCWA GRP is not anticipated to affect vulnerable species. Additionally, the project will not directly impact environmental flows or agricultural land and production.

Water User Group Application

The NHCRWA GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

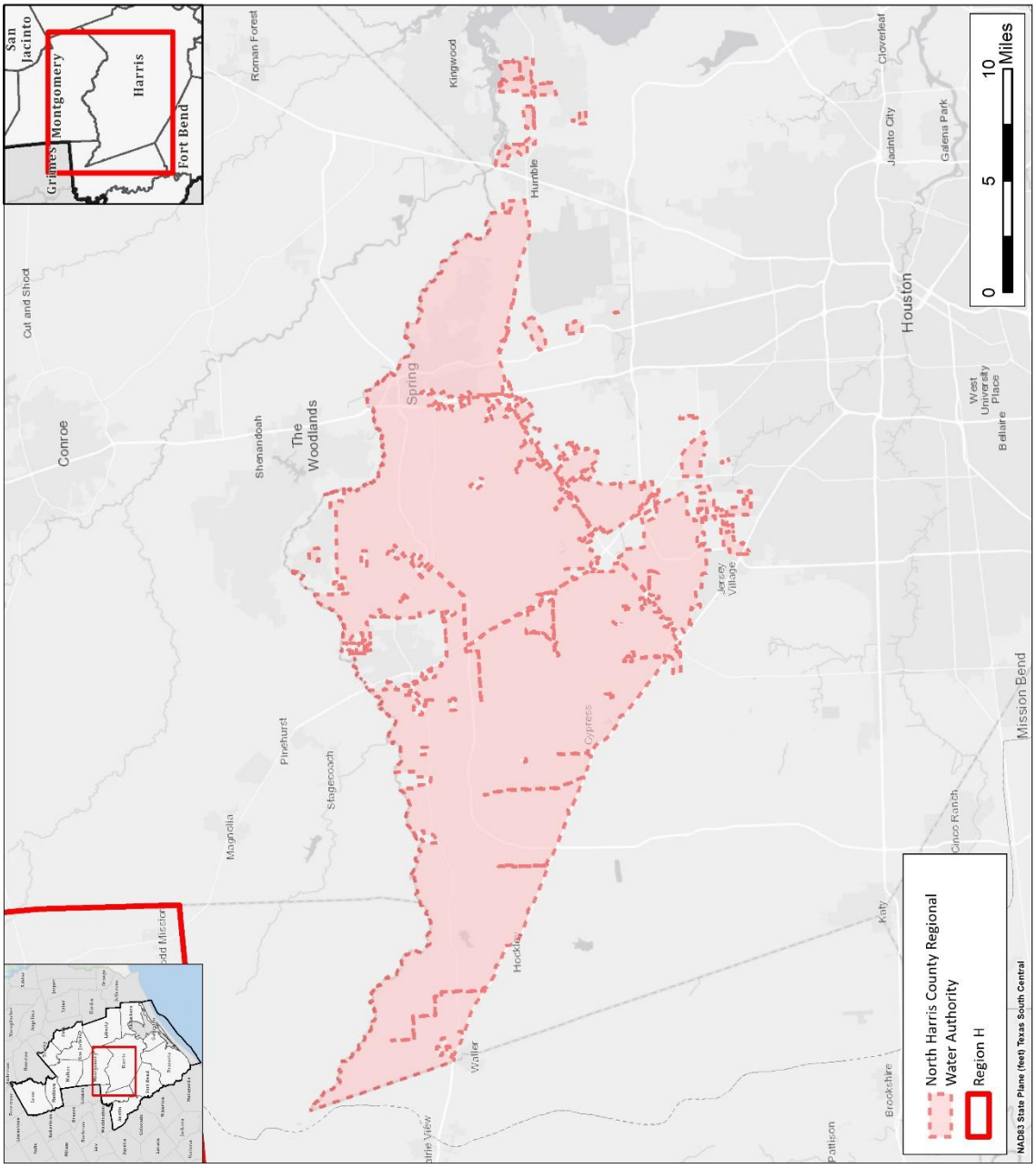
CRITERIA	WUG SUITABILITY
Proximity	Strategy is suited to serving WUGs located in northern Harris County.
Size	Sized to convey the requisite amount of source water.
Water Quality	Treated water of quality appropriate for municipal use.
Unit Cost	Included under other infrastructure projects.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

References

AECOM. *2014 North Harris County Regional Water Authority Groundwater Reduction Plan*, prepared for NHCRWA, June 2014.

Harris-Galveston Subsidence District. *Harris-Galveston Subsidence District 2013 District Regulatory Plan*, May 2013.

Location Map



REGION H Water Planning Group

NHCRWA GRP Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	West Harris County Regional Water Authority Groundwater Reduction Plan
Project ID:	GWRP-013
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	92,288 ac-ft/yr (82.4 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	5 years
Project Capital Cost:	Included under associated infrastructure projects
Unit Water Cost (Rounded):	Included under associated infrastructure projects

Strategy Description

The Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD) have established requirements for entities within their boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to meet these requirements, the West Harris County Regional Water Authority (WHCRWA) has contracted with the City of Houston (COH) to receive treated surface water. The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH. In order to utilize sufficient supplies to meet future surface water conversion obligations, WHCRWA is participating in multiple infrastructure projects related to the treatment and distribution of surface water.

Strategy Analyses

The project analyses for the WHCRWA Groundwater Reduction Plan (GRP) include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The Authority has already developed transmission and distribution infrastructure to meet its initial obligations for reducing groundwater demand and is receiving water from COH, which is reflected in the Regional Plan as an existing supply. In order to meet future water demands and regulatory conversion obligations, the Authority has continued development and implementation of its GRP program. WHCRWA partnered with other Regional Water Authorities and COH in development of the

Luce Bayou Interbasin Transfer Project to convey supplies from the Trinity River to Lake Houston and is also a participant in the expansion of the treatment capacity of the COH Northeast Water Purification Plant (NEWPP). The Authority has also increased its supply reservation from these facilities from an original reservation of 28.25 mgd (31,640 ac-ft/yr) currently applied in the Regional Plan as existing supply to 110.65 mgd (123,943 ac-ft/yr). WHCRWA is partnering with North Fort Bend Water Authority (NFBWA) to develop a new shared transmission pipeline system, referred to by the sponsors as the Surface Water Supply Project, which will convey increased treated surface water supplies from the NEWPP. WHCRWA is also developing an expansion of the infrastructure network through which it supplies its member districts, allowing for greater overall volume conveyed and conversion of additional districts to surface water.

Environmental Considerations

Any environmental impacts related to the GRP project are a factor of the associated source and infrastructure projects. Infrastructure development may result in some construction disturbance which could require mitigation. The most significant impact associated with the GRP is the source supply, which requires the interbasin transfer of surface water supplies.

Permitting and Development

The permitting and development requirements necessary for implementation of the WHCRWA GRP are associated with the source supply and infrastructure projects. WHCRWA is subject to contractual requirements established by COH as well as any relevant permitting required by the State of Texas and HGSD. Much of the permitting associated with implementation of large-scale shared infrastructure is primarily being addressed by COH.

For shared transmission with NFBWA, environmental clearance has been received from TWDB and the Authority has received USACE clearance under a nationwide permit. Some mitigation for construction in forested wetlands is required for the shared transmission. WHCRWA has also received TWDB environmental clearance for expansion of its distribution system.

Cost Analysis

The costs associated with developing this project are included under other infrastructure projects.

Water Management Strategy Evaluation

Based on the analysis provided above, the WHCRWA GRP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Costs for project are related to the infrastructure projects which allow physical implementation of the GRP.

CRITERIA	RATING	EXPLANATION
Location	3	Source supply requires an interbasin transfer of surface water and extensive conveyance infrastructure.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project does not directly impact flows. Source projects will result in decreased instream flows downstream of diversion location in source basin.
Local Preference	4	Local support. Limited opposition.
Institutional Constraints	3	Permits expected with minimal problems. Some permits already obtained. Property available.
Development Timeline	5	Project to be developed by 2025, with some portions active earlier.
Sponsorship		Sponsors identified and project is in development.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	No known significant impacts to other projects.

The WHCRWA GRP is not anticipated to affect vulnerable species or agricultural land and production. The project will not directly impact environmental flows.

Water User Group Application

The WHCRWA GRP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve WHCRWA, its wholesale customers, and GRP participants.

CRITERIA	WUG SUITABILITY
Proximity	Strategy is suited to serving WUGs located in western Harris County.
Size	Sized to convey the requisite amount of source water.
Water Quality	Treated water of quality appropriate for municipal use.

CRITERIA	WUG SUITABILITY
Unit Cost	Included under other infrastructure projects.
Other Factors	Reduces dependence on Gulf Coast Aquifer groundwater.

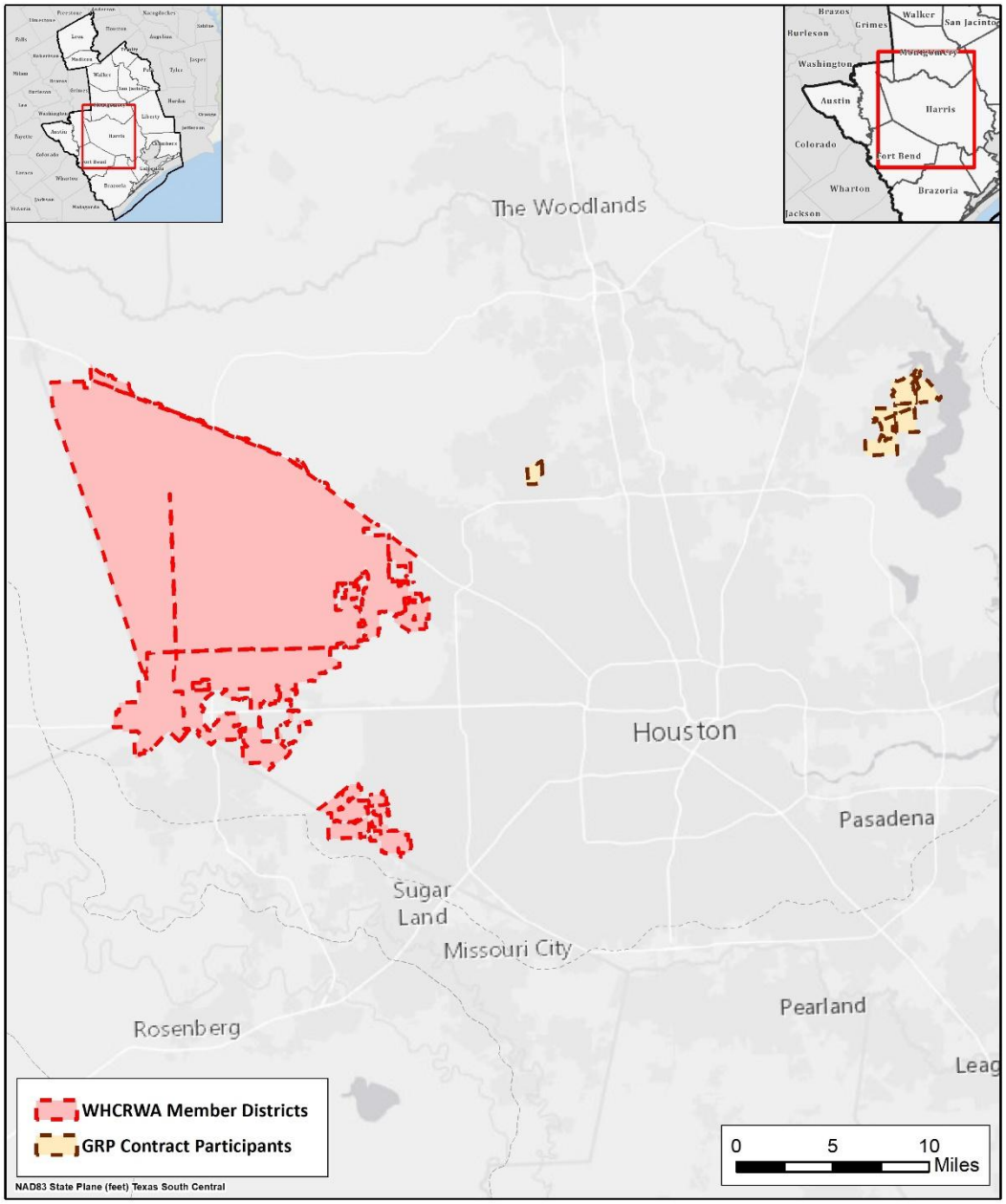
References

Dannenbaum Engineering Corporation. *West Harris County Regional Water Authority Groundwater Reduction Plan*, prepared for WHCRWA, June 2014.

Fort Bend Subsidence District. *Fort Bend Subsidence District 2013 Regulatory Plan*, August 2013.

Harris-Galveston Subsidence District. *Harris-Galveston Subsidence District 2013 District Regulatory Plan*, May 2013.

Location Map



REGION H Water Planning Group

WHCRWA GRP Location Map

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Houston Reuse
Project ID:	REUS-001
Project Type:	Reuse
Potential Supply Quantity (Rounded):	Up to 191,139 ac-ft/yr (Up to 170.6 mgd)
Implementation Decade:	2040
Development Timeline:	5-10 years
Project Capital Cost:	$820,816,940 (Sept. 2023)
Unit Water Cost (Rounded):	$130 to 3,595 per ac-ft (during loan period) $20 to 1,748 per ac-ft (after loan period)

Strategy Description

The City of Houston (COH) holds Water Right (WR) 5827 that permits the diversion and reuse of up to 580,923 ac-ft/yr in the San Jacinto River Basin or in the Trinity, Trinity-San Jacinto, and San Jacinto-Brazos Basins through interbasin transfer. This permit relates to more than 30 individual wastewater treatment plant (WWTP) discharges located on the Houston Ship Channel, Greens Bayou, Buffalo Bayou, Cole Creek, Berry Bayou, Keegans Bayou, Brickhouse Gully, White Oak Bayou, Evans Gully, and Lake Houston. In an effort to protect and maintain freshwater inflows to Galveston Bay, the permit limits diversions to 50 percent of the volume discharged on a daily basis from each wastewater treatment plant.

Although this permit was granted in 2011, COH has not yet implemented this permit through infrastructure development, as alternative water supplies have been readily available. Currently, the permit is only used to account for diversions from Lake Houston related to upstream WWTPs in the Kingwood area. This project examines various alternatives for utilizing this water as a supply in the 2026 Region H Regional Water Plan (RWP). Several options for water supply development were considered in detail after a comprehensive review of the permit and potential demands:

1. Greens Bayou Diversion
2. East Water Purification Plant Reuse Supply Diversion
    a. 69th Street WWTP Diversion
    b. Sims Bayou North WWTP Diversion
3. Southwest WWTP Diversion

Option 1 provides for the diversion of water from Greens Bayou at the site of the Northeast WWTP from 10 different WWTPs as a source of water to the West Canal to supply industrial customers downstream as well as the EWPP. Permitted discharges from these 10 WWTPs are as much as 45.5 MGD.

Option 2 is a blended, potable reuse alternative to provide water to the EWPP. Water may be diverted from Buffalo Bayou at the 69th Street WWTP site and/or from Sims Bayou at the Sims Bayou North WWTP, each of which receive flow from seven WWTPs upstream. Diverted return flows may be conveyed through pipeline to the EWPP where it would be blended with water from Lake Houston or the Trinity River Basin before being treated for use as a potable supply. The permitted discharges amount to 267.9 and 143.8 MGD of potential diversions at the 69th Street and Sims Bayou North WWTPs, respectively.

Option 3 involves diverting flow from Brays Bayou at a diversion point at the current location of the Southwest WWTP. Permitted discharges from this location and the four upstream WWTPs are as much as 121.6 MGD. However, Option 3 considers decommissioning the Southwest WWTP, which is currently permitted to discharge up to 60 MGD of treated effluent. Wastewater flows currently treated at this site would be redirected to the Almeda Sims WWTP, increasing the permitted discharges at and upstream from the Sims Bayou North WWTP to as much as 203.8 MGD and decreasing potential diversions at the location of the Southwest WWTP. An advanced water treatment facility (AWTF) would be constructed on the site of the decommissioned WWTP to treat diversions permitted under WR 5827. This option includes a transmission line to convey treated, potable reuse from the AWTF to a connection point in the COH water supply system. To account for the removal of the WWTP co-located with the diversion point, diversions for this option are limited to flows available from the four upstream WWTPs.

Another alternative for the development of reclaimed water supplies utilizing flows captured in this permit is the development of a reclaimed water supply to industrial customers along the Houston Ship Channel originating from the 69th Street and Sims Bayou North WWTPs. This alternative has been studied in past RWPs and has not been recommended as a strategy in the 2026 RWP.

The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for City of Houston Reuse include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The potential supply available from each of the take points is limited by a number of different factors including:

- Discharge rate of upstream WWTPs as varying over the course of the planning horizon,
- Consideration for bay and estuary inflows as stipulated by WR 5827,
- The instantaneous diversion rate as specified by WR 5827 and infrastructure in place to capture flows,
- Instream flow requirements as specified by WR 5827, and
- Basin hydrology.

In order to evaluate these factors and their impacts on the options presented above, the analysis utilized a model based on existing data sources in order to predict availability over time. This model

was used for the evaluation of water availability from all project options.

Naturalized flows from the Texas Commission on Environmental Quality (TCEQ) San Jacinto Basin Water Availability Model (WAM) were extracted to provide a basis for natural stream flows on a monthly basis for a historic period from January 1940 through December 1996. These flows represent naturalized conditions without diversions and discharges made following development of the basin. This data was developed for all four of the proposed diversion points considered by Options 1 through 3. Daily streamflow data was investigated for each diversion point as a basis with which to disaggregate these monthly flow values into daily flow records. Only two points, the 69th Street and Southwest WWTP diversion points, were found to have nearby sources of daily streamflow records that provided an adequate data set for assessment. Daily records for the 69th Street Plant were used in the analysis of the Northeast and Sims Bayou North WWTP points to provide a pattern of daily flow variation although the monthly magnitude for both of these sites was taken from the unique WAM output for each site.

Flows from WWTPs associated with WR 5827 were identified for the year 2010 using information from Environmental Protection Agency (EPA) Discharge Monitoring Report (DMR) data. These discharges were compared against the discharges permitted in WR 5827 to determine the remaining capacity in each plant. The COH population projections for the decades from 2030 through 2080 were used to scale the total wastewater flow from these WWTPs over time, and the total increase in flow was apportioned to the individual WWTPs based on their remaining capacity in 2010. In that way, plants with larger shares of the remaining WWTP capacity were assumed to bear more of the burden as wastewater flows increased over time. These discharges for plants upstream of a diversion point could be added to the naturalized flows identified above to represent actual flow in the channels.

Finally, diversions were assumed to be limited by a number of factors including the maximum diversion rate at the identified diversion point, a limit of 50 percent of the upstream discharges to protect bay and estuary inflows, and the instream flow limits associated with each diversion point. Diversions of effluent from upstream were limited in such a way that diversions could not cause the downstream instream flow targets to not be met on any given day.

Output from the model provided the potential yield that could be developed from the various alternatives in each decade from 2030 through 2080 and also provided a distribution of daily diversion rates at each site over time for use in sizing pump station and pipeline infrastructure. *Table 1* and *Table 2*, below, summarize the potential firm yield of each option and the required plant capacity to develop the supply, respectively.

Table 1 – Potential Firm Yield by Option (ac-ft/yr)

OPTION		2030	2040	2050	2060	2070	2080
1	Greens Bayou	3,678	4,017	4,370	4,543	4,481	4,531
2a	69th Street WWTP	111,702	113,715	115,416	116,192	115,915	116,137
2b	Sims Bayou North WWTP	43,290	46,139	48,547	49,646	49,253	49,568
3	Southwest WWTP	18,827	19,772	20,568	20,929	20,800	20,903
TOTAL		**177,498**	**183,644**	**188,901**	**191,311**	**190,449**	**191,139**

Table 2 – Required Pump Station Capacity by Option (MGD)[1]

OPTION		2030	2040	2050	2060	2070	2080
1	Greens Bayou Diversion	5	5	5	5	5	5
2a	69th Street WWTP	100	105	105	105	105	105
2b	Sims Bayou North WWTP	40	45	45	45	45	45
3	Southwest WWTP	20	20	20	20	20	20

[1] In 5 MGD increments.

Environmental Considerations

The majority of the infrastructure required for development of the COH Reuse options would be constructed in developed areas. For instance, Options 2a and 2b both involve construction in industrial areas along the Ship Channel and are not likely to significantly impact habitat. Option 1 has the greatest potential to impact undeveloped areas although the majority of this conveyance is to be constructed within existing right-of-way.

Permitting and Development

The existing WR 5827 provides for the discharge, conveyance, and diversion of effluent throughout the COH service area. However, the use of this water may require additional permitting depending upon use. Of particular concern are options that will make use of reclaimed water for potable uses through blending with alternative supplies. This approach to water management is an emerging source of supply and projects will require some consideration of how to safely and effectively incorporate these projects into existing water portfolios.

Based on a preliminary desktop review, the following environmental permits and permitting activities are likely to apply:

- U.S. Army Corps of Engineers (USACE) Section 404 Permit – All proposed pipeline rights-of-way (ROW), temporary workspace, and access road locations should be delineated for waters of the U.S., including wetlands. The proposed pipeline construction would likely be permitted under Nationwide Permit (NWP) 12-Utility Line Activities either with or without a Pre-construction Notification (PCN) to the USACE depending on the amount of impacts to waters of the U.S. The proposed pipeline that would cross the Houston Ship Channel would require a PCN and a Section 10 permit since the Houston Ship Channel is considered a navigable water of the U.S. by the USACE.
- Texas Historical Commission (THC) Coordination - Projects sponsored by public entities that affect a cumulative area greater than five acres or that disturb more than 5,000 cubic yards require advance consultation with the Texas Antiquities Committee according to Section 191.0525 (d) of the Antiquities Code of Texas. Because the proposed project may exceed these thresholds, coordination with the THC would be required. The THC may determine that archeological and/or historical surveys are needed.
- Threatened and Endangered Species – All proposed pipeline ROW, temporary workspace, and access road locations should be surveyed for potential threatened and endangered species habitat. If preferred habitat for threatened or endangered species is present, presence/absence surveys for the species would be required.

- Discharge and Diversion Points of Redirected WWTP Flows – WR 5827 may require minor amendment to reflect the redirection of wastewater inflows from the Southwest WWTP to the Almeda Sims WWTP and the associated reuse diversion point at Sims Bayou North WWTP.

The construction of pipelines would likely require a Stormwater Pollution Prevention Plan (SWPPP) and a TCEQ Construction General Permit (TXR 150000).

Cost Analysis

Costs were developed for Options 1, 2a, 2b, and 3 using default costing methods for regional plan development, as outlined by TWDB guidance. Cost estimates for each option are summarized below in *Table 3*, and detailed estimates are shown in *Table 4* through *Table 7*. At this time, it has been assumed that flows diverted from the channel will not require additional treatment before being blended with other raw water sources and treated to potable standards. Options 1, 2a, and 2b primarily consist of transmission infrastructure from diversion points to existing water purification plants. Costs for Option 3 are substantially higher than those for Options 1, 2a, and 2b due to the construction of an advanced water treatment facility on the site of the existing Southwest WWTP. The City of Houston Reuse project for the 2026 RWP includes all four of these options, with a projected total capital cost in September 2023 dollars of $820,816,940.

Table 3 – Project Cost Summary

Option		Project Cost	Potential Firm Yield (ac ft/yr)	Initial Unit Cost ($/ac ft)
1	Greens Bayou	$12,736,972	4,531	$263
2a	69th Street WWTP	$178,631,795	116,137	$130
2b	Sims Bayou North WWTP	$138,484,427	49,568	$250
3	Southwest WWTP	$490,963,746	20,903	$3,595
Total		**$820,816,940**	**191,139**	

Table 4 – Option 1 Project Cost Summary

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$5,335,734	$5,335,734	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$1,844,805	$1,844,805	
3	LAND AND EASEMENTS	1	LS	$2,973,300	$2,973,300	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$2,183,966	$2,183,966	
5	INTEREST DURING CONSTRUCTION	1	LS	$399,167	$399,167	
	PROJECT CAPITAL COST				**$12,736,972**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$896,187	$896,187	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$126,583	$126,583	$126,583	$126,583	$126,583
3	PUMPING ENERGY COSTS	$0	$32,829	$32,829	$32,829	$32,829	$32,829
	TOTAL ANNUAL COST	**$0**	**$1,055,599**	**$1,055,599**	**$159,412**	**$159,412**	**$159,412**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$1,055,599	$1,055,599	$159,412	$159,412	$159,412
2	YIELD	3,678	4,017	4,370	4,543	4,481	4,531
3	UNIT COST	$0	$263	$242	$35	$36	$35
	TOTAL UNIT COST						**$101**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$4,881,700	$4,881,700
2	PIPELINES	1	LS	$414,956	$414,956
3	PIPELINE CROSSINGS	1	LS	$39,078	$39,078
	PROJECT COST				**$5,335,734**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$4,881,700	$122,043
2	PIPELINES	1.0	%	$414,956	$4,150
3	PIPELINE CROSSINGS	1.0	%	$39,078	$391
	ANNUAL OPERATION AND MAINTENANCE COST				**$126,583**

Table 5 – Option 2a Project Cost Summary

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$116,021,892	$116,021,892	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$35,489,618	$35,489,618	
3	LAND AND EASEMENTS	1	LS	$19,170,800	$19,170,800	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$2,351,295	$2,351,295	
5	INTEREST DURING CONSTRUCTION	1	LS	$5,598,189	$5,598,189	
	PROJECT CAPITAL COST				**$178,631,795**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$12,568,725	$12,568,725	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$1,365,134	$1,365,134	$1,365,134	$1,365,134	$1,365,134
3	PUMPING ENERGY COSTS	$0	$900,719	$900,719	$900,719	$900,719	$900,719
	TOTAL ANNUAL COST	**$0**	**$14,834,579**	**$14,834,579**	**$2,265,853**	**$2,265,853**	**$2,265,853**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$14,834,579	$14,834,579	$2,265,853	$2,265,853	$2,265,853
2	YIELD	111,702	113,715	115,416	116,192	115,915	116,137
3	UNIT COST	$0	$130	$129	$20	$20	$20
	TOTAL UNIT COST						**$53**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$13,661,014	$13,661,014
2	PIPELINES	1	LS	$98,227,268	$98,227,268
3	PIPELINE CROSSINGS	1	LS	$4,133,610	$4,133,610
	PROJECT COST				**$116,021,892**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$13,661,014	$341,525
2	PIPELINES	1.0	%	$98,227,268	$982,273
3	PIPELINE CROSSINGS	1.0	%	$4,133,610	$41,336
	ANNUAL OPERATION AND MAINTENANCE COST				**$1,365,134**

Table 6 – Option 2b Project Cost Summary

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$86,598,026	$86,598,026	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$27,302,374	$27,302,374	
3	LAND AND EASEMENTS	1	LS	$17,905,800	$17,905,800	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$2,338,227	$2,338,227	
5	INTEREST DURING CONSTRUCTION	1	LS	$4,340,000	$4,340,000	
	PROJECT CAPITAL COST				**$138,484,427**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$9,743,913	$9,743,913	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$1,262,870	$1,262,870	$1,262,870	$1,262,870	$1,262,870
3	PUMPING ENERGY COSTS	$0	$525,944	$525,944	$525,944	$525,944	$525,944
	TOTAL ANNUAL COST	**$0**	**$11,532,728**	**$11,532,728**	**$1,788,814**	**$1,788,814**	**$1,788,814**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$11,532,728	$11,532,728	$1,788,814	$1,788,814	$1,788,814
2	YIELD	43,290	46,139	48,547	49,646	49,253	49,568
3	UNIT COST	$0	$250	$238	$36	$36	$36
	TOTAL UNIT COST						**$99**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$26,459,320	$26,459,320
2	PIPELINES	1	LS	$56,382,852	$56,382,852
3	PIPELINE CROSSINGS	1	LS	$3,755,854	$3,755,854
	PROJECT COST				**$86,598,026**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$26,459,320	$661,483
2	PIPELINES	1.0	%	$56,382,852	$563,829
3	PIPELINE CROSSINGS	1.0	%	$3,755,854	$37,559
	ANNUAL OPERATION AND MAINTENANCE COST				**$1,262,870**

Table 7 – Option 3 Project Cost Summary

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$328,767,692	$328,767,692
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$113,825,536	$113,825,536
3	LAND AND EASEMENTS	1	LS	$21,990,650	$21,990,650
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$10,993,426	$10,993,426
5	INTEREST DURING CONSTRUCTION	1	LS	$15,386,442	$15,386,442
	PROJECT CAPITAL COST				**$490,963,746**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$34,544,738	$34,544,738	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$36,167,346	$36,167,346	$36,167,346	$36,167,346	$36,167,346
3	PUMPING ENERGY COSTS	$0	$366,274	$366,274	$366,274	$366,274	$366,274
	TOTAL ANNUAL COST	**$0**	**$71,078,358**	**$71,078,358**	**$36,533,620**	**$36,533,620**	**$36,533,620**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$71,078,358	$71,078,358	$36,533,620	$36,533,620	$36,533,620
2	YIELD	18,827	19,772	20,568	20,929	20,800	20,903
3	UNIT COST	$0	$3,595	$3,456	$1,746	$1,756	$1,748
	TOTAL UNIT COST						**$2,067**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$9,468,282	$9,468,282
2	PIPELINES	1	LS	$23,115,469	$23,115,469
3	PIPELINE CROSSINGS	1	LS	$1,747,666	$1,747,666
4	ADVANCED WATER TREATMENT FACILITY	1	LS	$294,436,275	$294,436,275
	PROJECT COST				**$328,767,692**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$9,468,282	$236,707
2	PIPELINES	1.0	%	$23,115,469	$231,155
3	PIPELINE CROSSINGS	1.0	%	$1,747,666	$17,477
4	ADVANCED WATER TREATMENT FACILITY	1.0	LS	$35,682,008	$35,682,008
	ANNUAL OPERATION AND MAINTENANCE COST				**$36,167,346**

Water Management Strategy Evaluation

Based on the analysis provided above, the City of Houston Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1-5	Options 1, 2a, and 2b provide raw water and are very economical compared to alternative raw water supply projects. Option 3 provides treated water at a high cost.
Location	4	Water supplies are already permitted for use in the identified basins of need. Projects include transmission infrastructure to convey water to existing treatment plants and/or connect to existing water supply system.
Water Quality	3	The project takes advantage of existing and planned discharges in the Houston area.
Environmental Land and Habitat	4	Majority of projects are to be constructed in already-developed areas or existing rights-of-way.
Environmental Flows	2	Projects will reduce the level of flows returned to streams to a level planned for during permitting process.
Local Preference	4	Support for reuse and water-efficient projects in the area.
Institutional Constraints	3	Property acquisition required for project development.
Development Timeline	4	Larger alternatives may take approximately 10 years to implement although others may be developed much sooner.
Sponsorship	4	City of Houston is committed to reuse as a long-term project.
Vulnerability	4	Potential impacts from water quality events upstream and the opportunity for damage to critical infrastructure.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	3	This project is not expected to impact other strategies.

The COH Reuse concepts presented include up to 15 miles of pipelines depending on final configuration of the project which will impact an associated 90 acres of land. The majority of this impact will be in urbanized areas with limited impacts to habitat. The project may potentially reduce return flows to various basins by as much as 191,139 ac-ft/yr. However, this reduction in return flows may also correlate to a reduction in diversions of surface water from other basins. These diversions are already permitted for consumptive use under the City of Houston's Water Right 5827 which accounts for environmental flows. COH Reuse is not anticipated to impact agricultural land or production.

Water User Group Application

The City of Houston Reuse project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Withdrawal of the identified reclaimed source is generally limited to the permitted diversion points. However, use of existing and proposed infrastructure may make the supply available for use by COH and its customers.
Size	The concentration of reclaimed supplies through bed and banks transfer makes it possible to develop this project to fairly significant volumes of water commensurate with the demands projected for COH and its service area.
Water Quality	The reclaimed water projects will deliver raw water to two treatment plants which may be treated and used for meeting any potential need. Option 3 will provide treated water of quality that is acceptable for municipal use.
Unit Cost	The unit cost for the project varies based on capacity and the specifics of each option. However, the identified unit costs of the raw water options are economical compared to other long-term raw water options.
Other Factors	This project requires the use of reclaimed water blended with other sources as a potable drinking water supply in Options 1 and 2 and the direct treatment and reuse of reclaimed water as a potable supply in Option 3. These are emerging practices and may take some time to be fully adopted.

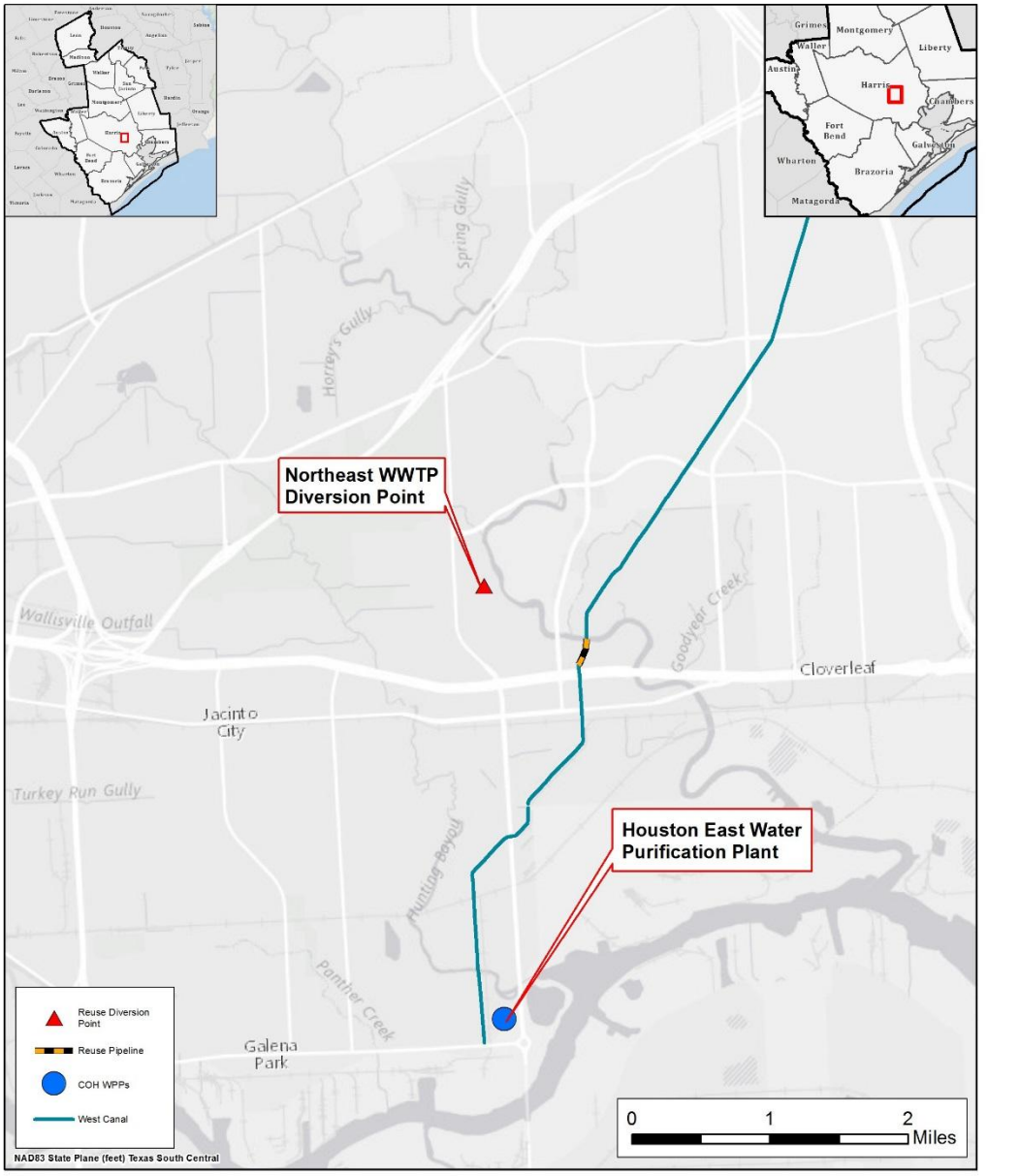
References

Texas Commission on Environmental Quality. *Water Right Permit Number 5827*, May 2011.

Texas Parks and Wildlife, *https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/*, Accessed May 16, 2019.

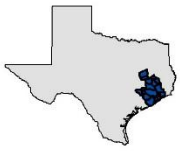
Texas Parks and Wildlife, *https://tpwd.texas.gov/gis/rtest/*, Accessed April 8, 2019.

Location Map – Option 1



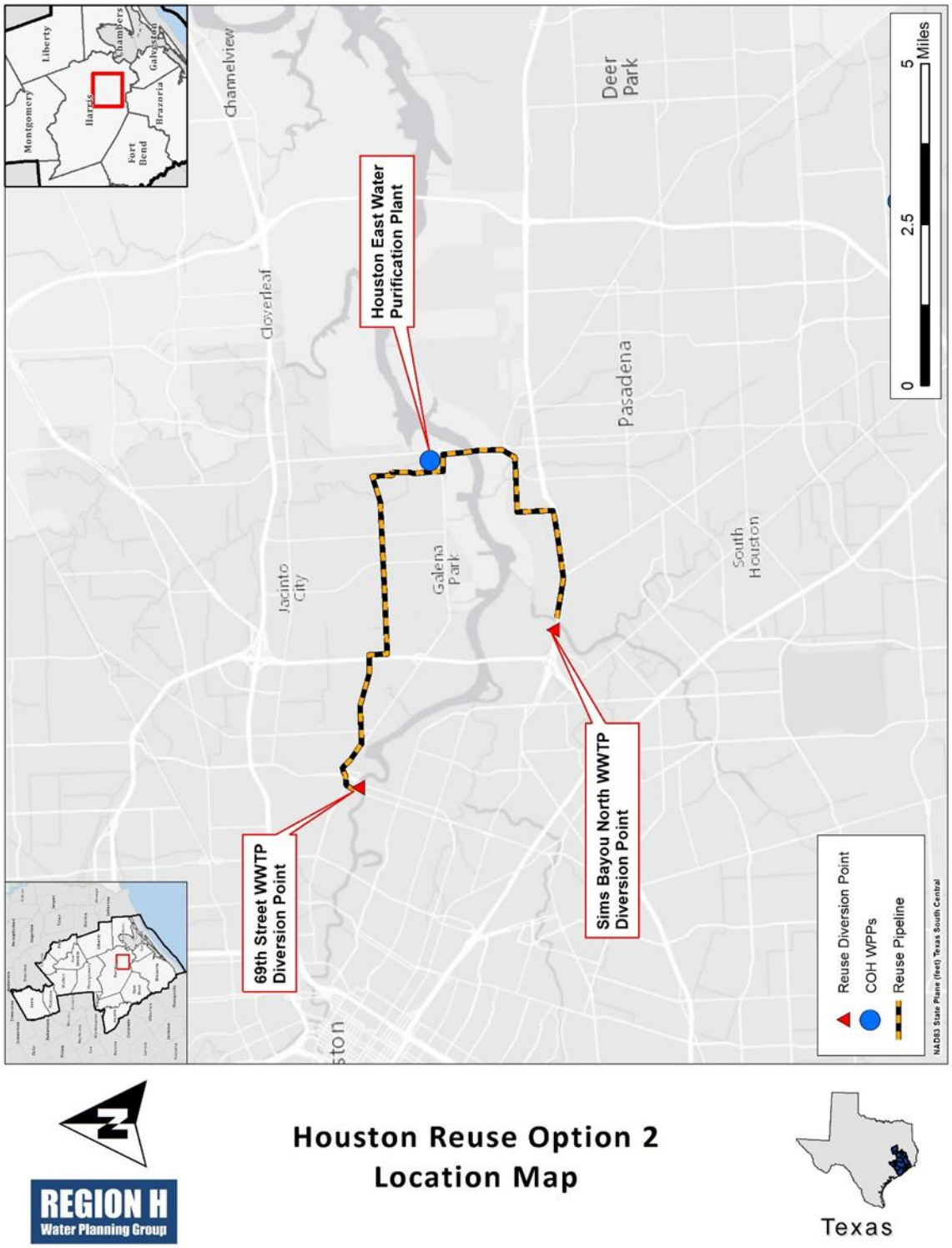
REGION H
Water Planning Group

Houston Reuse Option 1
Location Map

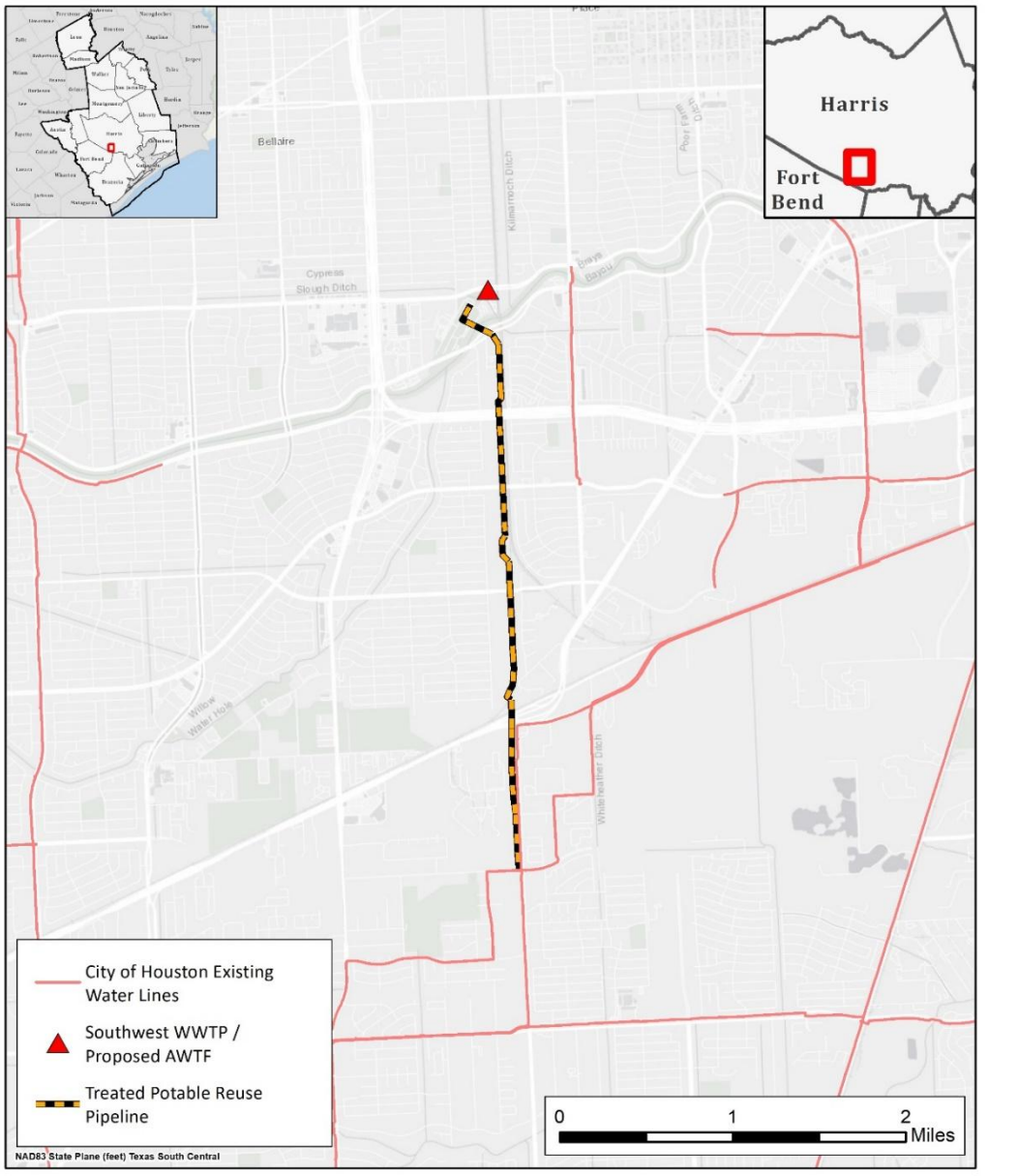


Texas

Location Map – Options 2a and 2b



Location Map – Option 3



REGION H Water Planning Group

Houston Reuse Option 3 Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Pearland Reuse
Project ID:	REUS-002
Project Type:	Reuse
Potential Supply Quantity (Rounded):	314 - 1,154 ac-ft/yr (0.25 - 1 mgd)
Implementation Decade:	2040
Development Timeline:	<5 years per phase
Project Capital Cost:	$24,161,522 (Sept. 2023)
Unit Water Cost (Rounded):	$1,683 per ac-ft (during loan period) $210 per ac-ft (after loan period)

Strategy Description

To plan for future growth and reduce dependence on groundwater, the City of Pearland has identified opportunities to meet irrigation and other demands through effluent reuse from its existing wastewater treatment facilities.

Strategy Analyses

The project analyses for the City of Pearland Reuse project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The City of Pearland has five wastewater treatment plants (WWTPs) which are capable of producing Type 1 effluent for reuse. Type 1 indicates a high-quality effluent treated to acceptable standards for application where contact with the public is likely. Pearland is considering utilizing a portion of this effluent for municipal irrigation at two locations; one site will use approximately 0.25 MGD (280 ac-ft/yr) while the other smaller location will receive 0.03 MGD (34 ac-ft/yr). This amount is anticipated to increase in subsequent decades. While Pearland has not yet established a target volume for this expanded reuse, for purposes of the Regional Plan it was assumed that, at a minimum, it would be possible for Pearland to supply three additional irrigation locations with 280 ac-ft/yr of reuse supply each. Considered in context of the City of Pearland's projected year 2040 water demand of 23,675 ac-ft, this is intended to serve as a conservative estimate, and it is possible that Pearland could elect to utilize reuse in excess of this amount.

Environmental Considerations

The direct reuse of the effluent source supply would be expected to have some degree of impact in

terms of reduction of instream flows downstream of the WWTP discharge point for any portion of the source supply originating from current levels of return flow. Any reuse from the portion of return flow generated from future demand growth would not be expected to create additional instream flow reductions, as this portion of potential supply is not yet generated or discharged.

Permitting and Development

The source WWTP facilities for the project already generate effluent treated to the required standards for the intended use and therefore limited permitting effort is anticipated. Some minor permitting effort may be required as part of transmission infrastructure development.

Cost Analysis

A detailed estimate of project cost is not available for the project at this time. A preliminary planning estimate of project cost was developed using standard cost estimate procedures for Region H. It was assumed for this estimate that 314 ac-ft of supply would be developed for year 2040, with infrastructure limited to three miles of 6-inch pipeline, a booster pump station, and a ground storage tank. Future reuse expansion was estimated with three additional reuse areas, each requiring similar infrastructure. It was assumed for both phases that all construction could be accommodated within existing easements and plant sites. Costs presented in *Table 1*, including debt service and costs for operations and maintenance, were calculated using standard cost estimation procedures for Region H.

Table 1 – City of Pearland Reuse Project Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$16,518,843	$16,518,843	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$5,333,354	$5,333,354	
3	LAND AND EASEMENTS	1	LS	$119,251	$119,251	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$691,492	$691,492	
5	INTEREST DURING CONSTRUCTION	1	LS	$1,498,582	$1,498,582	
	PROJECT CAPITAL COST				**$24,161,522**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE (PHASE 1)	$0	$428,917	$428,917	$0	$0	$0
	DEBT SERVICE (PHASE 2)	$0	$0	$1,271,113	$1,271,113	$0	$0
2	OPERATION AND MAINTENANCE (PHASE 1)	$0	$54,436	$54,436	$54,436	$54,436	$54,436
	OPERATION AND MAINTENANCE (PHASE 2)	$0	$0	$159,708	$159,708	$159,708	$159,708
3	PUMPING ENERGY COSTS	$0	$8,101	$28,384	$28,384	$28,384	$28,384
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$491,455**	**$1,942,559**	**$1,513,642**	**$242,528**	**$242,528**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$491,455	$1,942,559	$1,513,642	$242,529	$242,529
2	YIELD	-	314	1,154	1,154	1,154	1,154
3	UNIT COST	$0	$1,565	$1,683	$1,312	$210	$210
	TOTAL UNIT COST						**$899**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$3,263,700	$3,263,700
2	PIPELINES	1	LS	$8,964,832	$8,964,832
3	WATER STORAGE TANKS	1	LS	$4,290,311	$4,290,311
	PROJECT COST				**$16,518,843**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$3,263,700	$81,593
2	PIPELINES	1.0	%	$8,964,832	$89,648
3	WATER STORAGE TANKS	1.0	%	$4,290,311	$42,903
	ANNUAL OPERATION AND MAINTENANCE COST				**$214,144**

Water Management Strategy Evaluation

Based on the analysis provided above, the City of Pearland Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Costs are high during debt service and are reduced considerably after completion of debt service.
Location	4	Source located near points of demand with some conveyance infrastructure required.
Water Quality	3	No known issues regarding water quality. The project is expected to produce Type 1 effluent suitable for the intended use.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Some decrease in environmental flows below WWTPs.
Local Preference	4	No known opposition.
Institutional Constraints	5	Minimal or no permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	4	Sponsor is identified and committed to project.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	1	Project would primarily serve the sponsor entity.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

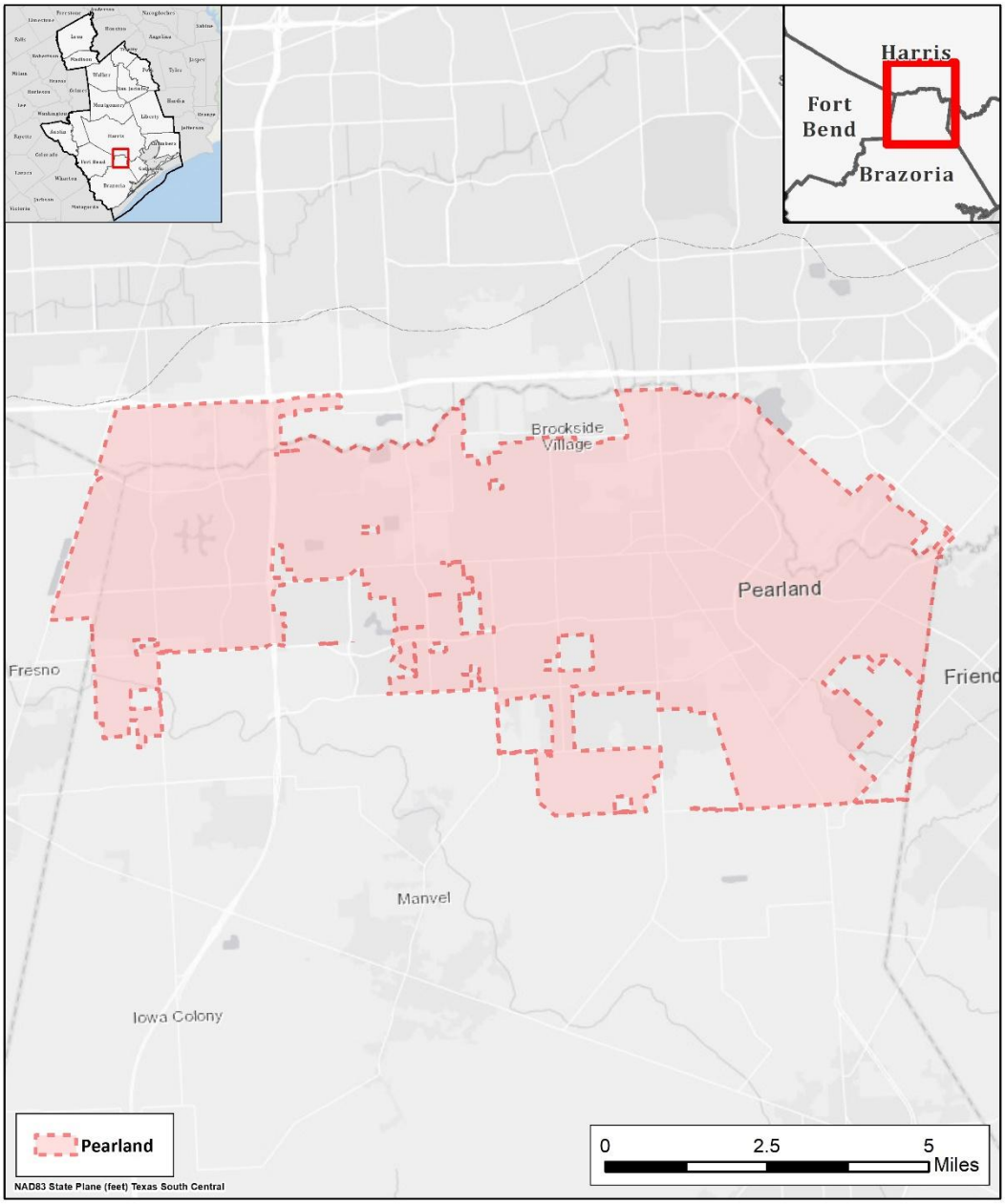
City of Pearland Reuse is not anticipated to affect acreage or vulnerable species. The project may potentially reduce return flows by as much as 1,154 ac-ft/yr. However, this reduction in return flows may also correlate to a reduction in diversions of surface water from other basins. City of Pearland Reuse is not anticipated to impact agricultural land or production.

Water User Group Application

The City of Pearland Reuse project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve the City of Pearland and any entities that it provides with water supply.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use, with some limited conveyance infrastructure required.
Size	Project begins with a relatively small volume but is anticipated to expand with time.
Water Quality	The WWTPs which would provide the effluent supply for this project are able to produce high quality Type 1 effluent.
Unit Cost	The cost of this project is high and decreases substantially after completion of debt service.
Other Factors	This project reduces groundwater dependence.

Location Map



REGION H Water Planning Group

City of Pearland Reuse Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	League City Effluent Reuse
Project ID:	REUS-003
Project Type:	Reuse
Potential Supply Quantity (Rounded):	11,200 ac-ft/yr (10.0 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$4,686,566 (Sept. 2023)
Unit Water Cost (Rounded):	$55-66 per ac-ft (during loan period) $4 per ac-ft (after loan period)

Strategy Description

League City is located primarily in northern Galveston County with some water service area in southeastern Harris County. The City is supplied primarily with surface water from the Gulf Coast Water Authority (GCWA) and City of Houston (COH). Surface water supply form GCWA is obtained from the Brazos River Basin in Galveston County and supply from the COH is obtained from the Trinity River in Harris County. The City also produces some self-supplied groundwater from the Gulf Coast Aquifer. Historically, League City has directly reused treated wastewater effluent to irrigate golf courses throughout the City and for irrigation, chemical feed, and wash down of equipment at their wastewater treatment plant (WWTP). As League City's population and water demands continue to grow, there will be greater volumes of wastewater effluent that can be treated and reused for the aforementioned historical uses, as well as for irrigation of commercial and residential development common areas and landscaping. In turn, this could potentially reduce the City's needs for other water supply sources, including surface water from GCWA and COH.

Strategy Analyses

The project analyses for the League City Effluent Reuse include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The size of a potential reuse project was estimated based on the projected water demands for League City. It was assumed that 5 MGD (5,600 ac-ft per year) of effluent could be reused by 2030, and the volume of reuse would grow incrementally across the planning horizon to approximately 10 MGD (11,200 ac-ft per year) by 2080.

Environmental Considerations

Environmental impacts of the project would be examined in detail during the Texas Commission on Environmental Quality (TCEQ) permitting or permit amendment process. The study includes areas within the Brazos and Trinity River Basins, which are subject to environmental flow requirements, including those established in accordance with 30 TAC §298 which establish seasonal requirements for flows. Any increase in reuse of current levels of wastewater flows would cause some reduction in return flows. Any portion of the supply based on return flow from future growth rather than existing development would not be expected to further reduce streamflow.

Infrastructure required for implementation of this project would consist primarily of limited conveyance infrastructure to connect to points of use. Use of existing easements or replacement of existing supply conveyances would minimize habitat impacts.

Permitting and Development

Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 TAC §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week. League City is currently planning a new WWTP that will have treatment processes to achieve the TCEQ Type 1 treatment levels.

Cost Analysis

Costs associated with future expanded reuse for irrigation would largely be associated with limited expansions of conveyance to connect to points of use. Implementation of this project would also result in additional annual costs for increased volume of advanced treatment, pumping energy, and O&M, although increased annual costs for a project of the scale specified are likely minimal as well.

Planning level cost estimates were developed for the Region H Plan based on cost estimates provided by GCWA. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Additional cost components, such as interest during construction, annualized debt service, and annualized operations and maintenance costs, were assumed using standard Regional Planning costing assumptions. Estimated costs are presented in *Table 1*.

Table 1 – League City Effluent Reuse Project Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$4,120,000	$4,120,000	
2	INTEREST DURING CONSTRUCTION	1	LS	$566,566	$566,566	
	PROJECT CAPITAL COST				$4,686,566	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$329,752	$329,752	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$41,200	$41,200	$41,200	$41,200	$41,200	$41,200

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$370,952	$370,952	$41,200	$41,200	$41,200	$41,200
2	YIELD	5,600	6,720	7,840	8,960	10,080	11,200
3	UNIT COST	$66	$55	$5	$5	$4	$4
	TOTAL UNIT COST						$18

Water Management Strategy Evaluation

Based on the analysis provided above, the League City Effluent Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Proposed project is expected to deliver at a very low cost due limited need for additional infrastructure.
Location	5	Source located near points of demand with minimal conveyance infrastructure required.
Water Quality	3	No known issues regarding water quality.
Environmental Land and Habitat	5	No impacts / minimal impacts.
Environmental Flows	2	Minor reduction in environmental flows.
Local Preference	4	Direct reuse for non-potable uses is already being done by the City. No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	4	Project sponsor identified.

CRITERIA	RATING	EXPLANATION
Vulnerability	5	Minimal risk associated with this project.
Regionalization	2	Serves sponsor entity and supports a limited number of associated systems.
Impacts on Other WMS	3	No significant impacts recognized to other projects. Could reduce irrigation demands on other supply sources.

The League City Effluent Reuse project includes no additional pipeline construction for subsequent phases of conversion. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The League City Effluent Reuse project was assumed to serve the needs of the League City Water User Group (WUG). This information was considered in context of the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the applicability of the project to the WUG(s) served.

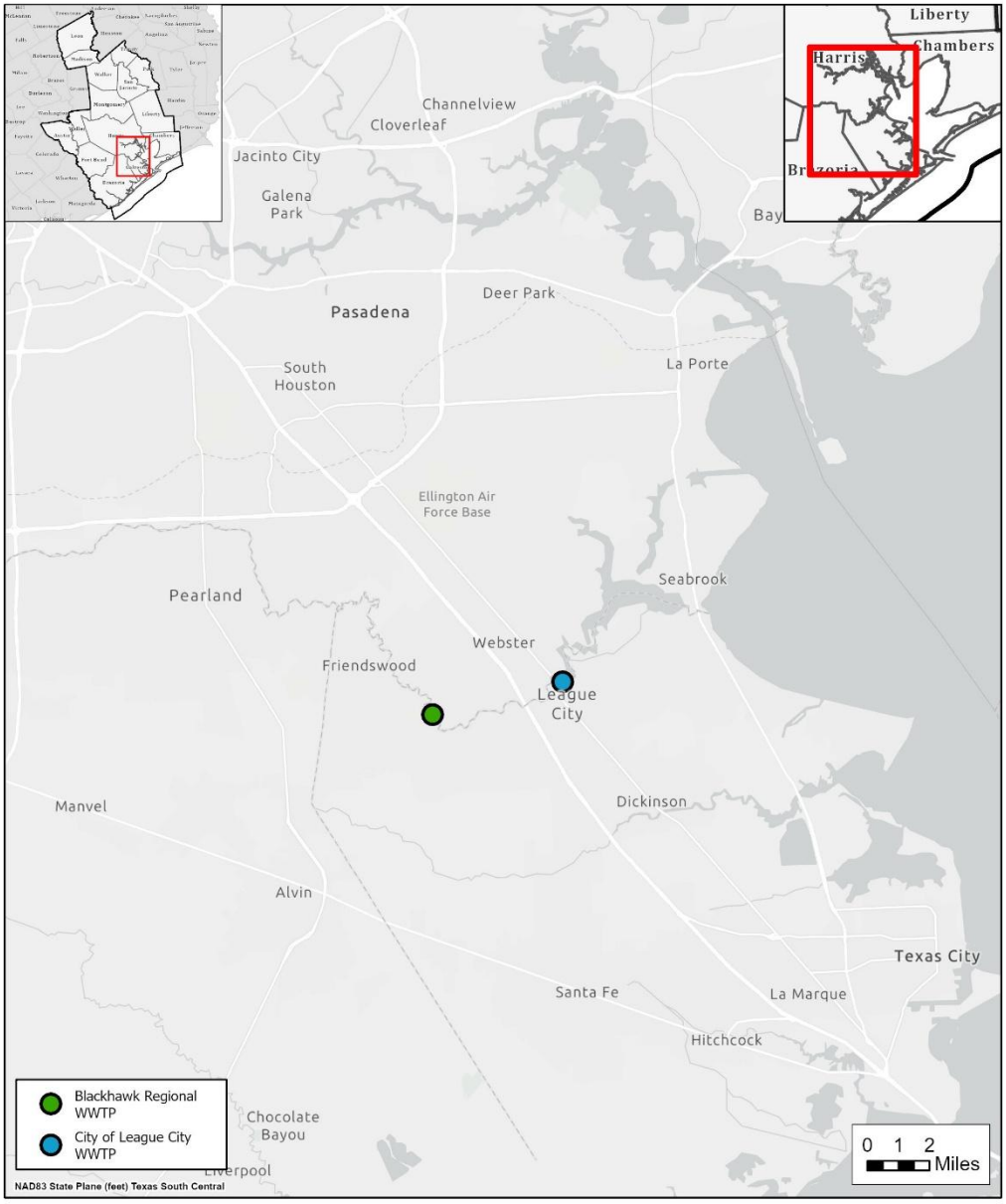
CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	Overall project supply volume is relatively small but is appropriate to the target irrigation demands, including golf courses and greenspaces.
Water Quality	This project provides a treated water source that may primarily used to serve irrigation demands.
Unit Cost	The cost of this project is minimal and appropriate to the target use.
Other Factors	Some reuse permitting or permit amendment effort may be necessary for the sponsor WUGs to implement this project.

References

League City Water Reuse, City of League City. 2024. https://www.leaguecitytx.gov/3315/Water-Reuse

Texas Water Development Board, Water Use Surveys. 2024.

Location Map



REGION H Water Planning Group

League City Effluent Reuse

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	North Fort Bend Water Authority Member District Reuse
Project ID:	REUS-004
Project Type:	Reuse
Potential Supply Quantity (Rounded):	4,280 ac-ft/yr (3.82 mgd)
Implementation Decade:	2030
Development Timeline:	1 – 3 years
Project Capital Cost:	$58,450,435 (Sept. 2023)
Unit Water Cost (Rounded):	$1,708 per ac-ft (during loan period) $747 per ac-ft (after loan period)

Strategy Description

Population growth in Region H over recent decades has spurred the development of direct wastewater reuse facilities to assist water systems in meeting water demands from golf courses, greenspace, and maintenance of amenity lakes. The North Fort Bend Water Authority (NFBWA) has identified a number of existing Municipal Utility Districts (MUDs) within its boundaries which are developing new wastewater reclamation projects for the purpose of supplying outdoor water demands.

Strategy Analyses

The project analyses for NFBWA Member District Reuse include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The water systems within NFBWA are supplied primarily by treated surface water delivered by NFBWA or by groundwater from the Gulf Coast Aquifer pumped by the member districts. Reuse of wastewater flows would create a new supply of water for meeting outdoor water demands. Reuse systems of this type would produce high quality effluent, which would have to be treated to TCEQ Type 1 reclaimed water standards due to the potential for public contact.

NFBWA has identified a number of member districts, listed in *Table 1*, with reuse projects in various stages of design and construction. For purposes of the Regional Water Plan, effluent supply availability was estimated from projected population for the applicable member districts and projected per-capita demands for NFBWA after application of recommended conservation and water loss reduction WMS. A return flow factor of 40 percent based on analyses from prior RWPs was then applied, with availability also constrained by the anticipated infrastructure capacity for each system.

Due to potential variations among systems regarding future growth in outdoor water needs, supplies for the project were conservatively assumed to remain level through year 2080.

Table 1 – NFBWA Member Districts Pursuing Reuse Projects

Municipal Utility Districts
Cinco Southwest MUD No. 1
Fort Bend County MUD No. 34
Fort Bend County MUD No. 35
Fort Bend County MUD No. 57
Fort Bend County MUD No. 118
Fort Bend County MUD No. 122
Fort Bend County MUD No. 123
Fort Bend County MUD No. 133
Fort Bend County MUD No. 146
Fort Bend County MUD No. 151
Fort Bend County MUD No. 182
Fort Bend County MUD No. 185
Fort Bend County MUD No. 194
Grand Lakes MUD

Environmental Considerations

The diversion of the effluent source supply would be expected to have some degree of impact in terms of reduction of instream flows downstream of plant facilities for any portion of the source supply originating from current levels of return flow. Any reuse from the portion of return flow generated from future demand growth would not be expected to create additional instream flow reductions, as this portion of potential supply is not yet generated or discharged.

Permitting and Development

Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 Texas Administrative Code (TAC) §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week.

Cost Analysis

A preliminary planning level cost estimate was prepared for NFBWA Member District Reuse using default costing methods for regional plan development. Costs were developed based on basic costing guidelines as outlined by TWDB guidance. Cost calculations assumed infrastructure components would include a tertiary treatment facility, ground storage tanks, a pump station, and one mile of pipeline for each participating member district. Costs for interest during construction and annualized costs (debt service, operations and maintenance, and energy) were estimated using standard Regional Planning costing reference data. Estimated costs are presented in *Table 2*.

Table 2 – NFBWA Member District Reuse Project Cost

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$40,047,264	$40,047,264
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$13,598,936	$13,598,936
3	LAND AND EASEMENTS	1	LS	$158,768	$158,768
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$1,020,167	$1,020,167
5	INTEREST DURING CONSTRUCTION	1	LS	$3,625,300	$3,625,300
	PROJECT CAPITAL COST				**$58,450,435**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$4,112,636	$4,112,636	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$3,107,743	$3,107,743	$3,107,743	$3,107,743	$3,107,743	$3,107,743
3	PUMPING ENERGY COSTS	$88,904	$88,904	$88,904	$88,904	$88,904	$88,904
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$7,309,283**	**$7,309,283**	**$3,196,647**	**$3,196,647**	**$3,196,647**	**$3,196,647**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$7,309,283	$7,309,283	$3,196,647	$3,196,647	$3,196,647	$3,196,647
2	YIELD	4,280	4,280	4,280	4,280	4,280	4,280
3	UNIT COST	$1,708	$1,708	$747	$747	$747	$747
	TOTAL UNIT COST						**$1,067**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$7,857,000	$7,857,000
2	PIPELINES	1	LS	$8,352,128	$8,352,128
3	WATER STORAGE TANKS	1	LS	$11,112,125	$11,112,125
4	WASTEWATER RECLAMATION PLANTS	1	LS	$12,726,011	$12,726,011
	PROJECT COST				**$40,047,264**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$7,857,000	$196,425
2	PIPELINES	1.0	%	$8,352,128	$83,521
3	WATER STORAGE TANKS	1.0	%	$11,112,125	$111,121
4	WASTEWATER RECLAMATION PLANTS	1.0	LS	$2,716,676	$2,716,676
	ANNUAL OPERATION AND MAINTENANCE COST				**$3,107,743**

Water Management Strategy Evaluation

Based on the analysis provided above, the NFBWA Member District Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Cost is high but decreases after completion of debt service.

CRITERIA	RATING	EXPLANATION
Location	5	Direct reuse infrastructure would be located in close proximity to points of water use.
Water Quality	3	The project is expected to produce Type 1 effluent suitable for the intended use.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Diversion of discharges would create reduction in environmental flows.
Local Preference	3	No known opposition to the proposed project.
Institutional Constraints	3	Permits expected with minimal problems.
Development Timeline	5	Project could be developed in a relatively short period of time.
Sponsorship	5	Individual member districts have notified NFBWA of intent to pursue reuse and are in various stages of planning and construction.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	2	Implemented primarily at the individual member district level. Overall strategy serves a limited number of systems but supports overall regionalization in conjunction with other projects.
Impacts on Other WMS	3	No significant impacts recognized to other project.

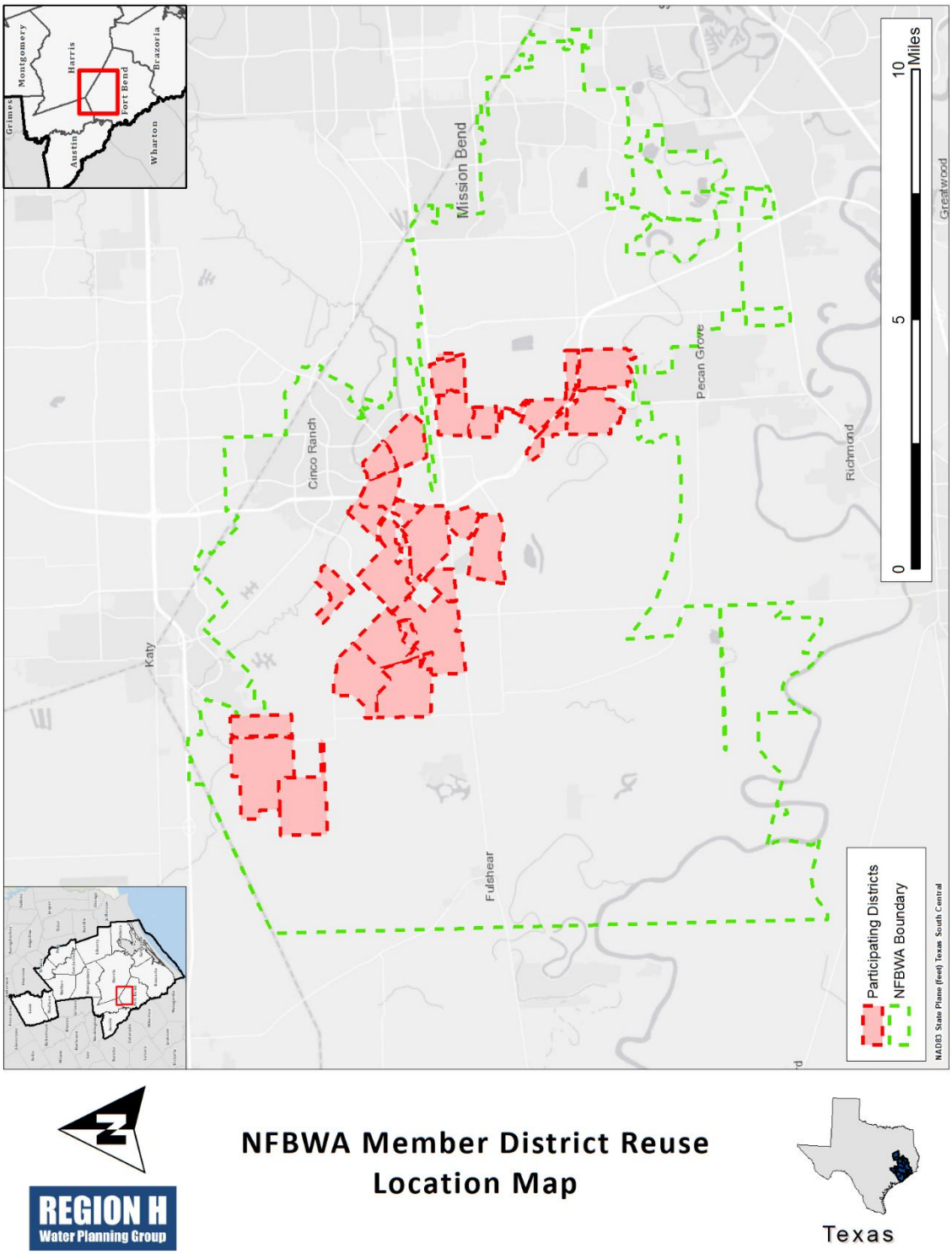
The NFBWA Member District Reuse project is not anticipated to affect acreage or vulnerable species and is not anticipated to impact agricultural land or production. The project may potentially reduce return flows by as much as 4,280 ac-ft/yr.

Water User Group Application

The NFBWA Member District Reuse project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve the member districts in NFBWA developing reuse infrastructure.

CRITERIA	WUG SUITABILITY
Proximity	Project diversion point located in close proximity to intended points of use.
Size	Overall project supply volume is appropriate to the intended use.
Water Quality	The project is expected to produce Type 1 effluent suitable for the intended use.
Unit Cost	Cost is high but decreases after completion of debt service.
Other Factors	Implementation of supply from this project requires permitting through TCEQ.

Location Map



REGION H Water Planning Group

NFBWA Member District Reuse Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	North Harris County Regional Water Authority Member District Reuse
Project ID:	REUS-005
Project Type:	Reuse
Potential Supply Quantity (Rounded):	300 ac-ft/yr (0.3 mgd)
Implementation Decade:	2030
Development Timeline:	1 – 3 years
Project Capital Cost:	$5,441,580 (Sept. 2023)
Unit Water Cost (Rounded):	$2,206 per ac-ft (during loan period) $929 per ac-ft (after loan period)

Strategy Description

Population growth in Region H over recent decades has spurred the development of direct wastewater reuse facilities to assist water systems in meeting water demands from golf courses and greenspace. The North Harris County Regional Water Authority (NHCRWA) has identified the potential for one or more of its member districts to develop new wastewater reclamation projects for the purpose of supplying existing golf course or green space water demands.

Strategy Analyses

The project analyses for NHCRWA Member District Reuse include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The water systems within NHCRWA are supplied primarily by treated surface water delivered by NHCRWA or by groundwater from the Gulf Coast Aquifer pumped by the member districts. Reuse of wastewater flows would create a new supply of water for meeting golf course or greenspace irrigation demands. A reuse system of this type would produce high quality effluent, which would have to be treated to TCEQ Type 1 reclaimed water standards due to the potential for public contact. Supply volume was conservatively estimated as 300 ac-ft/yr to approximate the supply for a single golf course; implementation of reclaimed water infrastructure by multiple member districts could generate a larger supply.

Environmental Considerations

The diversion of the effluent source supply would be expected to have some degree of impact in terms

of reduction of instream flows downstream of plant facilities for any portion of the source supply originating from current levels of return flow. Any reuse from the portion of return flow generated from future demand growth would not be expected to create additional instream flow reductions, as this portion of potential supply is not yet generated or discharged.

Permitting and Development

Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 Texas Administrative Code (TAC) §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week.

Cost Analysis

A preliminary planning level cost estimate was prepared for NHCRWA Member District Reuse using default costing methods for regional plan development. Costs were developed based on basic costing guidelines as outlined by TWDB guidance. Cost calculations assumed infrastructure components would include a tertiary treatment facility, ground storage tanks, a pump station, and one mile of pipeline. Costs for interest during construction and annualized costs (debt service, operations and maintenance, and energy) were estimated using standard Regional Planning costing reference data. Estimated costs are presented in *Table 1*.

Table 1 – NHCRWA Member District Reuse Project Cost

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$3,710,990	$3,710,990
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$1,261,493	$1,261,493
3	LAND AND EASEMENTS	1	LS	$15,758	$15,758
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$115,833	$115,833
5	INTEREST DURING CONSTRUCTION	1	LS	$337,506	$337,506
	PROJECT CAPITAL COST				**$5,441,580**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$382,875	$382,875	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$272,905	$272,905	$272,905	$272,905	$272,905	$272,905
3	PUMPING ENERGY COSTS	$5,944	$5,944	$5,944	$5,944	$5,944	$5,944
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$661,724**	**$661,724**	**$278,849**	**$278,849**	**$278,849**	**$278,849**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$661,724	$661,724	$278,849	$278,849	$278,849	$278,849
2	YIELD	300	300	300	300	300	300
3	UNIT COST	$2,206	$2,206	$929	$929	$929	$929
	TOTAL UNIT COST						**$1,355**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$760,300	$760,300
2	PIPELINES	1	LS	$747,069	$747,069
3	WATER STORAGE TANKS	1	LS	$1,074,524	$1,074,524
4	WASTEWATER RECLAMATION PLANTS	1	LS	$1,129,097	$1,129,097
	PROJECT COST				**$3,710,990**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$760,300	$19,008
2	PIPELINES	1.0	%	$747,069	$7,471
3	WATER STORAGE TANKS	1.0	%	$1,074,524	$10,745
4	WASTEWATER RECLAMATION PLANTS	1.0	LS	$235,682	$235,682
	ANNUAL OPERATION AND MAINTENANCE COST				**$272,905**

Water Management Strategy Evaluation

Based on the analysis provided above, the NHCRWA Member District Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Cost is high but decreases after completion of debt service.

CRITERIA	RATING	EXPLANATION
Location	5	Direct reuse infrastructure would be located in close proximity to points of water use.
Water Quality	3	The project is expected to produce Type 1 effluent suitable for the intended use.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Diversion of discharges would create reduction in environmental flows.
Local Preference	3	No known opposition to the proposed project.
Institutional Constraints	3	Permits expected with minimal problems.
Development Timeline	5	Project could be developed in a relatively short period of time.
Sponsorship		
Vulnerability	5	Minimal risk associated with this project.
Regionalization	2	Implemented primarily at the individual member district level. Overall strategy serves a limited number of systems but supports overall regionalization in conjunction with other projects.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

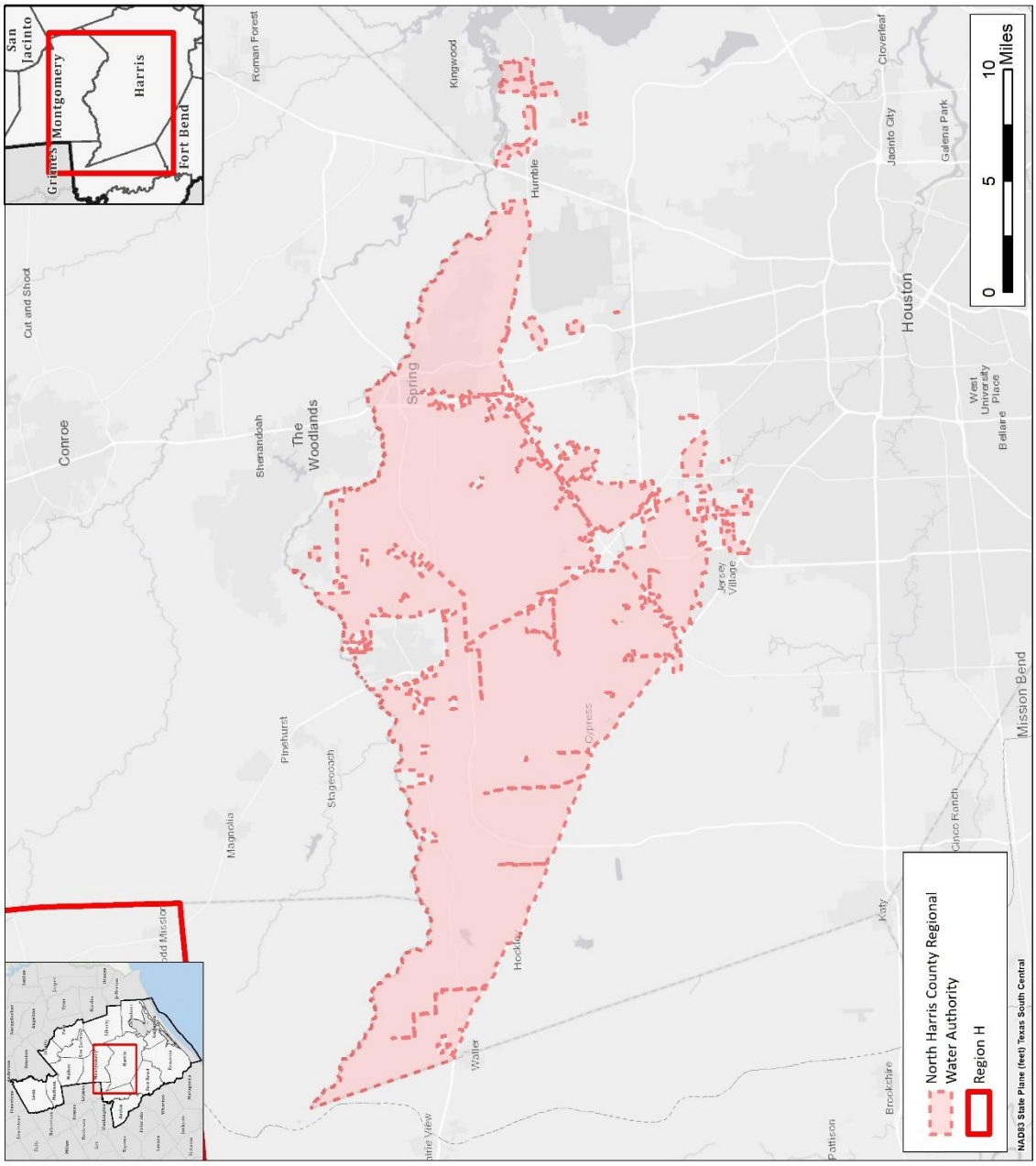
The NHCRWA Member District Reuse project is not anticipated to affect acreage or vulnerable species and is not anticipated to impact agricultural land or production. The project may potentially reduce return flows by as much as 300 ac-ft/yr.

Water User Group Application

The NHCRWA Member District Reuse project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve the member districts on NHCRWA developing reuse infrastructure.

CRITERIA	WUG SUITABILITY
Proximity	Project diversion point located in close proximity to intended points of use.
Size	Overall project supply volume is appropriate to the intended use.
Water Quality	The project is expected to produce Type 1 effluent suitable for the intended use.
Unit Cost	Cost is high but decreases after completion of debt service.
Other Factors	Implementation of supply from this project requires permitting through TCEQ.

Location Map



NHCRWA Member District Reuse Location Map

REGION H Water Planning Group

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	River Plantation Reuse
Project ID:	REUS-006
Project Type:	Reuse
Potential Supply Quantity (Rounded):	51 ac-ft/yr (0.05 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$0 (Sept. 2023)
Unit Water Cost (Rounded):	$0 per ac-ft (during loan period) $0 per ac-ft (after loan period)

Strategy Description

In order to address demand growth and protect groundwater resources, River Plantation MUD in conjunction with East Plantation UD and the River Plantation Country Club have implemented use of reclaimed water to offset groundwater use for golf course and green space irrigation. In order to address growing demands within Montgomery County, additional reuse capacity from existing reuse infrastructure could be utilized to meet an increased amount of anticipated municipal water demand. Based on prior analyses for the River Plantation and East Plantation Joint Groundwater Reduction Plan (GRP), the amount of reuse applied to irrigation demands could be increased from current levels of approximately 83 million gallons per year (mgy) to 100 mgy by Year 2030.

Strategy Analyses

The project analyses for River Plantation Reuse include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Assessment of supply availability for the River Plantation Reuse was evaluated and summarized within the GRP document and supporting analysis. River Plantation MUD has operated reuse infrastructure since 1988 and currently produces approximately 83 mgy (256 ac-ft/yr) of reclaimed water for golf course irrigation, with the capacity to convey up to 100 mgy (307 ac-ft/yr) to its reuse irrigation system. Prior studies indicate that the source wastewater treatment plant currently regularly produces over 100 million gallons of effluent per year.

Environmental Considerations

Environmental impacts of the project would be examined in detail during the Texas Commission on

Environmental Quality (TCEQ) permitting or permit amendment process. The study includes areas within the San Jacinto River Basin, which is subject to environmental flow requirements, including those established in accordance with 30 TAC §298 which establish seasonal requirements for flows. Any increase in reuse of current levels of wastewater flows would cause some reduction in return flows. Any portion of the supply based on return flow from future growth rather than existing development would not be expected to further reduce streamflow.

Infrastructure required for implementation of this project would consist primarily of limited conveyance infrastructure to connect to points of use. Use of existing easements or replacement of existing groundwater supply conveyances would minimize habitat impacts.

Permitting and Development

Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 TAC §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week.

Cost Analysis

Costs associated with future expanded reuse for irrigation have not yet been determined but are expected to be minimal, as much of the treatment and transmission infrastructure is currently in place. Implementation of this project would result in additional annual costs for increased volume of advanced treatment, pumping energy, and O&M, although increased annual costs for a project of the scale specified are likely minimal as well. As this project includes the use of a future water supply that does not result in additional infrastructure cost, no project cost is included for the strategy.

Water Management Strategy Evaluation

Based on the analysis provided above, the River Plantation Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Proposed project is expected to deliver at a very low cost due limited need for additional infrastructure.
Location	5	Source located near points of demand with minimal conveyance infrastructure required.
Water Quality	3	No known issues regarding water quality.
Environmental Land and Habitat	5	No impacts / minimal impacts.

CRITERIA	RATING	EXPLANATION
Environmental Flows	2	Minor reduction in environmental flows.
Local Preference	4	Project identified in prior studies. No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	4	Project is identified as a component of the sponsors' GRP.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	2	Serves sponsor entity and supports a limited number of associated systems.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The River Plantation Reuse project includes no additional pipeline construction for subsequent phases of conversion. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

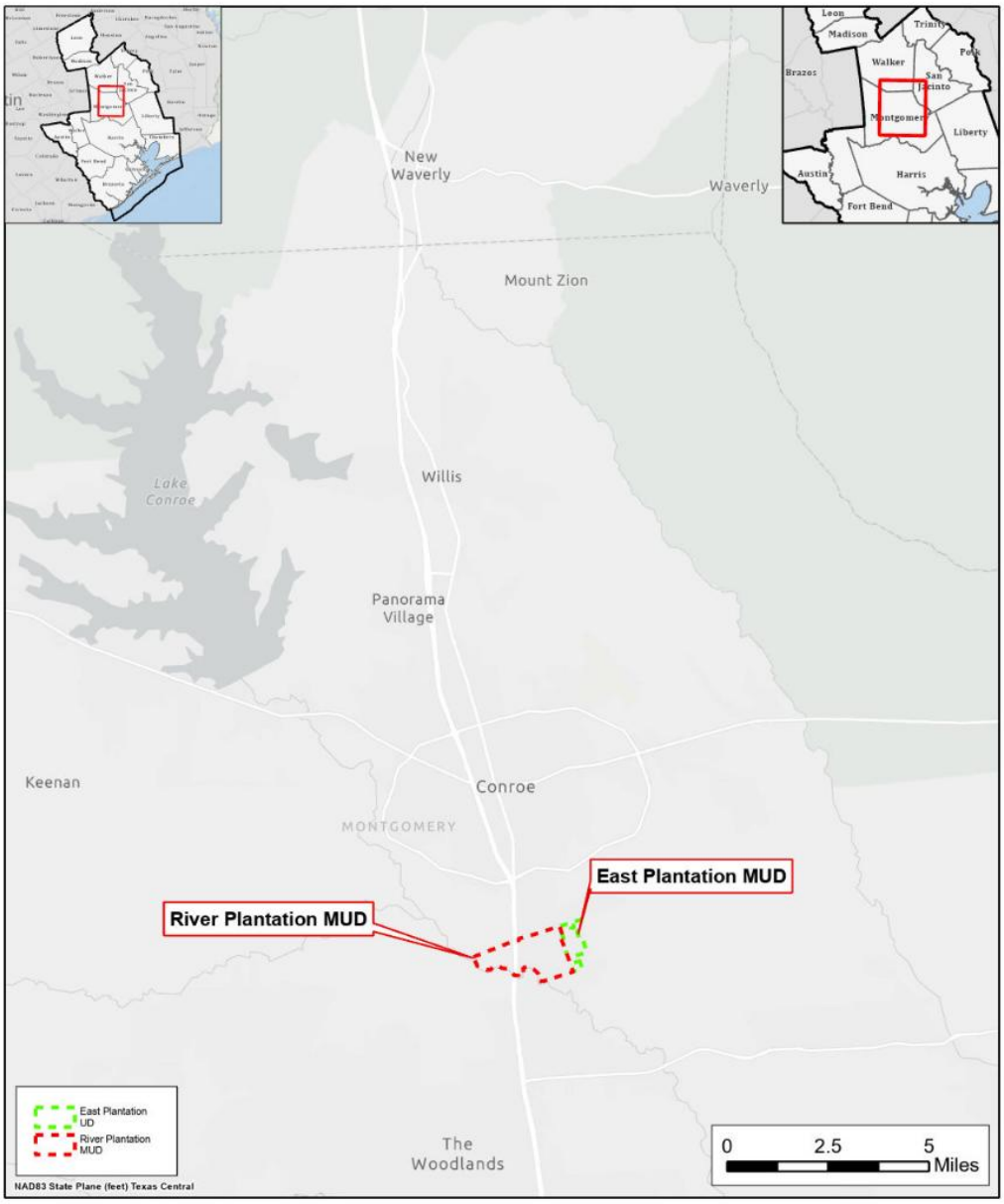
Determination of the Water User Groups (WUGs) to which the River Plantation Reuse project may be applied was evaluated based on the entities identified in the GRP document. This information was considered in context of the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the applicability of the project to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	Overall project supply volume is relatively small but is appropriate to the target greenspace and golf course irrigation demands.
Water Quality	This project provides a high-quality raw water source that may be used to meet greenspace and golf course demands.
Unit Cost	The cost of this project is minimal and appropriate to the target use.
Other Factors	Some reuse permitting or permit amendment effort may be necessary for the sponsor WUGs to implement this project.

References

Bleyl and Associates, *River Plantation Municipal Utility District, East Plantation Utility District, River Plantation Country Club Joint Groundwater Reduction Plan*, prepared for River Plantation MUD, March 2011.

Location Map



REGION H Water Planning Group

River Plantation Reuse Location Map

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	San Jacinto Basin Regional Return Flows
Project ID:	REUS-007
Project Type:	Reuse
Potential Supply Quantity (Rounded):	75,463 – 100,445 ac-ft/yr (67.4 to 89.7 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$0 (Sept. 2023)
Unit Water Cost (Rounded):	$0 per ac-ft

Strategy Description

Lake Houston is located at the confluence of the East and West Forks of the San Jacinto River and receives flow from the Spring Creek Watershed. This entire area is anticipated to undergo considerable growth over the upcoming decades which will inevitably contribute to increased return flows to Lake Houston and its contributing streams, which serves as ideal locations for capturing available flows for use as an additional water supply.

Several existing water right permits dictate the use of water diverted from Lake Houston. These rights are owned by COH and the San Jacinto River Authority (SJRA); some benefit from storage in Lake Houston while others are run-of-the-river diversions that share a diversion point with the reservoir. These rights are summarized in *Table 1*, below. Water Right 4964 serves SJRA's Highlands System and is diverted from Lake Houston although it does not benefit from storage in the reservoir. Water Right 4965 is the original right associated with Lake Houston and both permits and benefits from the reservoir's 160,000 ac-ft of storage. In 2003, COH and SJRA jointly permitted excess yield identified in Lake Houston totaling 32,500 ac-ft/yr. In addition, 80,000 ac-ft/yr of excess flows were also permitted for diversion when available. Conceptually, this permit allows for the diversion of return flows from the upper portion of the basin. However, since these return flows are not specifically called out in the permit, they are not considered in the firm yield analysis for Region H. SJRA's Water Right 5809 permits the use of return flows from wastewater treatment plants in The Woodlands in Montgomery County up to 14,944 ac-ft/yr. Finally, COH's permit 5827 includes diversion of as much as 12,770 ac-ft/yr (11.4 mgd) of return flows from the Kingwood Central and Kingwood West Wastewater Treatment Plants (WWTPs).

Table 1 – Existing Water Rights at Lake Houston

Permit	Priority Year	Diversion (Ac Ft/Yr)	Owner(s)	Lake Houston Storage?
4964	1942/44	55,000	SJRA	No
4965	1940/44	168,000	COH	Yes
5807	2003	32,500	COH/SJRA	Yes
5808	2003	80,000	COH/SJRA	No
5809	2003	14,944	SJRA	No
5827	2004	12,770*	COH	No

**Includes only the portion of WR 5827 that may be diverted at Lake Houston, which is the permitted discharge of the City of Houston's Kingwood West and Kingwood Central WWTPs as referenced in WR 5827.*

Besides permits for diversions from Lake Houston, several reuse permits already exist in the San Jacinto River Basin. SJRA and the City of Conroe obtained approval in 2018 for a permit to use up to 10 mgd (11,200 ac-ft/yr) of return flows generated by the City of Conroe, which are discharged to the West Fork of the San Jacinto River upstream of Lake Houston. Other permits for use of return flows in the San Jacinto River Basin include indirect/direct reuse permits owned by the City of Huntsville in Walker County and Montgomery County MUDs 8 and 9, River Plantation MUD, the City of Panorama Village, and The Woodlands in Montgomery County. All return flows modeled by Region H as available for use under existing permits would have to be deducted from a Regional Return Flows permit.

As the regional population grows, return flows are expected to increase along with development and overall water use. In developing its Groundwater Reduction Plan (GRP), SJRA contractually retained the right to return flows related to surface water provided to its customers. The City of Conroe has also pursued indirect reuse opportunities and has applied for and received a permit for the groundwater-sourced portion of its effluent. North Harris County Regional Water Authority (NHCRWA) has also contractually retained the right to return flows related to surface water provided to its customers.

This project aims to capture, on a firm yield basis, return flows associated with current unpermitted wastewater discharges and future growth in the San Jacinto River Basin above Lake Houston.

Strategy Analyses

The project analyses for San Jacinto Basin Regional Return Flows include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Identification of potential return flows was aided by the existence of a Geographic Information System (GIS) layer of spatial location of projected population growth throughout Harris and Montgomery Counties used for the development of population projections at the census block level. This is a similar layer to the one used for the development of population and demand projections for the 2026 Region H Regional Water Plan (RWP) and the Joint Regulatory Plan Review (JRPR) performed by Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD). For contributing basin area in counties outside of the JRPR study area, a ratio of project contributing area coverage to total WUG area was applied to Regional Planning population projections. Population projections at the most detailed level available were intersected with the Region H WUG spatial dataset and drainage sub-areas of the San Jacinto River Basin to determine estimated population in each section of the project contributing area. Intersected areas with a density less than a threshold of 0.75 persons per acre (a value based on records of on-site septic systems in the Lake Conroe watershed) were assumed to use on-site treatment and therefore not to generate return flows until the projected population density exceeded that threshold. Per-capita demand values were determined for each municipal WUG after application of Advanced Municipal Conservation and Water Loss Reduction strategies. In areas meeting or exceeding the population density threshold, populations were then multiplied by the post-conservation per-capita demand values to estimate projected water demand associated with the project area.

A return flow factor of 40 percent was applied to estimate effluent generated that could potentially be permitted. Although return flow ratios to demand are typically higher than 40 percent in many parts of the greater Houston area, the selected factor is similar to observed return flows from suburban growth north of Houston where most of the contributing demands for this project occur.

As noted previously, not all return flows generated within the project contributing area will be available to the project due to pre-existing reuse authorizations. Flows for existing reuse authorizations were deducted from the project availability estimate. An additional five percent loss factor was applied to account for channel losses. Return flow availability estimates are summarized by the drainage sub-area in which they are generated in *Table 2*. The project supply volume includes projected effluent originating from both surface water and groundwater-based supplies, the proportions of which will change over time. The project supply listed in *Table 2* reflects the highest level of supply available to the project; any additional constraints applied to an associated reuse permit could impact project yield.

Table 2 – Summary of Reuse Authorizations and Availability

	Permitted Amount	Flow Volume (ac ft/yr)					
		2020	2030	2040	2050	2060	2070
Post-Conservation Water Demand [a]		341,748	359,015	384,124	401,149	419,135	432,209
Total Return Flows		123,615	127,551	149,441	155,702	162,520	167,296
Availability Reductions		48,152	49,663	56,026	59,421	62,843	66,851
Maximum Project Supply		**75,463**	**77,888**	**93,415**	**96,281**	**99,677**	**100,445**

a. Projected demands after reductions based on recommended strategies: Advanced Municipal Conservation and Water Loss Reduction.

b. Availability reductions for existing authorizations and channel loss.

Environmental Considerations

Environmental impacts of the project would be examined in detail during the TCEQ permitting process. The San Jacinto Basin is subject to environmental flow requirements, including those established in accordance with 30 TAC §298 which establishes seasonal requirements for flows. As the measurement points associated with 30 TAC §298 pulse flow requirements are located between the discharge locations and Lake Houston, return flows associated with this project would be conveyed through the associated channels regardless of the project diversion and should therefore not reduce frequency of pulse flow target achievement. Furthermore, these flows should increase with population growth over time.

Diversions from the current level of return flows could potentially show some impacts below Lake Houston. Environmental analysis would be performed during the permitting phase, with impacts dependent on permit terms. During the development of the 2016 Region H Regional Water Plan, Region H examined the potential impacts of the Regional Return Flows project on bay and estuary inflows using the TCEQ Water Availability Models (WAMs). A worst-case analysis assuming full consumptive use of diverted return flows indicated that for most moisture conditions and seasons, impacts of the project would be limited and attainment of flow requirements under 30 TAC §298 would be achieved.

Since no construction or soil disturbance would occur, permitting and/or coordination with the U.S. Army Corps of Engineers and Texas Historical Commission would not be required. Also, no impacts to threatened or endangered species due to construction or soils disturbance are anticipated.

Permitting and Development

This project would require a water right permit from TCEQ to establish legal authorization over the source return flows. Due to the location-specific nature of reuse authorizations, exact permit requirements would be determined by TCEQ during the application review process. At a minimum the permit would, by the nature of its water right priority date, be subject to existing environmental flow requirements including those established in accordance with 30 TAC §298. A permit would also be expected to include water conservation plan requirements as well as specified monitoring and reporting requirements.

Also, any permit granted would be limited in volume to the authorized discharge of source wastewater treatment plants (WWTPs). During development of the 2016 RWP, a query was performed on the Environmental Protection Agency (EPA) Integrated Compliance Information System (ICIS), which determined that 98,963 ac-ft/yr of existing wastewater discharge capacity had been permitted as of 2014 in the Lake Houston watershed below Lake Conroe. Facilities associated with existing reuse authorizations, as discussed previously, were excluded from this query. As such, the Regional Return Flows project could be initiated with this level of target permit volume. Later in the planning horizon, when anticipated available project supply exceeds this amount, a permit amendment would be required in order to capture additional availability.

Cost Analysis

The costs associated with developing this project are included under other infrastructure projects that will make use of the supply developed by this strategy.

Water Management Strategy Evaluation

Based on the analysis provided above, the San Jacinto Basin Regional Return Flows project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	This project provides a raw water supply though permit that would rely upon other infrastructure to perfect it as a source of supply.
Location	4	Conveyance may be performed through existing and potential future conveyances considered under separate projects.
Water Quality	3	Project takes advantage of existing and planned discharges in the San Jacinto basin and does not contribute additional wastewater flows.
Environmental Land and Habitat	5	No impacts from permit project.
Environmental Flows	2	Project will reduce the amount of flows returned to streams at a level to be determined through the permitting process.
Local Preference	3	No known opposition to the proposed project.
Institutional Constraints	3	Permit process must be initiated.
Development Timeline	5	Permit could be developed in a relatively short period of time.
Sponsorship	3	Potential sponsors are engaged in permit application for a regional return flows concept.
Vulnerability	5	Minimal risk to availability of supply.
Regionalization	5	Supports numerous systems and expands upon existing multiple regionalized supplies.
Impacts on Other WMS	5	The project would provide substantial additional supply which could be utilized by other projects.

San Jacinto Basin Regional Return Flows are not anticipated to affect vulnerable species or agricultural land and production. This project may potentially reduce return flows to the San Jacinto River Basin by as much as 100,445 of surface water from various basins. Additionally, this appropriation would be bound by the limits of instream and bay and estuary flow requirements in place for the San Jacinto River Basin.

Water User Group Application

The San Jacinto Basin Regional Return Flows project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	
Size	This project is easily scaled to meet needs of various sizes.
Water Quality	This project provides a raw water source that may be used to meet a number of demands in the basin including potable demands through existing and future treatment projects.
Unit Cost	The project is a low-cost project although other infrastructure projects would be required to fully utilize its potential.
Other Factors	There is potential for the availability of this source to increase over time.

References

Texas Commission on Environmental Quality, Water Right Permit Number 3960, March 1986.

Texas Commission on Environmental Quality, Water Right Permit Number 4964, February 1987.

Texas Commission on Environmental Quality, Water Right Permit Number 4965, February 1987.

Texas Commission on Environmental Quality, Water Right Permit Number 5807, December 2008.

Texas Commission on Environmental Quality, Water Right Permit Number 5808, September 2009.

Texas Commission on Environmental Quality, Water Right Permit Number 5809A, July 2012.

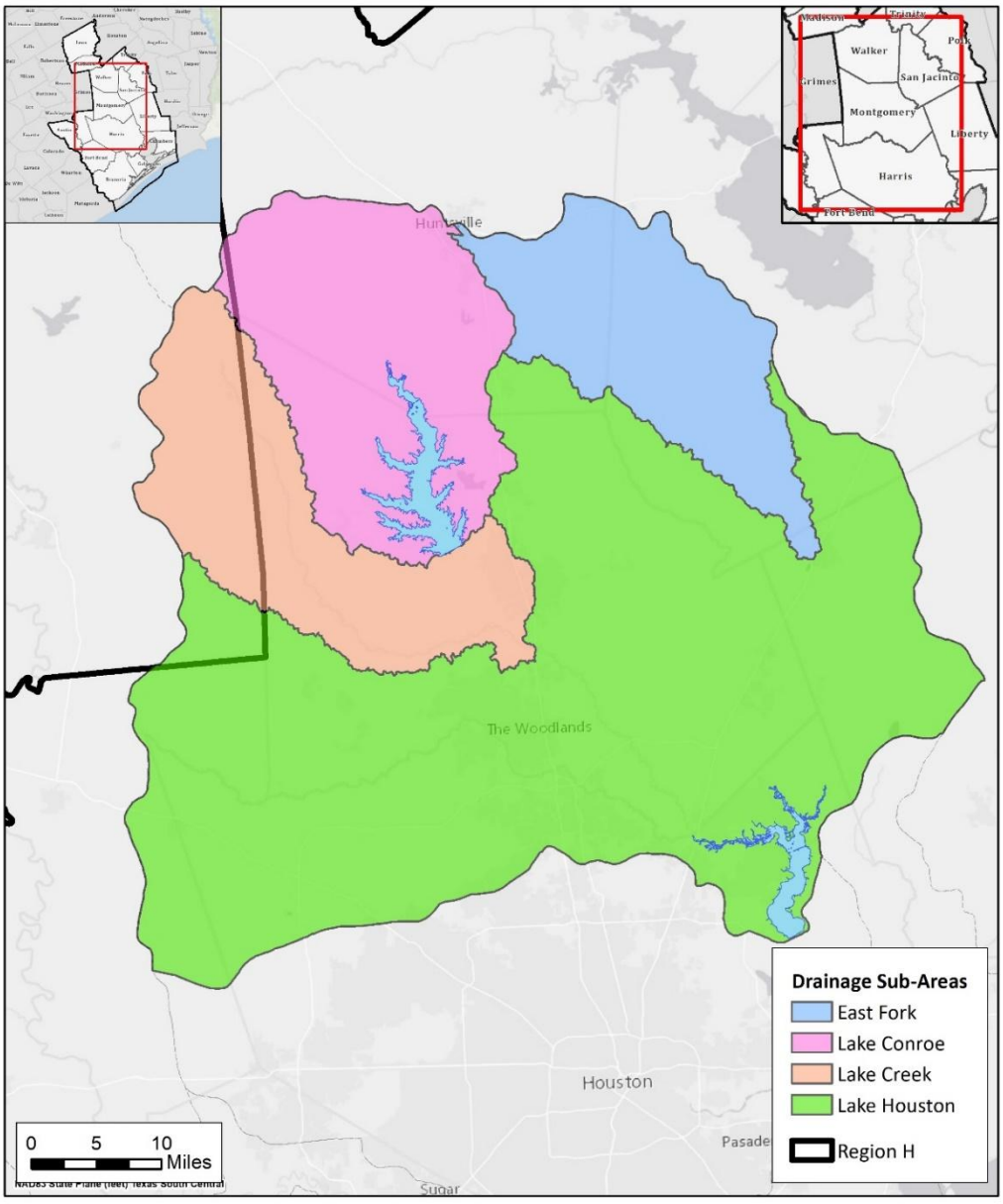
Texas Commission on Environmental Quality, Water Right Permit Number 5827, May 2011.

Texas Commission on Environmental Quality, Water Right Permit Number 12510, August 2017.

Texas Commission on Environmental Quality, Water Right Permit Number 12754, August 2017.

Texas Commission on Environmental Quality, Water Right Permit Number 12788, August 2018.

Location Map



REGION H
Water Planning Group

Regional Return Flows
Location Map

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Texas City Industrial Complex Reuse
Project ID:	REUS-008
Project Type:	Reuse
Potential Supply Quantity (Rounded):	11,200 ac-ft/yr (10 mgd)
Implementation Decade:	2040
Development Timeline:	<5 years
Project Capital Cost:	$45,700,000 (Sept. 2023)
Unit Water Cost (Rounded):	$344 per ac-ft (during loan period) $57 per ac-ft (after loan period)

Strategy Description

Gulf Coast Water Authority (GCWA) supplies a number of industrial and agricultural customers in Galveston County with surface water from the Brazos River Basin and San Jacinto-Brazos Coastal Basin. GCWA holds several water rights in these basins and supplies its customers with surface water from these rights as well as contractual supplies purchased from the Brazos River Authority (BRA). In addition to these surface water sources, GCWA is evaluating a wastewater reclamation project for the treatment and reuse of industrial wastewater by customers in Galveston County.

Strategy Analyses

The project analyses for Texas City Industrial Complex Reuse include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The Texas City Industrial Complex Reuse project is in the concept development process. For the purposes of the 2026 Region H Regional Water Plan (RWP), a yield of 10 mgd has been assumed from available wastewater discharges from likely project participants. Treated industrial discharges in the Texas City industrial area would subsequently be conveyed to additional treatment infrastructure and finished to quality standards as required by the end users before being conveyed back to participating GCWA industrial customers.

Environmental Considerations

Infrastructure development may result in some construction disturbance. However, conveyance infrastructure is expected to follow existing easements in a developed area and is unlikely to impact habitat.

Permitting and Development

Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 Texas Administrative Code (TAC) §210. TCEQ classifies reclaimed industrial water as Level 1 (certain on-site uses) or Level 2 (off-site use, mixed domestic and industrial wastewater, and other categories). Due to the removal of effluent to off-site treatment, supplies for this project would likely be categorized as Level 2 reclaimed water. If approved for use, the reclaimed water would have to be regularly sampled and analyzed. Additional minor permitting may be associated with construction activities.

Cost Analysis

A preliminary planning-level cost estimate was developed based upon estimates provided by the Gulf Coast Water Authority. Costs for engineering, design, construction, contingency, environmental mitigation, land acquisition, and interest during construction were assumed to be included in the costs provided by the sponsor. Annualized debt service, pumping energy costs, and costs of operation and maintenance were estimated using standard assumptions for Region H. Costs are presented in September 2023 equivalent costs in *Table 1*.

Table 1 – Texas City Industrial Complex Reuse Estimated Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$45,700,000	$45,700,000	
	PROJECT CAPITAL COST					**$45,700,000**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$3,215,501	$3,215,501	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$457,000	$457,000	$457,000	$457,000	$457,000
3	PUMPING ENERGY COSTS	$0	$184,293	$184,293	$184,293	$184,293	$184,293
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$3,856,794**	**$3,856,794**	**$641,293**	**$641,293**	**$641,293**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$3,856,794	$3,856,794	$641,293	$641,293	$641,293
2	YIELD	-	11,200	11,200	11,200	11,200	11,200
3	UNIT COST	$0	$344	$344	$57	$57	$57
	TOTAL UNIT COST						**$172**

Water Management Strategy Evaluation

Based on the analysis provided above, the Texas City Industrial Complex Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	Project provides treated water at a low to moderate cost.
Location	4	Some infrastructure will be required to convey treated water to end users.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	2	Project would reduce local bay inflow through the reduction of return flows, but would not reduce instream flows.
Local Preference	3	Local preference is unknown.
Institutional Constraints	3	Permits expected with minimal problems. Property is available.
Development Timeline	5	Project can be developed within 5 years.
Sponsorship	4	Sponsors are identified and are investigating project options.
Vulnerability	5	Minimal risk from natural and man-made disasters.
Regionalization	3	Project would serve multiple industrial entities.
Impacts on Other WMS	3	This project is not expected to impact other WMS.

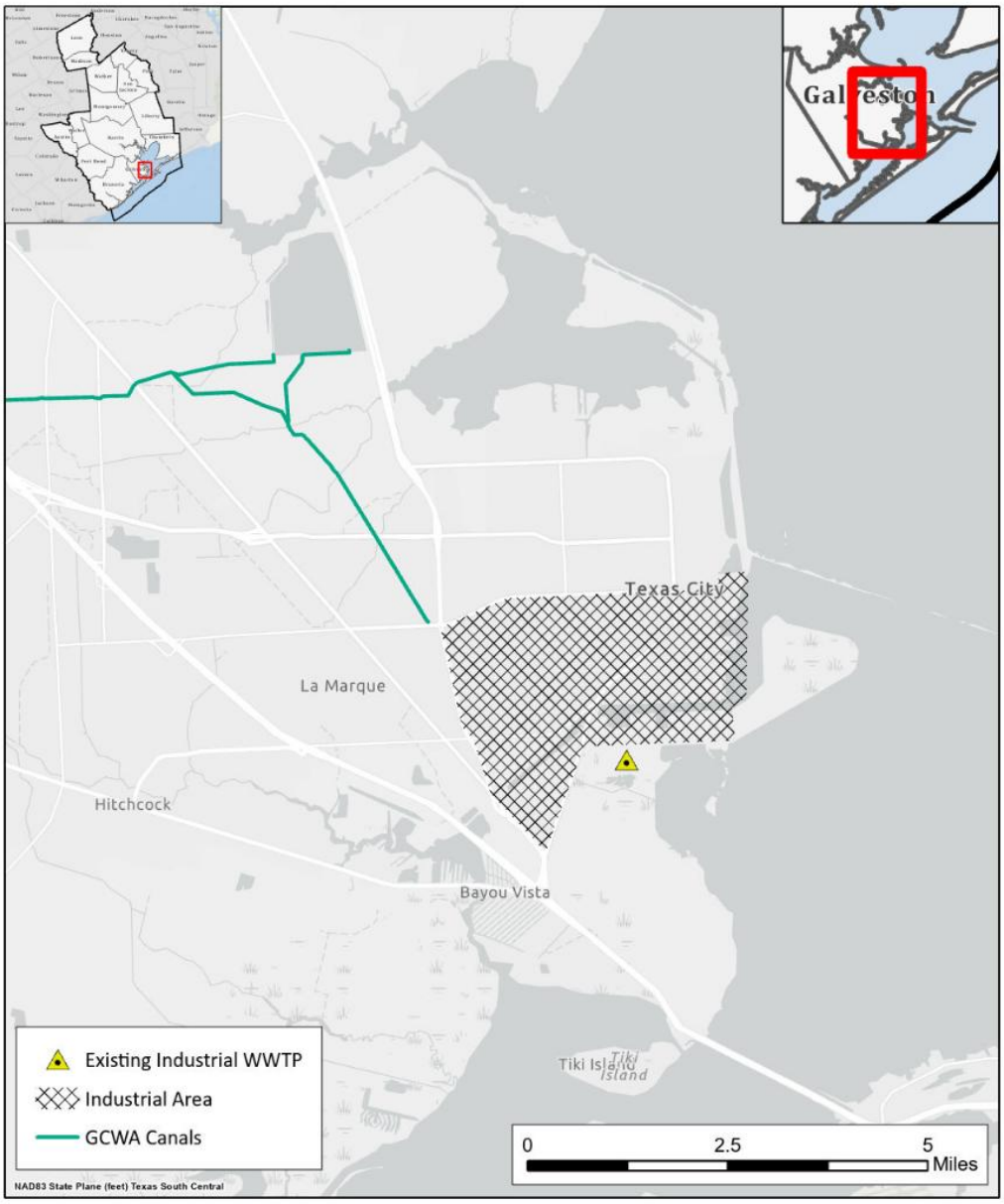
Development of the Texas City Industrial Complex Reuse project is anticipated to cause minimal impacts to habitat, due to construction within a heavily industrialized area. The project may potentially reduce bay inflows by as much as 11,200 ac-ft/yr. Because the source return flows are currently returned directly to the bay system, the project would not directly impact instream flows. It should also be noted that the reduction in bay return flows may also correlate to a reduction in diversions of surface water from other basins. The project is not anticipated to impact agricultural land or production.

Water User Group Application

The Texas City Industrial Complex Reuse project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located relatively near industrial demands served from the lower Brazos River Basin.
Size	Project provides a substantial volume of supply to meet the needs of wholesale, industrial users.
Water Quality	Project will treat wastewater to a quality suitable for industrial use.
Unit Cost	Unit cost is suitable for industrial applications.
Other Factors	Project is intended for use by current and potential future industrial customers of GCWA.

Location Map



REGION H Water Planning Group

Texas City Industrial Complex Reuse Location Map

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Wastewater Reclamation for Industry
Project ID:	REUS-009
Project Type:	Reuse
Potential Supply Quantity (Rounded):	67,200 ac-ft/yr (60 mgd)
Implementation Decade:	2060
Development Timeline:	10 years
Project Capital Cost:	$559,325,814 (Sept. 2023)
Unit Water Cost (Rounded):	$1,221 per ac-ft (during loan period) $636 per ac-ft (after loan period)

Strategy Description

The City of Houston (COH) holds Water Right Permit 5827 that allows the diversion and reuse of up to 580,923 ac-ft/yr in the San Jacinto River Basin or in the Trinity, Trinity-San Jacinto, and San Jacinto-Brazos basins through interbasin transfer. This permit relates to more than 30 individual wastewater treatment plant (WWTP) discharges located on the Houston Ship Channel, Greens Bayou, Buffalo Bayou, Cole Creek, Berry Bayou, Keegans Bayou, Brickhouse Gully, White Oak Bayou, Evans Gully, and Lake Houston. In an effort to protect and maintain freshwater inflows to Galveston Bay, the permit limits diversions to 50% of the volume discharged on a daily basis from each wastewater treatment plant.

In addition to other alternatives for reclaimed water use, this permit may also be used for service to industrial customers. One concept for service to industry has existed in the Region H Regional Water Plan (RWP) since the first plan in 2001. This approach considers using reclaimed wastewater effluent to replace existing surface water supplies that serve industrial demands for process and boiler feed waters. Under this project, municipal wastewater currently discharged to Buffalo Bayou will receive further treatment and will be offered as a high-quality water supply to industries. Reclaimed wastewater will be superior in quality to the raw water currently supplied, thus allowing industrial consumers to significantly reduce or eliminate their onsite water treatment costs. This project is applied within the industrial corridor of State Highway 225 and the Houston Ship Channel (San Jacinto Basin).

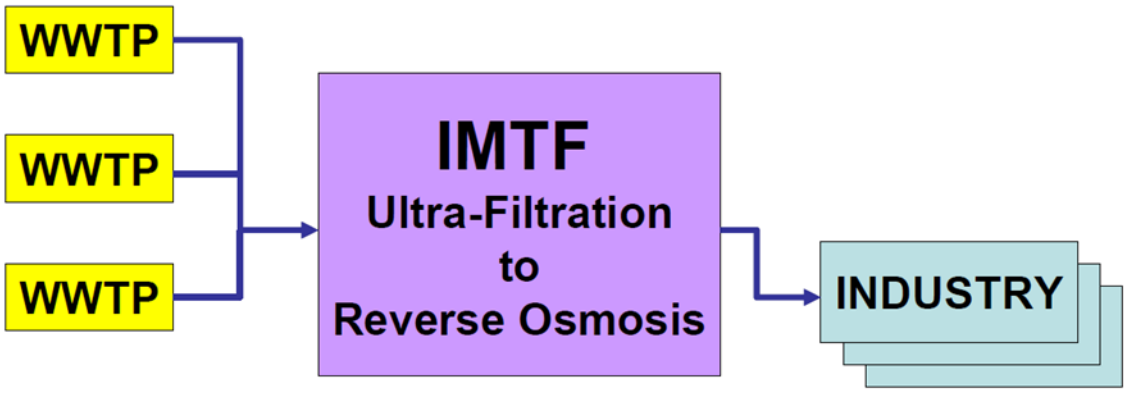
Strategy Analyses

The project analyses for Wastewater Reclamation for Industry include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Effluent from three of the City's wastewater treatment plants (Sims North, Sims South, and 69th Street) would be utilized. Secondary effluent would be pumped to an Integrated Membrane Treatment Facility (IMTF) as shown in *Figure 1*. After treatment, the reclaimed water would be piped to the industrial users along the south side of the Houston Ship Channel corridor.

Figure 1 – Proposed Reuse Project



Environmental Considerations

Effluent currently being discharged to Buffalo Bayou, Sims Bayou, and the Houston Ship Channel would be diverted to the new IMTF. A discharge of brine concentrate from the IMTF into the Houston Ship Channel could affect water quality, although the proposed discharge would be into the dredged channel below the saline elevation. Reclaiming effluent will reduce the impacts of the current WWTP discharges. Less effluent will be discharged into the receiving stream. However, these issues were addressed during the permitting of WR 5827. Minimal impact to the terrestrial habitats and terrestrial organisms adjacent to these bayous is expected as a result of the reduction of wastewater treatment plant discharges.

Current levels of wastewater discharge by industries into the Houston Ship Channel would remain unchanged. There are no water rights on the Houston Ship Channel that would be negatively impacted by this project. This project will treat 83 mgd of effluent to produce 60 mgd of delivered high-quality water (the other 23 mgd being brine discharge). This will offset an existing raw water demand which is currently met from other City of Houston surface water sources in the Trinity and San Jacinto basins.

Permitting and Development

Water rights permitting for this project has already been accomplished under Water Right Permit 5827. The terms of this permit specify the diversion rates and other terms for utilization of this supply. It should be noted that, since the identified supply would be taken directly from the plants without entry into waters of the state, the instream flow targets for diversion are not applicable. However, the 50 percent provision for bay and estuary inflows would be applied and would serve to protect baseflows from wastewater plants contributing to Galveston Bay.

Cost Analysis

Estimated costs for the project are shown in *Table 1*. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. The costs presented in this memorandum do not include the purchase cost of water.

Table 1 – Wastewater Reclamation for Industry Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$338,550,000	$338,550,000	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$115,058,500	$115,058,500	
3	LAND AND EASEMENTS	1	LS	$11,693,000	$11,693,000	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$10,630,000	$10,630,000	
5	INTEREST DURING CONSTRUCTION	1	LS	$83,394,314	$83,394,314	
	PROJECT CAPITAL COST				**$559,325,814**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$0	$0	$39,354,767	$39,354,767	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$0	$0	$40,840,550	$40,840,550	$40,840,550
3	PUMPING ENERGY COSTS	$0	$0	$0	$1,880,873	$1,880,873	$1,880,873
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$0**	**$0**	**$82,076,189**	**$82,076,189**	**$42,721,423**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$0	$0	$82,076,189	$82,076,189	$42,721,423
2	YIELD	-	-	-	67,200	67,200	67,200
3	UNIT COST	$0	$0	$0	$1,221	$1,221	$636
	TOTAL UNIT COST						**$1,026**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$30,150,000	$30,150,000
2	PIPELINES	1	LS	$44,540,000	$44,540,000
3	PIPELINE CROSSINGS	1	LS	$24,140,000	$24,140,000
4	WASTEWATER RECLAMATION PLANTS	1	LS	$239,720,000	$239,720,000
	PROJECT COST				**$338,550,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$30,150,000	$753,750
2	PIPELINES	1.0	%	$44,540,000	$445,400
3	PIPELINE CROSSINGS	1.0	%	$24,140,000	$241,400
4	WASTEWATER RECLAMATION PLANTS	1.0	LS	$39,400,000	$39,400,000
	ANNUAL OPERATION AND MAINTENANCE COST				**$40,840,550**

This project has a unique cost dynamic. The industries will participate in this project only if it can be proven that their specific total water cost can be reduced. Reclamation saves an equivalent quantity of existing City of Houston Trinity River water supplies. The exact cost benefit of this project can only be determined through negotiation of firm supply contracts with the industry customers.

Substitution of reclaimed wastewater would potentially increase the industries' cost of water. However, the reclaimed water could save the industries money since reclaimed water will require less

treatment (and in many cases no additional treatment) after it is delivered to the industrial consumers. The use of reclaimed municipal wastewater may be an economical alternative to current supplies.

Water Management Strategy Evaluation

Based on the analysis provided above, the Wastewater Reclamation for Industry project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	High costs related to treatment of water prior to delivery. However, this may be offset through water rate for providing higher quality water to industry.
Location	4	Conveyance required for project implementation.
Water Quality	4	Proposed project would provide a higher quality water to industrial customers.
Environmental Land and Habitat	4	Majority of projects are to be constructed in already-developed areas or existing rights-of-way.
Environmental Flows	2	Project will reduce the level of flows returned to streams to a level planned for during permitting process.
Local Preference	3	Mixed support between COH and industrial stakeholders.
Institutional Constraints	3	Property acquisition required for project development.
Development Timeline	4	Project will require lead time to get stakeholders on board, develop final project concept, and design and construct the project.
Sponsorship	3	COH requires support from industrial stakeholders in order to push the project forward.
Vulnerability	4	Potential impacts related to damage to critical infrastructure.
Regionalization	3	Project would serve multiple industrial entities.
Impacts on Other WMS	2	This project competes with water that may be utilized by the COH Reuse project.

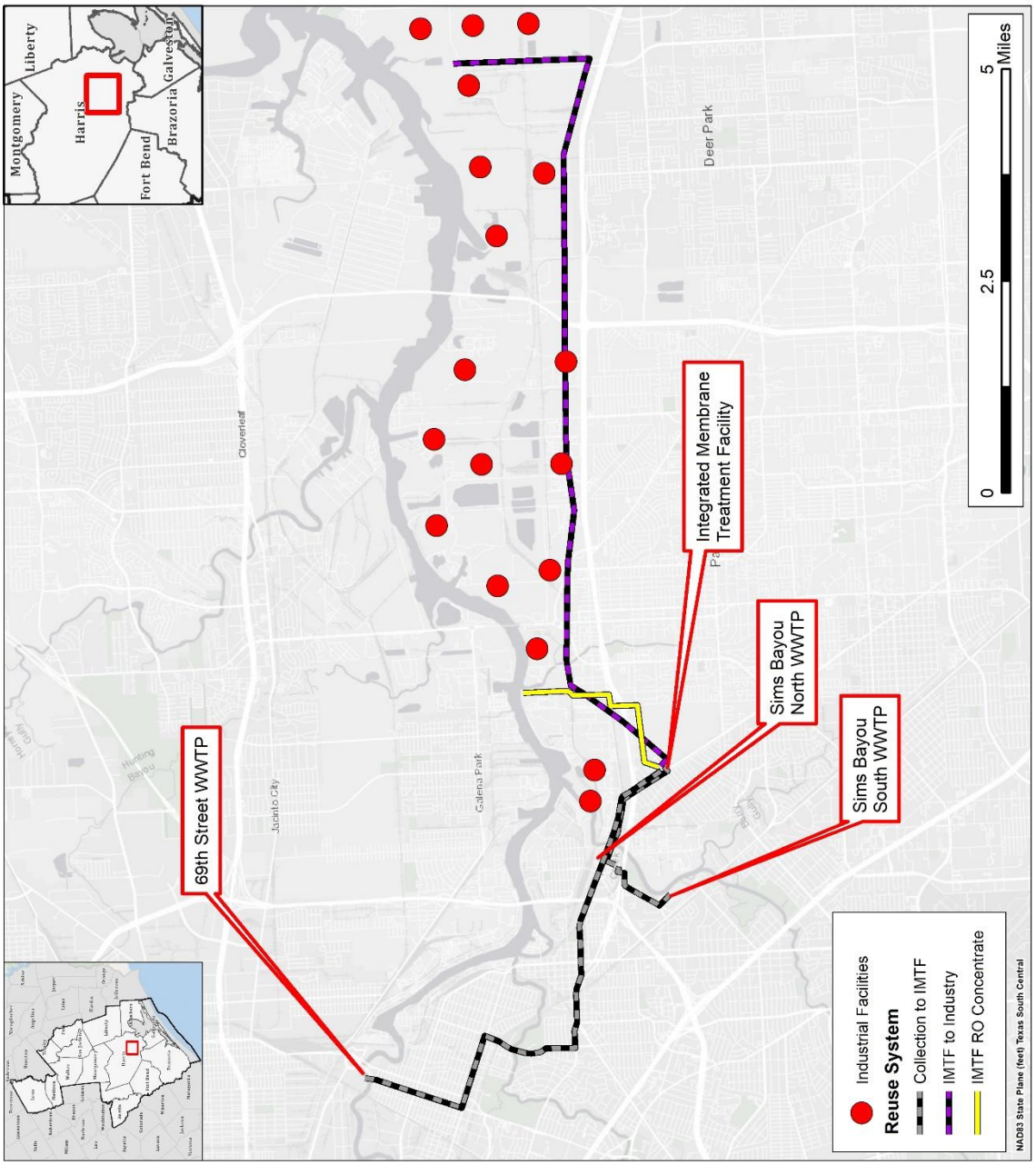
The Wastewater Reclamation for Industry concept includes up to 22 miles of pipelines for collection of effluent and distribution to industries. The majority of this development will be in urbanized areas with limited impacts to habitat such as existing industrial facilities. The project may potentially reduce return flows to the Houston Ship Channel by as much as 67,200 ac-ft/yr. However, this reduction in return flows may also correlate to a reduction in diversions of surface water from other basins. These diversions are already permitted for consumptive use under the City of Houston's Water Right 5827 which accounts for environmental flows. Wastewater Reclamation for Industry is not anticipated to impact agricultural land or production.

Water User Group Application

The Wastewater Reclamation for Industry project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is intended to serve customers along the Houston Ship Channel.
Size	The capacity of this project is intended to serve a portion of water demands by industry and may allow for reapplication of their current raw water supplies to other users.
Water Quality	This project provides treated but non-potable water for industrial use. This represents an improvement over the raw water currently sold to the target industries and may reduce their treatment burden.
Unit Cost	This high unit cost may be offset by reduced needs for treatment. However, the cost makes this water suitable only for industrial purposes.
Other Factors	The reliability of this supply is potentially higher than the current raw water supplies that may be curtailed by drought conditions, making it more attractive to industry.

Location Map



REGION H Water Planning Group

Wastewater Reclamation for Industry Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Wastewater Reclamation for Municipal Irrigation
Project ID:	REUS-010
Project Type:	Reuse
Potential Supply Quantity (Rounded):	1,750 – 15,139 ac-ft/yr (1.6 – 13.5 mgd)
Implementation Decade:	2030
Development Timeline:	1 – 3 years
Project Capital Cost:	$310,466,162 (Sept. 2023)
Unit Water Cost (Rounded):	Varies by WUG

Strategy Description

Population growth in Region H over recent decades has included the development of a large number of master-planned communities (MPCs) near the urbanized areas in the region. A number of these communities have adopted direct wastewater reuse technology to assist in meeting water demands from golf courses and greenspace. Wastewater reuse for municipal irrigation of golf courses and maintenance of green spaces and amenity ponds in new MPCs provides a potential means of utilizing reclaimed supplies. With growth expected to increase by several million people in the metropolitan area of Region H over the next 50 years, it can be expected that new master-planned communities will be developed in many of the urbanizing areas within Brazoria, Chambers, Fort Bend, Harris, Liberty, Montgomery, and Waller Counties, and this growth will also provide possible candidates for reclaimed wastewater.

Strategy Analyses

The project analyses for Wastewater Reclamation for Municipal Irrigation include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

This study examined the potential for development of direct wastewater reuse supplies to meet municipal irrigation water demands in Brazoria, Chambers, Fort Bend, Harris, Liberty, Montgomery, and Waller Counties. Population growth in future MPCs was identified as the most likely candidate for using this project. Future MPCs are assumed to represent a portion of the growth within County-Other water user groups (WUGs) in the region. There is additional potential for MPC development within the boundaries of the regional water authorities in Region H, including the North Harris County Regional Water Authority (NHCRWA), West Harris County Regional Water Authority (WHCRWA),

Central Harris County Regional Water Authority (CHCRWA), and North Fort Bend Water Authority (NFBWA) WUGs.

Potential growth within MPCs was analyzed through a Geographic Information System (GIS) analysis of the portion of estimated recent growth associated with existing MPCs as part of the analyses for the 2021 RWP. The results of this analysis indicated that approximately 45.4 percent of projected year 2010 – 2020 population growth in Fort Bend County was associated with MPCs. This value, which is substantially higher than the estimate of 25.64 percent MPC development estimated for prior Region H RWPs, reflects an increasing prevalence of MPC development over recent years. Since Fort Bend County leads the state in the number of MPCs, it was assumed that a value of approximately 45.4 percent would be representative of the growing trend toward master-planned development within Region H. This percentage was then applied to the total population growth in County-Other and regional water authority WUGs within the growing suburban areas of Region H to determine the population that would be expected to occur in MPCs.

In earlier RWP cycles, golf courses predicted for future development within Region H MPCs were considered as a potential demand center for utilization of direct reuse supplies. Due to gradual changes in land use patterns in the Region, this assumption was reassessed beginning with the 2021 RWP. An examination of location, size, and development period data for golf courses within Fort Bend County indicates that development of new golf course facilities has been extremely limited over the past 20 years. Therefore, potential golf course demand was not included in the analysis of wastewater reclamation for municipal irrigation for the 2026 RWP.

For the 2006 RWP, the acreage of green space areas projected to accompany future development was estimated from GIS data for Cinco Ranch and Greatwood MPCs in Fort Bend County. The area of irrigated esplanades and parks was compared to the total population of each development at ultimate development to find the average per-capita acreage of green space for the two communities. Subsequently, MPC total acreage and green space data from the Fort Bend Economic Development Council was examined in conjunction with detailed population projection data to identify potential changes in per-capita green space development. The results of this analysis indicate that per-capita green space development in MPCs has increased approximately sevenfold from the results of the 2006 RWP. However, recent land use trends include a focus on natural areas including forested parks and stands of native vegetation in addition to more traditional irrigated green space. Therefore, the green space acreage per-capita rate from previous RWPs was retained for this project. This per-capita rate was applied to the percentage of County-Other growth expected within MPCs to determine the projected green space acreage for each county through 2080.

Irrigation demands for the expected green space acreage were determined from evapotranspiration and precipitation data obtained from the Texas Water Development Board (TWDB) using a method adapted from Richard Duble of Texas Cooperative Extension. This methodology yielded the ideal average annual application rate for turfgrass irrigation and was used with the projected acreage found above to determine the projected irrigation water demands for green spaces throughout the planning period. This value for the ideal application rate was determined for the 2006 RWP and is retained for this planning round.

Water demands from amenity lakes associated with population growth in MPCs were estimated from well data from the Fort Bend Subsidence District. Wells that were associated with amenity lakes and were located within named WUGs were identified. The population associated with these WUGs, as reported by TWDB, was compared to the annual pumpage for the wells to determine a per-capita amenity lake demand. This per-capita demand was then applied to the portion of population growth

within County-Other that was expected to occur within MPCs. This value for per-capita amenity lake demand was determined for the 2006 RWP and is retained for this planning round.

The projected demands for reclaimed wastewater in each county are shown below in *Table 1*.

Table 1 – Projected Potential Demands for Reclaimed Wastewater

County	Potential Reuse Application	Wastewater Reuse Demands (ac ft/yr)					
		2030	2040	2050	2060	2070	2080
Brazoria	Green Spaces	20	52	90	107	126	147
	Amenity Lakes	22	58	102	121	143	166
	Total	**42**	**110**	**192**	**228**	**269**	**313**
Chambers	Green Spaces	10	59	132	201	276	362
	Amenity Lakes	12	67	149	228	313	409
	Total	**22**	**126**	**281**	**429**	**589**	**771**
Fort Bend	Green Spaces	242	852	1,495	2,027	2,566	3,056
	Amenity Lakes	275	965	1,694	2,299	2,906	3,461
	Total	**517**	**1,817**	**3,189**	**4,326**	**5,472**	**6,517**
Harris	Green Spaces	400	758	993	1,122	1,357	1,525
	Amenity Lakes	452	858	1,126	1,271	1,536	1,727
	Total	**852**	**1,616**	**2,119**	**2,393**	**2,893**	**3,252**
Liberty	Green Spaces	31	108	203	306	406	514
	Amenity Lakes	35	124	231	347	460	583
	Total	**66**	**232**	**434**	**653**	**866**	**1,097**
Montgomery	Green Spaces	101	393	687	915	1,088	1,205
	Amenity Lakes	114	445	778	1,037	1,232	1,365
	Total	**215**	**838**	**1,465**	**1,952**	**2,320**	**2,570**
Waller	Green Spaces	17	43	92	153	219	290
	Amenity Lakes	19	49	104	174	249	329
	Total	**36**	**92**	**196**	**327**	**468**	**619**
Total Potential Reuse Demands		**1,750**	**4,831**	**7,876**	**10,308**	**12,877**	**15,139**

The amount of wastewater that could potentially be reclaimed for non-potable uses is subject to both the potential demands for and the supply of treated wastewater. Because wastewater treatment plant discharge is often lowest during summer months when irrigation demands are at their highest, it is important to apply conservative assumptions in evaluating potential source availability for non-potable reuse for irrigation. Decadal per-capita demands for the target WUGs were adjusted to reflect the impacts of recommended advanced municipal conservation and water loss reduction water management strategies. A conservative return flow factor of 40 percent based on analyses from the 2016 RWP was then applied to County-Other and regional water authority adjusted demand projections to generate a decadal estimate of available effluent for direct non-potable reuse. Resultant post-conservation wastewater discharge rates for the target WUGs ranged from 23 to 71 gallons per capita per day. Estimated available effluent from this analysis is intended to be exclusive of return flows utilized in other potential reuse projects in the 2026 RWP. Based on the above methodology, the projected availability of reclaimed wastewater throughout the planning period within each county is shown in *Table 2*.

Table 2 – Projected Potential Supplies for Reclaimed Wastewater

County	Wastewater Reuse Supply (ac ft/yr)					
	2030	2040	2050	2060	2070	2080
Brazoria	124	310	518	607	703	789
Chambers	45	256	551	815	1,086	1,379
Fort Bend	1,660	5,399	9,035	11,831	14,552	16,804
Harris	2,423	4,331	5,694	6,383	7,719	8,568
Liberty	148	510	924	1,346	1,738	2,123
Montgomery	501	1,886	3,238	4,223	4,930	5,367
Waller	83	206	429	699	979	1,262
Total Potential Reuse Supplies	**4,984**	**12,898**	**20,389**	**25,904**	**31,707**	**36,292**

As noted previously, application of this project is limited not only by the available supply but by the potential demands. Therefore, the potential reclaimed water supply for irrigation in a given county and decade would be the lesser of the available effluent supply (*Table 2*) and the demand for that effluent (*Table 1*). The resultant usable project supply volume is shown in *Table 3*.

Table 3 – Projected Useable Reclaimed Wastewater Supply

County	Wastewater Reuse Supply (ac ft/yr)					
	2030	2040	2050	2060	2070	2080
Brazoria	42	110	192	228	269	313
Chambers	22	126	281	429	589	771
Fort Bend	517	1,817	3,189	4,326	5,472	6,517
Harris	852	1,616	2,119	2,393	2,893	3,252
Liberty	66	232	434	653	866	1,097
Montgomery	215	838	1,465	1,952	2,320	2,570
Waller	36	92	196	327	468	619
Total Usable Reuse Supplies	**1,750**	**4,831**	**7,876**	**10,308**	**12,877**	**15,139**

Environmental Considerations

Because the supply source for this project is based on return flow from future growth rather than existing development, this project would not be expected to reduce instream flows below current levels.

Infrastructure required for implementation of this project would consist primarily of reclamation facilities located at MPC wastewater treatment plants and conveyance infrastructure to connect to points of use. Because wastewater reclamation infrastructure would presumably be constructed concurrently with other community water and wastewater facilities, proper planning would minimize habitat impacts beyond those inherently associated with MPC development.

Permitting and Development

Construction of direct wastewater reuse facilities as part of overall MPC development would likely allow for a simplified construction permitting process relative to retrofitting direct reuse components into a preexisting system. At a minimum, MPC construction would require a Stormwater Pollution Prevention Plan (SWPPP) and a TCEQ Construction General Permit (TXR 150000).

Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the requirements of 30 TAC §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week.

Cost Analysis

A preliminary planning level cost estimate was prepared for the Wastewater Reclamation for Municipal Irrigation project using default costing methods for regional plan development. Costs were developed based on basic costing guidelines as outlined by TWDB guidance. For purposes of this assessment, it was assumed that each WWTP within the participating MPCs would have an average production based on the decadal increase of potential reuse demand volumes in each WUG and would require one mile of pipeline to reach points of use. Because the project is not implemented completely within one decade but rather increases in volume over time as more MPCs implement direct reuse, cost estimates developed for the project reflect incremental development of infrastructure and supply capacity. For this reason, annualized costs vary across the planning period as some users retire debt service and others begin project development. While overall annual costs increase across the planning period, unit costs decrease as more project supply volume is added with the development of new MPCs. *Table 4* summarizes the component costs of key facilities. Costs are presented in September 2023 dollars.

Table 4 – Wastewater Reclamation for Municipal Irrigation Project Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST		1	LS	$216,429,382	$216,429,382
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES		1	LS	$73,407,023	$73,407,023
3	LAND AND EASEMENTS		1	LS	$473,560	$473,560
4	ENVIRONMENTAL - STUDIES AND MITIGATION		1	LS	$900,000	$900,000
5	INTEREST DURING CONSTRUCTION		1	LS	$19,256,197	$19,256,197
	PROJECT CAPITAL COST					$310,466,162

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$3,389,639	$7,194,750	$7,591,623	$7,389,689	$7,263,840	$7,260,295
2	OPERATION AND MAINTENANCE (O&M)	$2,129,035	$4,781,674	$7,400,455	$9,750,696	$12,173,367	$14,537,454
3	PUMPING ENERGY COSTS	$31,571	$88,028	$143,668	$187,420	$233,788	$274,519
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$5,550,245	$12,064,452	$15,135,746	$17,327,805	$19,670,995	$22,072,267

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$5,550,245	$12,064,452	$15,135,746	$17,327,804	$19,670,995	$22,072,268
2	YIELD	1,750	4,831	7,876	10,308	12,877	15,139
3	UNIT COST	$3,172	$2,497	$1,922	$1,681	$1,528	$1,458
	TOTAL UNIT COST						$1,740

ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY						
1	PUMP STATIONS		1	LS	$39,356,800	$39,356,800
2	PIPELINES		1	LS	$46,865,217	$46,865,217
3	WATER STORAGE TANKS		1	LS	$71,009,231	$71,009,231
4	WASTEWATER RECLAMATION PLANTS		1	LS	$59,198,134	$59,198,134
	PROJECT COST					$216,429,382

ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY						
1	PUMP STATIONS		2.5	%	$39,356,800	$983,920
2	PIPELINES		1.0	%	$46,865,217	$468,652
3	WATER STORAGE TANKS		1.0	%	$71,009,231	$710,092
4	WASTEWATER RECLAMATION PLANTS		1.0	LS	$12,374,789	$12,374,789
	ANNUAL OPERATION AND MAINTENANCE COST					$14,537,454

Water Management Strategy Evaluation

Based on the analysis provided above, the Wastewater Reclamation for Municipal Irrigation project was evaluated across twelve different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Project cost is relatively high but potentially reduces development of other costly water supplies for municipal irrigation.
Location	5	Direct reuse infrastructure would be located in close proximity to points of water use.
	3	No known impacts to water quality. The project is expected to produce Type 1 effluent suitable for the intended use.
Environmental Land and Habitat	5	Impacts from project are unlikely to exceed regular land development impacts for master planned communities.
	2	Project will reduce the level of flows returned to streams.
Local Preference	3	No known opposition to the proposed project.
	3	Permits expected to be obtainable with minimal problems.
Development Timeline	5	Project could be developed in a relatively short period of time.
Sponsorship	3	Various stakeholders, many of which are not identified as named WUGs in the RWP, have implemented similar projects and this trend is expected to continue.
Vulnerability	5	Minimal risk to availability of supply.
Regionalization	3	This project serves multiple Master Planned Communities in the Region to meet water demands of greenspace
Impacts on Other WMS	3	The project would be developed in such a way to prevent detrimental impacts to other projects under development.

Wastewater Reclamation for Municipal Irrigation is not anticipated to affect acreage or vulnerable species, but actual impacts will depend upon local development of each potential project. The projects may potentially reduce return flows to various basins by as much as 15,139 ac-ft/yr. However, this reduction in return flows may also correlate to a reduction in diversions of surface water from other basins. Wastewater Reclamation for Municipal Irrigation is not anticipated to impact agricultural land or production.

Water User Group Application

The Wastewater Reclamation for Municipal Irrigation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate

to the suitability of the project to the WUGs served.

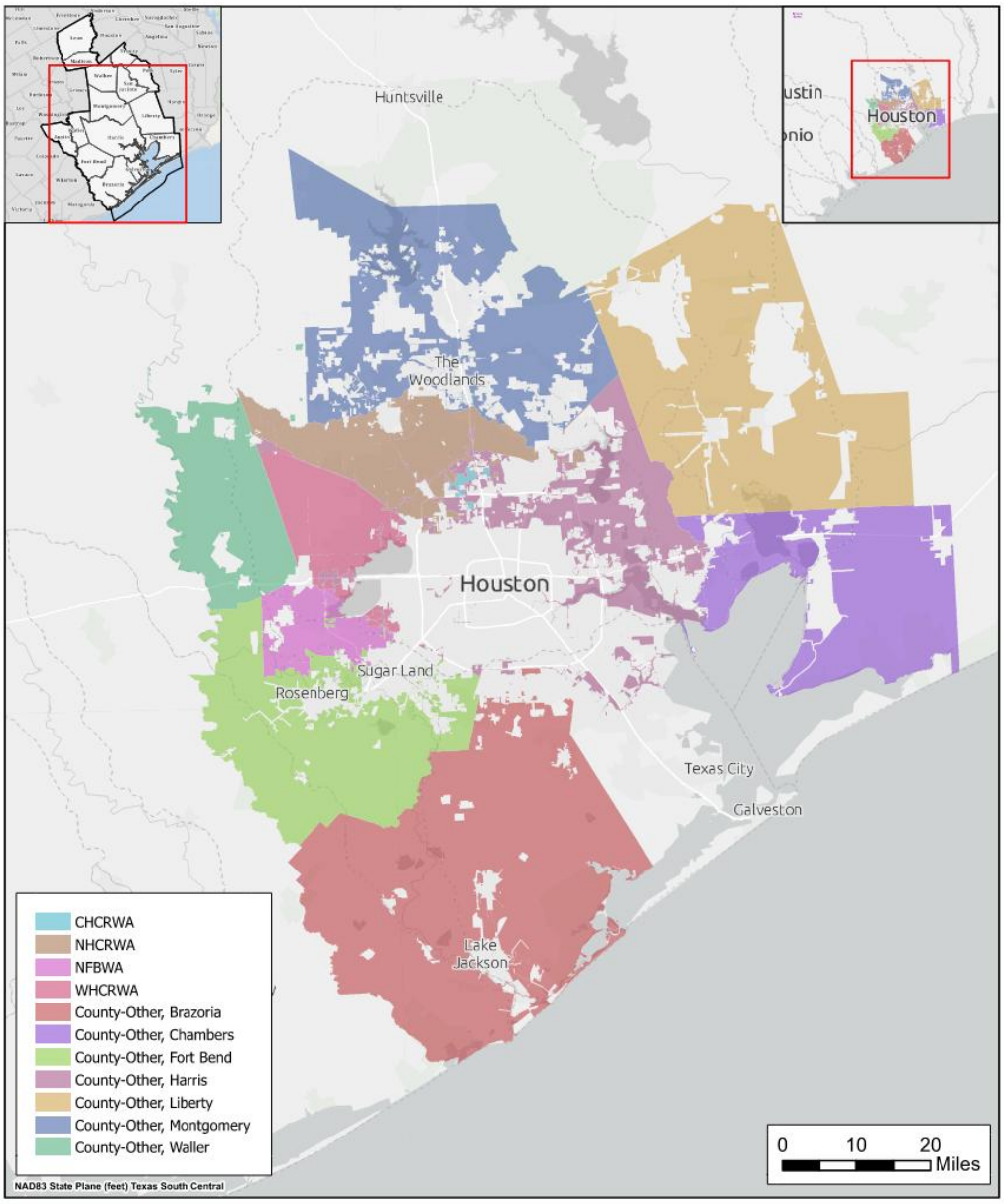
CRITERIA	WUG SUITABILITY
Proximity	This project provides water to new MPC developments (County-Other and regional water authority WUGs) in Brazoria, Fort Bend, Harris, and Montgomery Counties.
Size	This project is easily scaled with the size of the implementing MPCs.
Water Quality	This project provides a high-quality raw water source that may be used to meet greenspace and amenity pond water demands.
Unit Cost	This project is of relatively high cost but potentially reduces demand for development of expensive new supplies for amenity use. Unit costs for individual MPCs will decrease substantially after closure of debt service.
Other Factors	This project provides water to new MPC developments (County-Other and regional water authority WUGs) in Brazoria, Fort Bend, Harris, and Montgomery Counties.

References

Fort Bend County Economic Development Council - Business Resources & County Data. *www.fortbendcounty.com/resources/#maps*. Accessed 10 May 2019.

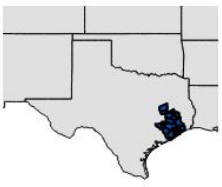
Texas Commission on Environmental Quality, *https://www.tceq.texas.gov/assistance/water/reclaimed_water.html*, Accessed May 23, 2019.

Location Map



REGION H Water Planning Group

Wastewater Reclamation for Municipal Irrigation Location Map



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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Westwood Shores MUD Reuse
Project ID:	REUS-011
Project Type:	Reuse
Potential Supply Quantity (Rounded):	150 ac-ft/yr (0.13 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$2,476,273 (Sept. 2023)
Unit Water Cost (Rounded):	$2,162 per ac-ft (during loan period) $1,001 per ac-ft (after loan period)

Strategy Description

Westwood Shores Municipal Utility District (MUD) is a water and wastewater utility provider located adjacent to Lake Livingston in Trinity County. Currently, irrigation for the Westwood Shores Golf Course, operated by the Westwood Shores Property Owners Association (POA) is supplied by up to 155 ac-ft/yr of raw water diverted from Lake Livingston to Westwood Lake. Westwood Shores MUD has proposed a reuse project to replace some of the raw water diversions with up to 150 ac-ft/yr of reclaimed water from the MUD's wastewater treatment plant (WWTP).

Strategy Analyses

The project analyses for Westwood Shores MUD Reuse include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Westwood Shores MUD anticipates providing 150 ac-ft/yr of reclaimed water for golf course irrigation.

Environmental Considerations

The reuse of effluent is intended to directly replace raw water diversions from Lake Livingston. Because the WWTP discharges into Lake Livingston near the intake point for current raw water diversions, no impact on streamflow is expected.

Permitting and Development

Use of reclaimed wastewater effluent requires approval and permitting by the TCEQ under the

requirements of 30 TAC §210. TCEQ classifies reclaimed water as Type 1 (higher quality for use where public contact is likely) or Type 2 (for uses with limited risk of human contact). Due to the potential for human contact, supplies for this project would have to be treated to Type 1 quality standards. If approved for use, the reclaimed water would have to be sampled and analyzed a minimum of twice per week.

Cost Analysis

An estimate of the project capital cost is available in the Clean Water State Revolving Fund Intended Use Plan for State Fiscal Year 2020. This cost was assumed to include all capital cost components except for interest during construction, including costs associated with construction, land acquisition, easements, and environmental studies and mitigation. It is anticipated that the project will include enhancements to the WWTP, a reuse pump station, and minor conveyance infrastructure. The cost of interest during construction and annualized costs of debt service, operation and maintenance, and pumping energy were estimated using standard regional planning assumptions. Estimated costs are presented in September 2023 dollars in *Table 1*.

Table 1 – Westwood Shores MUD Reuse Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$2,322,686	$2,322,686	
2	INTEREST DURING CONSTRUCTION	1	LS	$153,587	$153,587	
	PROJECT CAPITAL COST				**$2,476,273**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$174,233	$174,233	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$147,435	$147,435	$147,435	$147,435	$147,435	$147,435
3	PUMPING ENERGY COSTS	$2,704	$2,704	$2,704	$2,704	$2,704	$2,704
	TOTAL ANNUAL COST	**$324,372**	**$324,372**	**$150,139**	**$150,139**	**$150,139**	**$150,139**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$324,372	$324,372	$150,139	$150,139	$150,139	$150,139
2	YIELD	150	150	150	150	150	150
3	UNIT COST	$2,162	$2,162	$1,001	$1,001	$1,001	$1,001
	TOTAL UNIT COST						**$1,388**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WASTEWATER RECLAMATION PLANTS	1	LS	$2,322,686	$2,322,686
	PROJECT COST				**$2,322,686**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WASTEWATER RECLAMATION PLANTS	1.0	LS	$147,435	$147,435
	ANNUAL OPERATION AND MAINTENANCE COST				**$147,435**

Water Management Strategy Evaluation

Based on the analysis provided above, the Westwood Shores MUD Reuse project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Cost is high but decreases after completion of debt service.
Location	5	Reclaimed water source is located very near to point of use.
Water Quality	3	The project is expected to produce Type 1 effluent suitable for the intended use.
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	3	No impacts anticipated.
Local Preference	3	No known opposition to the proposed project.
Institutional Constraints	3	Permits expected with minimal problems.
Development Timeline	5	Project could be developed in a relatively short period of time.
Sponsorship	5	Sponsor is identified and has applied for project funding.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	1	Would serve a single water system.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

Westwood Shores MUD Reuse is not anticipated to affect vulnerable species or to impact agricultural land or production.

Water User Group Application

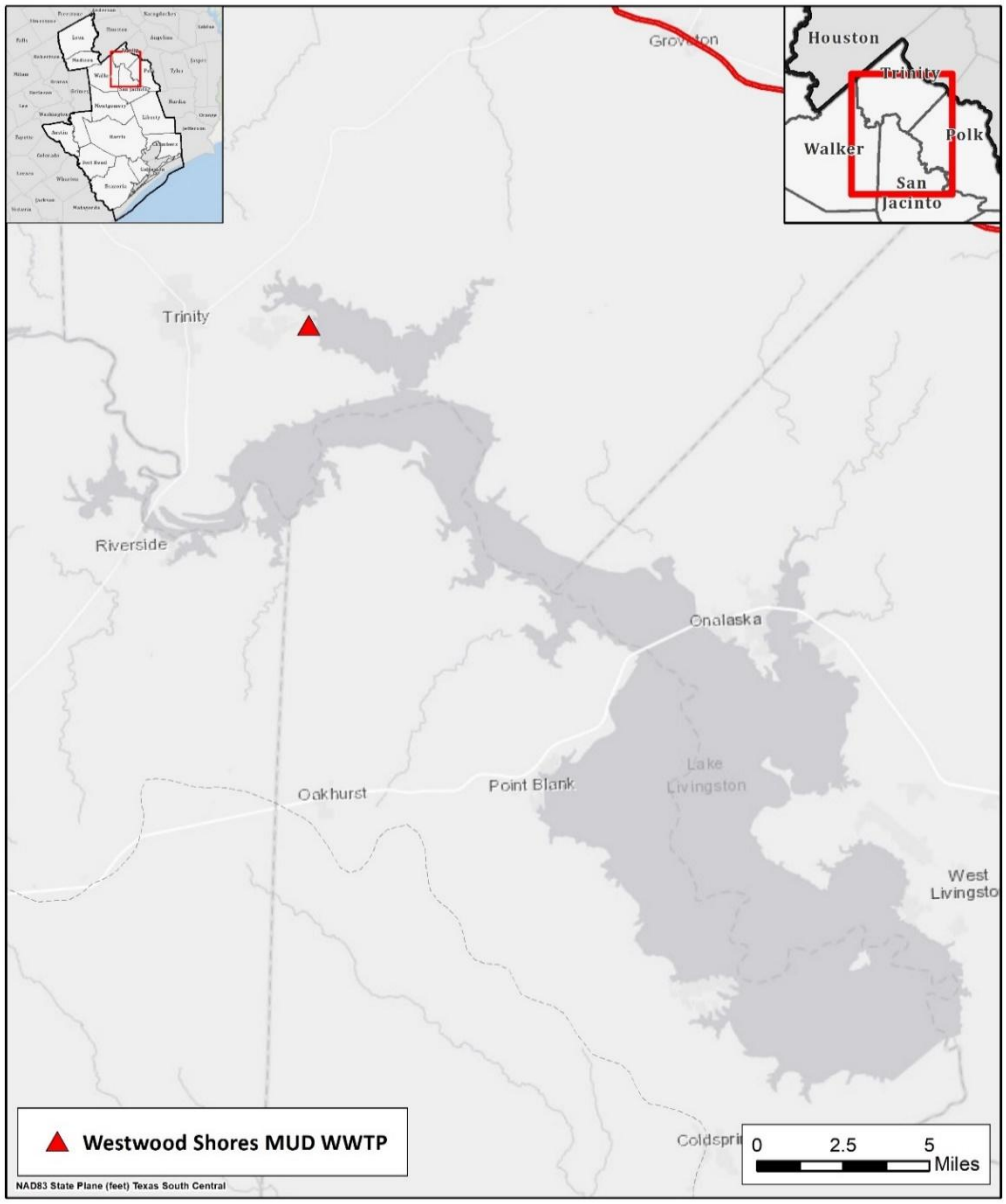
The Westwood Shores MUD Reuse project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve Westwood Shores MUD.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	Overall project supply volume is appropriate to the intended use.
Water Quality	The project is expected to produce Type 1 effluent suitable for the intended use.
Unit Cost	Cost is high but decreases after completion of debt service.
Other Factors	Implementation of supply from this project requires permitting through TCEQ.

References

Texas Water Development Board. *Intended Use Plan: Clean Water State Revolving Fund, SFY 2020*, July 2019.

Location Map



REGION H Water Planning Group

Westwood Shores MUD Reuse Location Map

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Allens Creek Reservoir
Project ID:	SWDV-001
Project Type:	New Surface Water Source
Potential Supply Quantity (Rounded):	99,650 ac-ft/yr (89 mgd)
Implementation Decade:	2040
Development Timeline:	15 years
Project Capital Cost:	$493,919,561 (Sept. 2023)
Unit Water Cost (Rounded):	$279 per ac-ft (during loan period) $47 per ac-ft (after loan period)

Strategy Description

Allens Creek Reservoir is a proposed off-channel water supply reservoir located in Austin County north of the City of Wallis. The reservoir will be created by a 4.25-mile embankment on Allens Creek adjacent to the Brazos River. The proposed reservoir has an authorized storage of 145,333 acre-feet with a surface area of 7,000 acres. Most of the water impounded in the reservoir will be pumped from the Brazos River, although a small portion of the inflow will originate from the Allens Creek watershed, outside of the reservoir footprint. Permit 2925, as amended, authorizes the storage in the reservoir, diversion of up to 202,000 acre-feet per year from the Brazos River into the reservoir, and diversion and use of 99,650 acre-feet per year from the reservoir for municipal, industrial and irrigation purposes in the Brazos, San Jacinto-Brazos, and San Jacinto Basins. Diversions from the Brazos River are authorized at a maximum rate of 2,200 cfs or approximately 1,400 MGD. The reservoir will be owned and operated by the Brazos River Authority (BRA). The project is expected to be online by 2040.

The Allens Creek site was originally intended to provide cooling water for a nuclear power plant. However, this project was abandoned and the permit for the project was allowed to expire. A new permit for the project was issued to the Texas Water Development Board (TWDB), City of Houston, and BRA; TWDB was a partner in this project through its state participation process. This permit has been amended twice to authorize the current storage and diversion amounts, as well as to establish environmental flows and other special conditions. In May 2022, the Brazos River Authority purchased the full rights to the reservoir from the City of Houston and TWDB.

In addition to providing much needed water supply, Allens Creek Reservoir will be key in increasing the reliability and flexibility of BRA's water supply operations in the lower Brazos Basin.

Strategy Analyses

The project analyses for the Allens Creek Reservoir include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The supply from Allens Creek Reservoir is specified in Permit 2925 issued by the Texas Commission on Environmental Quality (TCEQ). Allens Creek Reservoir is also part of BRA's Permit 5851, also known as the System Operation Permit. Additional yield in excess of the 99,650 acre-feet per year authorized in the Allens Creek permit may be realized through combined operation with the other system reservoirs included in the System Operation Permit. However, the volume of this additional yield is subject to assumptions regarding other uses in the BRA system. To be conservative, for the purposes of this evaluation the yield of Allens Creek Reservoir was limited to its individual water right.

Permit 2925 was issued in 2000. In 2017, BRA completed a drought study which evaluated BRA water rights using an extended hydrologic period of record (1940 to 2015). Based on the 2017 drought study, there had been no new drought of record for Allens Creek Reservoir, and the permitted yield of 99,650 acre-feet per year is estimated to be fully reliable in the RWP.

Environmental Considerations

A key environmental consideration is the potential impact of the project on threatened and endangered species. *Table 1* lists the threatened and endangered species of Austin County as well as other species of concern.

Table 1 – Rare, Threatened, and Endangered Species of Austin County

AMPHIBIANS		FEDERAL STATUS	STATE STATUS
Eastern tiger salamander	*Ambystoma tigrinum*		
Houston toad	*Anaxyrus houstonensis*	E	E
Southern crawfish frog	*Lithobates areolatus areolatus*		
Strecker's chorus frog	*Pseudacris streckeri*		
Woodhouse's toad	*Anaxyrus woodhousii*		

BIRDS		FEDERAL STATUS	STATE STATUS
Attwater's greater prairie-chicken	*Tympanuchus cupido attwateri*	E	E
Bald eagle	*Haliaeetus leucocephalus*	DL	
Bank swallow	*Riparia riparia*		
Black rail	*Laterallus jamaicensis*	T	T
Brewer's blackbird	*Euphagus cyanocephalus*		
Chestnut-collared longspur	*Calcarius ornatus*		
Common grackle	*Quiscalus quiscula*		
Common nighthawk	*Chordeiles minor*		
Franklin's gull	*Leucophaeus pipixcan*		
Henslow's sparrow	*Centronyx henslowii*		
Interior least tern	*Sternula antillarum athalassos*	DL	E
Least tern	*Sternula antillarum*	DL	
Loggerhead shrike	*Lanius ludovicianus*		
Mottled duck	*Anas fulvigula*		
Northern bobwhite	*Colinus virginianus*		
Piping plover	*Charadrius melodus*	T	T
Rufa red knot	*Calidris canutus rufa*	T	T
Sanderling	*Calidris alba*		
Snowy plover	*Charadrius nivosus*		
Sprague's pipit	*Anthus spragueii*		
Swallow-tailed kite	*Elanoides forficatus*		T
Western burrowing owl	*Athene cunicularia hypugaea*		
White-faced ibis	*Plegadis chihi*		T
White-tailed hawk	*Buteo albicaudatus*		T
Whooping crane	*Grus americana*	E	E
Willet	*Tringa semipalmata*		
Wilson's warbler	*Cardellina pusilla*		
Wood stork	*Mycteria americana*		T
Yellow rail	*Coturnicops noveboracensis*		
Yellow-billed cuckoo	*Coccyzus americanus*	T	

FISH		FEDERAL STATUS	STATE STATUS
Blackspot shiner	*Notropis atrocaudalis*		
Mississippi silvery minnow	*Hybognathus nuchalis*		
Silver chub	*Macrhybopsis storeriana*		
Silverband shiner	*Notropis shumardi*		
Spotted sucker	*Minytrema melanops*		

INSECTS		FEDERAL STATUS	STATE STATUS
American bumblebee	*Bombus pensylvanicus*		
[No accepted common name]	*Sparbarus coushatta*		
[No accepted common name]	*Plauditus texanus*		
[No accepted common name]	*Pseudocentroptiloides morihari*		

MAMMALS		FEDERAL STATUS	STATE STATUS
Big free-tailed bat	*Nyctinomops macrotis*		
Eastern spotted skunk	*Spilogale putorius*		
Hoary bat	*Lasiurus cinereus*		
Mountain lion	*Puma concolor*		
Plains spotted skunk	*Spilogale interrupta*		
Seminole bat	*Lasiurus seminolus*		
Tricolored bat	*Perimyotis subflavus*	PE	

MOLLUSKS		FEDERAL STATUS	STATE STATUS
Brazos heelsplitter	*Potamilus streckersoni*		T
Lilliput	*Toxolasma parvum*		
Mapleleaf	*Quadrula quadrula*		
Pimpleback	*Cyclonaias pustulosa*		
Pistolgrip	*Tritogonia verrucosa*		
Tampico pearlymussel	*Cyrtonaias tampicoensis*		
Tapered pondhorn	*Uniomerus declivis*		
Texas fawnsfoot	*Truncilla macrodon*	T	T

REPTILES		FEDERAL STATUS	STATE STATUS
American alligator	*Alligator mississippiensis*	SAT	
Common garter snake	*Thamnophis sirtalis*		
Eastern box turtle	*Terrapene carolina*		
Prairie skink	*Plestiodon septentrionalis*		
Slender glass lizard	*Ophisaurus attenuatus*		
Smooth softshell	*Apalone mutica*		
Texas horned lizard	*Phrynosoma cornutum*		T
Texas map turtle	*Graptemys versa*		
Western box turtle	*Terrapene ornata*		
Western chicken turtle	*Deirochelys reticularia miaria*		

PLANTS		FEDERAL STATUS	STATE STATUS
Heartleaf evening-primrose	*Oenothera cordata*		
Mohlenbrock's sedge	*Cyperus grayoides*		
Panicled indigobush	*Amorpha paniculata*		
Texas meadow-rue	*Thalictrum texanum*		
Texas pinkroot	*Spigelia texana*		
Texas sandmint	*Rhododon ciliatus*		
Texas seymeria	*Seymeria texana*		
Texas sunnybell	*Schoenolirion wrightii*		
Texas tauschia	*Tauschia texana*		

LE, LT - Federally Listed Endangered/Threatened; SAE, SAT - Federally Listed Endangered/Threatened by Similarity of Appearance; C - Federal Candidate for Listing; DL, PDL - Federally Delisted/Proposed for Delisting; NL - Not Federally Listed; PT – Federal Proposed for Listing; T - State Listed Endangered/Threatened; "blank" - Rare, but with no regulatory listing status.

Permitting and Development

A minimum 10-year schedule is estimated for permitting activities associated with the project. However, the schedule may be accelerated depending on coordination with regulating entities and the proposed project approach.

Based on a desktop investigation, the following permitting activities are likely to apply:

- U.S. Army Corps of Engineers (USACE) Section 404 Permit – Reservoir development will involve modifications to waters of the U.S. As such, the project must be federally permitted under Section 404 of the Clean Water Act. Due to the magnitude of impacts, construction of this reservoir would require a Section 404 Individual Permit.
- National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) – An EIS will likely be required as part of the Section 404 Permitting process.
- Cultural Resources Survey and National Register of Historic Places (NRHP) Testing – As part of the Section 404 Permit processing and EIS development, cultural resources surveys and NRHP testing will likely need to be completed.
- Mitigation Plan – A mitigation plan will be required as part of the Section 404 Permit. Mitigation will most likely involve purchase of mitigation bank credits or construction of mitigation sites to offset impacts to waters of the U.S. Due to substantial impacts to wetlands and other waters of the U.S., mitigation credits may be limited and mitigation may require permittee-responsible mitigation.
- U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD) Ancillary Studies – USFWS and TPWD are stakeholders in the Section 404 Permitting process, and, as such, they will require ancillary studies to be completed. These studies will include surveys for federal threatened and endangered species and habitat modeling to assess impacts of the proposed project.

The project already has a state water right. Commencing near the end of the permitting phase, design and construction periods of 3 to 5 years are anticipated to bring the project to completion at the end of an overall 15-year development period.

Cost Analysis

A detailed update to the reservoir cost estimate, including new costs for the impoundment, pump station, and conveyance facilities, was prepared for the 2016 RWP. Quantities of embankment fill, slurry trench, and soil cement were updated from the original estimates in the 2021 RWP. Estimates for erosion protection along the Brazos River were also updated in the 2021 RWP. Costs for the pump station and conveyance conceptual design were based on current and previous design studies. In the 2026 RWP, costs for these infrastructure elements, as well as the reservoir, have been scaled to September 2023 dollars based on the Engineering News Record (ENR) Construction Cost Index (CCI) and the Producer Price Index (PPI). Because the project site is already held by a sponsoring entity, land costs included in this estimate are limited to costs for survey and a limited amount of purchase or easement costs for associated appurtenances. However, additional land costs to purchase property for mitigation may be required, which are not included in this estimate.

Table 2 summarizes the component costs of key facilities. Costs are presented in September 2023 dollars and include a contingency of 35% including professional services. Based on these costs as presented and assuming full utilization of the reservoir yield of 99,650 acre-feet per year, the unit cost for water from the project is approximately $279 per acre-foot during the debt term and $47 per acre-foot following the retirement of the debt on the project (40 years).

Table 2 – Allens Creek Reservoir Project Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$252,484,237	$252,484,237	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$88,369,483	$88,369,483	
3	LAND AND EASEMENTS	1	LS	$1,330,627	$1,330,627	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$92,024,547	$92,024,547	
5	INTEREST DURING CONSTRUCTION	1	LS	$59,710,668	$59,710,668	
	PROJECT CAPITAL COST				**$493,919,561**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$23,128,911	$23,128,911	$23,128,911	$23,128,911	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$3,832,891	$3,832,891	$3,832,891	$3,832,891	$3,832,891
3	PUMPING ENERGY COSTS	$0	$863,237	$863,237	$863,237	$863,237	$863,237
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$27,825,039**	**$27,825,039**	**$27,825,039**	**$27,825,039**	**$4,696,128**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$27,825,039	$27,825,039	$27,825,039	$27,825,039	$4,696,128
2	YIELD	-	99,650	99,650	99,650	99,650	99,650
3	UNIT COST	$0	$279	$279	$279	$279	$47
	TOTAL UNIT COST						**$233**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$76,990,742	$76,990,742
2	APPROACH CHANNEL	1	LS	$8,205,529	$8,205,529
3	DISCHARGE CONVEYANCE	1	LS	$8,278,808	$8,278,808
4	OFF-CHANNEL RESERVOIRS	1	LS	$89,278,755	$89,278,755
5	EROSION PROTECTION	1	LS	$40,409,757	$40,409,757
6	RELOCATIONS	1	LS	$29,320,645	$29,320,645
	PROJECT COST				**$252,484,237**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$76,990,742	$1,924,769
2	APPROACH CHANNEL	1.0	%	$8,205,529	$82,055
3	DISCHARGE CONVEYANCE	1.0	%	$8,278,808	$82,788
4	OFF-CHANNEL RESERVOIRS	1.5	%	$89,278,755	$1,339,181
5	EROSION PROTECTION	1.0	%	$40,409,757	$404,098
6	RELOCATIONS	0.0	%	$29,320,645	$0
	ANNUAL OPERATION AND MAINTENANCE COST				**$3,832,891**

Water Management Strategy Evaluation

Based on the analysis provided above, the Allens Creek Reservoir project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	The project provides raw water at a highly competitive cost for future water supplies from the Brazos River Basin.
Location	4	The project is located upstream of significant future needs identified in the lower Brazos Basin. Some conveyance may be required to serve users in the western portion of Region H.
Water Quality	3	No known water quality issues impacted by the project.
Environmental Land and Habitat	4	Project has been configured in such a way to minimize impacts. Off-channel location is preferable to on-channel reservoir development.
Environmental Flows	3	The project will reduce peak flows in the Brazos Basin, but releases will improve dry-weather baseflows downstream.
Local Preference	4	The project is recognized as a priority in the lower Brazos River Basin and the western portion of Region H for meeting future needs.
Institutional Constraints	4	Project has received a water right permit, and land for reservoir site is already purchased.
Development Timeline	4	The project may be developed within 15 years due to steps that have already been undertaken to further the project.
Sponsorship	4	Project sponsor has been identified and is taking steps to further project development.
Vulnerability	2	Some risk from natural and man-made disasters due to impoundment of water.
Regionalization	4	The project will serve multiple water systems across an extensive area in the western portion of Region H.
Impacts on Other WMS	5	Project has the potential to benefit the overall yield of the BRA System Operation Permit by maximizing the utility of storage in the lower basin.

Allens Creek Reservoir will impact over 7,000 acres of land. The footprint has been modified from the original proposed footprint to prevent impacts to notable wetland features. The project may potentially reduce instream flows in the lower Brazos River by as much as 202,000 ac-ft/yr. Actual impacts are provided for by permit and will be bounded by environmental flow standards for the basin. Pump station and pipeline facilities have not yet been purchased and set aside for the project and may impact current agricultural operations in a limited manner.

Water User Group Application

The Allens Creek Reservoir project was evaluated on a basis of several criteria to determine the Water

User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy.

CRITERIA	WUG SUITABILITY
Proximity	The location of the project provides for service to needs in the lower Brazos Basin through bed and banks transfer. Its position in the basin allows the Brazos River Authority to make more efficient delivery of water to customers. Also, the reservoir may serve customers in multiple counties in the western portion of Region H.
Size	The magnitude of the project makes it adequate for serving large demands through the sale of water to WWPs that serve a large geographic area.
Water Quality	The project will produce raw water that may be treated through additional projects to provide for treated, potable water.
Unit Cost	The unit cost for the project is relatively low for a reservoir project and highly competitive with other projects from the lower Brazos River basin.

References

Brazos River Authority. (2017). Drought Study Report. Available at <https://brazos.org/about-us/water-supply/system-operations>.

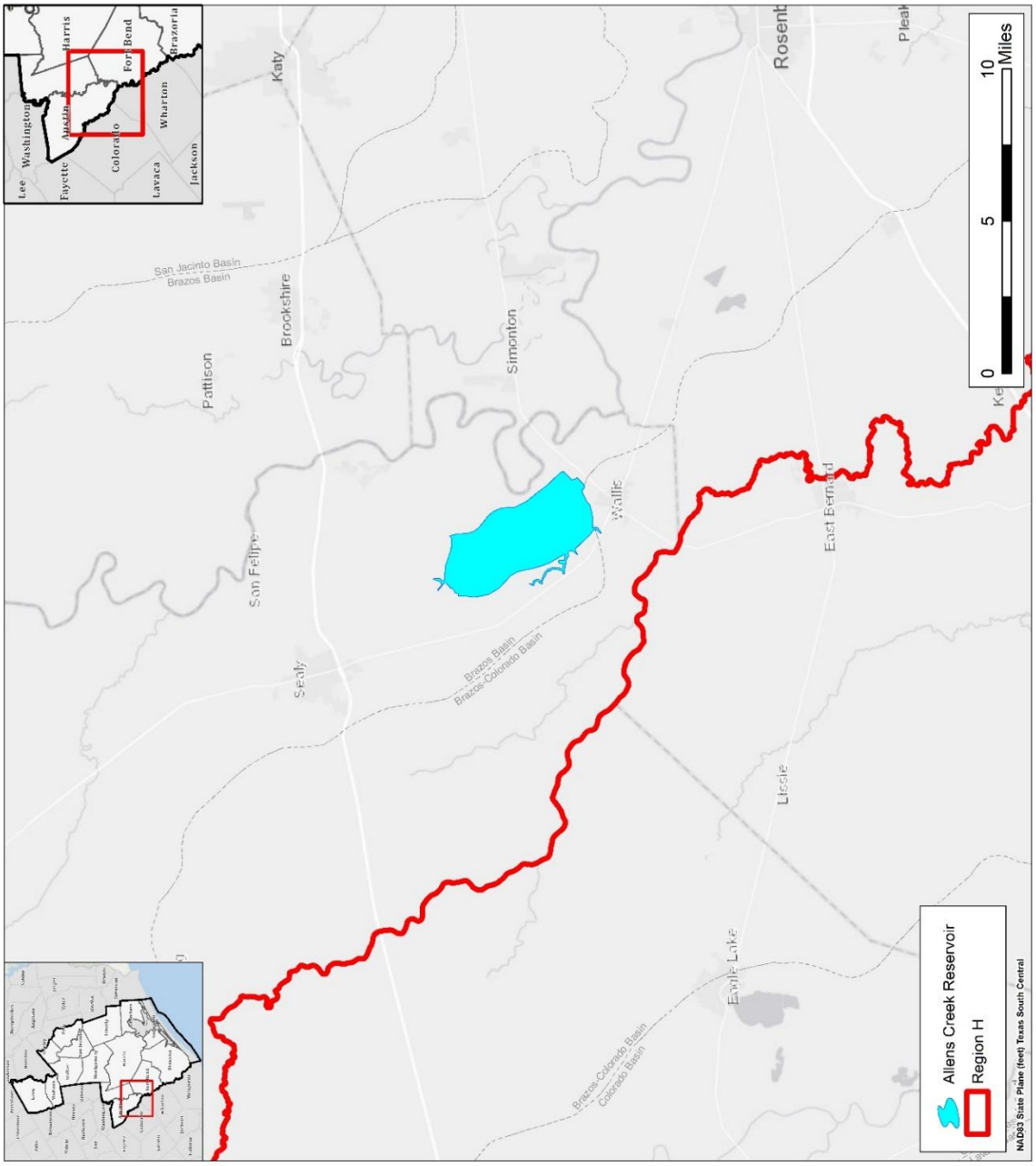
Brazos River Authority website https://brazos.org/allenscreek. Accessed October 2024.

Texas Commission on Environmental Quality, Brazos Water Availability model.

Permit 2925 as amended from TCEQ Water Rights Viewer gisweb.tceq.texas.gov/WRRetrieveRights/?ID=WRPERM2925. Accessed October 2024.

Texas Parks and Wildlife, https://tpwd.texas.gov/gis/rtest/. Accessed October 2024.

Location Map



REGION H
Water Planning Group

Allens Creek Reservoir
Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	BWSC Reservoir and Pump Station Expansion
Project ID:	SWDV-002
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	80,000 ac-ft/yr (71.4 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$452,434,516 (Sept. 2023)
Unit Water Cost (Rounded):	$465 per ac-ft (during loan period) $67 per ac-ft (after loan period)

Strategy Description

The Brazosport Water Supply Corporation (BWSC) plans to increase the total raw water pumping and storage capacity available for municipal and industrial use in the Freeport, Texas area. BWSC provides water supply service to the Brazosport Water Authority (BWA) and Dow Inc. Increasing the capacity of the existing Harris Reservoir and building an associated new river intake and pump station would give more flexibility in managing raw water resources and would provide protection during drought conditions when pumping from the Brazos River is limited or curtailed. This project does not require a new water right appropriation because it is intended to firm up existing water rights held by Dow Inc. and the Brazosport Water Authority to meet manufacturing and municipal demands in Brazoria County. The proposed reservoir would provide an additional firm yield supply quantity of 80,000 acre-feet/year.

Strategy Analyses

The project analyses for the BWSC Reservoir and Pump Station Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Dow pumps raw water supply from the Brazos River to meet the manufacturing demands of its industrial site, manufacturing demands of fence line partners, and municipal demands of the Brazosport Water Authority (BWA) and its customers. Water is diverted by Dow under Dow's water rights and on behalf of BWA under the authority's water rights. The proposed project would increase the amount of associated off-channel reservoir storage capacity by approximately 50,000 acre-feet and would provide a 4- to 8-month supply during the driest months of the critical drought, allowing Dow to meet more of its current raw water demand and the demands of the municipal customers of

the BWA. A new raw water intake and pump station, with a pumping capacity of 150,000 gpm, will make efficient use of the additional storage capacity and allow an additional 80,000 acre-feet per year of firm supply when used in conjunction with Dow's and the BWA's existing water rights as well as additional supply contracted from the Brazos River Authority.

Environmental Considerations

The project would impact approximately 2,000 acres of land, which was previously used for agricultural production and grazing. Although a number of federal and state endangered and threatened species are listed for Brazoria County, the existing disturbed condition of the proposed site suggests that impacts to listed species essentially have already occurred and any additional impacts will be moderate to low. As part of the project development and permitting process, a proposed mitigation plan has been developed for agency consideration. Large changes in nearby property values are not anticipated due to the rural nature of the existing area. Recreational use of the reservoir will be closely managed by project sponsors and is anticipated to include fishing and bird watching.

Permitting and Development

The development of a project of this nature will require the study and consideration of many issues. These will include, but are not necessarily limited to: environmental assessments of the intake and pump station and reservoir sites, Sand, Gravel and Marl permit from the Texas Parks and Wildlife Department (TPWD), compliance with TCEQ dam safety regulations including reviews and construction approvals, revisions to Federal Emergency Management Agency (FEMA) floodplain mapping for the Oyster Creek and Brazos River floodplains, utility relocations, new electrical power supply to the pump station site, road relocations, sediment removal (permitting and facility design), Storm Water Pollution Prevention Plans for construction operations, and site security. USACE issued a Record of Decision for the project in 2023. Amendment of the associated water right permit for additional off-channel storage capacity has been granted by the Texas Commission on Environmental Quality (TCEQ).

Cost Analysis

Costs were developed for the reservoir expansion project based on the estimated cost and infrastructure capacity data provided by the project sponsors, in conjunction with standard Regional Water Planning costing procedures and assumptions. Costs for land, environmental studies and mitigation, and interest during construction were assumed to be reflected in other capital components. Annualized costs for debt service and operations and maintenance were estimated using standard Regional Planning costing reference data. Estimated costs are presented in *Table 1*.

Table 1 – BWSC Reservoir and Pump Station Expansion Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$339,456,627	$339,456,627	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$112,977,889	$112,977,889	
3	LAND AND EASEMENTS	1	LS	$0	$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$0	$0	
	PROJECT CAPITAL COST				**$452,434,516**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$31,833,780	$31,833,780	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$5,320,541	$5,320,541	$5,320,541	$5,320,541	$5,320,541	$5,320,541
3	PUMPING ENERGY COSTS	$29,201	$29,201	$29,201	$29,201	$29,201	$29,201
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$37,183,522**	**$37,183,522**	**$5,349,742**	**$5,349,742**	**$5,349,742**	**$5,349,742**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$37,183,522	$37,183,522	$5,349,742	$5,349,742	$5,349,742	$5,349,742
2	YIELD	80,000	80,000	80,000	80,000	80,000	80,000
3	UNIT COST	$465	$465	$67	$67	$67	$67
	TOTAL UNIT COST						**$200**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$22,869,178	$22,869,178
2	OFF-CHANNEL RESERVOIRS	1	LS	$316,587,449	$316,587,449
	PROJECT COST				**$339,456,627**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$22,869,178	$571,729
2	OFF-CHANNEL RESERVOIRS	1.5	%	$316,587,449	$4,748,812
	ANNUAL OPERATION AND MAINTENANCE COST				**$5,320,541**

Water Management Strategy Evaluation

Based on the analysis provided above, the BWSC Reservoir and Pump Station Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	Reservoir improvements result in a low-cost project for enhancing yields from the Brazos River.

CRITERIA	RATING	EXPLANATION
Location	5	Reservoir is already in proximity to demands through existing infrastructure.
Water Quality	4	Water supply quality is enhanced through the development of additional raw water that is less impacted by intrusion of saltwater in lower reaches of the Brazos River.
Environmental Land and Habitat	4	Limited environmental impacts associated with identified site.
Environmental Flows	2	Reduction in instream flows during periods when the reservoir is filled. These diversions are currently within the limits of the existing water right.
Local Preference	5	Widespread support and opportunity to enhance manufacturing and municipal water supplies.
Institutional Constraints	4	Property acquired and limited permitting in progress.
Development Timeline	5	Project development within 5 years.
Sponsorship	5	BWSC is identified as project sponsor and the project is moving forward.
Vulnerability	3	Some risk from natural and man-made disasters due to impoundment of water.
Regionalization	4	Supports multiple customer systems and expands upon existing regionalized supplies.
Impacts on Other WMS	4	Project provides additional surface water availability from Dow and BWA water rights.

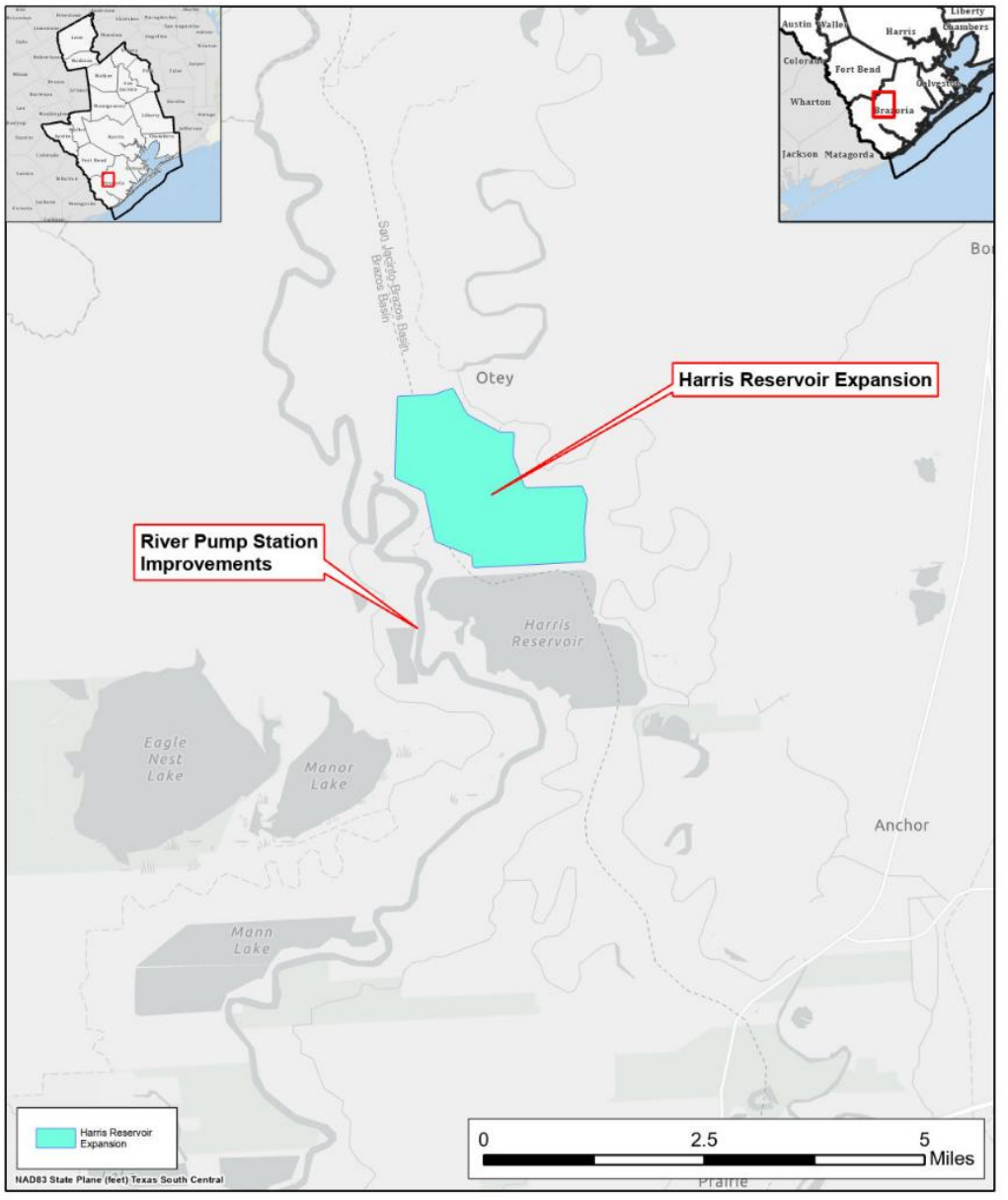
The BWSC Reservoir and Pump Station Expansion will impact 2,000 acres of land that was previously under agricultural production and will have limited environmental impacts. The project will not directly impact environmental flows, as it will utilize existing diversions in the basin that are already permitted.

Water User Group Application

The BWSC Reservoir and Pump Station Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Location of the project suits it to serving existing customers of the Dow and BWA systems.
Size	Project supply capacity is a considerable benefit to large deficits traditionally associated with the lower Brazos River Basin.
Water Quality	Project produces raw water for use by customers who require raw water or are already prepared to treat raw water for other uses.
Unit Cost	Unit cost is reasonable for municipal and industrial needs.
Other Factors	Project is being sponsored by BWSC and is intended to serve the needs of current and future customers.

Location Map



REGION H Water Planning Group

BWSC Reservoir and Pump Station Expansion Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	GCWA Coastal Desalination
Project ID:	SWDV-003
Project Type:	New Surface Water Source
Potential Supply Quantity (Rounded):	Up to 22,400 ac-ft/yr (20.0 mgd)
Implementation Decade:	2040
Development Timeline:	10 years
Project Capital Cost:	$283,297,581 (Sept. 2023)
Unit Water Cost (Rounded):	$2,207 per ac-ft (during loan period) $1,317 per ac-ft (after loan period)

Strategy Description

The Gulf Coast Water Authority (GCWA) is a major water provider to municipal, manufacturing, and irrigation users in the San Jacinto-Brazos Coastal Basin, with customers in Brazoria, Fort Bend, and Galveston Counties. GCWA has recognized seawater desalination as a potential alternative for meeting current and future treated water needs within its service area. Additionally, because of the end-of-basin location of GCWA's service area in the region and its wide network of water transmission and distribution infrastructure, a large-scale seawater desalination facility creates opportunities for leveraging existing water resources through conjunctive water resource management, which would further enhance regional water supplies.

This memorandum summarizes a conceptual coastal seawater desalination project for GCWA. GCWA is currently conducting a feasibility study to assess regional seawater desalination project alternatives. As part of these feasibility study, GCWA is actively collaborating with other regional partners, including the Brazos River Authority (BRA) and the Harris Galveston Subsidence District (HGSD).

Strategy Analyses

The project analyses for GCWA Costal Desalination include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The concept for the project assumes a new seawater desalination facility located in or adjacent to GCWA's existing service area. This enables GCWA to augment their existing water supplies with a reliable, high-quality water supply from an alternative, drought-proof water source. The treated water from a seawater desalination facility could offset the current supplies that GCWA provides to industrial, agricultural, and municipal customers, including diversion rights from the Brazos River.

The strategy concept assumes an initial 20 MGD reverse osmosis (RO) treatment facility to treat raw seawater. An additional 20 MGD treatment module could be added in the future to increase the total capacity of the treatment facility to 40 MGD. Additional conceptual project components assumed include a seawater intake pump station and raw water pipeline, saline water storage, and a pipeline and diffuser system to dispose of brine created from the desalination process.

A specific location for this facility has not yet been identified. Project siting is being evaluated as part of the ongoing feasibility study. If possible, the project location would benefit from the following:

- Access to utilize pre-existing infrastructure to reduce costs and expedite project implementation.
- Access to saline and fresh water sources and discharge points.
- Pre-existing permits for withdrawal and discharge.
- Options to discharge into the Gulf of Mexico, which presents fewer environmental concerns than a system discharging into a bay system.

Conservatively, it was assumed that the intake would be sized to feed a seawater desalination facility operating at 50 percent recovery. Considering recovery rates of the other unit treatment processes and process water, the facility would require a raw seawater intake of approximately 43.5 MGD. A 54-inch diameter pipeline was assumed to convey raw seawater from the intake to the treatment facility. A saline water reservoir could potentially be used as part of the intake and raw water conveyance system to mitigate sudden water quality changes and provide GCWA with flexibility to capture excess Brazos River water, which could facilitate conjunctive conveyance and operation of saline and freshwater sources.

A seawater desalination facility requires pretreatment prior to the desalination process to remove dissolved solids or salts. Pretreatment for desalination is similar to the process described for a conventional surface water treatment plant and is designed to deliver a high-quality feed of water to the RO trains. The level of pretreatment required will be dependent upon the quality of the source water.

Brine created from the desalination process, which could have a solids concentration nearly twice that of incoming seawater, would be discharged from the site. Brine concentrate disposal options include mixing the effluent with existing discharges, such as treated wastewater or industrial cooling water, open disposal in areas of high mixing potential, or submerged diffuse discharges. The most viable disposal option will be dependent on the characteristics of the selected site and will require further study.

Environmental Considerations

Direct environmental impacts associated with this project will be dependent on the site of the facility. If the facility is located on or near one a site that is already developed, environmental impacts could be mitigated. For example, locating the facility in a developed area would limit impacts of surface disturbance and minimize impacts to habitat and wildlife. Utilizing existing discharge points would minimize additional impacts to water resources in the area. This project could potentially result in increases in streamflow via return flows from points of use, which would benefit the Brazos River and potentially some of its tributaries. This project will have the potential effect of reducing groundwater pumping and mitigating subsidence potential.

Permitting and Development

Permit requirements for the implementation of the project will be dependent on the facility location. If the facility is co-located on or near one of GCWA's existing facility sites, it could minimize impacts on species, wetlands, and other environmental factors.

Permits for seawater withdrawals would be needed to allow for the plant's operation. Waste-stream discharge will require a separate Texas Pollutant Discharge Elimination System (TPDES) discharge permit. Pipe alignments could be designed to follow existing pipelines wherever possible, minimizing environmental impacts along these rights-of-way.

Cost Analysis

Planning level cost estimates have been developed for the Region H Plan based on cost estimates provided by GCWA. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Additional cost components, such as interest during construction, annualized debt service, and annualized operations and maintenance costs, were assumed using standard Regional Planning costing assumptions. Estimated costs are presented in *Table 1*.

Table 1 – GCWA Coastal Desalination Project Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$196,650,264	$196,650,264	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$68,827,592	$68,827,592	
3	LAND AND EASEMENTS	1	LS	$130,229	$130,229	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$118,390	$118,390	
5	INTEREST DURING CONSTRUCTION	1	LS	$17,571,106	$17,571,106	
	PROJECT CAPITAL COST				$283,297,581	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$0	$19,933,123	$19,933,123	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$29,497,540	$29,497,540	$29,497,540	$29,497,540	$29,497,540
	TOTAL ANNUAL COST	$0	$49,430,662	$49,430,662	$29,497,540	$29,497,540	$29,497,540

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$0	$49,430,662	$49,430,662	$29,497,540	$29,497,540	$29,497,540
2	YIELD	-	22,400	22,400	22,400	22,400	22,400
3	UNIT COST	$0	$2,207	$2,207	$1,317	$1,317	$1,317
	TOTAL UNIT COST						$1,673

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER TREATMENT PLANTS	1	LS	$196,650,264	$196,650,264
	PROJECT COST				$196,650,264

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER TREATMENT PLANTS	1.0	LS	$29,497,540	$29,497,540
	ANNUAL OPERATION AND MAINTENANCE COST				$29,497,540

Water Management Strategy Evaluation

Based on the analysis provided above, the GCWA Coastal Desalination strategy was evaluated across eleven different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	High cost, but the project represents a drought-proof, high quality water supply.
Location	3	Conveyance likely required to meet demands, but is dependent on project site and location of future municipal and industrial development in the lower Brazos River Basin.
Water Quality	3	No known water quality issues. Additional assessment of water quality will be required once a site is identified.
Environmental Land and Habitat	3	Limited environmental concerns associated with project development. Additional assessment of environmental impacts will be required once a site is identified.
Environmental Flows	4	No anticipated impact on local environmental flows. Some potential for increases in streamflow via return flows from points of use.
Local Preference	3	Local support for desalination development.
Institutional Constraints	2	Extensive permitting required but not yet initiated. Depending on the selected site, some property acquisition may be necessary.
Development Timeline	4	Anticipated development timeline of 10 years. Development timeline could be shortened if able to leverage existing infrastructure.
Sponsorship	3	Sponsor(s) identified.
Vulnerability	3	Risk to project related to natural disasters within proximity to the coast. However, this risk could be mitigated through existing, developed infrastructure.
Regionalization	4	Supports existing regional systems and water users supplied by GCWA.
Impacts on Other WMS	4	No direct impacts on other projects. Could allow greater flexibility in use of some existing sources.

Potential effects to acreage or vulnerable species will be dependent on the selected project site. If the GCWA Coastal Desalination project is located on or near an existing, developed site, is anticipated to have a minimal Impact to acreage and have no impact to vulnerable species. The project may increase return flows to streams by approximately 50 percent of the potential project yield of 22,400 ac-ft/yr and is not anticipated to impact agricultural land or production.

Water User Group Application

The GCWA Coastal Desalination project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The proposed project will ideally be sited to serve needs in the GCWA service area.
Size	The project may be scaled from 20 MGD to 40 MGD based on the concept outlined making it adaptable for a number of potential water needs.
Water Quality	The water from this project would be a high-quality, RO-treated supply that would be appropriate for municipal or extremely high-quality industrial use.
Unit Cost	The unit cost for this project may be prohibitive to most users with alternatives available. However, implementation of this project may be reasonable for uses requiring a supply that is protected from effects of drought.
Other Factors	Needs in the immediate vicinity of the project are currently planned to be met with alternative water supplies in the near-term.

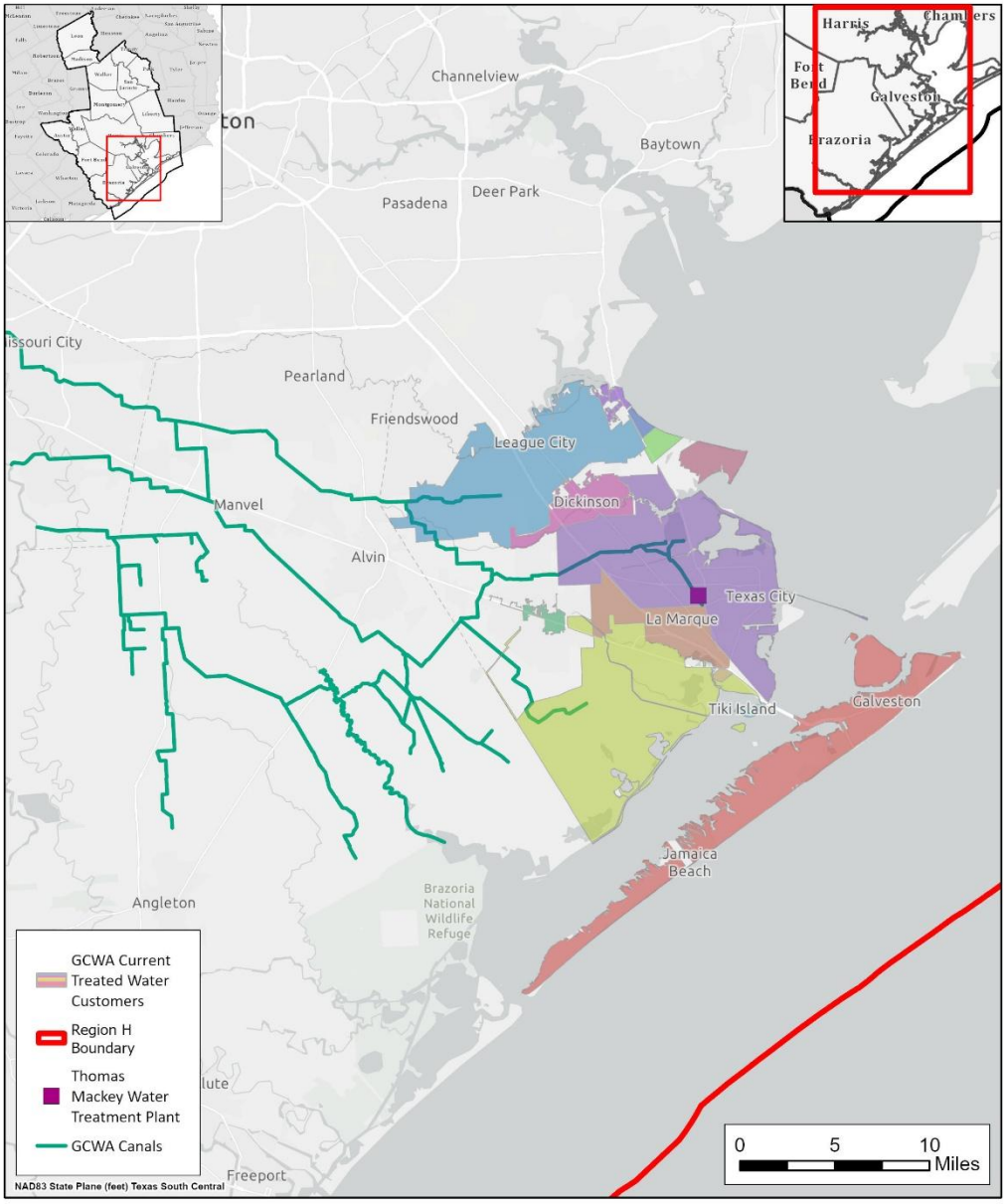
References

Gulf Coast Water Authority. *Regional Seawater Desalination Feasibility Study Grant Application, Response to Bureau of Reclamation Notice of Funding Opportunity No. R23AS00076*. 2023.

Texas Water Development Board. *The Future of Desalination in Texas, Volume 1 – Biennial Report on Seawater Desalination*. 2004.

Texas Water Development Board. *The Future of Desalination in Texas: 2018 Biennial Report to the Texas Legislature on Seawater and Brackish Groundwater Desalination*. 2018.

Location Map



REGION H Water Planning Group

GCWA Coastal Desalination

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Lake Somerville Augmentation
Project ID:	SWDV-004
Project Type:	New Surface Water Source
Potential Supply Quantity (Rounded):	Up to 20,000 ac-ft/yr (17.9 mgd)
Implementation Decade:	2050
Development Timeline:	<10 years
Project Capital Cost:	$498,006,241 (Sept. 2023)
Unit Water Cost (Rounded):	$1,998 per ac-ft (during loan period) $246 per ac-ft (after loan period)

Strategy Description

The Brazos River and its tributaries serve as a major source of water supply for entities in Regional Water Planning Areas (RWPAs) G and H. Due to the natural variability of flows in the basin, reservoirs have played an important role in capturing and storing high flows to generate more reliable water supplies. Through the Regional Planning process and other planning efforts, a number of supply concepts to increase Brazos River Basin supplies through increased use of storage have been considered. One potential option is the use of available storage capacity in Lake Somerville to store flows diverted from the main channel of the Brazos River and conveyed to the lake by pipeline.

Strategy Analyses

The project analyses for Lake Somerville Augmentation include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Lake Somerville, which is located on Yegua Creek, is operated by the US Army Corps of Engineers (USACE) and through contract serves as a water supply impoundment for the Brazos River Authority (BRA). One concept to increase firm water supplies in the Brazos Basin is the development of a pump station and pipeline to divert high flows from the Brazos River to utilize available storage in Lake Somerville and potentially increase the firm yield of the reservoir. The lake is currently permitted for diversions of up to 48,000 ac-ft per year for multiple uses under Certificate of Adjudication (COA) 12-5164. A potential strategy yield of up to 20,000 ac-ft/yr is based upon analyses by BRA.

Environmental Considerations

Due to the conceptual nature of this project, a detailed project-specific environmental assessment or

field survey has not been performed. Any project of this magnitude will include environmental challenges to be resolved during planning, design, and construction. Specific environmental obstacles would be identified during routing studies of the proposed alignment and other infrastructure. Construction of pipeline and pump station facilities would create some degree of surface disturbance, although disturbance and associated impacts would likely be limited for the conceptual pipeline route, which largely follows existing roadway alignments. Overall habitat impacts for the project would be expected to be far less than those necessary for the development of a new reservoir.

As with any new appropriation or transfer of surface water, there is the potential for impact to instream flows and habitat. However, several factors likely mitigate potential impacts for the Lake Somerville Augmentation project. The project would derive yield largely from diversions captured during periods of high flow in the river. Additionally, the proposed project does not involve an interbasin transfer of water but rather utilizes an impoundment on a tributary which flows into the river south of the diversion point. The concept as modeled would also be junior to the Senate Bill 3 environmental flow standards adopted for the Brazos River Basin.

Permitting and Development

A number of permitting steps are required for the development of this project. A new appropriation of surface water would require water right permitting through the TCEQ. Additionally, because Lake Somerville is operated by USACE, coordination and permitting through that agency would be required as well. Permitting and mitigation would also be required for physical development of infrastructure, potentially including permitting through Section 404 of the Clean Water Act administered by the USACE. These permitting requirements may require various studies for application including environmental impact or assessment studies, a wildlife habitat mitigation plan, an assessment of impacts to species, and cultural resource studies.

Cost Analysis

Preliminary planning level cost estimates were prepared for the Lake Somerville Augmentation project using standard regional planning costing assumptions and adjusted to a cost reference of September 2023 dollars as required by TWDB. Costs were developed for a 200-mgd pump station with an intake structure and an estimated 18.4 miles of pipeline. Due to the conceptual nature of the project, cost estimation for this analysis was limited to the major pump station and pipeline components and does not include other components including individual appurtenances, pipeline crossings, relocations, or other infrastructure. A summary of the project cost estimate is provided below in *Table 1*.

Table 1 – Lake Somerville Augmentation Project Cost Estimate (200 mgd Pump Station)

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$355,473,436	$355,473,436	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$109,695,533	$109,695,533	
3	LAND AND EASEMENTS	1	LS	$1,344,725	$1,344,725	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$604,460	$604,460	
5	INTEREST DURING CONSTRUCTION	1	LS	$30,888,088	$30,888,088	
	PROJECT CAPITAL COST				**$498,006,241**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$0	$35,040,255	$35,040,255	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$0	$4,470,785	$4,470,785	$4,470,785	$4,470,785
3	PUMPING ENERGY COSTS	$0	$0	$458,496	$458,496	$458,496	$458,496
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$0**	**$39,969,537**	**$39,969,537**	**$4,929,281**	**$4,929,281**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$0	$39,969,537	$39,969,537	$4,929,281	$4,929,281
2	YIELD	-	-	20,000	20,000	20,000	20,000
3	UNIT COST	$0	$0	$1,998	$1,998	$246	$246
	TOTAL UNIT COST						**$1,122**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$61,070,048	$61,070,048
2	PIPELINES	1	LS	$294,403,388	$294,403,388
	PROJECT COST				**$355,473,436**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$61,070,048	$1,526,751
2	PIPELINES	1.0	%	$294,403,388	$2,944,034
	ANNUAL OPERATION AND MAINTENANCE COST				**$4,470,785**

Water Management Strategy Evaluation

Based on the analysis provided above, the Lake Somerville Augmentation project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Project has a high unit cost, but annual costs decrease considerably after debt service.
Location	4	Project requires extensive pipeline conveyance.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	3	Environmental impacts associated with the project can be mitigated.
Environmental Flows	2	Reduction in instream flows limited by flow requirements for Brazos River Basin.
Local Preference	3	No known significant opposition to project.
Institutional Constraints	3	Permitting and property acquisition required for project development.
Development Timeline	4	Approximate 10-year development timeline.
Sponsorship	3	Concept identified by Brazos River Authority.
Vulnerability	4	Slight risk from natural and man-made disasters.
Regionalization	4	Supports existing regional systems and water users supplied by the Brazos River Authority water supply system.
Impacts on Other WMS	4	Project has potential to be integrated into System Operation Permit though enhancing overall basin storage.

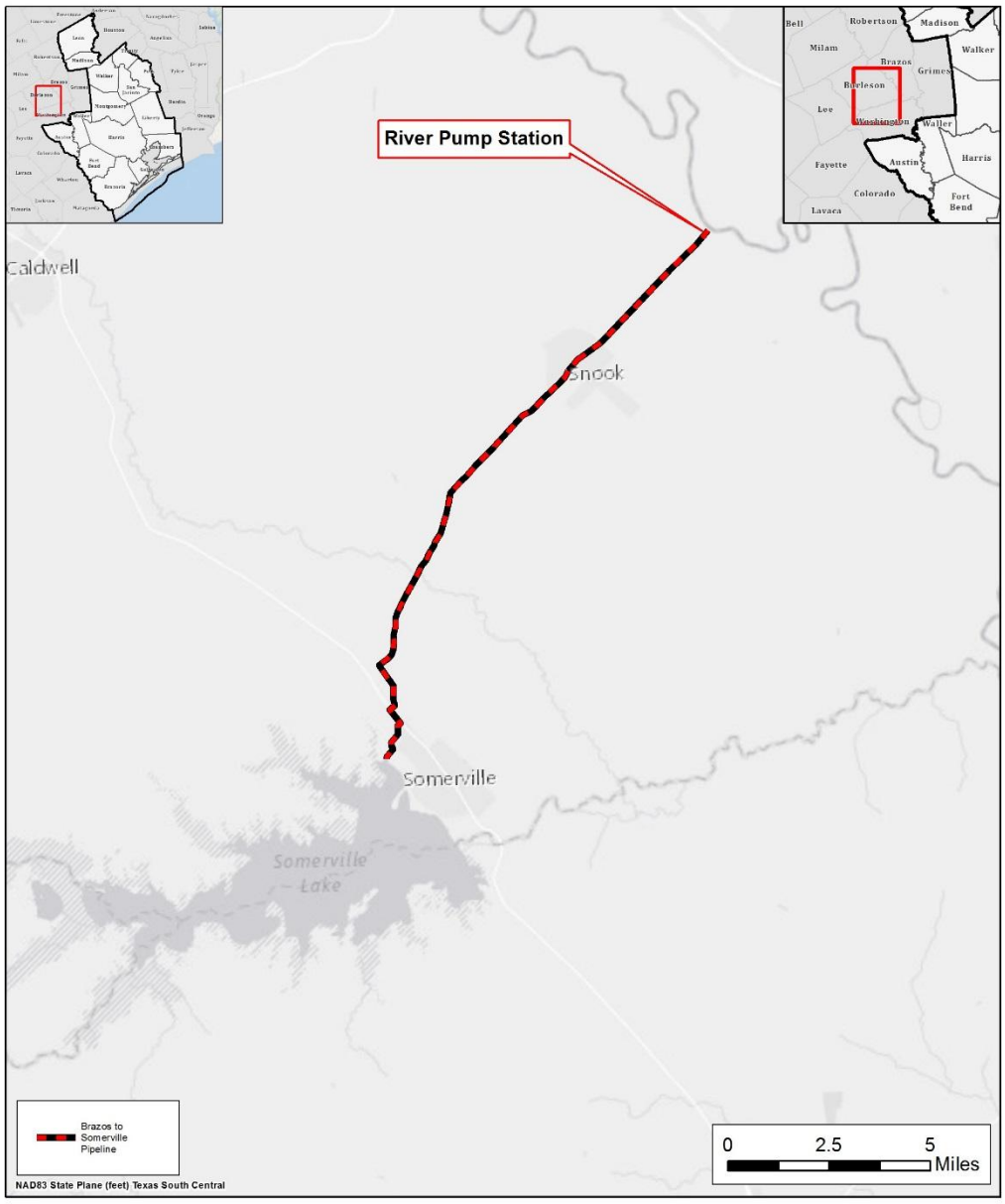
The Lake Somerville Augmentation project includes up to 18 miles of pipeline. The majority of this impact will be in rural areas with potential limited impacts to habitat and agriculture. The project may potentially reduce instream flows by approximately 20,000 ac-ft/yr, on average. Actual impacts will be determined by the water right permit and bounded by environmental flow standards for the basin.

Water User Group Application

The Lake Somerville Augmentation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is intended to serve customers in the lower Brazos River Basin.
Size	The magnitude of the project makes is adequate for serving moderately large demands through the sale of water to WWPs that serve a large geographic area.
Water Quality	The project will produce raw water that may be treated through additional projects to provide for treated, potable water.
Unit Cost	The unit cost for the project is moderately high during debt service but unit cost declines substantially afterward.
Other Factors	Project may provide benefit to overall system operation.

Location Map



REGION H Water Planning Group

Lake Somerville Augmentation Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	BAWA East SWTP Expansion
Project ID:	TRET-001
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	13,440 ac-ft/yr (12 MGD)
Implementation Decade:	2030
Development Timeline:	2 years
Project Capital Cost:	$124,515,458 (Sept. 2023)
Unit Water Cost (Rounded):	$868 per ac-ft (during loan period) $217 per ac-ft (after loan period)

Strategy Description

Baytown Area Water Authority (BAWA) is a wholesale provider of treated water to municipal water systems in eastern Harris and western Chambers Counties in Region H, including the City of Baytown and multiple Fresh Water Supply Districts and Municipal Utility Districts. BAWA utilizes surface water obtained under contract from the City of Houston and diverted from two take points on the Coastal Water Authority canal system. This raw water is treated at BAWA's original Fritz Langham Surface Water Treatment Plant (SWTP) as well as the newer East SWTP before being distributed through the BAWA and City of Baytown transmission and distribution systems. In order to meet the needs of current and future customers, BAWA has identified the need to expand the treatment capacity of the BAWA East SWTP. The new treatment infrastructure will be developed on the existing East SWTP site, limiting the required permitting and the need for development of additional conveyance. This project does not require a new water right appropriation because it is associated with infrastructure related to the use of existing rights.

Strategy Analyses

The project analyses for the BAWA East SWTP Expansion project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

This project is supplied by contractual agreements for supply from existing water rights. The BAWA East SWTP Expansion project will increase deliverable supplies from existing sources and will not require a new water right appropriation. The proposed infrastructure will increase treatment capacity to allow an increased volume of contracted surface water supply to be used by BAWA's customers. Major project components include development of additional treatment units and storage in order to increase treatment capacity, with an initial phase increasing the facility's capacity from 6 mgd to 12

mgd by 2030, resulting in an additional 6 mgd (6,720 ac ft/yr) of treated water capacity. A subsequent expansion phase is anticipated to expand the facility by another 6 mgd.

Environmental Considerations

The enhanced infrastructure will facilitate an increase in treatment capacity for the BAWA system. Impacts on instream flows and bay and estuary flows are anticipated to be minimal, as the proposed project increases usable supply from contractual supplies based upon existing water rights and existing canal conveyance; the project does not develop new surface water sources. Infrastructure development may result in some limited surface disturbance from construction; however, this is expected to be minimal as the proposed infrastructure has a limited footprint and will be developed on BAWA's existing SWTP site adjacent to existing facilities.

Permitting and Development

The development of this strategy may require some permitting due to surface disturbance from the construction of treatment infrastructure. This is expected to be minimal, as construction is anticipated to occur on the sponsor's existing SWTP site. Because the supply source is provided by existing water rights and diverted from the existing Coastal Water Authority canal system, permitting of new water rights or amendment of existing rights will not be required.

Cost Analysis

Planning level cost estimates for this strategy are included in the table below. An estimated capital cost for the expansion of the SWTP was provided by BAWA and was scaled to a September 2023 equivalent cost in accordance with TWDB guidance (*Table 1)*. The costs presented in this memorandum do not include the purchase cost of water. Certain costs presented in *Table 1*, including environmental studies and mitigation, estimated interest during construction, and annual costs such as debt service and costs for operations and maintenance, were calculated using standard cost estimation procedures for Region H.

Table 1 – BAWA East SWTP Expansion Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$80,272,638	$80,272,638	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$36,040,776	$36,040,776	
3	LAND AND EASEMENTS	1	LS	$43,560	$43,560	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$435,600	$435,600	
5	INTEREST DURING CONSTRUCTION	1	LS	$7,722,884	$7,722,884	
	PROJECT CAPITAL COST				**$124,515,458**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$4,380,521	$8,761,042	$4,380,521	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$1,454,906	$2,909,811	$2,909,811	$2,909,811	$2,909,811	$2,909,811
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$5,835,426**	**$11,670,853**	**$7,290,332**	**$2,909,811**	**$2,909,811**	**$2,909,811**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$5,835,426	$11,670,853	$7,290,332	$2,909,811	$2,909,811	$2,909,811
2	YIELD	6,720	13,440	13,440	13,440	13,440	13,440
3	UNIT COST	$868	$868	$542	$217	$217	$217
	TOTAL UNIT COST						**$454**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER TREATMENT PLANTS	1	LS	$80,272,638	$80,272,638
	PROJECT COST				**$80,272,638**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER TREATMENT PLANTS	1.0	LS	$2,909,811	$2,909,811
	ANNUAL OPERATION AND MAINTENANCE COST				**$2,909,811**

Water Management Strategy Evaluation

Based on the analysis provided above, the BAWA East SWTP Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	3	Costs are moderate during debt service but are reduced considerably after completion of debt service

CRITERIA	RATING	EXPLANATION
Location	5	Project is associated with an existing treatment plant site and conveyance infrastructure serving a large area.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	4	Expansion to be constructed on existing plant site. Minimal impacts anticipated.
Environmental Flows		from canal conveyance are associated with existing water
Local Preference	4	No known significant opposition.
Institutional Constraints		Property and facilities to be expanded already owned by sponsor.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship	5	The project sponsor is committed to the project and is actively engaged in planning and design activities.
Vulnerability	4	Minor risks from natural and man-made disasters associated with source availability.
Regionalization	2	Serves sponsor entity and a limited number of customers.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The BAWA East SWTP Expansion will facilitate diversions made from existing water rights. The project is not anticipated to impact agricultural land and production or to impact vulnerable species.

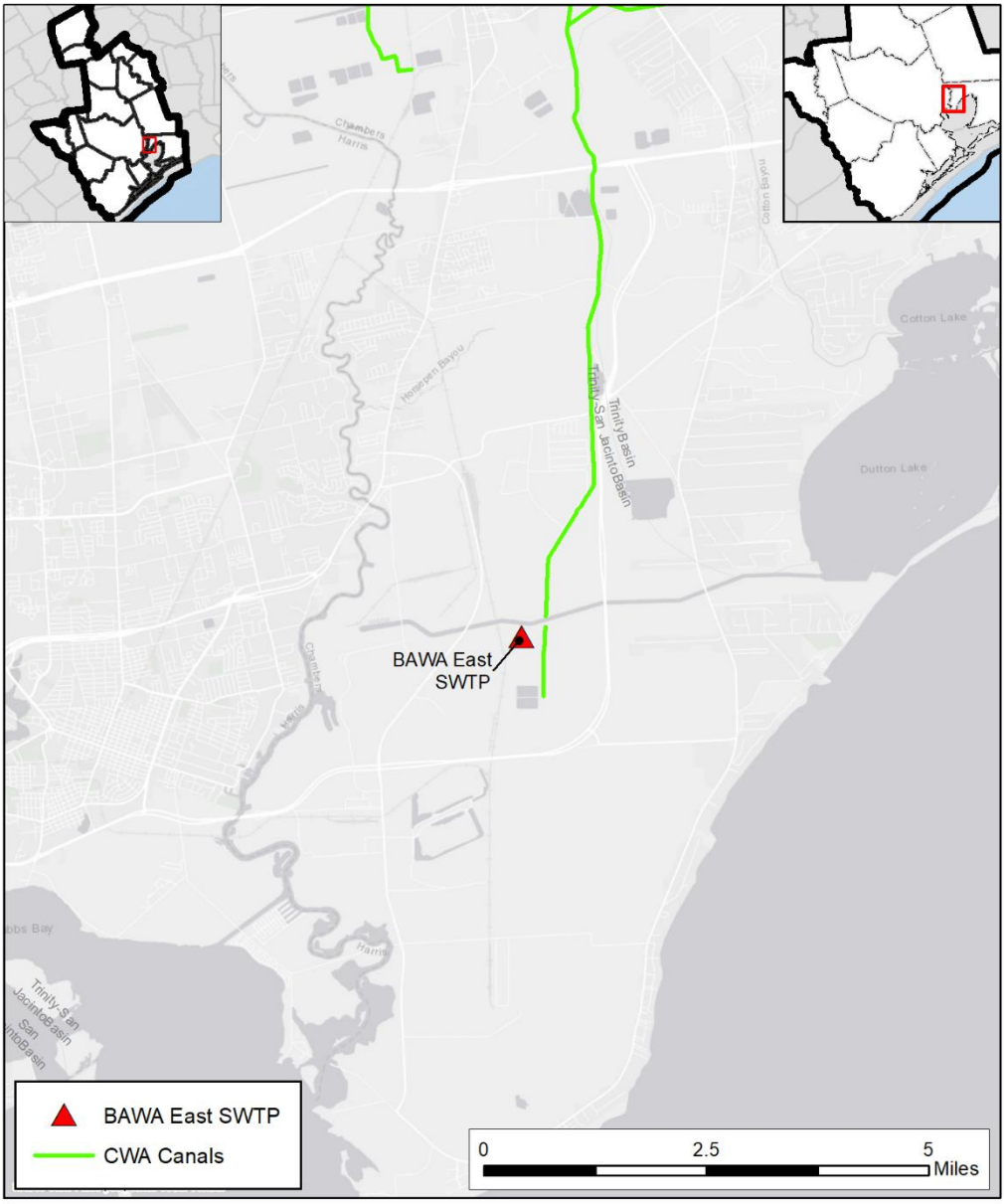
Water User Group Application

The BAWA East SWTP Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	The project is sized in accordance with the treatment infrastructure needs and available source water identified by the project sponsor.
Water Quality	This project provides treated surface water for a variety of uses.

CRITERIA	WUG SUITABILITY
Unit Cost	Costs are moderate during debt service but are reduced considerably after completion of debt service.
Other Factors	This project meets demands in a rapidly growing area and also helps reduce potential demand on groundwater sources.

Location Map



REGION H
Water Planning Group

BAWA East Surface Water Treatment Plant Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Brazosport Water Authority Conventional Treatment Expansion
Project ID:	TRET-002
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	8,400 ac-ft/yr (7.5 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$23,244,186 (Sept. 2023)
Unit Water Cost (Rounded):	$400 per ac-ft (during loan period) $205 per ac-ft (after loan period)

Strategy Description

The Brazosport Water Authority (BWA) serves seven communities in the southern Brazoria County area and provides potable service to Dow Inc. and two Texas Department of Criminal Justice (TDCJ) units, as well as the City of Rosenberg. In December of 2013, BWA concluded a Texas Water Development Board (TWDB) Regional Facility Planning Grant study to examine the potential for serving the current BWA service area as well as other portions of Brazoria County in the future. In addition to the development of a reverse osmosis (RO) water treatment plant (WTP) at the site of the current BWA surface water treatment plant, the study also recommended expansion of BWA's conventional surface water treatment capacity in order to accommodate additional growth within and surrounding the existing service area of the facility.

Strategy Analyses

The project analyses for BWA Conventional Treatment Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The proposed project will include the expansion of BWA's 20 MGD conventional filtration treatment plant by an additional 7.5 MGD. This project will work in conjunction with the proposed brackish groundwater and RO facilities to provide adequate supplies to meet future needs to be served by BWA.

Environmental Considerations

It is anticipated that the BWA WTP Expansion will be developed within the confines of the existing plant site. This is expected to minimize additional environmental impacts.

Permitting and Development

Permitting will be required for components external to the scope of any initial permitting process conducted for the BWA WTP site.

Cost Analysis

Preliminary cost estimates for the proposed project were provided by BWA and adjusted for use in regional planning. These costs are summarized below in *Table 1*.

Table 1 – BWA Conventional Treatment Expansion Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$16,150,000	$16,150,000	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$5,652,500	$5,652,500	
3	LAND AND EASEMENTS	1	LS	$0	$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$1,441,686	$1,441,686	
	PROJECT CAPITAL COST				**$23,244,186**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$1,635,486	$1,635,486	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$1,722,428	$1,722,428	$1,722,428	$1,722,428	$1,722,428	$1,722,428
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$3,357,914**	**$3,357,914**	**$1,722,428**	**$1,722,428**	**$1,722,428**	**$1,722,428**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$3,357,914	$3,357,914	$1,722,428	$1,722,428	$1,722,428	$1,722,428
2	YIELD	8,400	8,400	8,400	8,400	8,400	8,400
3	UNIT COST	$400	$400	$205	$205	$205	$205
	TOTAL UNIT COST						**$270**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$2,270,000	$2,270,000
2	WATER TREATMENT PLANTS	1	LS	$13,880,000	$13,880,000
	PROJECT COST				**$16,150,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$2,270,000	$56,750
2	WATER TREATMENT PLANTS	1.0	LS	$1,665,678	$1,665,678
	ANNUAL OPERATION AND MAINTENANCE COST				**$1,722,428**

Water Management Strategy Evaluation

Based on the analysis provided above, the BWA Conventional Treatment Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can

be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	Project provides treated water at a moderately low cost, which decreases further after completion of debt service.
Location	3	Conveyance required to provide water to diverse BWA service area.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	5	Very limited impacts associated with existing BWA plant site.
Environmental Flows	3	No change in river diversions directly associated with project.
Local Preference	4	Local support from BWA customers.
Institutional Constraints	3	Minimal permitting effort associated with project.
Development Timeline	5	Project can be implemented in a relatively short time period.
Sponsorship	5	Project is under development.
Vulnerability	4	No substantial risk from natural and man-made disasters.
Regionalization	4	Supports multiple customer systems and expands upon existing regionalized supplies.
Impacts on Other WMS	5	Project works in conjunction with BWA brackish groundwater project to provide a reliable water supply.

The BWA Conventional Treatment Expansion is not anticipated to affect acreage or vulnerable species. Development is anticipated to be on the existing plant site with limited potential for impact. The plant expansion will not directly impact environmental flows. The project will utilize existing diversions in the basin that are already permitted. The project is not anticipated to impact agricultural land or production.

Water User Group Application

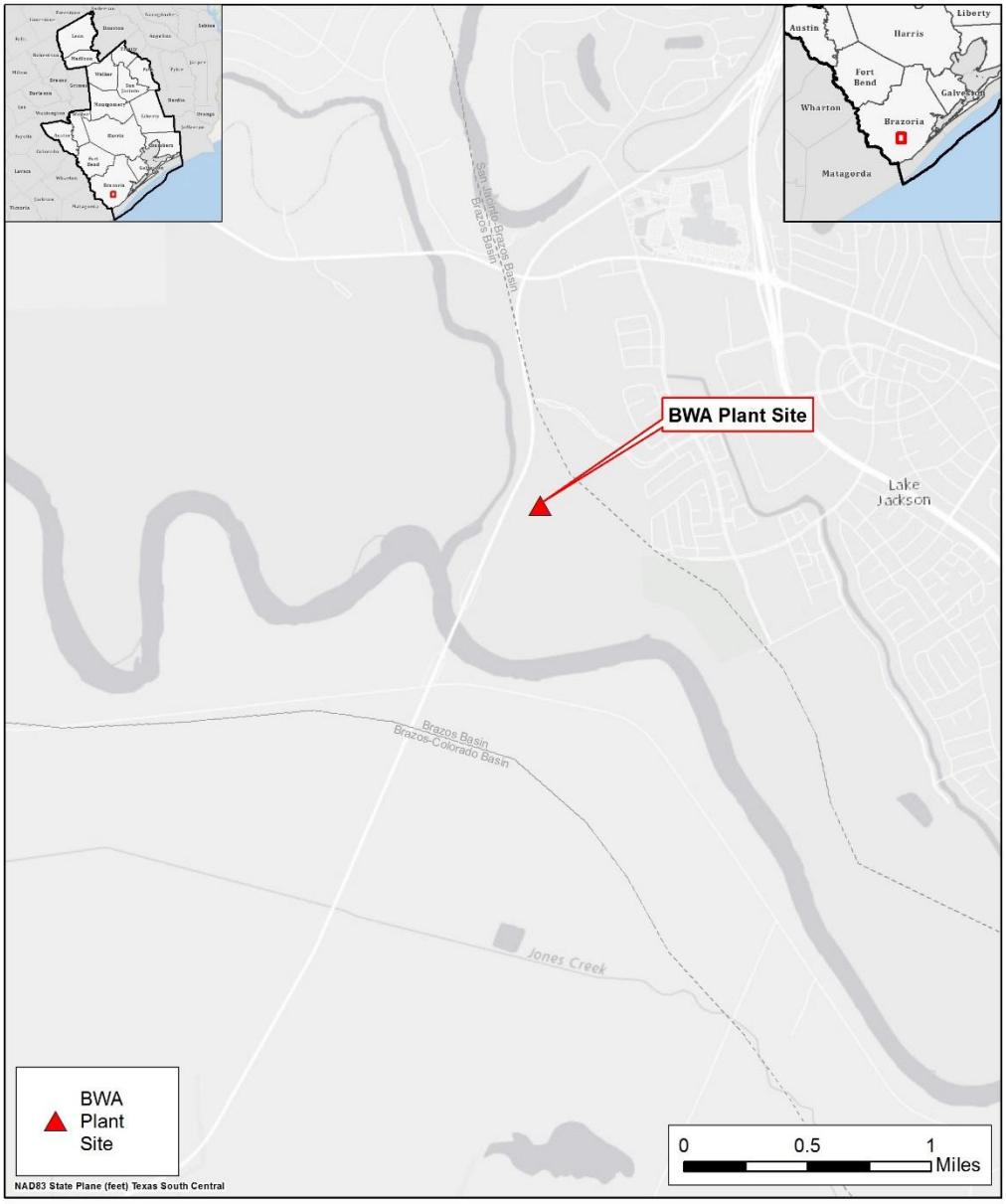
The BWA Conventional Treatment Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is positioned to provide water within the current BWA customer service area.
Size	Project is sized to provide adequate dry-year supply for BWA customer use.
Water Quality	Project will provide treated potable water for municipal and industrial use.
Unit Cost	Unit cost is suited to use for municipal supply.
Other Factors	Project is identified for BWA service area.

References

CDM-Smith. *Brazoria County Regional Water Facility Study*. May 2013.

Location Map



REGION H Water Planning Group

Brazosport Water Authority Conventional Treatment Plant Location Map

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	City of Houston EWPP Enhancement
Project ID:	TRET-003
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	470,400 ac-ft/yr (420 mgd)
Implementation Decade:	2040
Development Timeline:	<10 years
Project Capital Cost:	$5,000,000,000 (Sept. 2023)
Unit Water Cost (Rounded):	$1,492 per ac-ft (during loan period) $744 per ac-ft (after loan period)

Strategy Description

The City of Houston (COH) operates three major surface water treatment plants in Harris County. Collectively, these facilities provide treated water to the COH distribution system as well as a number of regional partners and contract customers. The facilities provide an important tie between raw water supplies in the Trinity and San Jacinto River Basins and demands as far west as the Brazos River Basin in Fort Bend County. The treated supply from these facilities enables COH and its customers to meet the groundwater reduction requirements of the Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD). As demand increases in both the Houston service area and among wholesale customers of COH, additional treatment capacity will be required.

COH has identified the need for a project including capacity expansion, infrastructure upgrades, and other facility enhancements at the East Water Purification Plant (EWPP) to help meet this demand. The EWPP is a major surface water treatment facility located in eastern Houston near the confluence of Hunting Bayou and Buffalo Bayou. The plant primarily utilizes water associated with the Lake Livingston water right in the Trinity River Basin as well as from Lake Houston, with source water conveyed to the site through the Coastal Water Authority (CWA) canal system. The EWPP treats water for use by COH and wholesale customers, including industry and municipalities. The facility also serves as a source of treated surface water for several regional water authorities, including North Channel Water Authority, North Fort Bend Water Authority, and West Harris County Regional Water Authority. The new treatment infrastructure will be developed on the existing EWPP site, limiting the required permitting and the need for development of additional conveyance. This project does not require a new water right appropriation because it is associated with infrastructure related to the use of existing rights. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for City of Houston EWPP Enhancement include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The project will be supplied primarily by the existing Lake Livingston water right in the Trinity River Basin as well as Lake Houston in the San Jacinto River Basin, with supplies continuing to be conveyed westward to the EWPP through the CWA Canal system. The project will increase treated supplies from existing sources and will not require a new water right appropriation. Major project components are anticipated to include new treatment infrastructure and associated appurtenances. Preliminary analyses by COH anticipate a planned capacity for the expanded and enhanced EWPP facility of 420 million gallons per day (mgd), or 470,400 ac-ft/yr, of finished water.

Environmental Considerations

The enhanced infrastructure will facilitate an increase in treatment capacity of the COH system and increase overall system reliability. Impacts on instream flows and bay and estuary inflows are expected to be minimal, as the proposed project increases the usable supply from sources associated with existing water rights and conveyance. The project does not develop new surface water sources. Infrastructure development may result in some limited surface disturbance from construction; however, this is expected to be minimal as the proposed infrastructure will be developed at the existing EWPP site.

Permitting and Development

The development of this strategy may require some permitting due to surface disturbance from the construction of treatment infrastructure. This is expected to be minimal, as construction is anticipated to occur on the sponsor's existing EWPP site. Because the supply source is provided by existing water rights and conveyance, permitting of new water rights or amendment of existing rights will not be required.

Cost Analysis

Costs were developed for the project based on the estimated total capital cost provided by the project sponsor. Annualized costs for debt service and operations and maintenance were estimated using standard Regional Planning costing reference data. Estimated costs are presented in *Table 1*.

Table 1 – City of Houston EWPP Enhancement Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$5,000,000,000	$5,000,000,000	
	PROJECT CAPITAL COST				**$5,000,000,000**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$0	$351,805,384	$351,805,384	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$350,000,000	$350,000,000	$350,000,000	$350,000,000	$350,000,000
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$701,805,384**	**$701,805,384**	**$350,000,000**	**$350,000,000**	**$350,000,000**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$0	$701,805,384	$701,805,384	$350,000,000	$350,000,000	$350,000,000
2	YIELD	-	470,400	470,400	470,400	470,400	470,400
3	UNIT COST	$0	$1,492	$1,492	$744	$744	$744
	TOTAL UNIT COST						**$1,043**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER TREATMENT PLANTS	1	LS	$5,000,000,000	$5,000,000,000
	PROJECT COST				**$5,000,000,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER TREATMENT PLANTS	1.0	LS	$350,000,000	$350,000,000
	ANNUAL OPERATION AND MAINTENANCE COST				**$350,000,000**

Water Management Strategy Evaluation

Based on the analysis provided above, the City of Houston EWPP Enhancement project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

Criteria	Rating	Explanation
Cost		Costs are high during debt service but are reduced considerably after completion of debt service
Location	5	Project is associated with an existing treatment plant site and conveyance infrastructure serving a large area.
Water Quality		No known issues related to water quality.
Environmental Land and Habitat	4	Enhancements to be constructed on existing plant site. Minimal impacts anticipated.
Environmental Flows	3	Project does not directly impact flows. Increased diversions from existing conveyance are associated with existing water rights.
Local Preference	4	No known significant opposition.
Institutional Constraints	5	Property and facilities to be enhanced already owned by sponsor.
Development Timeline	4	Project development timeline of less than 10 years.
Sponsorship	5	The project sponsor is committed to the project and is actively engaged in planning activities.
Vulnerability	4	Minor risks from natural and man-made disasters associated with source availability.
Regionalization	4	Supports multiple customer systems and expands upon existing regionalized supplies.
Impacts on Other WMS	5	The project enhances the overall treatment capacity and reliability of the City of Houston system, supporting WMS including the City of Houston Groundwater Reduction Plan and contractual supplies to other entities.

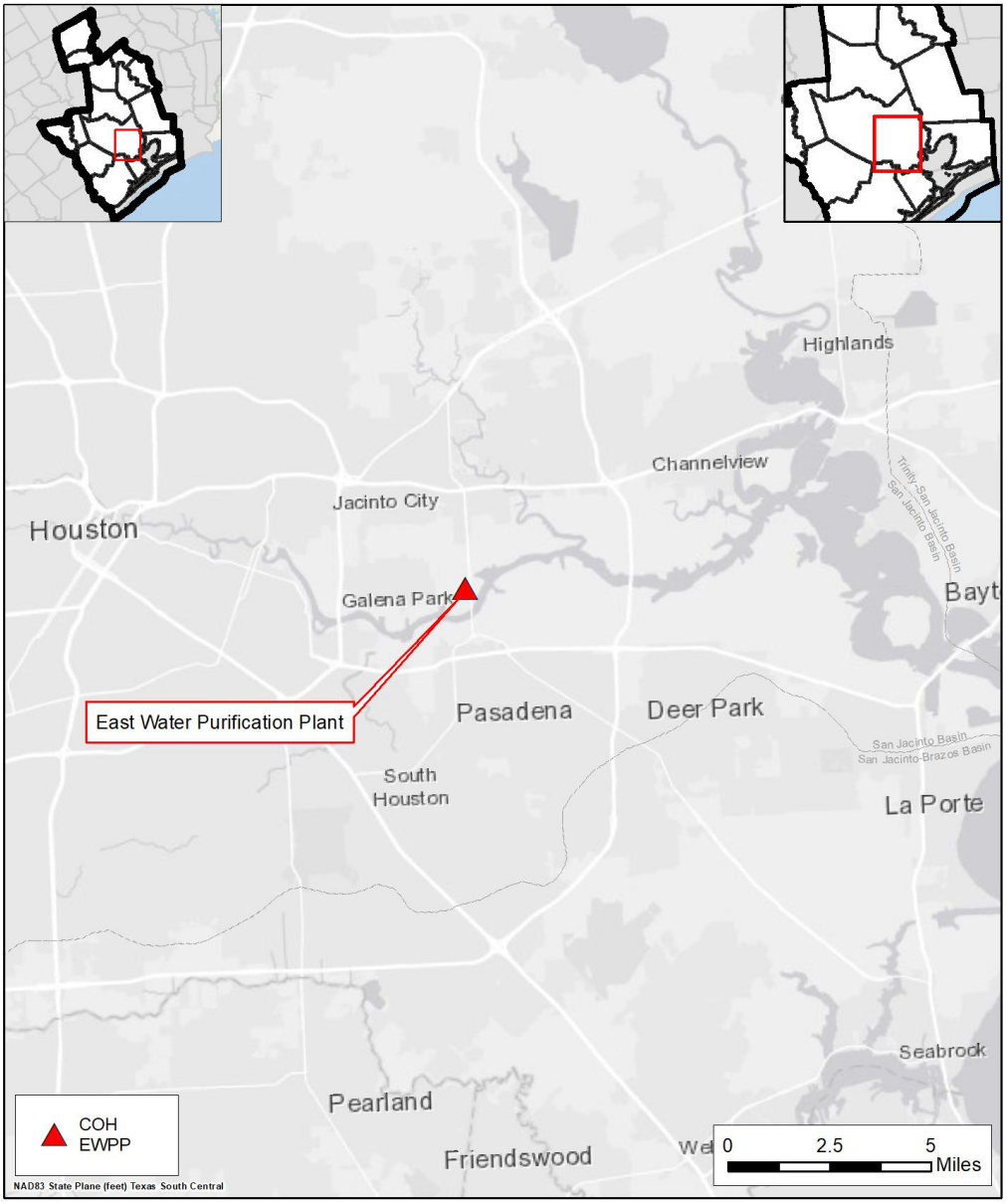
The City of Houston EWPP Enhancement is not anticipated to affect acreage or vulnerable species. The City of Houston EWPP Enhancement will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The City of Houston EWPP Enhancement project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy, as well as other factors that may relate to the suitability of the strategy to the WUGs served.

Criteria	WUG Suitability
Proximity	The project is located in close proximity to intended points of use and can be made available to meet demands in the immediate vicinity of the plant or conveyed to other demand areas.
Size	The project is sized in accordance with the treatment infrastructure needs and available source water identified by the project sponsor.
Water Quality	The project provides treated surface water for potable uses such as for meeting municipal demands.
Unit Cost	The unit cost of this project makes it an acceptable project for municipal and other potable water demands.
Other Factors	The sponsor has been identified and is moving forward with project development, which will meet demands in a rapidly growing area and also help reduce potential demand on groundwater sources.

Location Map



REGION H Water Planning Group

East Water Purification Plant Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Harris County MUD 50 SWTP
Project ID:	TRET-004
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	560 ac-ft/yr (0.5 MGD)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$22,804,420 (Sept. 2023)
Unit Water Cost (Rounded):	$4,994 per ac-ft (during loan period) $2,129 per ac-ft (after loan period)

Strategy Description

Harris County MUD 50 is located in eastern Harris County and serves the Barrett Station community and surrounding areas. Overall regional growth and the development of new transportation infrastructure have led to increasing population in the eastern portion of Harris County, with this growth projected to continue into the future. The Harris-Galveston Subsidence District (HGSD) has established requirements for entities within its boundaries to limit groundwater pumpage to a specified percentage of total water use to address the issue of land surface subsidence caused by prolonged, excess pumping from the Gulf Coast Aquifer; as demands are expected to grow with time, the allowable percentage from groundwater is scheduled to decrease. In order to address the combination of increasing demand and the regulation of groundwater, Harris County MUD 50 will, in the future, need to develop additional water supply. The MUD has secured a contract for 0.5 MGD (560 ac-ft/yr) of raw surface water from the San Jacinto River Authority (SJRA). The conveyance infrastructure for SJRA's Highlands System crosses though the MUD 50 service area, reducing the infrastructure needed to access the supply. MUD 50 has previously investigated various concepts for development of surface water treatment infrastructure to meet needs within its service area. New treatment infrastructure would be developed within an urbanized area, limiting the required permitting and the need for development of additional conveyance. This project does not require a new water right appropriation because it is associated with infrastructure related to the use of existing rights.

Strategy Analyses

The project analyses for the Harris County MUD 50 SWTP project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Harris County MUD 50 currently holds a contract for up to 0.5 MGD of raw water supply from SJRA. This project concept utilizes the contractual agreements for supply from existing water rights and would develop treated supplies from existing sources and will not require a new water right appropriation. Major project components would be anticipated to include a pump station with intake, approximately one mile of pipeline, and a conventional surface water treatment plant.

Environmental Considerations

The primary impact associated with the implementation of this water management project is the increase in diversions for the SJRA Highlands system. Increased diversion of water will result in some minimal decreases in instream flow downstream of the intake point. However, these diversions would be made from existing water rights owned by a wholesale water provider, contracted by Harris County MUD 50, and no new water rights permits would be required for this project.

Permitting and Development

The development of this strategy may require some permitting due to surface disturbance from the construction of treatment infrastructure. This is expected to be minimal, as construction is anticipated to occur within a pre-disturbed urbanized area. Because the supply source is provided by existing water rights and diverted from an existing conveyance system, permitting of new water rights or amendment of existing rights will not be required.

Cost Analysis

Planning level cost estimates for this strategy are estimated for a 0.5 mgd concept. Development of the project was assumed to require a pump station with intake, conventional surface water treatment plant, and approximately one mile of conveyance pipeline. Capital costs for these elements, along with environmental studies and mitigation, estimated interest during construction, and annual costs such as debt service and costs for operations and maintenance, were calculated using standard cost estimation procedures for Region H. Estimated costs are presented in *Table 1* and are shown in September 2023 dollars in accordance with TWDB guidance.

Table 1 – Harris County MUD 50 SWTP Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$15,798,607	$15,798,607	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$5,485,154	$5,485,154	
3	LAND AND EASEMENTS	1	LS	$13,527	$13,527	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$92,723	$92,723	
5	INTEREST DURING CONSTRUCTION	1	LS	$1,414,410	$1,414,410	
	PROJECT CAPITAL COST				**$22,804,420**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$1,604,544	$1,604,544	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$1,181,415	$1,181,415	$1,181,415	$1,181,415	$1,181,415	$1,181,415
3	PUMPING ENERGY COSTS	$10,794	$10,794	$10,794	$10,794	$10,794	$10,794
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$2,796,753**	**$2,796,753**	**$1,192,209**	**$1,192,209**	**$1,192,209**	**$1,192,209**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$2,796,753	$2,796,753	$1,192,209	$1,192,209	$1,192,209	$1,192,209
2	YIELD	560	560	560	560	560	560
3	UNIT COST	$4,994	$4,994	$2,129	$2,129	$2,129	$2,129
	TOTAL UNIT COST						**$3,084**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$4,248,000	$4,248,000
2	PIPELINES	1	LS	$887,175	$887,175
3	WATER TREATMENT PLANTS	1	LS	$10,663,432	$10,663,432
	PROJECT COST				**$15,798,607**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$4,248,000	$106,200
2	PIPELINES	1.0	%	$887,175	$8,872
3	WATER TREATMENT PLANTS	1.0	LS	$1,066,343	$1,066,343
	ANNUAL OPERATION AND MAINTENANCE COST				**$1,181,415**

Water Management Strategy Evaluation

Based on the analysis provided above, the Harris County MUD 50 SWTP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Costs are high due to limited economy of scale of project.

CRITERIA	RATING	EXPLANATION
Location	4	Some conveyance infrastructure may be necessary to access contractual supplies.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	5	Limited or no known impacts.
Environmental Flows	2	Minor reduction in environmental flows.
Local Preference	4	No known significant opposition.
Institutional Constraints	3	Contractual surface water source is procured. Project site would require permitting and procurement.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship	2	Sponsor has previously investigated project, but current commitment level is uncertain.
Vulnerability	4	Minor risks from natural and man-made disasters associated with source availability.
Regionalization	1	Would serve a single water system.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The Harris County MUD 50 SWTP will facilitate diversions made from existing water rights. The project is not anticipated to impact agricultural land and production or to impact vulnerable species.

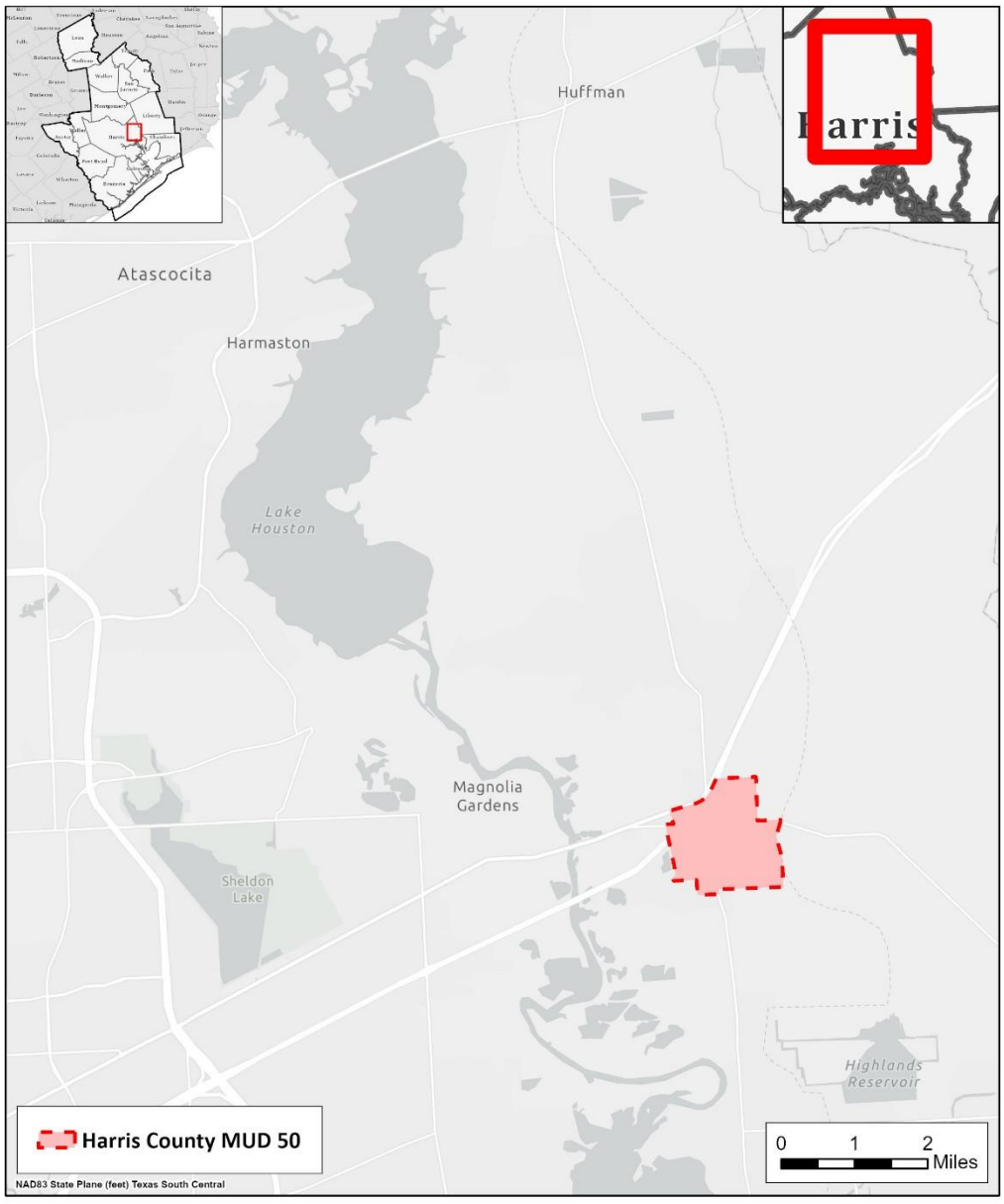
Water User Group Application

The Harris County MUD 50 SWTP project was evaluated on the basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	The project is sized in accordance with the treatment infrastructure needs and available source water identified by the project sponsor.
Water Quality	This project provides treated surface water for a variety of uses.

CRITERIA	WUG SUITABILITY
Unit Cost	Costs are high due to limited economy of scale, but correspond to an area with few current strategy options.
Other Factors	This project meets demands in a growing area and also helps reduce potential demand on groundwater sources.

Location Map



REGION H Water Planning Group

Harris County MUD 50 SWTP

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Northeast Water Purification Plant Expansion
Project ID:	TRET-005
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	380,800 ac-ft/yr (340 mgd)
Implementation Decade:	2030 (2025) for Phase 2
Development Timeline:	<5 years
Project Capital Cost:	$2,153,107,392 (Sept. 2023)
Unit Water Cost (Rounded):	$503-753 per ac-ft (during loan period) $355 per ac-ft (after loan period)

Strategy Description

The Northeast Water Purification Plant (NEWPP) is a 160 MGD treatment facility located in northeast Harris County. The plant diverts water from nearby Lake Houston and treats it for use by the City of Houston (COH), North Harris County Regional Water Authority (NHCRWA), and Central Harris County Regional Water Authority (CHCRWA). The facility serves as the sole source of treated surface water for NHCRWA and CHCRWA, enabling them to meet the groundwater reduction requirements of the Harris-Galveston Subsidence District (HGSD).

The NEWPP will continue to serve these users with treated surface water as their demands and conversion requirements increase over time. Sponsors of this project to help meet additional water needs include NHCRWA, CHCRWA, North Fort Bend Water Authority (NFBWA), West Harris County Regional Water Authority (WHCRWA), COH. Meeting these future conversion targets will require the combined benefit of the individual authorities' Groundwater Reduction Plans (GRPs) and their associated infrastructure, the expanded NEWPP, and the Luce Bayou transfer project, which was completed in 2019. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for Northeast Water Purification Plant Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The projected plant capacity was developed based on demands estimated by the project participants. Phase 1 was completed in 2023, with the addition of an 80 MGD module, bringing the total existing facility treatment capacity to 160 MGD. Three additional 80 MGD modules will be constructed during

Phase 2, to be completed by 2025. The shares of demand for Phase 2 of the project are shown below in *Table 1*. COH is investigating a potential third expansion phase of up to 100 MGD capacity for development by 2035, bringing the total capacity of the NEWPP to as much as 500 MGD.

Table 1 – NEWPP Phase 2 Pro Rata Shares

Participant	Pro Rata Share (MGD)
NHCRWA	84.75
CHCRWA	3.66
NFBWA	51.375
WHCRWA	61.815
COH	38.40
TOTAL	**240.00**

Environmental Considerations

The NEWPP site was fully acquired during the development of the original 80 MGD treatment plant. Impacts will be associated with the development of property that is already included within the project footprint. Improvements to the intake structure and pipeline conveyance to the plant may also involve mitigation efforts.

Permitting and Development

Permitting will be required for components external to the scope of the initial permitting process conducted for the NEWPP site.

Cost Analysis

Maximum project price and shares of total capital cost assigned to each sponsor were provided by COH for Phases 2 and 3 of the project. For regional planning purposes, the provided maximum project cost estimate was assumed to be inclusive of all capital components, including construction, engineering, design, environmental studies, land acquisition and easement cost, and interest during construction. Values were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Annual costs, including debt service and operation and maintenance, were developed using standard regional planning assumptions based on TWDB guidance. Estimated costs for Phases 2 and 3 are shown in *Table 2*.

Table 2 – Northeast Water Purification Plant Expansion Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST		1	LS	$1,996,688,810	$1,996,688,810
2	ENGINEERING, FINANCIAL, AND LEGAL SERVICES AND CONTINGENCIES		1	LS	$156,418,582	$156,418,582
3	LAND AND EASEMENTS		1	LS	$0	$0
4	ENVIRONMENTAL - STUDIES AND MITIGATION		1	LS	$0	$0
5	INTEREST DURING CONSTRUCTION		1	LS	$0	$0
	PROJECT CAPITAL COST					**$2,153,107,392**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE (PHASE 2)	$95,206,093	$95,206,093	$0	$0	$0	$0
2	DEBT SERVICE (PHASE 3)	$0	$56,288,861	$56,288,861	$0	$0	$0
3	OPERATION AND MAINTENANCE (PHASE 2)	$79,164,305	$79,164,305	$79,164,305	$79,164,305	$79,164,305	$79,164,305
4	OPERATION AND MAINTENANCE (PHASE 3)	$0	$56,000,000	$56,000,000	$56,000,000	$56,000,000	$56,000,000
5	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
6	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$174,370,398**	**$286,659,260**	**$191,453,167**	**$135,164,305**	**$135,164,305**	**$135,164,305**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$174,370,398	$286,659,260	$191,453,167	$135,164,305	$135,164,305	$135,164,305
2	YIELD	268,800	380,800	380,800	380,800	380,800	380,800
3	UNIT COST	$649	$753	$503	$355	$355	$355
	TOTAL UNIT COST						**$487**

ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY						
1	WATER TREATMENT PLANTS (PHASE 2)		1	LS	$1,119,956,952	$1,119,956,952
2	WATER TREATMENT PLANTS (PHASE 3)		1	LS	$800,000,000	$800,000,000
3	SUBSTATION IMPROVEMENTS (PHASE 2)		1	LS	$76,731,858	$76,731,858
4	SUBSTATION IMPROVEMENTS (PHASE 3)		1	LS	$0	$0
	PROJECT COST					**$1,996,688,810**

ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY						
1	WATER TREATMENT PLANTS (PHASE 2)		7.0	%	$1,119,956,952	$78,396,987
2	WATER TREATMENT PLANTS (PHASE 3)		7.0	%	$800,000,000	$56,000,000
3	SUBSTATION IMPROVEMENTS (PHASE 2)		1.0	%	$76,731,858	$767,319
4	SUBSTATION IMPROVEMENTS (PHASE 3)		1.0	%	$0	$0
	ANNUAL OPERATION AND MAINTENANCE COST					**$135,164,305**

Water Management Strategy Evaluation

Based on the analysis provided above, the Northeast Water Purification Plant Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost		Initial project cost is moderate, with some decrease after completion of debt service.
Location	3	Conveyance required to make water supply available to intended users. This is planned under other projects.
Water Quality		No known issues related to water quality.
Environmental Land and Habitat	4	Expansion to be constructed on existing plant site.
Environmental Flows	3	No direct impact to environmental flows although water diverted for treatment at the NEWPP may reduce flows downstream of Lake Houston.
Local Preference	5	Substantial support for project development.
Institutional Constraints	5	Property acquired and construction in progress.
Development Timeline	5	Project development timeline of less than 5 years.
Sponsorship	5	Sponsors identified and engaged in project development.
Vulnerability	4	Minor risks from natural and man-made disasters associated with source availability.
Regionalization	4	Serves extensive area and multiple WWPs in Region H, supporting existing regional systems.
Impacts on Other WMS	5	NEWPP expansion is a significant piece of the overall water supply strategy for Harris and Fort Bend Counties as the means of treating water delivered by Luce Bayou before transmission to regional water authority customers.

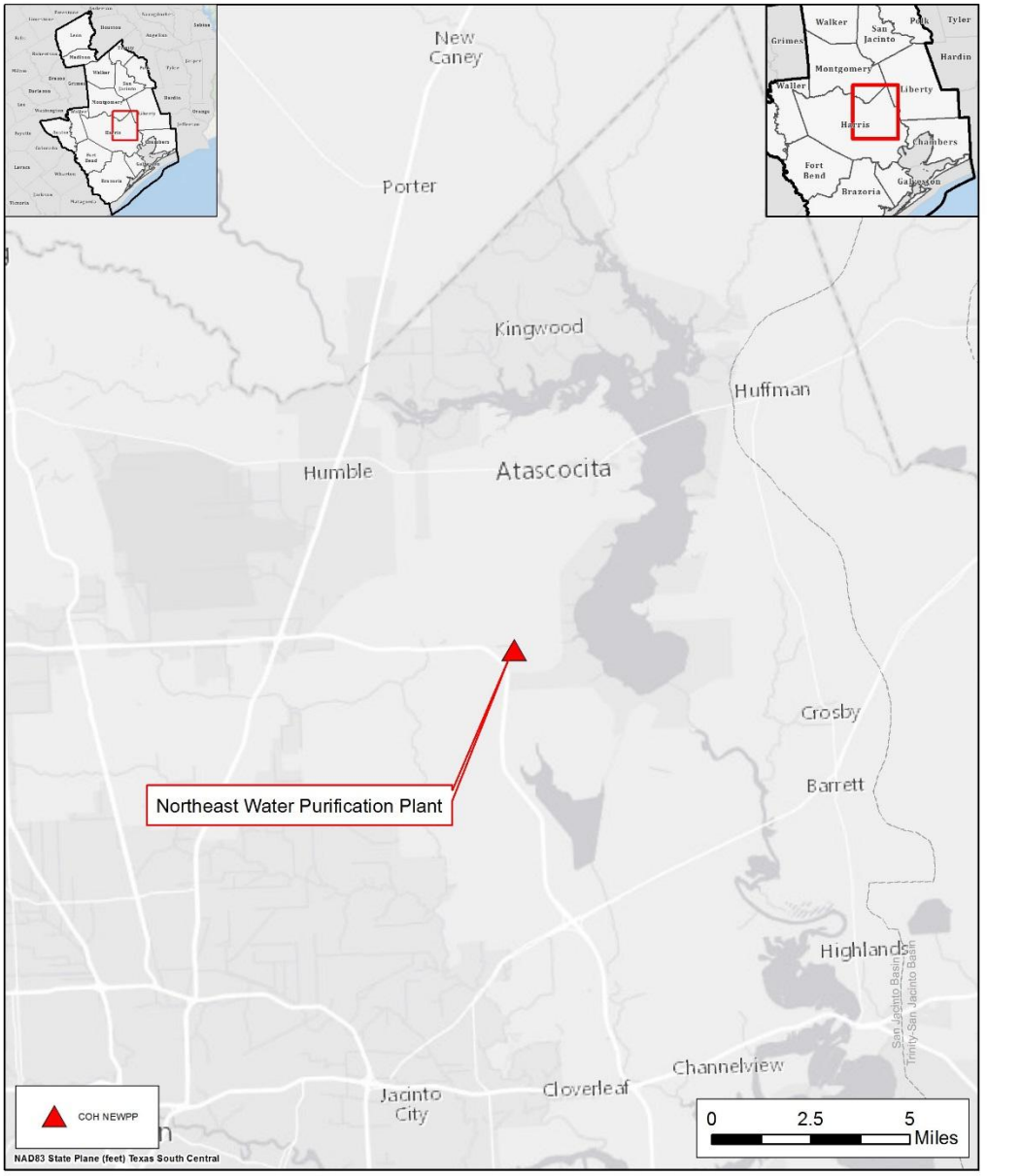
The NEWPP Expansion is not anticipated to affect acreage or vulnerable species. The NEWPP Expansion will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The Northeast Water Purification Plant Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Treated water from the NEWPP expansion can be made available to meet demands in the immediate vicinity of the plant or conveyed through additional projects to other demand areas.
Size	The expansion provides a sizable amount of treated surface water for use throughout the greater Houston area. The total volume is divided among project participants.
Water Quality	The project provides treated surface water for potable uses such as for meeting municipal demands.
Unit Cost	The unit cost of this project makes it an acceptable project for municipal and other potable water demands.
Other Factors	The participants in this project have been identified and are moving forward with project development.

Location Map



REGION H
Water Planning Group

Northeast Water Purification Plant
Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Pearland Surface Water Treatment Plant
Project ID:	TRET-006
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	22,400 ac-ft/yr (20 mgd)
Implementation Decade:	2030 (2025)
Development Timeline:	5 years
Project Capital Cost:	$261,245,745 (Sept. 2023)
Unit Water Cost (Rounded):	$1,170 per ac-ft (during loan period) $349 per ac-ft (after loan period)

Strategy Description

In order to address demand growth and reduce dependence on groundwater, the City of Pearland has contracted with the City of Houston (COH) for treated surface water from the Southeast Water Purification Plant (SEWPP) and with Gulf Coast Water Authority (GCWA) for raw surface water supplies. The City of Pearland is in the process of developing a surface water treatment plant (SWTP) in order to utilize the contracted raw surface water.

Strategy Analyses

The project analyses for Pearland SWTP include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

This project is supplied by contractual agreements for supply from existing water rights. Development of the Pearland SWTP project will require development of a surface water treatment plant and associated infrastructure, including 24-inch and 36-inch transmission lines. The initial 10 MGD (11,200 ac-ft/yr) capacity phase of SWTP development was constructed in 2024 and is entering initial operation. The project also includes an expansion of the SWTP to a total capacity of 20 MGD (22,400 ac-ft/yr) by year 2030.

Environmental Considerations

Implementation of this water management strategy will increase GCWA diversions from the Brazos River, resulting in some minimal decreases in instream flow downstream of the GCWA pump stations. However, these diversions will be made from existing water rights currently owned by GCWA and contracted by the City of Pearland, and no new water rights permits are required for this project.

Otherwise, implementation of this project should produce minimal environmental impacts.

Permitting and Development

Because the supply source for this project is from existing water rights and will be delivered through GCWA's canal system, permitting of new surface water rights or modification of existing rights to add a diversion point will not be required.

Cost Analysis

Capital costs for the initial 10 MGD surface water treatment plant are summarized in the City of Pearland's Capital Improvement Plan. Costs associated with environmental studies and mitigation are not identified as separate items, but for purposes of the regional plan it is assumed that these values are included in the estimates for other capital cost components. An estimated capital cost for the year 2030 expansion of the SWTP was provided by Pearland in preparation of prior Regional Water Plans and was scaled to a September 2023 equivalent cost in accordance with TWDB guidance. The costs presented in this memorandum do not include the purchase cost of water. Annual costs presented in *Table 1*, including debt service and costs for operations and maintenance, as well as estimated interest during construction, were calculated using standard cost estimation procedures for Region H.

Table 1 – Pearland Surface Water Treatment Plant Project Cost

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$175,500,000	$175,500,000	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$14,307,062	$14,307,062	
3	LAND AND EASEMENTS	1	LS	$2,265,285	$2,265,285	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$12,700,743	$12,700,743	
6	FUTURE 10 MGD EXPANSION	1	LS	$56,472,655	$56,472,655	
	PROJECT CAPITAL COST				$261,245,745	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	DEBT SERVICE	$18,381,532	$18,381,532	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$7,818,336	$7,818,336	$7,818,336	$7,818,336	$7,818,336	$7,818,336
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	$26,199,868	$26,199,868	$7,818,336	$7,818,336	$7,818,336	$7,818,336

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2030	2040	2050	2060	2070	2080
1	ANNUAL COST	$26,199,868	$26,199,868	$7,818,336	$7,818,336	$7,818,336	$7,818,336
2	YIELD	22,400	22,400	22,400	22,400	22,400	22,400
3	UNIT COST	$1,170	$1,170	$349	$349	$349	$349
	TOTAL UNIT COST						$623

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	WATER TREATMENT PLANTS	1	LS	$175,500,000	$175,500,000
	PROJECT COST				$175,500,000

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	WATER TREATMENT PLANTS	1.0	LS	$7,818,336	$7,818,336
	ANNUAL OPERATION AND MAINTENANCE COST				$7,818,336

Water Management Strategy Evaluation

Based on the analysis provided above, the Pearland SWTP project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	2	Costs are somewhat high during debt service but are reduced considerably after completion of debt service.
Location	4	Source located near points of demand with some conveyance infrastructure required to meet additional demands.
Water Quality	3	No known issues regarding water quality.

CRITERIA	RATING	EXPLANATION
Environmental Land and Habitat	4	Minimal impacts anticipated.
Environmental Flows	3	Project does not directly impact flows. Increased diversions are associated with existing water rights.
Local Preference	4	No known opposition.
Institutional Constraints	3	Minimal permitting challenges or opposition expected.
Development Timeline	5	Project development, including permitting, could be accomplished in approximately 5 years or less.
Sponsorship	4	Sponsor is identified and committed to project.
Vulnerability	5	Minimal risk associated with this project.
Regionalization	2	Serves sponsor entity and a limited number of customers.
Impacts on Other WMS	3	No significant impacts recognized to other projects.

The Pearland SWTP includes a plant site that will be located in the vicinity of existing development. The project will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

Water User Group Application

The Pearland SWTP project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served. It is anticipated that the project will only serve the City of Pearland and any entities that it provides with water supply.

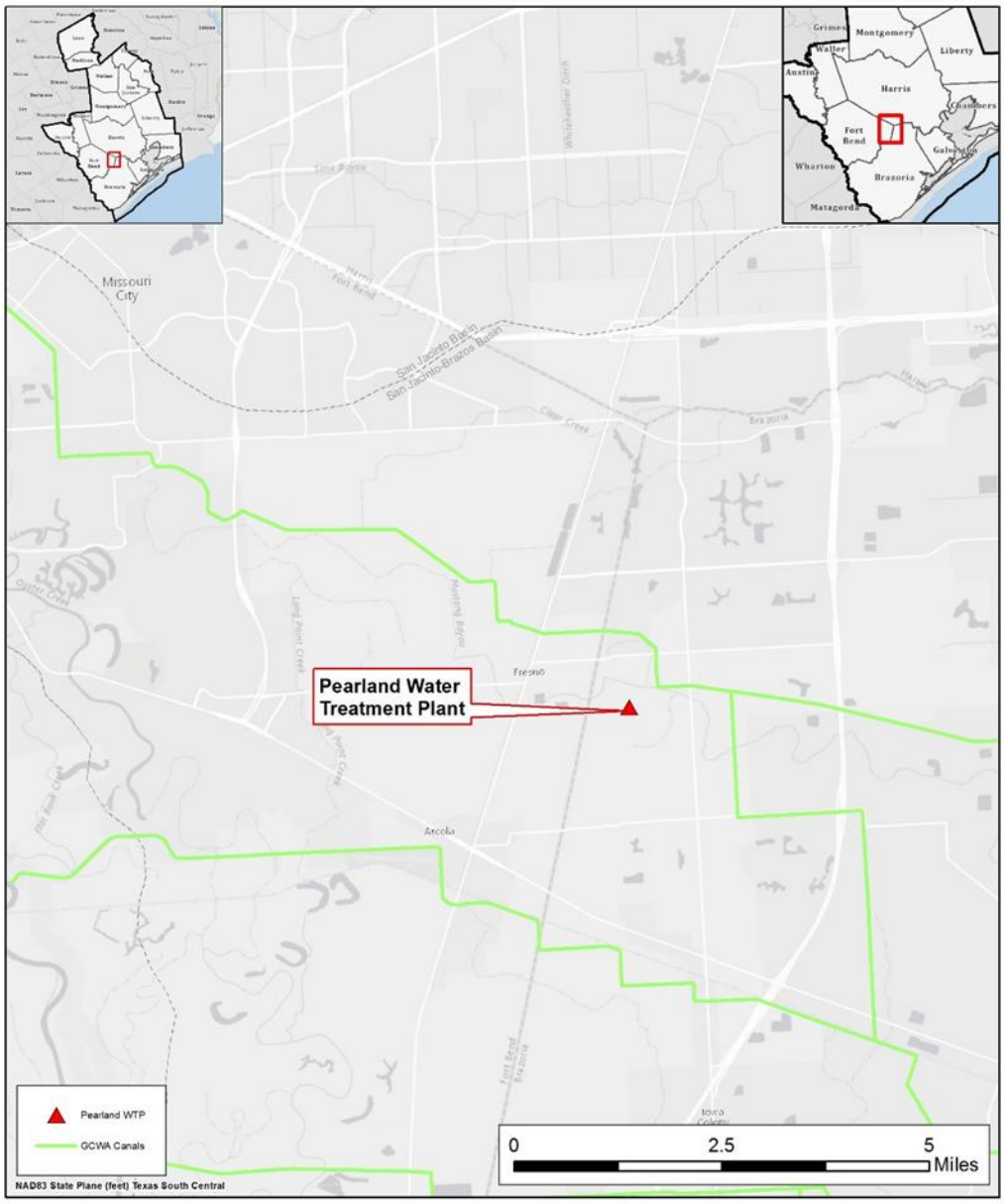
CRITERIA	WUG SUITABILITY
Proximity	Project is located in close proximity to intended points of use.
Size	Project is of appropriate size to utilize the City of Pearland's surface water contracts.
Water Quality	This project is expected to provide water of acceptable quality.
Unit Cost	The cost of this project is moderately high but decreases substantially after completion of debt service.
Other Factors	This project reduces groundwater dependence.

References

City of Pearland, *2024-2028 City of Pearland Capital Improvement Program*.

City of Pearland. Water Master Plan, August 2019

Location Map



REGION H Water Planning Group

City of Pearland Water Treatment Plant Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	SEWPP Expansion
Project ID:	TRET-007
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	134,417 ac-ft/yr (120 mgd)
Implementation Decade:	2030
Development Timeline:	5 years
Project Capital Cost:	$1,116,248,913 (Sept. 2023)
Unit Water Cost (Rounded):	$457-$938 per ac-ft (during loan period) $353 per ac-ft (after loan period)

Strategy Description

The Southeast Water Purification Plant (SEWPP), which is operated by the City of Houston (COH), provides an important tie between raw water supplies in the Trinity River basin and a number of major demand centers served by the co-participants in the facility. The 200 MGD capacity of the plant is distributed among the COH, the Gulf Coast Water Authority (GCWA), Clear Lake City Water Authority (CLCWA), Clearbrook City MUD, the La Porte Area Water Authority (LPAWA), Harris County MUD 55, Pasadena, South Houston, Webster, Friendswood, and Baybrook MUD 1. The treated supply from these facilities enables COH and its customers to meet the groundwater reduction requirements of the Harris-Galveston Subsidence District (HGSD) and Fort Bend Subsidence District (FBSD). As demand increases in both the Houston service area and among wholesale customers of COH, additional treatment capacity will be required.

COH has identified the need for a multi-phase project expanding the capacity of the SEWPP to help meet this demand. In order to satisfy projected future needs due to substantial growth, COH plans an initial 20 to 40 MGD expansion, with a subsequent expansion phase of an additional 100 MGD of treatment capacity. The SEWPP facility currently includes available space dedicated to the development of additional treatment modules, so land purchase will not be necessary. Conveyance of the proposed expanded treated water supply would require improvements to transmission infrastructure from the SEWPP along the Old Galveston Road corridor. Details regarding this transmission expansion project are contained in a separate project memorandum. The project also supports the City's One Water Houston approach to integrated, sustainable management of water resources.

Strategy Analyses

The project analyses for the SEWPP Additional Module include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

COH has identified two anticipated phases of expansion at the SEWPP in order to meet water demands, support groundwater reduction requirements, and address Safe Drinking Water Act requirements. The first phase, anticipated for implementation by 2028, will increase peak treatment capacity of the facility by 20 to 40 MGD (22,400 to 44,800 ac-ft/yr); for purposes of the 2026 RWP, it was assumed that the expansion would be 20 MGD. COH anticipates a subsequent 100 MGD (112,000 ac-ft/yr) expansion by 2035.

Environmental Considerations

The enhanced infrastructure will facilitate an increase in treatment capacity of the COH system and increase overall system reliability. Impacts on instream flows and bay and estuary inflows are expected to be minimal, as the proposed project increases the usable supply from sources associated with existing water rights and conveyance. Infrastructure development may result in some limited surface disturbance from construction; however, this is expected to be minimal as the proposed infrastructure will be developed at the existing SEWPP site.

Permitting and Development

Development of expanded treatment infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. This is expected to be minimal, as the majority of construction would be expected to occur on the existing plant site.

Cost Analysis

Costs were developed for the project using a preliminary planning-level capital cost estimate provided by the COH in conjunction with standard Regional Planning cost reference data. Costs were scaled to a September 2023 equivalent cost in accordance with TWDB requirements. Costing is shown for two phases, as the initial expansion is implemented in 2028 (2030 decade), with the subsequent larger expansion implemented in 2035 and counted under the 2040 decade. The costs presented in this memorandum do not include the purchase cost of water. Estimated costs are presented in *Table 1*.

Table 1 – SEWPP Expansion Project Cost

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$677,404,768	$677,404,768
2	ENGINEERING, FINANCIAL, AND LEGAL SERVICES AND CONTINGENCIES	1	LS	$237,058,541	$237,058,541
3	LAND AND EASEMENTS	1	LS	$3,930,400	$3,930,400
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$39,205,136	$39,205,136
5	INTEREST DURING CONSTRUCTION	1	LS	$158,650,068	$158,650,068
	PROJECT CAPITAL COST				**$1,116,248,913**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE (2028 EXPANSION)	$6,286,941	$6,286,941	$0	$0	$0	$0
2	DEBT SERVICE (2035 EXPANSION)	$0	$72,253,535	$72,253,535	$0	$0	$0
3	OPERATION AND MAINTENANCE (2028 EXPANSION)	$3,558,964	$3,558,964	$3,558,964	$3,558,964	$3,558,964	$3,558,964
4	OPERATION AND MAINTENANCE (2035 EXPANSION)	$0	$41,627,865	$41,627,865	$41,627,865	$41,627,865	$41,627,865
5	PUMPING ENERGY COSTS	$384,575	$2,307,523	$2,307,523	$2,307,523	$2,307,523	$2,307,523
6	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$10,230,480**	**$126,034,826**	**$119,747,886**	**$47,494,351**	**$47,494,351**	**$47,494,351**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$10,230,480	$126,034,826	$119,747,886	$47,494,351	$47,494,351	$47,494,351
2	YIELD	22,400	134,400	134,400	134,400	134,400	134,400
3	UNIT COST	$457	$938	$891	$353	$353	$353
	TOTAL UNIT COST						**$574**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS (2028 EXPANSION)	1	LS	$8,945,484	$8,945,484
2	PUMP STATIONS (2035 EXPANSION)	1	LS	$39,760,114	$39,760,114
3	PIPELINES (2028 EXPANSION)	1	LS	$196,051	$196,051
4	PIPELINES (2035 EXPANSION)	1	LS	$466,511	$466,511
5	WATER TREATMENT PLANTS (2028 EXPANSION)	1	LS	$47,619,513	$47,619,513
6	WATER TREATMENT PLANTS (2035 EXPANSION)	1	LS	$580,417,095	$580,417,095
	PROJECT COST				**$677,404,768**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS (2028 EXPANSION)	2.5	%	$8,945,484	$223,637
2	PUMP STATIONS (2035 EXPANSION)	2.5	%	$39,760,114	$994,003
3	PIPELINES (2028 EXPANSION)	1.0	%	$196,051	$1,961
4	PIPELINES (2035 EXPANSION)	1.0	%	$466,511	$4,665
5	WATER TREATMENT PLANTS (2028 EXPANSION)	1.0	LS	$47,619,513	$3,333,366
6	WATER TREATMENT PLANTS (2035 EXPANSION)	1.0	LS	$580,417,095	$40,629,197
	ANNUAL OPERATION AND MAINTENANCE COST				**$45,186,828**

Water Management Strategy Evaluation

Based on the analysis provided above, the SEWPP Expansion project was evaluated across twelve

different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	2	Cost is relatively high, although it decreases substantially after debt service.
Location	3	Conveyance required to make water supply available to intended users. This is planned under other projects.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	4	Enhancements to be constructed on existing plant site. Minimal impacts anticipated
Environmental Flows	3	Project does not directly impact flows.
Local Preference	3	No known significant opposition.
Institutional Constraints	5	Property and facilities to be enhanced already owned by sponsor.
Development Timeline	5	Project development timeline of less than 5 years for initial phase
Sponsorship	5	The project sponsor is committed to the project and is actively engaged in planning activities.
Vulnerability	4	Minor risks from natural and man-made disasters associated with source availability.
Regionalization	4	Supports multiple customer systems and expands upon existing regionalized supplies.
Impacts on Other WMS	5	The project enhances the overall treatment capacity and reliability of the City of Houston system, supporting WMS including the City of Houston Groundwater Reduction Plan and contractual supplies to other entities. Later phases are dependent on expansion of raw water capacity.

The SEWPP Expansion project is not anticipated to impact acreage or vulnerable species and will not directly impact environmental flows. The project is not anticipated to impact agricultural land or production.

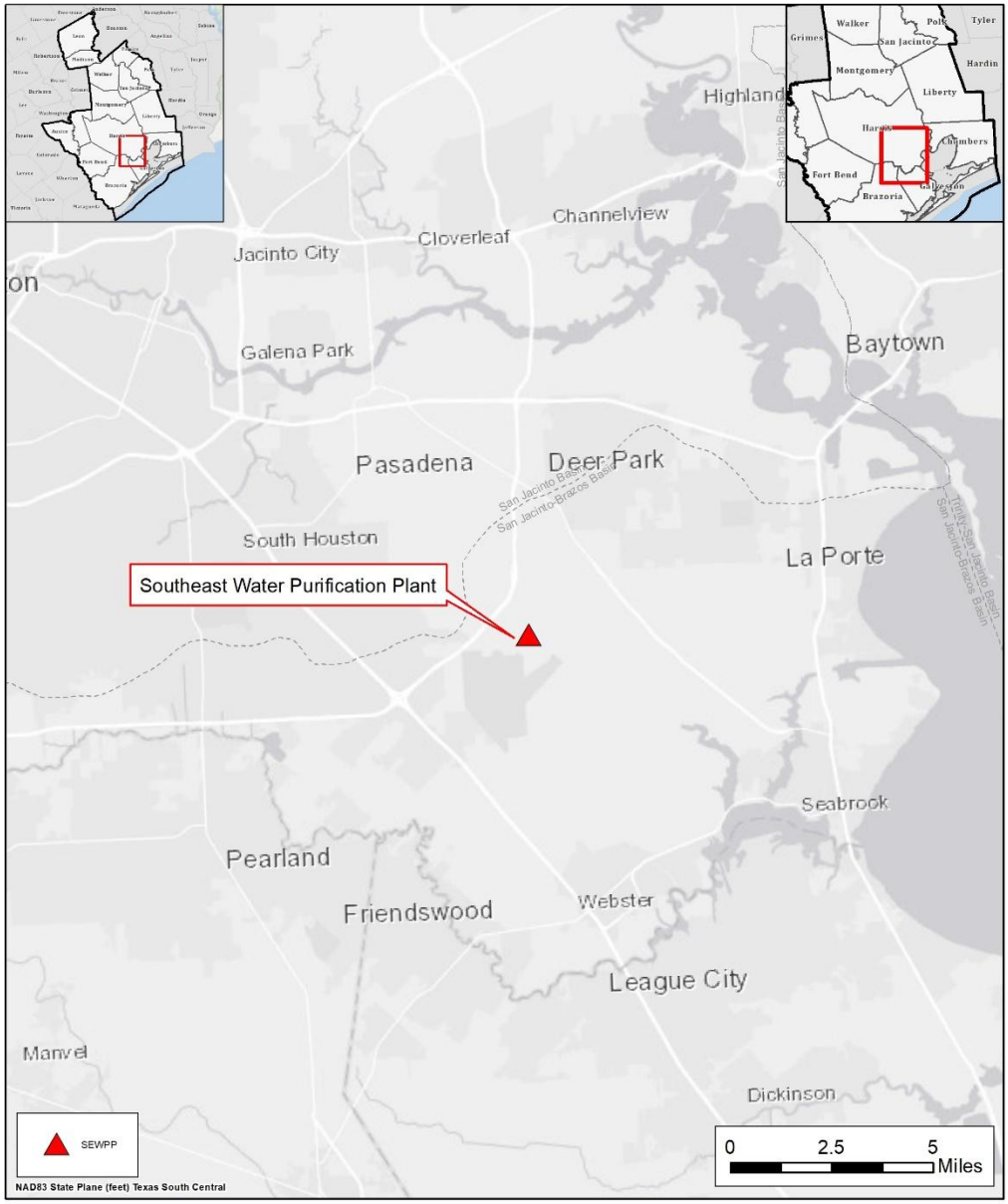
Water User Group Application

The SEWPP Additional Module project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of

the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The supply could be conveyed through additional projects to meet growing demands in the existing SEWPP service area.
Size	The magnitude of the project was developed based on surface water needs projected for SEWPP participants and customers.
Water Quality	This project provides treated surface water for a variety of uses.
Unit Cost	The unit cost of this project makes it an acceptable project for municipal and other potable water demands.
Other Factors	This project represents additional treated water capacity beyond the level currently implemented or in development.

Location Map



Southeast Water Purification Plant
Location Map

REGION H
Water Planning Group

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Brazos Saltwater Barrier
Project ID:	OTHR-001
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	10,000 ac-ft/yr (8.9 mgd)
Implementation Decade:	2030
Development Timeline:	10 years
Project Capital Cost:	$77,571,019 (Sept. 2023)
Unit Water Cost (Rounded):	$596 per ac-ft (during loan period) $51 per ac-ft (after loan period)

Strategy Description

The Lower Brazos River is tidally influenced, with the extent of the area of brackish water fluctuating seasonally. Municipal and industrial water users in the Freeport area face water quality concerns as the saltwater wedge moves upstream of the Brazoria Pump Station during periods of low flow in the Brazos River. During these times, a constant and adequate flow of water from higher in the Brazos River Basin is required in order to allow for the diversion of water supplies of sufficient quality. A saltwater barrier has the potential to reduce impacts to water quality in the lower basin and, therefore, to reduce the volume of water required for successful diversion of fresh water from the Brazos River. The proposed project is for the development of a saltwater barrier to protect the Harris Pump Station although alternative concepts to protect the Brazoria Pump Station have also been explored.

Dow Inc. owns water right 12-5328, which authorizes the diversion of 305,656 acre-feet per year from the Brazos River for industrial, municipal, and irrigation uses. Dow provides a portion of this supply to meet the needs of eight surrounding industrial customers in Brazoria County. The Brazosport Water Authority (BWA) owns water right 12-5366, which authorizes the diversion of 45,000 acre-feet per year from the Brazos River for municipal use. The BWA provides treated water to the cities of Angleton, Brazoria, Clute, Freeport, Lake Jackson, Oyster Creek, and Richwood and two TDCJ prison units in Brazoria County, as well as to the city of Rosenberg in Fort Bend County. These are the two most downstream water rights for municipal and industrial demand.

The Texas Commission on Environmental Quality (TCEQ) Water Quality Inventory defines the Brazos River as tidal below river mile 25, which corresponds to the observed situation at the Harris and Brazoria Pump Stations. Measured salinities at the Harris Pump Station range from 50 parts per million (ppm) to 200 ppm, which is typical for river flows. Measured salinities at the Brazoria Pump Station range from 100 parts per million (ppm) to values in excess of 10,000 ppm. (For comparison, typical values in Galveston Bay are approximately 15,000 ppm.) Seawater has a salinity of 3.5%, or 35,000 ppm, causing the tidal reach of the Brazos River to become brackish during lower flows. This

brackish zone decreases in an upstream direction, and also stratifies within the channel, with the denser brackish water below the less dense fresh water. This forms a triangular zone of brackish water, referred to as a salt wedge. TCEQ Rule 30 TAC 290 – Public Drinking Water, defines a secondary standard for Total Dissolved Solids (TDS) of less than 1,000 ppm. Due to the expense and effort required to desalinate brackish water, Dow and BWA divert at their upstream pump station (Harris) when salinities at Brazoria exceed approximately 500 ppm. Note that while seasonal use of the Harris intake is normal and expected, permanent use of this intake would effectively remove the Brazoria Reservoir from the Dow/BWA system, decreasing the yield due to the loss of storage capacity.

Strategy Analyses

The project analyses for Brazos Saltwater Barrier include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

Dow Inc. has engaged in studies to determine the effectiveness of a saltwater barrier project to protect the Harris Pump Station. These studies have demonstrated benefit from the construction of a saltwater barrier for use during low-flow conditions.

Model analyses have been performed using the Texas Commission on Environmental Quality (TCEQ) Water Availability Model (WAM) Run 3 for the Brazos River. Some issues considered in this analysis are the benefits of conservation by Dow and improvements to reservoir storage and pump station performance capturing river flows. In addition, the studies have examined the impacts of infringement on Dow's water rights caused by upstream diverters. These users are attempting to capture water during extreme conditions when Dow requires this supply in order to make diversions from the river. Development of a saltwater barrier will enhance this ability without a priority call being made on the river, thus allowing upstream diverters to continue diverting under dry conditions. The WAM analysis also reflects environmental flow considerations specified by the water right. It should be noted that further reductions in project availability for environmental flows were not applied because the project leverages an existing water right substantially senior to Senate Bill 3 environmental flow requirements.

Environmental Considerations

The construction of the proposed Brazos Saltwater Barrier may have both temporary and permanent impacts on the Brazos estuary and the downstream and immediate upstream reaches of the Brazos River. Temporary construction may include such impacts as increased turbidity, biochemical oxygen demand (BOD), and contaminant loads in the river, depending on the nature of the sediment entering the river due to disturbance of river bottom sediments and adjacent upland areas. These impacts could be expected to occur in the project area and points downstream on the Brazos River to as far south as the Gulf of Mexico and the Brazos River Estuary. Long-term impacts would result from changes to flows in the river as a result of the operation of the barrier. These impacts could include impediments to fish migration, changes (reductions) in the amounts of sediments and nutrients reaching the Gulf of Mexico and Brazos Estuary, localized changes in hydrology of adjacent wetlands downstream of the facility, and increased sedimentation in the river channel immediately upstream of the barrier. It should be noted that the Brazos River Estuary is one of the smallest in the state and in some respects is less studied than other larger or more productive estuaries. Further study of the

impacts on water quantity and quality, ecosystem functions, and species life cycles may be required as part of the project development and detailed design.

The project may also result in permanent impacts to any upstream reservoirs currently used to flush saltwater from the channel during periods of low flow. These could include more stable water levels in such lakes, which in turn would result in higher productivity of the lake fisheries and increased value of the lakes as a recreational resource.

Permitting and Development

Constructing the proposed Brazos Saltwater Barrier would require several state and federal permits. The project would require a Section 404 / Section 10 permit from the U.S. Army Corps of Engineers (USACE), most likely an individual permit as opposed to one of the Nationwide Permits. If a bridge or other obstruction to navigation would result from the project, a Section 9 bridge permit from the U.S. Coast Guard would be required. Additionally, a Section 401 water quality certification would be required from the Texas Commission on Environmental Quality (as part of the Section 404 permit). A Texas Pollution Discharge Elimination System general permit for construction would require submittal of a Notice of Intent and development of a Storm Water Pollution Prevention Plan (with monitoring of the construction site). If substantial materials are excavated from the river, a Sand, Marl and Gravel permit must be obtained from the Texas Parks and Wildlife Department and any structures placed in a tidal water of the State of Texas must be granted an easement from the Texas General Land Office (GLO) unless exempted by law. Many of these permit actions would require secondary reviews, such as archeological and threatened and endangered species investigations of the project site. Dow has already taken steps to provide for a temporary saltwater barrier at the Harris Reservoir site. Permitting for this structure has already been completed through the USACE, GLO, and TCEQ.

Cost Analysis

Preliminary costs have been developed for the construction of the Harris site for the saltwater barrier, based upon information provided by the project sponsor. Capital costs were scaled to a September 2023 equivalent cost using the Construction Cost Index and Producer Price Index in accordance with TWDB guidance. Debt service and annual operations and maintenance costs were also calculated using standard Regional Planning procedures. Estimated costs are presented in *Table 1*.

Table 1 – Brazos Saltwater Barrier Project Costs

OPINION OF PROBABLE CONSTRUCTION COST					September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY					
1	CONSTRUCTION COST	1	LS	$50,650,000	$50,650,000
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$20,770,000	$20,770,000
3	LAND AND EASEMENTS	1	LS	$1,240,000	$1,240,000
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$2,480,000	$2,480,000
5	INTEREST DURING CONSTRUCTION	1	LS	$2,431,019	$2,431,019
	PROJECT CAPITAL COST				**$77,571,019**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$5,457,980	$5,457,980	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$506,500	$506,500	$506,500	$506,500	$506,500	$506,500
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$5,964,480**	**$5,964,480**	**$506,500**	**$506,500**	**$506,500**	**$506,500**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$5,964,480	$5,964,480	$506,500	$506,500	$506,500	$506,500
2	YIELD	10,000	10,000	10,000	10,000	10,000	10,000
3	UNIT COST	$596	$596	$51	$51	$51	$51
	TOTAL UNIT COST						**$233**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	SALTWATER BARRIER	1	LS	$50,650,000	$50,650,000
	PROJECT COST				**$50,650,000**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	SALTWATER BARRIER	1.0	%	$50,650,000	$506,500
	ANNUAL OPERATION AND MAINTENANCE COST				**$506,500**

Water Management Strategy Evaluation

Based on the analysis provided above, the Brazos Saltwater Barrier project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	4	Project is a reasonable-cost alternative for making more water available in the basin during drought conditions.
Location	5	Project benefit is not location specific as it impacts water rights throughout the basin.

CRITERIA	RATING	EXPLANATION
Water Quality	5	Project significantly reduces water quality issues during low-flow conditions.
Environmental Land and Habitat	2	Environmental issues associated with development in the Brazos River. Project will protect upstream portions of the basin.
Environmental Flows	2	Project will enable the reduction of instream flows in the lower basin in order to add water availability.
Local Preference	4	Local support by industry in Brazoria County.
Institutional Constraints	2	Permits required and property acquisition essential in developing project.
Development Timeline	4	Project can be developed in a relatively short period of time, pending permitting.
Sponsorship	3	One sponsor, Dow Inc., is committed to the project as one of many water supply alternatives.
Vulnerability	3	Moderate risk associated with development of a significant structure in the Brazos River floodplain.
Regionalization	4	Supports multiple participant systems and expands upon existing regionalized supplies.
Impacts on Other WMS	5	Project may enhance yields of existing water rights and future supplies to be permitted in the Brazos River Basin.

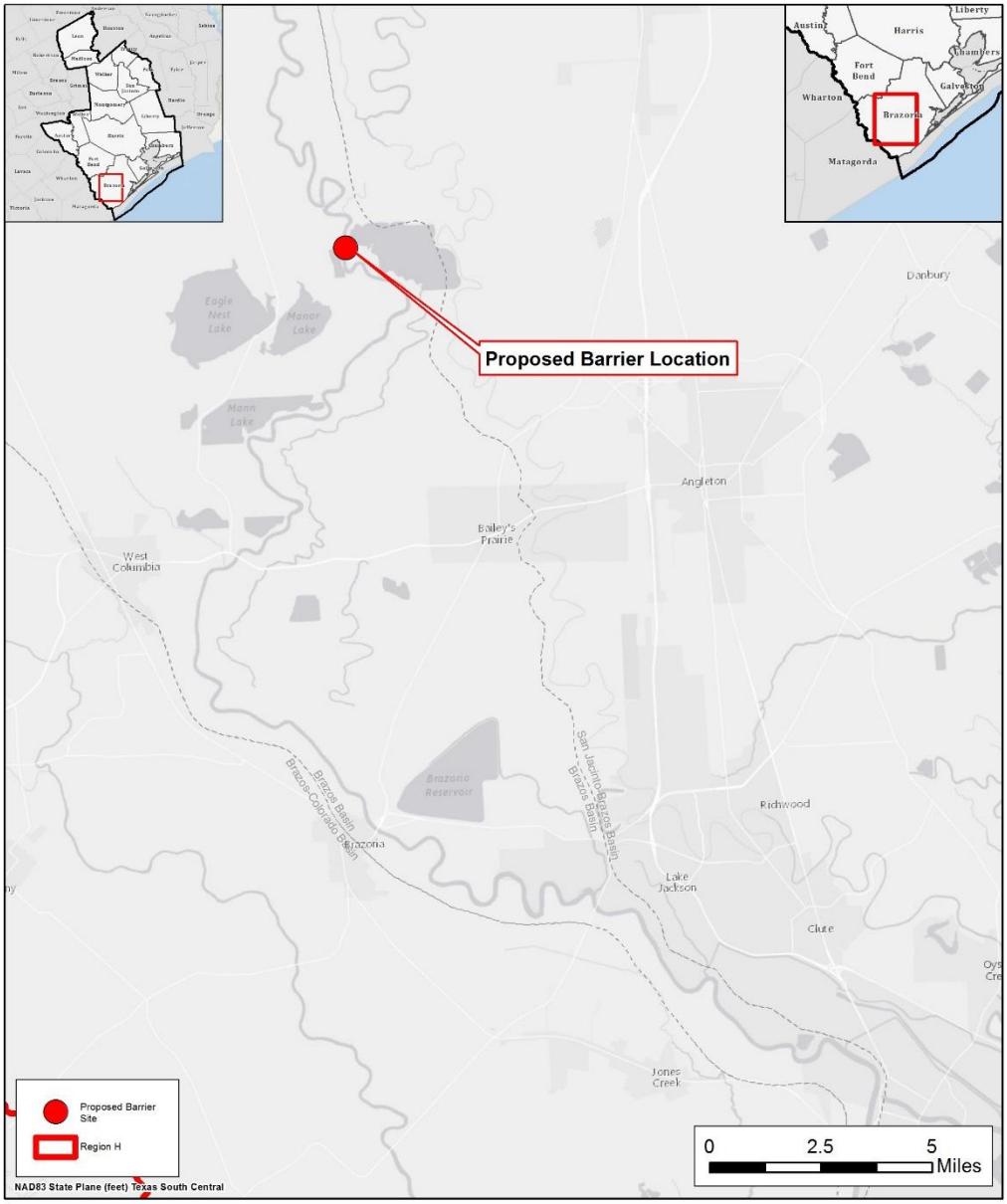
The Brazos Saltwater Barrier will directly impact the Brazos River channel where it is located and may impact the migration of species during its operation. The project operates during periods when flow in the Brazos River will be inadequate to prevent intrusion of highly saline waters. The project is not anticipated to impact agricultural land or production.

Water User Group Application

The Brazos Saltwater Barrier project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The benefits of the saltwater barrier are experienced directly in the lower
Size	The magnitude of this project scales according to the magnitude of target diversions.
	The project will make raw water supplies more available in the lower basin.
Unit Cost	The unit cost is moderate and reduces substantially after debt service, while allowing for yield enhancement during drought-of-record conditions.
Other Factors	The primary sponsor of this project is Dow Inc. although there are many more potential benefactors within the Brazos River Basin.

Location Map



REGION H
Water Planning Group

Brazos Saltwater Barrier
Location Map

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	GCWA Canal Lining and Loss Mitigation
Project ID:	OTHR-002
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	8,960 ac-ft/yr (8.0 mgd)
Implementation Decade:	2030
Development Timeline:	<5 years
Project Capital Cost:	$22,393,000 (Sept. 2023)
Unit Water Cost (Rounded):	$201 per ac-ft (during loan period) $25 per ac-ft (after loan period)

Strategy Description

The Gulf Coast Water Authority (GCWA) supplies a number of municipal, industrial, and agricultural customers in the San Jacinto-Brazos Coastal Basin with surface water from the Brazos River Basin and San Jacinto-Brazos Coastal Basin. The majority of these supplies are diverted at GCWA's three pump stations on the Brazos River and delivered by an extensive canal system including the American, Briscoe, and Juliff canal networks. As part of ongoing efforts to enhance the efficiency and flexibility of its system, GCWA has identified the opportunity to increase delivery capacity through targeted loss mitigation and canal lining efforts.

Strategy Analyses

The project analyses for GCWA Canal Lining and Loss Mitigation include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

GCWA has identified several enhancement activities in order to reduce system losses and increase delivery capacity and flow rates. GCWA is currently engaged in a satellite leak detection survey of its extensive canal conveyance network, reservoirs, and the pipeline conveyance for its treated water system in Galveston County. This survey is intended to help identify target areas for conveyance hardening to reduce leakage losses. These targeted hardening efforts, in conjunction with other loss mitigation activities, are anticipated to increase deliverable capacity buy up to 8 mgd (8,960 ac-ft/yr). GCWA has identified additional canal lining activities in other segments which are aimed primarily at increasing flow rates and delivery capacity, but which may also have some loss reduction benefit as well. The GCWA Canal Lining and Loss Mitigation project does not require a new water right appropriation and does not directly increase firm source availability, but does allow for increased

overall delivery capacity and reduces losses of flows diverted from the Brazos River and conveyed through GCWA canals.

Environmental Considerations

The enhanced infrastructure will facilitate increased delivery capacity from sources diverted from the Brazos River. These diversions will be made primarily from existing water rights or from sources developed under other future projects, and the GCWA Canal Lining and Loss Mitigation project does not directly increase diversions. The project will decrease conveyance losses within the canal system, offsetting a portion of the need for river diversions.

Infrastructure development may result in some construction disturbance which could require mitigation. This construction impact would occur primarily on the existing conveyance facility sites and would cause little disturbance to undeveloped habitat.

Permitting and Development

Loss mitigation and canal lining activities will cause some degree of surface disturbance, which may require permitting and mitigation. This is expected to be minimal, as the majority of construction would be expected to occur within or adjacent to existing canal sites. Because the project increases deliverable supply from existing water rights and through GCWA's canal system, permitting of new surface water rights or modification of existing rights will not be required.

Cost Analysis

Planning level cost estimates were developed for the Region H Plan based on available sponsor information. Sponsor estimates were assumed to be inclusive of all capital cost components. The annual cost was estimated assuming a debt service of 3.5% for 20 years, in accordance with TWDB regional water planning cost assumptions. Costs are presented in September 2023 equivalent costs in *Table 1*.

Table 1 – GCWA Canal Lining and Loss Mitigation Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	LEAK DETECTION AND MITIGATION	1	LS	$12,393,000	$12,393,000	
2	CANAL LINING	1	LS	$10,000,000	$10,000,000	
	PROJECT CAPITAL COST				**$22,393,000**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$1,575,596	$1,575,596	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$223,930	$223,930	$223,930	$223,930	$223,930	$223,930
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$1,799,526**	**$1,799,526**	**$223,930**	**$223,930**	**$223,930**	**$223,930**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$1,799,526	$1,799,526	$223,930	$223,930	$223,930	$223,930
2	YIELD	8,960	8,960	8,960	8,960	8,960	8,960
3	UNIT COST	$201	$201	$25	$25	$25	$25
	TOTAL UNIT COST						**$84**

Water Management Strategy Evaluation

Based on the analysis provided above, the GCWA Canal Lining and Loss Mitigation project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Project is a very low-cost alternative for making more water available in the GCWA system.
Location	5	Project is associated with existing conveyance infrastructure serving a large area.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project will allow more efficient delivery of existing diversions.
Local Preference	3	No known significant opposition.
Institutional Constraints	5	Property and facilities to be improved already owned by sponsor.
Development Timeline	5	Project can be developed in a relatively short period of time.

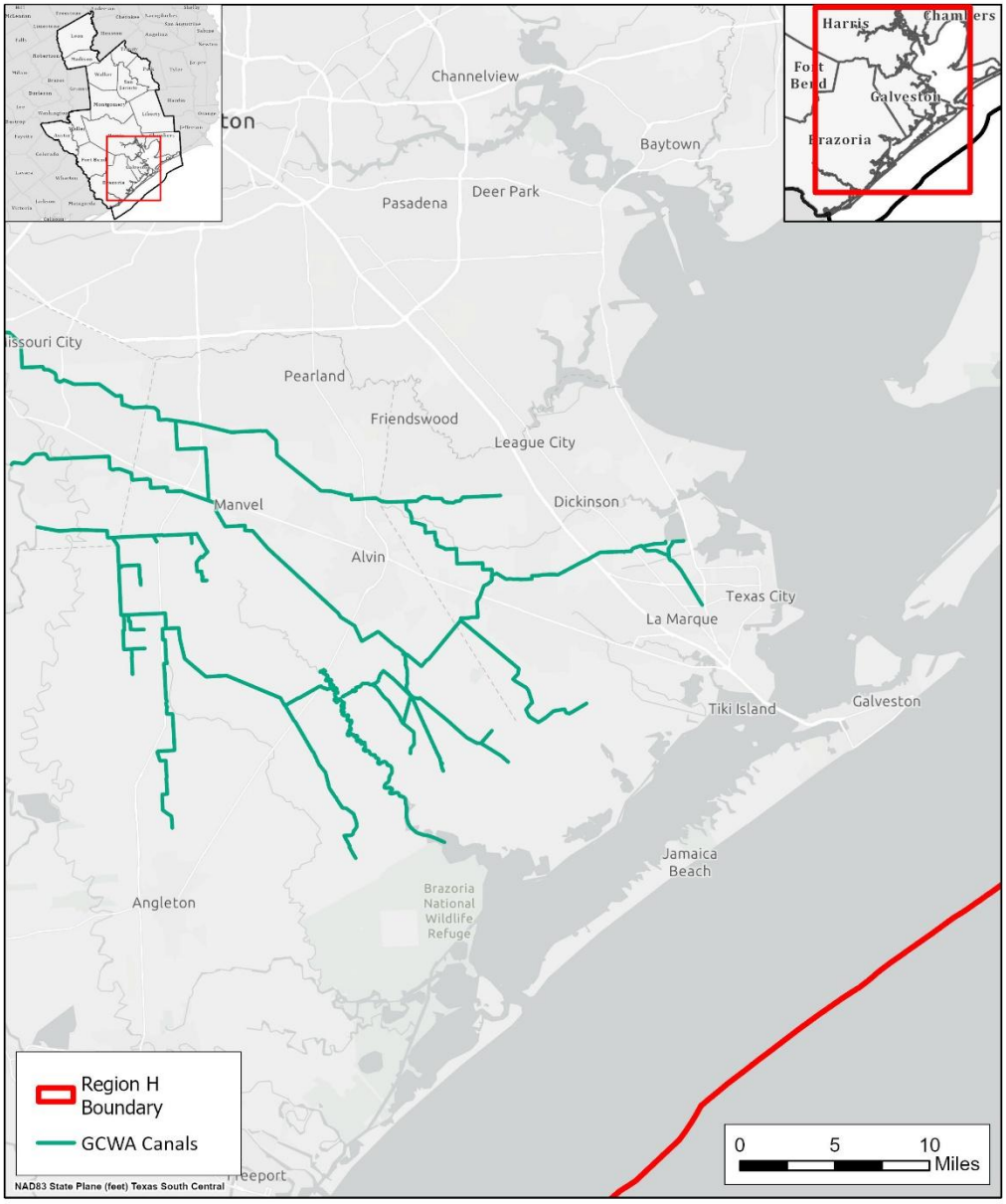
Vulnerability	5	Minimal risk from natural and manmade disaster to enhancements of the conveyance system.
Impacts on Other WMS	4	Project will increase overall GCWA system flexibility and reliability, positively impacting customer WMS.

Water User Group Application

The GCWA Canal Lining and Loss Mitigation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The benefits of improved delivery efficiency and capacity are experienced by an extensive area of the GCWA system.
Size	The project is sized in accordance with preliminary facility assessment results.
Water Quality	The project will increase efficiency in the delivery of raw water for multiple uses. Water quality issues are considered by other related projects.
Unit Cost	The unit cost, which is low, is appropriate to the municipal, industrial, and irrigation uses in the GCWA system.
Other Factors	Allows more flexible and reliable utilization of existing sources.

Location Map



REGION H Water Planning Group

GCWA Canal Lining and Loss Mitigation

Texas

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	GCWA Shannon Pump Station Expansion
Project ID:	OTHR-003
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	201,600 ac-ft/yr (180 mgd)
Implementation Decade:	2030
Development Timeline:	1 year
Project Capital Cost:	$81,410,301 (Sept. 2023)
Unit Water Cost (Rounded):	$120 per ac-ft (during loan period) $27 per ac-ft (after loan period)

Strategy Description

The Gulf Coast Water Authority (GCWA) supplies a number of municipal, industrial, and agricultural customers in the San Jacinto-Brazos Coastal Basin with surface water from the Brazos River Basin and San Jacinto-Brazos Coastal Basin. GCWA holds several water rights in these basins and supplies its customers with surface water from these rights as well as contractual supplies purchased from the Brazos River Authority (BRA). The majority of these supplies are diverted at GCWA's three pump stations on the Brazos River and delivered by an extensive canal system. The most upstream of these points, the Shannon pump station, provides flow directly to the American Canal as well as supplying other portions of the GCWA system through interconnections. As part of ongoing efforts to enhance the flexibility of its system, GCWA has identified the need to develop expanded facilities at the Shannon pump station. This project does not require a new water right appropriation because it is intended to increase infrastructure capacity related to use of existing rights and existing and future contractual sources.

Strategy Analyses

The project analyses for GCWA Shannon Pump Station Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The GCWA Shannon Pump Station Expansion project is intended to take advantage of supplies from existing and potential future sources. While the project will not require a new water right appropriation and does not directly increase firm source availability, it would allow a larger portion of owned or contracted surface water supply to be diverted at the Shannon Pump Station site. New facilities would be integrated into GCWA's existing distribution network for delivery to customers.

The improved pump station is a key component of GCWA's overall system and would operate synergistically with other projects. In addition to addressing growing water demands for customers along the American Canal, the expanded diversion capacity would allow the Shannon Pump Station to serve a substantial portion of the GCWA service area, increasing system supply security and facilitating maintenance downtime for other intake and pump station sites.

Major project components include development of a new intake structure, high-capacity pump station, and temporary bypass pumping facilities to meet water demand during project development. The current pump station facility is capable of diverting up to approximately 55 MGD. The proposed project would replace existing intake and pump station facilities, creating a capacity of approximately 110 MGD and allowing 55 MGD (61,600 ac-ft/yr) of additional supply to be captured from the Shannon diversion point. The expanded pumping facilities are designed to accommodate potential expansion to 180 MGD (201,600 ac-ft/yr).

Environmental Considerations

The enhanced infrastructure will facilitate an increase in diversions from the GCWA Shannon pump station, resulting in some decreases in instream flow downstream of the diversion point. However, these diversions will be made primarily from existing water rights or from sources developed under other future projects. Further, during periods when the Shannon pump station is used to allow downtime at other GCWA diversion points, a portion of the increased diversion at the Shannon site will be offset by reduced GCWA diversions downstream.

Infrastructure development may result in some construction disturbance which could require mitigation. This construction impact would occur on the existing facility site and would cause little disturbance to undeveloped habitat.

Permitting and Development

Development of expanded treatment infrastructure will cause some degree of surface disturbance, which may require permitting and mitigation. This is expected to be minimal, as the majority of construction would be expected to occur on the existing pump station site. Because the supply source for this project is from existing water rights and will be delivered through GCWA's canal system, permitting of new surface water rights or modification of existing rights to add a diversion point will not be required.

Cost Analysis

Planning level cost estimates were developed for the Region H Plan based on available sponsor information. Capital costs were scaled to a September 2023 equivalent cost in accordance with TWDB guidance. Additional cost components, such as interest during construction, annualized debt service, and annualized operations and maintenance costs, were assumed using standard Regional Planning costing assumptions. Estimated costs are presented in *Table 1*.

Table 1 – GCWA Shannon Pump Station Expansion Project Costs

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$67,593,394	$67,593,394	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$11,265,568	$11,265,568	
3	LAND AND EASEMENTS	1	LS	$0	$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$0	$0	
5	INTEREST DURING CONSTRUCTION	1	LS	$2,551,339	$2,551,339	
	PROJECT CAPITAL COST				**$81,410,301**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$5,728,116	$5,728,116	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$1,689,835	$1,689,835	$1,689,835	$1,689,835	$1,689,835	$1,689,835
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$7,417,951**	**$7,417,951**	**$1,689,835**	**$1,689,835**	**$1,689,835**	**$1,689,835**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$7,417,951	$7,417,951	$1,689,835	$1,689,835	$1,689,835	$1,689,835
2	YIELD	61,600	61,600	61,600	61,600	61,600	61,600
3	UNIT COST	$120	$120	$27	$27	$27	$27
	TOTAL UNIT COST						**$58**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$67,593,394	$67,593,394
	PROJECT COST				**$67,593,394**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$67,593,394	$1,689,835
	ANNUAL OPERATION AND MAINTENANCE COST				**$1,689,835**

Water Management Strategy Evaluation

Based on the analysis provided above, the GCWA Shannon Pump Station Expansion project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Project is a very low-cost alternative for making more water available in the GCWA system.
Location	5	Project is associated with existing diversion site and conveyance infrastructure serving a large area.
Water Quality	3	No known issues related to water quality.

CRITERIA	RATING	EXPLANATION
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	2	
Local Preference	3	No known significant opposition.
Institutional Constraints		Property and facilities to be improved already owned by sponsor.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship		The project sponsor, GCWA, is committed to the project and is actively evaluating preliminary design.
Vulnerability	3	Moderate risk associated with development of a structure in a coastal basin.
		Serves multiple customers and supports multiple regionalized water systems.
Impacts on Other WMS	5	Project will increase overall GCWA system flexibility and reliability, positively impacting customer WMS.

The GCWA Shannon Pump Station Expansion will facilitate increased diversions made primarily from existing water rights or from sources developed under other future projects. The project is not anticipated to impact agricultural land or production or to affect vulnerable species.

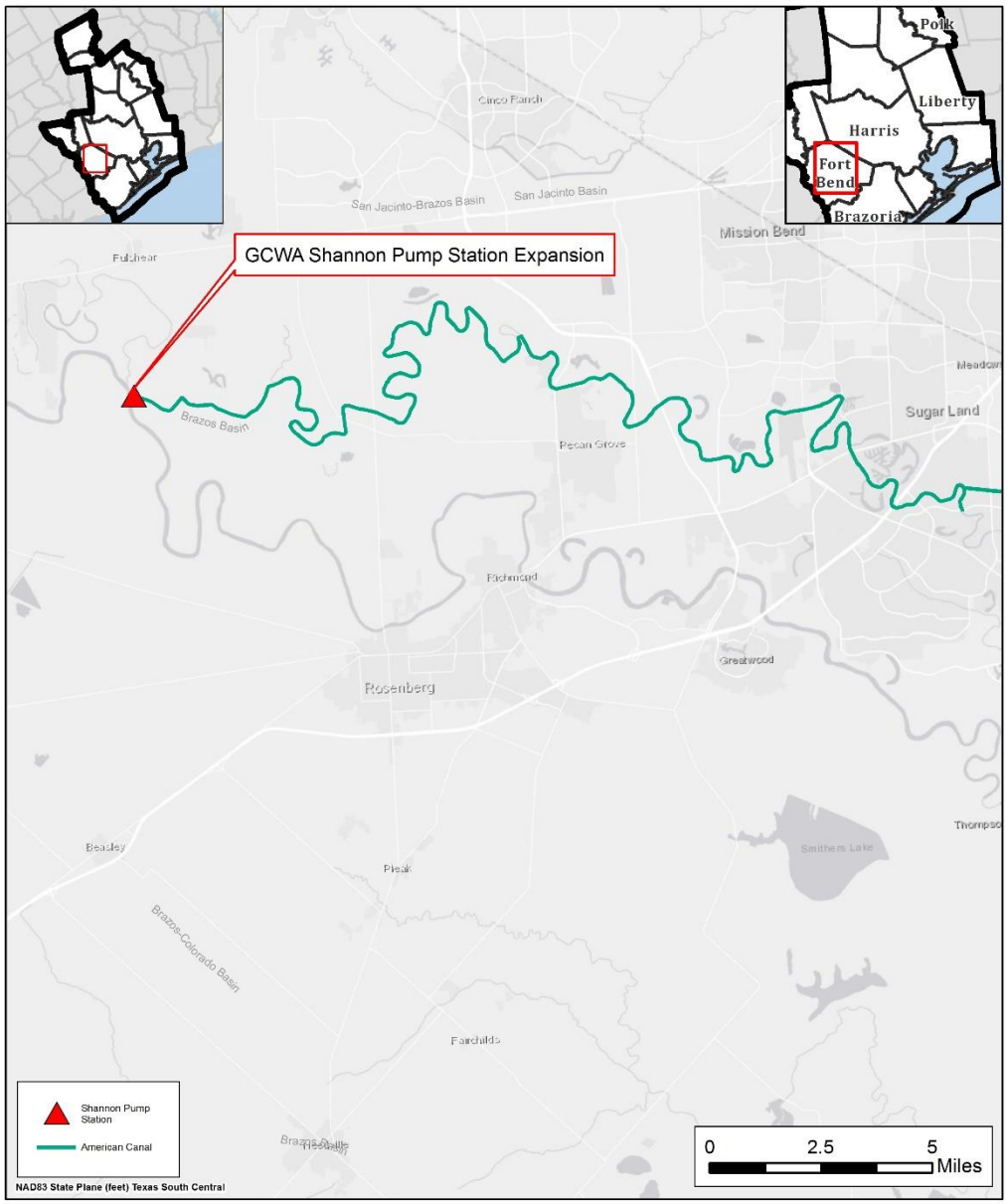
Water User Group Application

The GCWA Shannon Pump Station Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The benefits of the pump station expansion are experienced by an extensive area of the GCWA system, with points of demand serviced through existing canal infrastructure.
Size	The project is sized in accordance with the available source, anticipated future demands, and provision for system infrastructure redundancy.

CRITERIA	WUG SUITABILITY
Water Quality	The project will increase flexibility in the diversion of raw water for multiple uses. Water quality issues are considered by other related projects.
Unit Cost	The unit cost, which is relatively low, is appropriate to the municipal, industrial, and irrigation uses in the GCWA system.
Other Factors	Allows more flexible and reliable utilization of existing sources.

Location Map



REGION H Water Planning Group

GCWA Shannon Pump Station Expansion Location Map

Texas

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	LNVA Devers Pump Station Relocation
Project ID:	OTHR-004
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	88,704 ac-ft/yr (79 MGD)
Implementation Decade:	2030 (2025)
Development Timeline:	1 year
Project Capital Cost:	$21,337,986 (Sept. 2023)
Unit Water Cost (Rounded):	$21 per ac-ft (during loan period) $4 per ac-ft (after load period)

Strategy Description

The Lower Neches Valley Authority (LNVA) is a major water supplier to irrigators in the eastern portion of Region H, including rice production in Chambers and Liberty County. A substantial portion of this supply is provided through LNVA's Devers Canal System, which diverts water from the Trinity River at the Devers 1st Pump Station near Moss Bluff, TX for conveyance through a canal network to points of use. In order to meet the needs of current and future customers and increase deliverable supply, LNVA has identified the need to develop a new Devers 1st Pump Station. The new pump station will be located adjacent to the current pump station, limiting the required permitting and the need for development of additional conveyance to connect to existing canal infrastructure. This project does not require a new water right appropriation because it is associated with infrastructure capacity related to the use of existing rights.

Strategy Analyses

The project analyses for the LNVA Devers Pump Station Relocation project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The LNVA Devers Pump Station Relocation project will increase deliverable supplies from existing sources and will not require a new water right appropriation. The proposed infrastructure will increase pumping capacity to allow existing LNVA owned or contracted surface water supply to be diverted from the Trinity River and delivered to LNVA's customers. Major project components include development of a new intake structure, high-capacity pump station, and discharge structures to connect the pump station to the Devers Canal System. The new facility has a planned capacity of 200,000 gpm, resulting in an additional 55,000 gpm (88,704 ac-ft/yr) of reliable pumping capacity.

Environmental Considerations

The enhanced infrastructure will facilitate an increase in diversion capacity for the LNVA Devers Canal system. Impacts on instream flows and bay and estuary flows are anticipated to be minimal, as the proposed project increases supply from existing water rights to levels observed in prior historical conditions; the project does not develop new surface water sources. Diversions will be made from existing water rights and at the existing diversion location. Infrastructure development may result in some surface disturbance from construction that could require mitigation; however, this is expected to be minimal as the proposed infrastructure has a limited footprint and will be developed on LNVA's existing pump station site adjacent to existing facilities.

Permitting and Development

The development of this strategy may require some permitting due to surface disturbance from the construction of pump station infrastructure. This is expected to be minimal, as construction is anticipated to occur on the sponsor's existing property and in close proximity to the existing pump station site. Because the supply source is provided by existing water rights and will be delivered through LNVA's Devers system, permitting of new water rights to add a diversion point will not be required.

Cost Analysis

Planning level cost estimates for this strategy are included in the table below. Capital costs include planning, design, real estate, environmental and permitting, and construction of pump station infrastructure. The annual cost was estimated assuming a debt service of 3.5% for 20 years, in accordance with TWDB regional water planning cost assumptions. Costs are presented in September 2023 equivalent costs in *Table 1*.

Table 1 – LNVA Devers Pump Station Relocation Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2023
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	$15,262,337	$15,262,337	
2	ENGINEERING, FINANCIAL, LEGAL SERVICES, AND CONTINGENCIES	1	LS	$5,341,818	$5,341,818	
3	LAND AND EASEMENTS	1	LS	$5,920	$5,920	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	$59,195	$59,195	
5	INTEREST DURING CONSTRUCTION	1	LS	$668,717	$668,717	
	PROJECT CAPITAL COST				**$21,337,986**	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	DEBT SERVICE	$1,501,364	$1,501,364	$0	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$381,558	$381,558	$381,558	$381,558	$381,558	$381,558
	TOTAL ANNUAL COST	**$1,882,922**	**$1,882,922**	**$381,558**	**$381,558**	**$381,558**	**$381,558**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
1	ANNUAL COST	$1,882,922	$1,882,922	$381,558	$381,558	$381,558	$381,558
2	YIELD	88,704	88,704	88,704	88,704	88,704	88,704
3	UNIT COST	$21	$21	$4	$4	$4	$4
	TOTAL UNIT COST						**$10**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$15,262,337	$15,262,337
	PROJECT COST				**$15,262,337**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$15,262,337	$381,558
	ANNUAL OPERATION AND MAINTENANCE COST				**$381,558**

Water Management Strategy Evaluation

Based on the analysis provided above, the LNVA Devers Pump Station Relocation project was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Project is a very low-cost alternative for making more water available in the LNVA Devers System.
Location	5	Project is associated with an existing diversion site and conveyance infrastructure serving a large area.

CRITERIA	RATING	EXPLANATION
Water Quality		No known issues related to water quality.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project will increase diversion capacity from existing sources to levels observed in prior conditions and is anticipated to have minimal impacts on environmental flows.
Local Preference	3	No known significant opposition.
Institutional Constraints	5	Property and facilities to be improved already owned by sponsor.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship	5	The project sponsor, LNVA, is committed to the project and is actively evaluating final design.
Vulnerability	3	Moderate risk associated with development of a structure in a coastal area.
Regionalization	3	Supports service to multiple customer entities.
Impacts on Other WMS	5	Project will increase overall LNVA system reliability, positively impacting customer supply. Potential synergy with other project(s). No negative impacts on other WMS or projects.

The LNVA Devers Pump Station Relocation will facilitate diversions made from existing water rights. The project is anticipated to positively impact agricultural land and production through increased supply reliability. The project is not anticipated to impact vulnerable species.

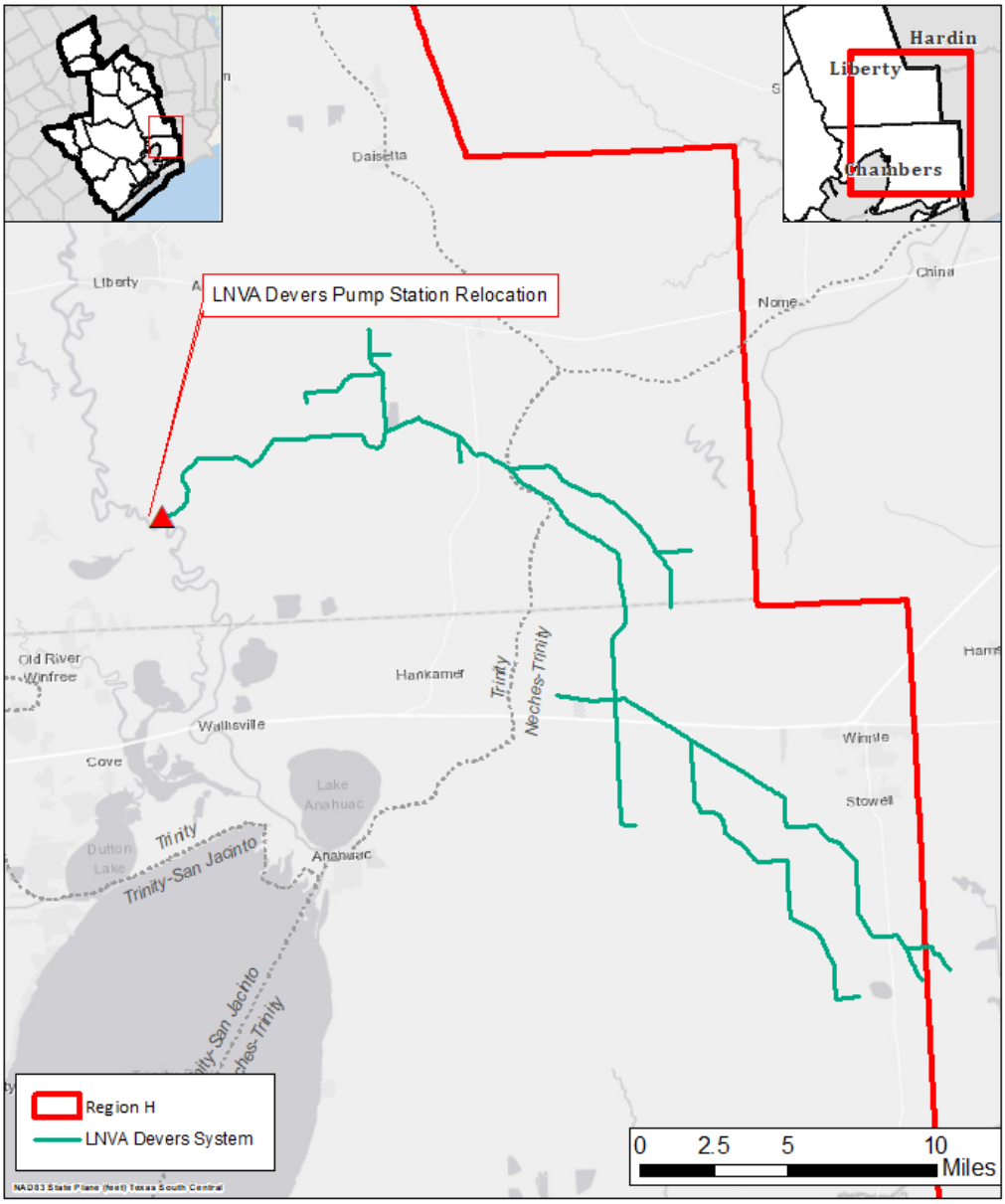
Water User Group Application

The LNVA Devers Pump Station Relocation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The benefits of the pump station relocation would be experienced by LNVA customers supplied by the LNVA Devers System, with points of demand serviced through existing canal infrastructure.
Size	The project is sized in accordance with the available source, anticipated future demands, and provision for system infrastructure redundancy.

CRITERIA	WUG SUITABILITY
Water Quality	The project is not anticipated to impact water quality. This project will convey raw water, which is suitable for irrigation use.
Unit Cost	The unit cost, which is relatively low, is appropriate to the irrigation use within the LNVA Devers System.
Other Factors	This project is identified primarily for irrigation customers in Chamber and Liberty Counties but could also potentially supply other customers with future needs.

Location Map



REGION H Water Planning Group

LNVA Devers Pump Station Relocation Location Map

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Municipal Drought Management
Project ID:	OTHR-005
Project Type:	Drought Management
Potential Supply Quantity (Rounded):	Up to 15,750 ac-ft/yr (14.1 mgd)
Implementation Decade:	2030
Development Timeline:	0 years
Project Capital Cost:	N/A
Unit Water Cost (Rounded):	$47 to 50 per ac-ft

Strategy Description

The Texas Commission on Environmental Quality (TCEQ), in accordance with the Texas Administrative Code (TAC), requires all wholesale public water suppliers, retail public water suppliers, and irrigation districts to prepare drought contingency plans (DCPs) meeting the requirements of 30 TAC §288(b) and to update these plans at least every five years. TCEQ administrative rules in 30 TAC §288.1 define a drought contingency plan as "a strategy or combination of strategies for temporary supply management and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies". Most DCPs aim to curtail demands through temporary reductions in certain categories of water use, often in response to hydrologic drought conditions but also in cases of other water supply emergencies (for example, equipment failures caused by excessively high peak water demands). Common elements of DCPs are successive stages of drought response, criteria for initiating each stage (triggers), objectives such as a percent reduction in demand (targets), and voluntary and/or mandatory actions to achieve those objectives (response measures).

It is important to note that drought management differs from typical water management strategies in that it benefits an enacting utility only temporarily at the time of implementation. Because drought management is only active and beneficial during certain periods of time, its reliable yield is essentially zero when considered in an analogous manner to surface water, groundwater, reuse, or conservation. The Municipal Drought Management strategy considers the potential temporary benefit of demand reductions produced by implementation of the short-term measures outlined in entities' DCPs. As the TCEQ does not require private industrial water users or individual agricultural users to develop DCPs, this analysis was limited to the assessment of potential demand reductions among municipal water user groups (WUGs).

Strategy Analyses

The project analyses for Municipal Drought Management include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

For each municipal WUG in Region H, potential savings were estimated based on the most recent available version of the WUG's own DCP. For entities which have not submitted DCPs to the Region H Water Planning Group (RHWPG), DCP stages and target reductions were applied based on the DCP of the wholesale provider serving the entity, when available. In total, target demand reductions were determined for 210 of the 383 municipal WUGs in Region H. WUGs that have not submitted DCPs to the RHWPG and which are not served by a wholesale provider were assumed to have zero potential benefit from the Municipal Drought Management strategy. County-Other WUGs were also not evaluated, as they are made up of multiple individual utilities.

In addition to the assessment of DCPs submitted by entities across Region H, the RHWPG also reviewed recent occurrences of entities implementing measures from their DCPs. Although within Region H the year 2011 represents the most severe drought in recent years, drought responses from 2023 have been used to estimate the potential level of DCP implementation by entities in Region H under another drought of record. This is due to a greater number of public water systems implementing drought restrictions in 2023 compared to 2011. The RHWPG performed an analysis of TCEQ records of entities implementing mandatory landscape watering restrictions to estimate the percent of time in a one-year period (based on 2023) during which each entity would likely be enforcing mandatory outdoor watering restrictions.

Demand reductions were assessed for multiple scenarios. Demand reduction targets were applied to municipal WUGs' projected decadal demands only for the percent of time during which any entity was assumed to be in a drought stage with mandatory curtailments. Targets were based on either the first stage in which a DCP prescribed mandatory restrictions, the next highest stage with mandatory restrictions, or multiple stages based on which stages were implemented in 2023. The multiple-stage scenario was considered to most closely reflect 2023 conditions; however, as most reporting entities in Region H did not trigger a more restrictive stage than their first mandatory stage, the outcomes of this scenario are similar to those in the first mandatory stage option. (For most entities, the first stage with mandatory restrictions is Stage 2, with only voluntary responses prescribed in Stage 1 of the DCP.) Voluntary drought response stages were assumed to have no impact on demands.

Targeted demand reductions were applied to each WUG's post-conservation demand, which is the projected demand after reductions were applied from the Advanced Municipal Conservation and Water Loss Reduction water management strategies. Furthermore, as many of the measures defined in DCPs focus on demand curtailment through the reduction of outdoor watering, this analysis assumed that any substantial benefits from Municipal Drought Management would be attributable to mandatory restrictions on outdoor watering. Because Region H has included twice-per-week watering restrictions in its Advanced Municipal Conservation strategy, savings already accounted for as part of Advanced Municipal Conservation were excluded from potential drought management savings.

Additionally, a factor was applied to account for the potential impacts of less than 100% compliance among retail water customers and less than 100% efficacy of DCP response measures in achieving the

targeted demand reductions. Scenarios were assessed for compliance and efficacy factors of 50% and 100%. Finally, as Municipal Drought Management may reduce demand but does not, by nature, provide a surplus supply, estimated potential savings were capped at a WUG's post-conservation needs (unmet demand after application of other demand reduction strategies).

Table 1 summarizes the potential savings estimated for each scenario in each of the planning decades. At 100% efficacy, savings under approximate 2023 conditions range from 4,280 ac-ft/yr in 2030 to 5,516 ac-ft/yr in 2080.

Table 1 – Total Demand Reduction from Municipal Drought Management Strategy

Reduction Scenario	Compliance / Efficacy Factor	Potential Savings from DCP Implementation					
		2030	2040	2050	2060	2070	2080
First Mandatory Stage[1]	50%	2,085	2,566	2,640	2,660	2,731	2,649
Next Mandatory Stage[2]		7,040	7,997	8,104	8,027	8,074	7,903
Multiple Stages[3]		2,194	2,671	2,745	2,766	2,839	2,759
First Mandatory Stage[1]	100%	4,063	5,096	5,273	5,317	5,347	5,297
Next Mandatory Stage[2]		13,947	15,404	16,162	15,993	16,014	15,750
Multiple Stages[3]		4,280	5,304	5,484	5,529	5,563	5,516

1) First Stage – Reduction targets based on least restrictive stage with any mandatory curtailment in each entity's DCP (or wholesale provider's DCP).
2) Next Stage – Reduction targets based on second least restrictive stage with any mandatory curtailment.
3) Multiple Stages – Reduction targets based on multiple stages with mandatory curtailments, distributed based on each entity's projected percent of year in that stage.

Because Municipal Drought Management reduces need through a percentage reduction in demand, municipal WUGs with large population and high demands are most impacted by the implementation of this strategy.

Environmental Considerations

Generally, no significant negative environmental impacts are associated with Municipal Drought Management, as typical drought management measures do not involve the construction of any facilities. Municipal effluent is a critical and substantial component to baseflows in the Houston area. However, drought response measures typically focus on reducing outdoor water use, which would likely impact return flows less than indoor water use reduction. Furthermore, any reduction in return flows to receiving basins would, theoretically, be more than offset by reduced diversions of water from the source basins.

Permitting and Development

A drought management strategy is very local in nature and would be implemented by individual utilities, typically through municipal ordinances and enforcement. Drought response measures can be implemented immediately upon utility determination that a drought trigger has been reached, and implementation timelines and requirements are usually outlined in a utility's DCP.

Cost Analysis

Implementation of demand reduction measures in response to a drought would likely impose minimal direct costs to a water provider, limited primarily to the costs of notifying customers and enforcement. However, because the Municipal Drought Management strategy reduces demand on a short-term basis rather than providing additional supply, costs are borne by end-users in the form of economic impacts. Estimates of adverse monetary impacts due to residential water use restrictions were analyzed using the Texas Water Development Board (TWDB) Drought Management Costing Tool, which estimates the foregone consumer surplus cost of reduced residential water use. In other words, the estimated impacts represent the value consumers would be willing to pay to not have implemented residential watering use restrictions.

The analysis of cost assumes that residential outdoor water use will be reduced by the same percentage as the reduction assumed for the entire WUG, which is the DCP Target Reduction multiplied by the assumed Efficacy and compliance factor. For purposes of a consumer surplus (lost) cost estimate, this reduction is applied to the average household water use, which is for many WUGs less than the overall WUG's dry-year per-capita demand estimate, which may include non-residential use and increases due to dry conditions. The volume of water savings represented in the cost is thus less than the total savings estimated for the Demand Management WMS. Costs were estimated based on the assumption that all savings represented by the Municipal Drought Management strategy occur within residential water use. Furthermore, this cost estimate is limited to an estimate of foregone consumer surplus (i.e., the cost to residents) and does not include additional costs that may be borne by a utility during enactment and enforcement of demand management measures. The unit cost is specifically based on the Consumer surplus cost of reduced outdoor residential watering, which are estimates of the consumers' willingness to pay to be restored back to their normal levels of water usage. Impacts of drought response measures applied to non-residential consumers were not evaluated as part of this strategy analysis. *Table 2* summarizes the potential adverse monetary impacts of the Municipal Drought Management strategy for the multiple-stage scenario at an efficacy factor of 100%. The relationship between price and demand differs greatly between WUGs, so the economic impact per acre-foot of demand reduction changes from decade to decade depending on which entities contribute greater portions of total savings due to varying demands.

Table 2 – Adverse Monetary Impacts of Residential Water Use Restrictions

ANNUAL COST SUMMARY	2030	2040	2050	2060	2070	2080
Annual Cost	$113,000	$139,000	$142,000	$138,000	$135,000	$132,000
Demand Reduction (ac-ft/yr)	2,301	2,765	2,852	2,869	2,870	2,813
Unit Cost	$49	$50	$50	$48	$47	$47
Average Unit Cost						**$49**

Non-residential economic impacts were not analyzed as part of this strategy. Commercial and industrial impacts may include reducing operations or even temporary business closures, particularly for businesses with high water use. Reductions in agricultural irrigation may directly reduce crop yields and subsequent revenues.

Water Management Strategy Evaluation

Based on the analysis provided above, the Municipal Drought Management strategy was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	1	Estimated economic impacts to residential water users are relatively low, but additional potential costs associated with industrial, commercial, and agricultural water use are unknown. True costs encompass greater socioeconomic impacts of unmet needs on job and income losses and reduced tax revenue.
Location	5	Drought management measures generally benefit the WUGs in which they are implemented, but demand reduction in one WUG may also allow for water to be used by other customers after the demand level is reduced.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	5	No impacts to landform associated with drought management.
Environmental Flows	3	No impacts to instream flows. Typically, reductions in return flows are also associated with reduced diversions. Although drought management may reduce diversions during extreme droughts, they are typically not enacted and, therefore, do not have any routine impact.
Local Preference	2	Local support varies from utility to utility. Some opposition expected.
Institutional Constraints	5	No permits required for implementation of drought response measures.
Development Timeline	5	Drought management measures can be implemented in a relatively short period of time.
Sponsorship	3	Although sponsors are identified, commitment to implementation varies considerably.
Vulnerability	5	Drought management has no identifiable risk from natural or man-made disasters.
Regionalization	1	Typically implemented at the individual water system level or for a small number of interconnected systems.

CRITERIA	RATING	EXPLANATION
Impacts on Other WMS	2	Drought management measures may negatively impact the availability of return flows for downstream use.

Water User Group Application

The Municipal Drought Management strategy was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Drought management measures do not produce water and only reduce total demand. Therefore, proximity of source and demand is not an issue for implementation.
Size	Targeted demand reductions of drought management measures are proportional to WUG demands.
Water Quality	Measures produce no water and only reduce demand.
Unit Cost	Estimated economic impacts to residential water users are relatively low. Additional potential costs associated with industrial, commercial, and agricultural water use are unknown.
Other Factors	Total reduction in demand due to drought management measures is highly dependent on localized supply conditions and levels of customer compliance.

References

Texas Water Development Board. *Drought Management Costing Tool*. Available at <http://www.twdb.texas.gov/waterplanning/rwp/planningdocu/2021/current_docs.asp>. October 2019.

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	New and Expanded Contracts
Project ID:	OTHR-006
Project Type:	N/A
Potential Supply Quantity:	Varies
Implementation Decade:	Varies
Development Timeline:	0 years
Project Capital Cost:	N/A
Unit Water Cost:	N/A

Strategy Description

The Region H Water Planning Group supports the voluntary transfer of water between entities to effectively meet the needs of some Water User Groups (WUGs) with water surpluses available from other entities. Several water management strategies have been recommended through which WUGs would pursue new contracts for purchasing water or would expand the contracted amounts of existing agreements from Major Water Providers (MWPs) in the region.

Strategy Analyses

The strategy analyses for New and Expanded Contracts include evaluations of the potential supply to be created. Because most of the recommended contracts are for WUGs and MWPs between which infrastructure already exists to transfer water, the strategy is limited to execution of a contract for purchase of water. Where additional infrastructure may be required, environmental factors, permitting and development considerations, and an analysis of cost were performed as part of a separate project analysis.

Supply Development

Transferred supply volumes transferred through New and Expanded Contracts are intended to meet needs of WUGs. However, transferred volumes are limited to the surplus available to a MWP for sale and thus depend on the MWP's surface water rights, groundwater pumping permits, and treatment capacity. Surplus available to a MWP may consist of existing unused water supplies or new supply sources developed through other water management strategies and contracts. Contracts are also recommended based on the feasibility of transferring water from a MWP to a WUG and often make use of existing infrastructure.

Environmental Considerations

The execution of new water supply contracts or expansion of existing contracts do not directly require any development which could present environmental concerns. While the use of purchased water

may reduce instream flows, the volumes transferred for supply are permitted under existing surface water rights.

Permitting and Development

The contractual transfers recommended as part of New and Expanded Contracts strategies are limited to transfers of waters already owned by the seller, either through a water rights permit or purchase from another wholesale water provider. No additional permitting is required. Interbasin transfers, which do require additional permitting, were each considered as separate water management strategies.

Cost Analysis

The cost of purchasing water under new or expanded contracts was not evaluated, as these costs are highly variable and many of the recommended contracts would begin in later decades of the planning period. Costs of developing infrastructure for water transfers, where necessary, were considered under separate projects.

Water Management Strategy Evaluation

Based on the analysis provided above, the New and Expanded Contracts water management strategy was evaluated across twelve different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	No direct infrastructure costs are associated with this strategy.
Location	4	Contracts are typically recommended between WUGs and MWPs in close proximity to one another.
Water Quality	3	No known water quality issues.
Environmental Land and Habitat	5	Limited impacts are associated with this strategy.
Environmental Flows	2	Transfer of purchased water may result in reduced instream flows.
Local Preference	3	No known opposition.
Institutional Constraints	5	No permitting or land acquisition required.
Development Timeline	5	Contracts can typically be executed in less than 1 year.
Sponsorship	3	Sponsors have been identified.

Vulnerability	5	Minimal risk from natural and man-made disasters.
Impacts on Other WMS	5	New and Expanded Contracts utilize supplies developed through other WMS to meet needs.

Water User Group Application

The New and Expanded Contracts strategy was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy.

CRITERIA	WUG SUITABILITY
Proximity	New and Expanded Contracts would directly supply WUGs with existing water needs.
Size	Contract allocations are sized to meet WUG needs.
Water Quality	Purchased supplies may be raw or treated, depending on the seller. Purchased raw water supplies will require treatment by the WUG.
Unit Cost	Costs associated with this strategy will depend on negotiated contract prices. No costs have been evaluated as part of the 2026 RWP.

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APPENDIX 5B-A

WATER LOSS REDUCTION SAVINGS FOR MUNICIPAL WUGS

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Table 5B-A1 – Water Loss Reduction Savings for Municipal WUGs

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Alvin	19	56	80	80	80	80	0.6	1.8	2.5	2.4	2.5	2.4
Ames Minglewood WSC	1	3	5	7	8	9	0.7	2.2	3.7	5.1	5.6	6.0
Anahuac	4	12	18	24	31	37	1.8	5.4	8.0	10.7	13.1	15.6
Angleton	32	91	142	186	222	250	1.5	4.2	6.7	8.9	10.9	12.7
Austin County WSC	4	14	25	34	42	51	1.5	4.7	7.7	10.0	12.1	14.4
Bacliff MUD	0	0	0	0	0	0	0	0	0	0	0	0
Baker Road MUD	0	0	0	0	0	0	0	0	0	0	0	0
Baybrook MUD 1	0	0	0	0	0	0	0	0	0	0	0	0
Baytown	97	324	548	755	791	794	0.8	2.3	3.7	5.0	5.2	5.2
Bayview MUD	0	0	0	0	0	0	0	0	0	0	0	0
Bellaire	0	0	0	0	0	0	0	0	0	0	0	0
Bellville	0	0	0	0	0	0	0	0	0	0	0	0
Blaketree MUD 1 of Montgomery County	0	2	6	9	11	13	0	6.7	11.5	15.8	19.3	22.8
Blue Bell Manor Utility	0	0	0	0	0	0	0	0	0	0	0	0
Blue Ridge West MUD	0	0	0	0	0	0	0	0	0	0	0	0
Bolivar Peninsula SUD	12	36	57	76	94	109	3.6	10.6	16.8	22.3	27.5	31.8
Brazoria	0	0	0	0	0	0	0	0	0	0	0	0
Brazoria County FWSD 1	1	3	5	6	7	9	1.1	2.9	4.9	5.9	6.8	8.8
Brazoria County MUD 2	15	46	75	105	131	152	3.5	10.1	16.0	21.4	26.3	30.7
Brazoria County MUD 21	4	12	18	18	18	18	0.8	2.2	3.3	3.3	3.3	3.3
Brazoria County MUD 22	3	8	8	8	9	9	1.0	2.5	2.5	2.5	2.7	2.6
Brazoria County MUD 25	0	0	0	0	0	0	0	0	0	0	0	0
Brazoria County MUD 29	0	0	0	0	0	0	0	0	0	0	0	0
Brazoria County MUD 3	0	0	0	0	0	0	0	0	0	0	0	0
Brazoria County MUD 31	11	33	51	69	84	96	3.0	9.0	14.0	19.0	23.2	26.8
Brazoria County MUD 39	0	0	0	0	0	0	0	0	0	0	0	0
Brazoria County MUD 55	0	0	0	0	0	0	0	0	0	0	0	0

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Brazoria County MUD 6	0	0	0	0	0	0	0	0	0	0	0	0
Brookshire MWD	15	45	72	97	129	162	2.4	6.8	10.9	14.6	17.8	20.8
Buffalo	2	6	7	7	6	6	1.1	3.6	4.5	4.7	4.2	4.5
Bunker Hill Village	0	0	0	0	0	0	0	0	0	0	0	0
C C Water Works	0	0	0	0	0	0	0	0	0	0	0	0
Cape Royale UD	0	0	0	0	0	0	0	0	0	0	0	0
Centerville	1	3	5	5	5	5	1.0	3.1	5.3	5.3	5.4	5.6
Central Harris County Regional Water Authority	0	0	0	0	0	0	0	0	0	0	0	0
Chambers County MUD 1	0	0	0	0	0	0	0	0	0	0	0	0
Chateau Woods MUD	0	0	0	0	0	0	0	0	0	0	0	0
Chimney Hill MUD	0	0	0	0	0	0	0	0	0	0	0	0
Clear Brook City MUD	0	0	0	0	0	0	0	0	0	0	0	0
Clear Lake City Water Authority	0	0	0	0	0	0	0	0	0	0	0	0
Cleveland	18	57	102	150	201	254	2.0	5.7	9.1	12.2	14.9	17.4
Clute	0	0	0	0	0	0	0	0	0	0	0	0
Concord0Robbins WSC	0	0	0	0	0	0	0	0	0	0	0	0
Conroe	0	0	0	0	0	0	0	0	0	0	0	0
Conroe Resort Utilities	1	4	7	9	12	16	1.2	4.4	7.1	8.4	10.5	13.0
Corinthian Point MUD 2	0	0	0	0	0	0	0	0	0	0	0	0
Country Terrace Water	0	0	0	0	0	0	0	0	0	0	0	0
County-Other, Austin	0	0	0	0	0	0	0	0	0	0	0	0
County-Other, Brazoria	154	473	813	1,125	1,433	1,735	1.4	3.9	6.2	8.3	10.2	11.9
County-Other, Chambers	43	182	425	744	1,144	1,645	1.6	4.5	7.1	9.4	11.6	13.5
County-Other, Fort Bend	207	1,069	2,596	4,448	6,754	9,238	1.4	4.1	6.5	8.7	10.7	12.5
County-Other, Galveston	25	74	122	168	208	224	0.9	2.4	3.9	5.2	6.3	6.7
County-Other, Harris	0	0	0	0	0	0	0	0	0	0	0	0
County-Other, Leon	5	12	16	18	16	12	1.5	4.2	7.2	9.7	11.4	13.9
County-Other, Liberty	77	298	619	1,036	1,522	2,094	1.3	3.6	5.7	7.7	9.4	10.9

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
County-Other, Madison	8	25	41	55	71	86	2.3	6.8	10.9	14.1	17.5	20.4
County-Other, Montgomery	203	767	1,523	2,349	3,175	3,641	0.9	2.4	3.9	5.2	6.3	6.8
County-Other, Polk	17	53	85	118	151	182	0.8	2.2	3.4	4.6	5.6	6.5
County-Other, San Jacinto	14	41	63	81	97	109	1.1	3.3	5.2	6.9	8.5	9.9
County-Other, Trinity[1]	1	2	3	3	3	3	0.5	1.1	1.8	1.9	2.0	2.1
County-Other, Walker	19	52	78	92	98	90	1.5	4.2	6.7	8.9	11.0	12.0
County-Other, Waller	28	100	218	392	615	885	1.0	2.9	4.6	6.1	7.5	8.8
Crosby MUD	9	30	48	67	87	91	1.2	3.5	5.6	7.5	9.1	9.6
Cut & Shoot	0	0	0	0	0	0	0	0	0	0	0	0
Daisetta	1	2	4	5	6	7	1.0	1.9	3.8	4.8	5.8	6.7
Danbury	0	0	0	0	0	0	0	0	0	0	0	0
Dayton	30	109	199	300	402	509	2.1	6.1	9.7	12.9	15.9	18.5
Deer Park	44	127	203	271	335	372	1.1	3.2	5.1	6.8	8.4	9.3
Devers	0	0	0	0	0	0	0	0	0	0	0	0
Dobbin Plantersville WSC	0	0	0	0	0	0	0	0	0	0	0	0
Dodge Oakhurst WSC	0	0	0	0	0	0	0	0	0	0	0	0
Domestic Water	0	0	0	0	0	0	0	0	0	0	0	0
Douglas Utility	0	0	0	0	0	0	0	0	0	0	0	0
East Montgomery County MUD 6	0	0	0	0	0	0	0	0	0	0	0	0
East Plantation UD	0	0	0	0	0	0	0	0	0	0	0	0
El Dorado UD	0	0	0	0	0	0	0	0	0	0	0	0
Far Hills UD	0	0	0	0	0	0	0	0	0	0	0	0
First Colony MUD 9	0	0	0	0	0	0	0	0	0	0	0	0
Flo Community WSC	0	0	0	0	0	0	0	0	0	0	0	0
Forest Hills MUD	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County FWSD 1	6	28	51	70	89	109	0.5	1.5	2.4	3.2	3.9	4.6
Fort Bend County FWSD 2	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 115	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 116	6	20	30	30	31	31	1.3	3.7	5.5	5.4	5.5	5.4

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Fort Bend County MUD 121	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 128	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 129	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 131	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 140	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 149	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 152	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 155	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 158	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 162	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 23	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 24	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 25	19	55	88	118	147	151	1.3	3.8	5.9	7.9	9.8	9.9
Fort Bend County MUD 26	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 42	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 46	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 47	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 48	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 49	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 5	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County MUD 81	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bend County WCID 2	69	212	352	487	536	555	1.6	4.4	7.0	9.4	10.0	10.0
Fort Bend County WCID 3	0	0	0	0	0	0	0	0	0	0	0	0
Freeport	18	50	79	102	122	136	1.6	4.4	7.1	9.4	11.5	13.3
Friendswood	84	246	397	536	665	784	1.7	4.8	7.7	10.2	12.5	14.6
Fulshear	0	0	0	0	0	0	0	0	0	0	0	0
G & W WSC	0	0	0	0	0	0	0	0	0	0	0	0
Galena Park	10	29	47	64	79	89	0.8	2.3	3.7	5.0	6.0	7.1
Galveston	313	897	1,444	1,943	2,400	2,819	4.9	13.9	22.1	29.5	36.2	42.2

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Galveston County FWSD 6	0	0	0	0	0	0	0	0	0	0	0	0
Galveston County MUD 12	0	0	0	0	0	0	0	0	0	0	0	0
Galveston County WCID 1	48	140	226	305	378	444	1.6	4.6	7.2	9.6	11.9	13.8
Galveston County WCID 12	10	30	48	65	80	94	2.6	7.6	11.9	16.0	19.5	22.8
Galveston County WCID 8	3	9	11	11	11	11	0.6	1.8	2.2	2.2	2.2	2.2
Glendale WSC	0	0	0	0	0	0	0	0	0	0	0	0
Grand Oaks MUD	0	0	0	0	0	0	0	0	0	0	0	0
Green Trails MUD	0	0	0	0	0	0	0	0	0	0	0	0
Greenwood UD	0	0	0	0	0	0	0	0	0	0	0	0
Groveton	2	5	6	8	9	9	2.3	6.2	8.3	12.0	14.8	16.4
Hardin WSC	0	1	1	1	1	1	0	0.2	0.2	0.2	0.2	0.2
Harris County FWSD 10A	3	8	13	17	21	24	1.0	2.6	4.3	5.6	6.9	8.1
Harris County FWSD 27	0	0	0	0	0	0	0	0	0	0	0	0
Harris County FWSD 58	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 106	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 11	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 119	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 122	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 132	12	35	54	54	56	57	1.6	4.6	6.9	6.8	6.9	6.9
Harris County MUD 148	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 151	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 152	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 153	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 154	9	25	40	48	50	50	0.8	2.1	3.3	3.9	4.0	3.9
Harris County MUD 180	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 189	3	5	5	5	6	6	0.7	1.2	1.2	1.2	1.3	1.3
Harris County MUD 216	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 221	3	9	13	13	13	14	0.5	1.4	2.0	2.0	1.9	2.1
Harris County MUD 23	3	9	14	19	23	23	0.7	2.1	3.3	4.4	5.4	5.4

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Harris County MUD 261	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 278	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 290	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 321	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 342	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 344	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 345	9	26	41	56	71	83	2.1	6.0	9.4	12.8	15.6	18.2
Harris County MUD 36	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 361	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 372	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 400	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 412	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 420	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 46	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 49	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 494	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 5	7	20	32	43	54	65	1.0	2.7	4.2	5.6	6.9	8.1
Harris County MUD 50	5	14	23	31	40	48	1.2	3.4	5.4	7.1	8.8	10.3
Harris County MUD 504	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 55	16	47	74	98	121	142	0.9	2.7	4.2	5.7	7.0	8.1
Harris County MUD 58	2	4	6	6	6	6	1.0	1.9	2.9	2.9	2.9	2.9
Harris County MUD 6	2	6	6	6	6	6	0.5	1.4	1.4	1.4	1.4	1.4
Harris County MUD 8	0	0	0	0	0	0	0	0	0	0	0	0
Harris County MUD 96	0	0	0	0	0	0	0	0	0	0	0	0
Harris County UD 14	1	4	4	4	4	4	0.3	1.1	1.1	1.1	1.1	1.1
Harris County UD 15	4	10	16	19	19	20	1.0	2.4	3.8	4.5	4.4	4.6
Harris County WCID 1	14	41	67	91	119	140	1.5	4.2	6.6	8.9	10.9	12.8
Harris County WCID 133	0	0	0	0	0	0	0	0	0	0	0	0
Harris County WCID 156	0	0	0	0	0	0	0	0	0	0	0	0

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Harris County WCID 161	0	0	0	0	0	0	0	0	0	0	0	0
Harris County WCID 50	0	0	0	0	0	0	0	0	0	0	0	0
Harris County WCID 70	1	2	2	2	2	2	0.6	1.2	1.2	1.2	1.2	1.2
Harris County WCID 74	0	0	0	0	0	0	0	0	0	0	0	0
Harris County WCID 89	6	17	27	36	41	41	1.1	3.1	5.0	6.6	7.6	7.6
Harris County WCID 96	0	0	0	0	0	0	0	0	0	0	0	0
Harris County WCID0Fondren Road	1	4	4	4	4	4	0.3	1.2	1.2	1.2	1.2	1.2
Harris-Montgomery Counties MUD 386	9	27	43	58	72	89	3.0	8.6	13.6	18.3	22.5	26.2
Hempstead	0	0	0	0	0	0	0	0	0	0	0	0
High Prairie WSC	0	0	0	0	0	0	0	0	0	0	0	0
Hillcrest Village	2	4	7	9	11	12	2.6	5.4	9.5	12.4	15.6	17.6
Hilltop Lakes WSC	0	0	0	0	0	0	0	0	0	0	0	0
Hilshire Village	0	0	0	0	0	0	0	0	0	0	0	0
Hitchcock	11	32	51	68	85	99	1.3	3.7	6.0	7.9	9.8	11.3
HMW SUD	0	0	0	0	0	0	0	0	0	0	0	0
Houston	4,843	14,216	23,155	31,263	38,198	44,730	1.8	5.2	8.3	11.1	13.6	15.9
Humble	30	89	162	187	193	196	1.1	3.2	5.2	5.6	5.6	5.6
Huntsville	0	0	0	0	0	0	0	0	0	0	0	0
Jacinto City	1	1	1	1	1	1	0.1	0.1	0.1	0.1	0.1	0.1
Jamaica Beach	0	0	0	0	0	0	0	0	0	0	0	0
Jersey Village	0	0	0	0	0	0	0	0	0	0	0	0
Jewett	0	0	0	0	0	0	0	0	0	0	0	0
Johnston Water Utility	0	0	0	0	0	0	0	0	0	0	0	0
Katy	0	0	0	0	0	0	0	0	0	0	0	0
Keenan WSC	0	0	0	0	0	0	0	0	0	0	0	0
Kendleton	0	0	0	0	0	0	0	0	0	0	0	0
Kings Manor MUD	0	0	0	0	0	0	0	0	0	0	0	0
Kirkmont MUD	0	0	0	0	0	0	0	0	0	0	0	0
La Marque	43	129	212	288	358	422	2.0	5.7	9.1	12.1	14.8	17.3

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
La Porte	0	0	0	0	0	0	0	0	0	0	0	0
Lake Bonanza WSC	0	0	0	0	0	0	0	0	0	0	0	0
Lake Conroe Hills MUD	1	5	8	11	14	14	0.5	2.2	3.4	4.6	5.6	5.4
Lake Jackson	53	148	233	304	365	410	1.8	5.0	8.0	10.7	13.1	15.3
Lake Livingston WSC	36	110	182	249	316	384	2.2	6.2	10.0	13.2	16.1	18.9
Lake MUD	0	0	0	0	0	0	0	0	0	0	0	0
Lazy River Improvement District	0	0	0	0	0	0	0	0	0	0	0	0
League City	0	0	0	0	0	0	0	0	0	0	0	0
Leggett WSC	0	0	0	0	0	0	0	0	0	0	0	0
Liberty	18	51	83	113	140	165	2.0	5.5	8.7	11.6	14.2	16.6
Liberty County FWSD 1 Hull	0	0	0	0	0	0	0	0	0	0	0	0
Livingston	42	130	214	298	380	464	5.6	16.1	25.6	34.3	42.0	49.1
Longhorn Town UD	0	0	0	0	0	0	0	0	0	0	0	0
Luce Bayou PUD	1	4	6	8	10	11	2.0	4.1	6.1	8.1	10.1	11.0
Madisonville	14	40	64	85	105	122	2.9	8.3	13.3	17.7	21.9	25.5
Magnolia	0	0	0	0	0	0	0	0	0	0	0	0
Manvel	0	0	0	0	0	0	0	0	0	0	0	0
Mason Creek UD	0	0	0	0	0	0	0	0	0	0	0	0
Meadowcreek MUD	0	0	0	0	0	0	0	0	0	0	0	0
Meadows Place	0	0	0	0	0	0	0	0	0	0	0	0
Memorial Point UD	0	0	0	0	0	0	0	0	0	0	0	0
Memorial Villages Water Authority	0	0	0	0	0	0	0	0	0	0	0	0
Mercy WSC	5	12	19	25	29	34	0.9	2.3	3.7	5.0	5.9	7.1
Missouri City	0	0	0	0	0	0	0	0	0	0	0	0
Mont Belvieu	46	167	278	459	681	953	3.6	10.3	16.4	21.9	26.8	31.3
Montgomery	5	16	27	36	36	37	1.6	3.9	6.3	8.2	8.1	8.2
Montgomery County MUD 105	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 112	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 115	0	0	0	0	0	0	0	0	0	0	0	0

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Montgomery County MUD 119	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 126	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 127	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 137	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 139	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 15	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 18	13	41	67	79	82	84	2.5	7.3	11.5	13.2	13.2	13.1
Montgomery County MUD 19	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 24	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 56	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 8	9	27	45	62	74	77	1.9	5.6	9.1	12.1	14.0	14.1
Montgomery County MUD 83	4	11	18	25	31	38	1.6	4.3	6.8	9.1	11.0	13.0
Montgomery County MUD 84	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 88	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 89	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 9	15	45	74	103	123	127	2.7	8.0	12.7	17.1	19.7	19.7
Montgomery County MUD 94	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 95	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 98	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County MUD 99	2	8	14	20	25	25	1.2	4.3	6.5	8.9	10.2	10.1
Montgomery County UD 2	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery County UD 3	5	16	24	25	25	26	2.0	6.1	8.8	8.8	8.5	8.5
Montgomery County UD 4	7	20	29	30	32	33	1.8	5.0	7.0	7.0	7.2	7.1
Montgomery County WCID 1	0	0	0	0	0	0	0	0	0	0	0	0
Morgans Point	0	0	0	0	0	0	0	0	0	0	0	0
Moscow WSC	0	0	0	0	0	0	0	0	0	0	0	0
Mount Houston Road MUD	0	0	0	0	0	0	0	0	0	0	0	0
MSEC Enterprises	0	0	0	0	0	0	0	0	0	0	0	0
Nassau Bay	11	31	49	65	80	80	1.8	5.1	8.0	10.5	12.9	13.0

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Needville	0	0	0	0	0	0	0	0	0	0	0	0
New Caney MUD	13	44	80	113	122	127	0.7	1.8	2.9	3.7	3.7	3.7
New Waverly	0	0	0	0	0	0	0	0	0	0	0	0
Newport MUD	0	0	0	0	0	0	0	0	0	0	0	0
Nitsch and Son Utility	0	0	0	0	0	0	0	0	0	0	0	0
Normangee	0	0	0	0	0	0	0	0	0	0	0	0
North Belt UD	0	0	0	0	0	0	0	0	0	0	0	0
North Channel Water Authority	117	345	578	794	976	1,148	0.9	2.7	4.2	5.6	6.9	8.1
North Forest MUD	0	0	0	0	0	0	0	0	0	0	0	0
North Fort Bend Water Authority	495	1,585	2,718	3,861	4,113	4,297	1.3	3.6	5.8	7.7	7.8	7.9
North Green MUD	0	0	0	0	0	0	0	0	0	0	0	0
North Harris County Regional Water Auth.	0	0	0	0	0	0	0	0	0	0	0	0
North Zulch MUD	3	9	15	20	25	29	1.3	4.0	6.7	8.9	11.2	12.9
Northeast Harris County MUD 1	3	9	14	19	24	29	5.3	15.8	24.6	33.3	41.9	48.3
Northwest Harris County MUD 16	0	0	0	0	0	0	0	0	0	0	0	0
Oak Hollow Utility	0	0	0	0	0	0	0	0	0	0	0	0
Oak Ridge North	10	35	59	88	108	126	2.8	8.3	13.3	17.7	21.9	25.5
Onalaska WSC	0	0	0	0	0	0	0	0	0	0	0	0
One Five O WSC	3	9	15	19	23	26	1.1	3.4	5.8	7.4	9.1	10.5
Oyster Creek	6	17	27	35	42	46	4.4	12.6	20.1	27.0	33.8	39.0
P B & S C WSC	0	0	0	0	0	0	0	0	0	0	0	0
Palmer Plantation MUD 1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.4
Palmer Plantation MUD 2	1	1	1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3
Panorama Village	4	12	17	18	18	19	1.2	3.5	4.8	4.9	4.8	4.9
Parkway MUD	0	0	0	0	0	0	0	0	0	0	0	0
Pasadena	0	0	0	0	0	0	0	0	0	0	0	0
Pattison WSC	5	14	23	32	40	48	3.0	8.3	13.0	17.6	21.4	25.2
Patton Village	0	0	0	0	0	0	0	0	0	0	0	0
Pearland	158	500	824	1,142	1,332	1,353	0.9	2.6	4.2	5.6	6.3	6.3

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Pecan Grove MUD 1	16	50	61	62	62	63	1.1	3.2	3.8	3.8	3.7	3.7
Pennington WSC	0	0	0	0	0	0	0	0	0	0	0	0
Phelps SUD	0	0	0	0	0	0	0	0	0	0	0	0
Pine Village PUD	0	0	0	0	0	0	0	0	0	0	0	0
Pinehurst Decker Prairie WSC	2	8	15	24	32	39	1.2	3.8	5.9	7.9	9.8	11.4
Pinewood Community	0	0	0	0	0	0	0	0	0	0	0	0
Plantation MUD	1	1	1	1	1	1	0.2	0.2	0.2	0.2	0.2	0.2
Point Aquarius MUD	0	0	0	0	0	0	0	0	0	0	0	0
Porter SUD	0	0	0	0	0	0	0	0	0	0	0	0
Prairie View	0	0	0	0	0	0	0	0	0	0	0	0
Prairie View A&M University	0	0	0	0	0	0	0	0	0	0	0	0
Providence WSC	0	0	0	0	0	0	0	0	0	0	0	0
Quadvest	0	0	0	0	0	0	0	0	0	0	0	0
Quail Valley UD	14	40	64	91	107	111	1.1	3.0	4.8	6.4	7.3	7.4
Ranch Crest Water	0	0	0	0	0	0	0	0	0	0	0	0
Rayford Road MUD	0	0	0	0	0	0	0	0	0	0	0	0
Raywood WSC	2	5	9	12	16	20	2.5	6.3	11.3	14.7	18.2	20.5
Richmond	0	0	0	0	0	0	0	0	0	0	0	0
Richwood	0	0	0	0	0	0	0	0	0	0	0	0
River Plantation MUD	0	0	0	0	0	0	0	0	0	0	0	0
Riverside SUD	8	24	41	59	79	101	1.4	3.9	6.1	8.1	10.1	11.8
Rolling Fork PUD	0	0	0	0	0	0	0	0	0	0	0	0
Roman Forest Consolidated MUD	2	8	17	29	39	46	1.1	3.3	5.5	7.3	8.8	10.4
Rosenberg	53	185	344	506	663	818	0.9	2.5	4.0	5.3	6.5	7.6
Royal Valley Utilities	0	0	0	0	0	0	0	0	0	0	0	0
Sagemeadow UD	0	0	0	0	0	0	0	0	0	0	0	0
San Jacinto SUD	0	0	0	0	0	0	0	0	0	0	0	0
San Leon MUD	0	0	0	0	0	0	0	0	0	0	0	0
Seabrook	0	0	0	0	0	0	0	0	0	0	0	0

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Sealy	0	0	0	0	0	0	0	0	0	0	0	0
Sedona Lakes MUD 1	0	0	0	0	0	0	0	0	0	0	0	0
Sequoia Improvement District	2	4	7	9	11	13	2.0	4.0	7.0	9.0	11.1	13.1
Shenandoah	14	48	79	82	83	83	2.4	6.9	10.9	10.9	10.9	10.9
Shepherd	0	0	0	0	0	0	0	0	0	0	0	0
Shoreacres	8	23	37	50	62	72	4.7	13.4	21.4	28.9	35.6	41.2
Sienna Plantation	0	0	0	0	0	0	0	0	0	0	0	0
Soda WSC	3	10	16	24	30	37	1.3	4.1	6.3	9.1	10.9	12.9
South Cleveland WSC	3	7	9	11	14	16	0.4	0.5	0.5	0.5	0.5	0.5
South Houston	0	0	0	0	0	0	0	0	0	0	0	0
Southeast WSC	0	0	0	0	0	0	0	0	0	0	0	0
Southern Montgomery County MUD	0	0	0	0	0	0	0	0	0	0	0	0
Southern Water	3	8	10	10	10	10	0.6	1.5	1.7	1.7	1.7	1.7
Southside Place	2	5	9	10	10	10	0.9	2.3	4.1	4.6	4.7	4.8
Southwest Harris County MUD 1	0	0	0	0	0	0	0	0	0	0	0	0
Splendora	14	50	100	169	243	289	1.1	3.0	4.7	6.3	7.8	9.1
Spring Creek UD	0	0	0	0	0	0	0	0	0	0	0	0
Spring Meadows MUD	0	0	0	0	0	0	0	0	0	0	0	0
Spring Valley	8	24	38	51	54	54	1.7	4.8	7.6	10.2	10.9	11.0
Stanley Lake MUD	0	0	0	0	0	0	0	0	0	0	0	0
Suburban Utility	7	20	40	56	70	82	1.0	2.8	4.4	5.8	7.1	8.3
Sugar Land	0	0	0	0	0	0	0	0	0	0	0	0
Sunbelt FWSD	21	62	100	135	164	175	0.7	2.0	3.2	4.2	5.2	5.5
Surfside Beach	0	0	0	0	0	0	0	0	0	0	0	0
Sweeny	0	0	0	0	0	0	0	0	0	0	0	0
T & W Water Service	0	0	0	0	0	0	0	0	0	0	0	0
Tarkington SUD	3	8	8	9	9	9	0.5	1.3	1.2	1.4	1.3	1.3
TDCJ Darrington Unit	0	0	0	0	0	0	0	0	0	0	0	0
TDCJ Ferguson Unit	0	0	0	0	0	0	0	0	0	0	0	0

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
TDCJ Jester Units	0	0	0	0	0	0	0	0	0	0	0	0
TDCJ Ramsey Area	0	0	0	0	0	0	0	0	0	0	0	0
Tempe WSC 1	0	0	0	0	0	0	0	0	0	0	0	0
Texas City	56	165	269	366	407	411	0.9	2.5	3.9	5.2	5.7	5.7
The Commons Water Supply	4	12	20	26	32	36	1.2	3.6	6.0	7.8	9.6	10.8
The Woodlands	169	505	822	1,108	1,207	1,332	1.5	4.3	6.8	9.0	9.5	9.5
Thunderbird UD	0	0	0	0	0	0	0	0	0	0	0	0
Tomball	29	89	161	226	242	248	1.6	4.4	7.0	9.3	9.3	9.3
Trail of the Lakes MUD	0	0	0	0	0	0	0	0	0	0	0	0
Trinity	0	0	0	0	0	0	0	0	0	0	0	0
Trinity Bay Conservation District	27	80	139	194	254	316	2.9	7.7	12.4	16.5	20.4	23.6
Trinity Rural WSC	0	0	0	0	0	0	0	0	0	0	0	0
Valley Ranch MUD 1	0	0	0	0	0	0	0	0	0	0	0	0
Varner Creek UD	0	0	0	0	0	0	0	0	0	0	0	0
Walker County SUD	0	0	0	0	0	0	0	0	0	0	0	0
Waller	0	0	0	0	0	0	0	0	0	0	0	0
Wallis	0	0	0	0	0	0	0	0	0	0	0	0
Waterwood MUD 1	0	0	0	0	0	0	0	0	0	0	0	0
Webster	28	82	130	174	215	250	2.2	6.3	9.9	13.2	16.3	19.0
West Columbia	3	3	3	3	3	3	0.6	0.6	0.6	0.6	0.7	0.7
West End WSC	2	7	12	15	19	22	0.8	2.8	4.9	6.2	7.8	9.1
West Hardin WSC	0	0	0	0	0	0	0	0	0	0	0	0
West Harris County MUD 6	0	0	0	0	0	0	0	0	0	0	0	0
West Harris County Regional Water Auth.	0	0	0	0	0	0	0	0	0	0	0	0
West University Place	15	24	24	24	23	23	0.9	1.4	1.4	1.4	1.3	1.4
Westfield Garden Park	0	0	0	0	0	0	0	0	0	0	0	0
Westwood North WSC	0	0	0	0	0	0	0	0	0	0	0	0
Westwood Shores MUD	1	2	4	5	5	6	1.1	2.4	5.2	6.8	7.1	9.0
White Oak WSC	0	0	0	0	0	0	0	0	0	0	0	0

Water User Group	Water Loss Reduction Savings (ac ft/yr)						Water Loss Reduction Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Willis	9	26	44	62	80	96	1.2	3.3	5.2	7.0	8.7	10.1
Willow Creek Farms MUD	1	1	1	1	1	1	0.2	0.2	0.2	0.2	0.2	0.2
Windfern Forest Utility District	0	0	0	0	0	0	0	0	0	0	0	0
Wood Branch Village	0	0	0	0	0	0	0	0	0	0	0	0
Wood Trace MUD 1	0	0	0	0	0	0	0	0	0	0	0	0
Woodcreek MUD	0	0	0	0	0	0	0	0	0	0	0	0
Woodcreek Water of Liberty	0	0	0	0	0	0	0	0	0	0	0	0
Woodland Oaks Utility	0	0	0	0	0	0	0	0	0	0	0	0
Woodridge MUD	0	0	0	0	0	0	0	0	0	0	0	0

1. Vaues reflect recommended conservation using the Region H Water Loss methodology. The primary interregional split of this WUG is located in Region I, and loss allocations for the WUG are made by Region I in the TWDB DB27 database. Values shown in the table for this WUG may therefore vary slightly from the data in DB27.

APPENDIX 5B-B

ADVANCED CONSERVATION SAVINGS FOR MUNICIPAL WUGS

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Table 5B-B1 – Advanced Conservation Savings for Municipal WUGs

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Alvin	104	203	239	279	300	355	3.5	6.6	7.3	8.5	9.2	10.9
Ames Minglewood WSC	5	8	8	10	11	13	3.7	5.9	5.9	7.4	7.7	8.6
Anahuac	8	12	13	15	17	20	3.6	5.4	5.8	6.7	7.2	8.4
Angleton	70	146	165	187	197	231	3.2	6.8	7.7	9.0	9.7	11.8
Austin County WSC	11	18	21	25	27	31	4.2	6.0	6.4	7.4	7.8	8.8
Bacliff MUD	27	48	54	62	68	82	2.7	4.6	5.0	5.7	6.2	7.4
Baker Road MUD	7	9	10	10	11	13	6.2	7.8	8.7	8.7	8.9	10.1
Baybrook MUD 1	7	11	13	14	12	13	2.7	4.0	4.6	5.0	4.1	4.3
Baytown	429	984	1,219	1,444	1,547	1,773	3.6	7.1	8.3	9.5	10.2	11.6
Bayview MUD	5	9	11	13	14	17	3.1	5.2	6.1	7.1	7.5	9.1
Bellaire	116	210	248	296	340	399	5.8	10.4	12.2	14.6	17.0	20.1
Bellville	33	54	64	67	64	66	6.8	11.0	12.6	13.0	12.3	12.5
Blaketree MUD 1 of Montgomery County	0	6	11	16	17	18	0.0	20.2	21.1	28.1	29.8	31.6
Blue Bell Manor Utility	13	19	21	24	25	29	3.0	4.4	4.7	5.3	5.6	6.5
Blue Ridge West MUD	29	43	47	55	60	71	3.6	5.3	5.7	6.3	6.7	7.8
Bolivar Peninsula SUD	52	90	102	114	119	134	15.5	26.6	30.0	33.4	34.8	39.1
Brazoria	13	21	23	26	27	32	4.1	6.7	7.3	8.4	8.9	11.0
Brazoria County FWSD 1	3	5	5	6	6	8	3.3	4.9	4.9	5.9	5.9	7.8
Brazoria County MUD 2	37	46	50	54	57	61	8.6	10.1	10.7	11.0	11.5	12.3
Brazoria County MUD 21	22	33	36	40	42	46	4.1	6.0	6.6	7.3	7.6	8.4
Brazoria County MUD 22	15	30	36	37	34	36	4.8	9.4	11.3	11.6	10.1	10.4
Brazoria County MUD 25	12	18	20	22	24	28	2.5	3.6	4.0	4.4	4.7	5.4
Brazoria County MUD 29	15	26	30	34	37	45	3.1	5.0	5.8	6.5	6.9	8.2
Brazoria County MUD 3	20	28	31	35	38	44	4.3	5.8	6.4	7.0	7.4	8.4
Brazoria County MUD 31	25	34	36	39	41	45	6.8	9.3	9.9	10.7	11.3	12.6

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Brazoria County MUD 39	17	22	23	26	28	31	9.0	10.6	11.1	11.8	12.2	13.3
Brazoria County MUD 55	14	22	24	26	27	30	7.0	11.0	12.2	13.3	14.0	16.0
Brazoria County MUD 6	38	50	55	59	62	68	4.7	5.8	6.3	6.5	6.7	7.3
Brookshire MWD	26	44	50	54	55	63	4.1	6.7	7.6	8.1	7.6	8.1
Buffalo	12	20	22	22	20	21	6.8	12.0	14.1	14.7	14.1	15.7
Bunker Hill Village	40	50	53	56	58	61	9.1	10.8	11.4	12.1	12.5	13.2
C C Water Works	8	15	23	32	43	59	3.0	3.9	4.4	4.8	5.3	6.0
Cape Royale UD	7	11	12	13	14	15	10.7	16.9	19.0	21.2	23.5	26.1
Centerville	6	13	15	15	14	14	6.1	13.5	15.8	16.0	15.2	15.6
Central Harris County Regional Water Auth.	175	329	368	430	482	594	2.8	5.3	5.8	6.7	7.4	8.9
Chambers County MUD 1	13	20	23	28	33	41	2.2	3.1	3.3	3.7	4.0	4.6
Chateau Woods MUD	12	23	27	32	35	42	3.5	5.0	5.8	6.7	7.2	8.4
Chimney Hill MUD	18	28	30	34	36	43	3.0	4.7	5.1	5.8	6.1	7.3
Clear Brook City MUD	70	133	147	170	188	229	3.1	5.8	6.4	7.4	8.1	9.9
Clear Lake City Water Authority	340	639	803	1,012	1,230	1,500	4.7	8.7	10.8	13.6	16.4	20.3
Cleveland	43	74	100	160	207	272	4.8	7.4	8.9	13.0	15.4	18.7
Clute	50	104	98	98	95	96	4.4	9.3	8.8	9.1	9.1	9.6
Concord0Robbins WSC	10	16	15	14	13	13	5.0	9.3	10.9	11.8	13.4	18.0
Conroe	476	1,019	1,723	2,401	2,834	3,571	4.3	7.6	10.3	11.9	12.7	14.7
Conroe Resort Utilities	5	9	12	14	13	15	5.9	10.0	12.2	13.1	11.3	12.2
Corinthian Point MUD 2	5	7	9	11	12	13	7.1	9.1	9.9	11.5	12.1	12.6
Country Terrace Water	6	10	11	13	14	17	3.9	6.5	7.1	8.4	9.1	11.1
County-Other, Austin	70	123	138	159	174	209	4.2	7.1	7.9	9.1	9.9	11.8
County-Other, Brazoria	473	762	893	1,049	1,174	1,418	4.2	6.3	6.8	7.8	8.4	9.7
County-Other, Chambers	75	142	223	327	440	617	2.7	3.5	3.7	4.1	4.4	5.1
County-Other, Fort Bend	560	1,376	2,344	3,526	4,759	6,630	3.9	5.3	5.9	6.9	7.6	9.0

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
County-Other, Galveston	95	149	168	194	212	249	3.3	4.9	5.3	6.0	6.4	7.5
County-Other, Harris	788	1,249	1,484	1,732	1,905	2,211	3.2	4.2	4.5	5.0	5.4	6.2
County-Other, Leon	11	17	15	13	12	10	3.2	5.9	6.8	7.0	8.6	11.6
County-Other, Liberty	241	488	699	1,001	1,320	1,838	3.9	5.9	6.5	7.4	8.1	9.6
County-Other, Madison	15	22	25	28	31	37	4.4	6.0	6.6	7.2	7.6	8.8
County-Other, Montgomery	791	1,480	2,023	2,662	3,202	4,007	3.3	4.7	5.1	5.8	6.4	7.5
County-Other, Polk	46	70	78	89	99	117	2.5	3.6	3.9	4.3	4.6	5.3
County-Other, San Jacinto	33	46	48	51	53	58	2.6	3.7	4.0	4.4	4.7	5.3
County-Other, Trinity	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
County-Other, Walker	62	81	82	81	75	73	4.8	6.6	7.0	7.9	8.4	9.7
County-Other, Waller	94	170	248	373	519	747	3.5	5.0	5.2	5.8	6.4	7.4
Crosby MUD	33	57	67	72	72	76	4.3	6.7	7.8	8.1	7.6	8.0
Cut & Shoot	35	83	112	150	185	240	3.0	5.7	6.5	7.6	8.5	10.7
Daisetta	4	6	6	7	8	9	3.8	5.8	5.8	6.7	7.7	8.6
Danbury	6	10	11	12	13	15	3.2	5.3	5.8	6.4	7.1	8.4
Dayton	80	161	219	291	364	462	5.6	9.0	10.7	12.5	14.4	16.8
Deer Park	179	362	450	557	665	806	4.6	9.2	11.3	14.0	16.6	20.2
Devers	4	5	5	6	6	7	6.6	8.2	8.2	9.9	9.8	11.4
Dobbin Plantersville WSC	22	50	91	124	140	147	2.0	2.8	3.7	4.2	4.3	4.2
Dodge Oakhurst WSC	10	17	23	31	41	56	2.8	4.2	4.6	4.9	5.3	6.1
Domestic Water	5	8	10	12	14	17	3.2	5.1	6.2	6.8	7.3	8.7
Douglas Utility	7	8	8	9	9	10	2.9	3.3	3.2	3.6	3.7	4.0
East Montgomery County MUD 6	9	14	16	22	27	33	3.7	5.5	5.5	6.2	6.7	8.3
East Plantation UD	7	9	13	17	19	21	5.3	6.7	6.8	7.7	8.8	9.6
El Dorado UD	12	18	20	23	26	30	3.2	4.6	4.8	5.4	6.0	6.8
Far Hills UD	9	16	21	25	29	34	6.8	9.5	10.8	11.8	12.7	14.3

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
First Colony MUD 9	39	57	64	73	79	90	4.5	6.4	6.9	7.5	7.7	8.5
Flo Community WSC	14	21	23	25	26	30	4.1	6.3	7.2	8.0	8.5	10.1
Forest Hills MUD	9	13	14	16	17	20	2.7	4.0	4.3	4.9	5.2	6.2
Fort Bend County FWSD 1	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Fort Bend County FWSD 2	16	24	27	32	36	47	1.9	2.7	2.8	3.2	3.4	4.2
Fort Bend County MUD 115	16	20	24	25	26	27	9.6	11.9	13.0	13.3	13.4	13.6
Fort Bend County MUD 116	26	40	44	49	51	57	5.5	7.3	8.0	8.8	9.0	9.9
Fort Bend County MUD 121	14	20	22	24	26	30	3.3	4.7	5.2	5.6	6.1	7.0
Fort Bend County MUD 128	71	120	144	175	210	256	5.6	9.3	11.1	13.5	15.9	18.9
Fort Bend County MUD 129	33	43	46	50	53	60	5.5	7.1	7.5	8.0	8.3	9.0
Fort Bend County MUD 131	10	18	21	24	29	36	5.8	9.8	10.9	12.2	12.9	15.1
Fort Bend County MUD 140	12	17	18	20	23	28	4.7	6.7	7.0	7.8	7.9	8.7
Fort Bend County MUD 149	39	47	51	54	57	62	6.8	8.1	8.6	9.0	9.5	10.2
Fort Bend County MUD 152	20	28	30	34	37	42	5.1	7.2	7.6	8.3	8.6	9.7
Fort Bend County MUD 155	19	30	39	50	59	70	4.1	5.4	5.7	6.4	6.9	7.7
Fort Bend County MUD 158	12	18	22	26	30	35	4.4	5.9	6.3	6.7	7.2	8.0
Fort Bend County MUD 162	9	14	16	20	25	34	2.8	4.4	4.6	5.3	5.3	6.6
Fort Bend County MUD 23	57	112	125	147	165	202	3.5	6.6	7.4	8.6	9.6	11.7
Fort Bend County MUD 24	10	17	19	21	23	27	3.0	4.6	5.1	5.7	6.2	7.3
Fort Bend County MUD 25	73	136	167	206	247	300	5.1	9.3	11.2	13.8	16.4	19.7
Fort Bend County MUD 26	20	31	35	41	46	55	3.2	4.8	5.2	5.8	6.3	7.4
Fort Bend County MUD 42	20	30	34	37	40	45	4.7	6.7	7.4	7.9	8.3	9.1
Fort Bend County MUD 46	17	25	29	32	32	34	6.1	8.2	8.9	9.6	9.6	10.1
Fort Bend County MUD 47	10	17	18	21	22	27	3.6	6.2	6.5	7.6	8.0	9.2
Fort Bend County MUD 48	16	24	27	31	35	42	3.4	5.1	5.7	6.1	6.8	8.0
Fort Bend County MUD 49	5	7	8	9	10	12	5.1	6.9	7.9	8.9	8.9	10.7

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Fort Bend County MUD 5	12	21	26	31	34	41	2.7	4.2	4.6	5.3	5.7	6.9
Fort Bend County MUD 81	37	44	64	84	98	112	12.9	15.3	15.2	16.3	17.3	18.5
Fort Bend County WCID 2	250	485	655	843	1,032	1,287	5.7	10.1	13.1	16.3	19.3	23.2
Fort Bend County WCID 3	8	10	10	10	11	12	11.6	14.4	14.4	14.4	14.7	15.3
Freeport	49	103	119	105	98	99	4.2	9.1	10.7	9.6	9.2	9.7
Friendswood	242	474	588	729	873	1,061	4.9	9.3	11.4	13.9	16.5	19.8
Fulshear	138	374	533	684	840	1,043	4.8	7.9	11.0	13.8	16.4	19.9
G & W WSC	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Galena Park	31	61	62	63	63	61	2.5	4.9	4.9	4.9	4.8	4.9
Galveston	531	989	1,180	1,371	1,480	1,722	8.3	15.3	18.1	20.8	22.3	25.8
Galveston County FWSD 6	9	15	17	19	20	23	7.3	12.1	13.7	15.3	16.1	18.5
Galveston County MUD 12	14	23	25	28	31	35	5.4	8.9	9.7	10.9	12.0	13.6
Galveston County WCID 1	99	201	232	271	296	360	3.3	6.5	7.4	8.6	9.3	11.2
Galveston County WCID 12	23	36	42	44	42	44	6.0	9.1	10.4	10.8	10.3	10.7
Galveston County WCID 8	18	31	35	40	44	52	3.8	6.3	7.0	8.0	8.8	10.3
Glendale WSC	4	6	6	7	7	7	6.7	10.7	11.5	14.1	14.8	15.7
Grand Oaks MUD	5	8	9	10	12	14	3.9	5.9	6.5	7.2	8.4	9.6
Green Trails MUD	15	21	23	24	25	27	6.8	9.3	10.2	10.6	10.8	11.5
Greenwood UD	27	47	47	47	46	46	2.4	4.2	4.2	4.2	4.1	4.1
Groveton	3	5	6	6	5	6	6.0	10.7	13.7	14.2	12.4	15.6
Hardin WSC	18	29	32	37	41	50	3.8	6.1	6.5	7.4	7.9	9.2
Harris County FWSD 10A	8	13	14	16	17	20	2.7	4.3	4.6	5.3	5.6	6.7
Harris County FWSD 27	9	15	17	20	24	28	2.7	3.8	4.1	4.7	4.9	6.0
Harris County FWSD 58	11	16	18	19	21	23	5.9	8.6	9.6	10.2	11.2	12.3
Harris County MUD 106	19	28	31	35	39	44	3.8	5.5	5.9	6.5	7.0	7.8
Harris County MUD 11	12	19	20	23	24	28	2.9	4.6	4.8	5.5	5.8	6.8

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Harris County MUD 119	22	31	34	37	40	45	2.9	4.0	4.4	4.8	5.2	5.8
Harris County MUD 122	4	7	8	9	9	11	2.6	4.5	5.1	5.8	5.7	6.6
Harris County MUD 132	47	64	71	76	79	85	6.4	8.5	9.1	9.6	9.7	10.3
Harris County MUD 148	20	33	39	46	51	60	2.9	4.6	5.0	5.6	6.2	7.3
Harris County MUD 151	33	47	51	57	62	70	4.4	6.1	6.5	7.2	7.5	8.4
Harris County MUD 152	31	46	52	58	65	76	3.2	4.7	5.1	5.7	6.1	7.1
Harris County MUD 153	44	70	80	86	88	96	4.4	6.8	7.6	8.1	8.0	8.7
Harris County MUD 154	40	70	78	91	102	124	3.4	5.9	6.4	7.5	8.1	9.8
Harris County MUD 180	17	27	30	34	37	44	2.5	3.8	4.2	4.8	5.1	5.9
Harris County MUD 189	12	16	17	18	19	21	2.9	3.8	4.0	4.1	4.2	4.5
Harris County MUD 216	10	13	13	14	13	14	3.6	4.6	4.6	5.0	4.6	5.0
Harris County MUD 221	16	23	25	28	31	36	2.5	3.6	3.8	4.3	4.6	5.3
Harris County MUD 23	13	20	21	24	26	30	3.0	4.7	4.9	5.6	6.1	7.1
Harris County MUD 261	8	11	12	13	14	15	6.8	9.0	9.6	10.3	11.1	11.9
Harris County MUD 278	33	53	65	102	119	147	3.0	4.7	5.4	8.3	9.6	11.8
Harris County MUD 290	35	54	66	100	116	142	3.2	4.9	5.6	8.3	9.4	11.3
Harris County MUD 321	5	7	9	9	8	7	3.6	4.6	5.7	5.7	5.1	4.5
Harris County MUD 342	19	26	32	38	41	45	4.0	5.4	5.5	6.0	6.4	7.0
Harris County MUD 344	28	42	46	49	51	55	5.6	6.9	7.6	8.1	8.4	9.0
Harris County MUD 345	25	33	35	38	42	46	5.8	7.6	8.1	8.7	9.2	10.1
Harris County MUD 36	15	25	36	41	38	36	7.2	11.5	12.1	12.4	11.4	10.5
Harris County MUD 361	20	31	35	40	44	52	3.7	5.6	6.0	6.8	7.2	8.5
Harris County MUD 372	19	25	27	29	31	34	6.6	8.2	8.8	9.5	9.8	10.4
Harris County MUD 400	56	124	167	241	272	328	5.3	11.5	14.6	20.6	22.6	26.9
Harris County MUD 412	25	36	43	49	52	58	5.2	7.3	7.6	8.3	8.6	9.5
Harris County MUD 420	5	8	9	10	11	13	2.6	4.2	4.5	5.0	5.6	6.6

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Harris County MUD 46	19	26	28	30	31	34	3.7	5.1	5.5	5.9	6.1	6.7
Harris County MUD 49	28	45	51	59	65	77	2.8	4.4	4.8	5.4	5.9	7.0
Harris County MUD 494	13	22	25	29	33	39	4.0	6.7	7.1	8.1	8.9	10.4
Harris County MUD 5	18	28	32	36	40	48	2.4	3.7	4.2	4.7	5.1	6.0
Harris County MUD 50	15	23	26	30	34	41	3.7	5.6	6.1	6.9	7.5	8.8
Harris County MUD 504	13	19	21	23	25	29	2.8	4.2	4.6	5.0	5.4	6.3
Harris County MUD 55	53	102	113	131	145	177	3.0	5.8	6.5	7.6	8.3	10.1
Harris County MUD 58	6	8	9	10	10	11	2.9	3.9	4.4	4.8	4.8	5.3
Harris County MUD 6	13	20	22	25	26	31	3.1	4.8	5.2	5.9	6.2	7.5
Harris County MUD 8	13	18	21	23	25	28	2.3	3.1	3.4	3.6	4.0	4.5
Harris County MUD 96	24	38	44	51	56	66	2.5	4.0	4.3	4.8	5.3	6.2
Harris County UD 14	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Harris County UD 15	15	21	23	25	26	29	3.6	5.0	5.5	5.9	6.0	6.6
Harris County WCID 1	37	56	64	71	76	86	3.9	5.8	6.3	6.9	7.0	7.8
Harris County WCID 133	20	29	31	35	37	42	2.9	4.1	4.4	4.9	5.2	5.9
Harris County WCID 156	5	6	7	7	8	8	5.5	6.6	7.7	7.7	8.8	8.8
Harris County WCID 161	6	8	9	10	10	12	3.8	5.1	5.7	6.3	6.4	7.8
Harris County WCID 50	11	17	18	20	22	25	3.1	4.8	5.0	5.6	6.2	7.1
Harris County WCID 70	8	13	14	15	16	18	4.7	7.7	8.3	8.9	9.4	10.6
Harris County WCID 74	19	26	29	32	34	39	3.0	4.0	4.3	4.8	5.1	5.9
Harris County WCID 89	28	45	49	55	58	66	5.2	8.3	9.0	10.2	10.8	12.3
Harris County WCID 96	40	54	63	72	75	82	4.3	5.7	5.9	6.5	6.9	7.5
Harris County WCID0Fondren Road	9	14	16	18	19	23	2.8	4.3	4.9	5.5	5.8	7.1
Harris-Montgomery Counties MUD 386	12	19	20	23	24	29	4.0	6.0	6.3	7.3	7.5	8.6
Hempstead	36	56	63	67	67	71	4.8	7.3	8.2	8.7	8.7	9.2
High Prairie WSC	8	11	12	13	14	16	3.9	5.2	5.5	5.9	6.3	7.0

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Hillcrest Village	3	5	5	5	6	6	3.9	6.7	6.8	6.9	8.5	8.8
Hilltop Lakes WSC	9	17	22	28	32	38	5.3	8.2	8.7	10.1	10.5	11.2
Hilshire Village	6	8	8	9	9	10	6.6	8.8	8.8	9.9	10.0	11.2
Hitchcock	26	41	45	50	55	65	3.1	4.8	5.3	5.8	6.3	7.4
HMW SUD	44	84	133	175	204	259	4.0	6.8	9.6	11.8	13.1	16.0
Houston	12,751	24,218	28,497	33,471	35,467	40,720	4.8	8.9	10.2	11.9	12.7	14.5
Humble	132	278	386	501	598	733	5.0	10.1	12.3	15.1	17.4	21.0
Huntsville	297	631	899	1,248	1,648	2,254	4.5	8.7	10.9	13.2	15.2	18.3
Jacinto City	15	9	9	10	10	9	1.4	0.8	0.8	0.9	0.9	0.8
Jamaica Beach	12	19	21	23	25	29	9.9	15.6	17.3	18.9	20.5	23.8
Jersey Village	51	78	88	95	107	196	4.9	7.2	8.1	8.7	9.5	16.8
Jewett	3	5	4	3	0	0	4.8	11.1	12.2	12.9	0.0	0.0
Johnston Water Utility	26	42	53	62	70	79	8.1	9.0	9.6	10.1	10.6	11.3
Katy	188	404	552	698	829	1,014	6.2	10.1	12.3	14.6	16.2	18.9
Keenan WSC	4	8	12	16	20	25	3.2	4.6	5.0	5.9	6.8	8.0
Kendleton	3	18	25	29	32	37	9.3	10.2	14.2	16.5	17.4	19.6
Kings Manor MUD	17	24	27	30	32	37	3.8	5.3	5.8	6.4	6.7	7.6
Kirkmont MUD	12	17	18	19	21	23	4.3	6.0	6.4	6.8	7.5	8.2
La Marque	113	208	255	308	359	427	5.3	9.2	10.9	12.9	14.9	17.5
La Porte	174	401	525	659	778	943	4.4	9.4	12.2	15.2	18.6	22.0
Lake Bonanza WSC	8	16	21	27	31	39	2.9	4.8	5.3	6.2	6.6	7.9
Lake Conroe Hills MUD	7	14	16	19	21	26	3.7	6.2	6.9	7.9	8.4	10.1
Lake Jackson	156	299	370	455	538	641	5.2	10.2	12.7	16.0	19.4	23.9
Lake Livingston WSC	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Lake MUD	25	40	45	51	57	69	2.6	4.0	4.4	5.0	5.3	6.4
Lazy River Improvement District	7	11	12	13	14	16	5.5	8.1	8.5	8.8	9.1	9.9

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
League City	535	1,195	1,379	1,590	1,706	1,956	3.9	8.4	9.4	10.7	11.3	12.9
Leggett WSC	8	14	16	18	18	21	4.3	7.0	7.7	8.3	8.0	9.0
Liberty	43	70	82	87	84	88	4.7	7.5	8.6	8.9	8.5	8.9
Liberty County FWSD 1 Hull	3	5	5	6	6	7	5.5	9.2	9.2	11.0	11.0	12.9
Livingston	67	99	115	123	120	127	9.0	12.3	13.8	14.2	13.3	13.4
Longhorn Town UD	11	15	16	17	17	18	5.1	6.9	7.4	7.9	7.9	8.1
Luce Bayou PUD	0	5	7	7	8	9	0.0	5.1	7.1	7.0	8.1	9.0
Madisonville	25	41	47	49	47	49	5.2	8.5	9.8	10.2	9.8	10.2
Magnolia	20	38	50	57	57	61	5.6	9.0	10.1	11.0	10.7	11.0
Manvel	32	74	123	224	298	394	4.7	7.0	8.7	14.4	17.4	21.3
Mason Creek UD	39	55	59	64	68	75	4.7	6.5	7.0	7.6	7.9	8.5
Meadowcreek MUD	9	14	16	18	20	22	4.7	7.2	8.0	8.8	9.7	10.5
Meadows Place	24	35	39	45	49	56	4.3	6.1	6.5	7.0	7.4	8.2
Memorial Point UD	5	7	8	10	10	12	5.9	7.6	8.3	10.0	9.6	11.0
Memorial Villages Water Authority	148	211	251	297	329	376	11.8	16.6	18.3	21.0	23.6	27.0
Mercy WSC	12	17	18	19	20	22	2.3	3.2	3.5	3.8	4.1	4.6
Missouri City	47	82	128	169	209	261	4.2	6.3	9.1	11.7	13.8	16.8
Mont Belvieu	126	235	295	388	492	657	9.9	14.5	17.4	18.5	19.4	21.6
Montgomery	21	42	52	58	58	62	6.6	10.3	12.2	13.3	13.0	13.7
Montgomery County MUD 105	6	9	10	11	13	14	4.4	6.2	6.5	6.9	7.7	8.0
Montgomery County MUD 112	24	35	41	45	47	60	6.1	8.3	9.2	10.0	10.2	10.4
Montgomery County MUD 115	24	35	40	44	48	54	4.4	6.3	6.9	7.5	7.9	8.6
Montgomery County MUD 119	43	82	131	169	201	250	4.0	6.9	10.6	13.1	15.0	17.9
Montgomery County MUD 126	4	8	11	14	16	17	3.6	6.2	6.6	6.6	6.3	6.8
Montgomery County MUD 127	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Montgomery County MUD 137	8	15	19	23	26	30	5.7	8.9	10.0	11.3	12.3	14.0

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Montgomery County MUD 139	22	41	49	51	46	47	4.5	8.3	10.0	10.4	9.4	9.6
Montgomery County MUD 15	20	34	38	44	49	59	2.5	4.0	4.4	5.0	5.4	6.3
Montgomery County MUD 18	53	72	79	88	94	105	10.1	12.8	13.6	14.7	15.2	16.4
Montgomery County MUD 19	15	19	20	21	20	20	4.9	6.1	6.3	6.6	6.3	6.2
Montgomery County MUD 24	6	12	15	17	17	19	5.1	8.3	9.9	10.9	10.5	11.3
Montgomery County MUD 56	3	6	7	8	9	10	2.3	4.5	4.8	5.4	5.9	6.5
Montgomery County MUD 8	44	69	78	90	98	114	9.5	14.4	15.7	17.6	18.5	20.9
Montgomery County MUD 83	12	18	20	22	24	28	4.9	7.0	7.6	8.0	8.5	9.6
Montgomery County MUD 84	16	23	26	30	33	38	5.9	7.9	8.6	9.5	10.1	11.2
Montgomery County MUD 88	19	29	32	34	36	40	4.6	7.0	7.7	8.2	8.4	9.0
Montgomery County MUD 89	27	39	44	49	52	59	4.3	6.1	6.7	7.2	7.4	8.0
Montgomery County MUD 9	60	86	95	107	117	133	11.0	15.3	16.3	17.7	18.8	20.6
Montgomery County MUD 94	25	39	44	51	56	64	3.9	5.6	6.1	6.8	7.2	8.0
Montgomery County MUD 95	18	38	50	55	52	55	4.8	8.0	9.8	10.7	9.9	10.4
Montgomery County MUD 98	9	14	16	18	20	25	3.3	5.0	5.5	6.1	6.5	7.9
Montgomery County MUD 99	10	18	23	26	27	29	5.9	9.6	10.6	11.5	11.0	11.8
Montgomery County UD 2	13	21	24	28	30	34	7.1	9.9	11.0	12.5	13.0	14.4
Montgomery County UD 3	32	52	60	69	76	88	12.6	19.9	22.0	24.4	25.8	28.8
Montgomery County UD 4	37	58	66	75	82	94	9.6	14.5	15.9	17.5	18.4	20.3
Montgomery County WCID 1	16	29	34	40	44	53	2.5	4.1	4.7	5.5	5.9	7.0
Morgans Point	4	6	7	7	7	7	11.7	16.6	19.3	19.3	19.5	20.2
Moscow WSC[1]	0	3	3	4	4	5	0.0	11.9	11.5	14.7	14.1	16.9
Mount Houston Road MUD	22	33	36	40	42	48	2.5	3.6	3.9	4.4	4.6	5.3
MSEC Enterprises	132	279	388	522	648	803	6.3	10.3	12.1	14.8	17.9	21.2
Nassau Bay	35	47	52	55	54	57	5.8	7.7	8.4	8.9	8.7	9.2
Needville	12	27	38	47	52	62	3.3	4.6	5.5	6.6	7.3	8.6

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
New Caney MUD	65	147	192	249	297	381	3.3	6.0	7.0	8.2	9.0	11.1
New Waverly	5	8	9	8	7	6	5.1	9.3	11.7	12.0	12.1	12.0
Newport MUD	55	105	121	148	171	212	3.9	7.4	7.9	9.3	10.4	12.8
Nitsch and Son Utility	7	11	12	14	15	17	3.4	5.3	5.8	6.7	7.2	8.2
Normangee	3	4	4	4	3	0	7.8	13.3	16.6	20.6	18.7	0.0
North Belt UD	20	27	33	37	38	40	6.4	8.6	9.1	9.6	9.8	10.1
North Channel Water Authority	433	930	1,081	1,273	1,375	1,576	3.5	7.2	7.9	9.1	9.8	11.1
North Forest MUD	6	9	10	11	12	14	3.4	5.1	5.6	6.2	6.8	7.6
North Fort Bend Water Authority	2,229	4,968	6,398	8,309	9,747	12,016	5.8	11.4	13.6	16.6	18.6	22.0
North Green MUD	12	15	16	18	19	21	2.3	2.8	2.9	3.2	3.3	3.6
North Harris County Regional Water Auth.	4,691	10,862	13,519	17,064	19,666	24,095	5.0	11.3	13.6	17.0	18.9	22.7
North Zulch MUD	10	17	19	22	24	28	4.5	7.6	8.5	9.8	10.7	12.5
Northeast Harris County MUD 1	5	9	10	11	11	13	8.8	15.8	17.5	19.3	19.2	21.7
Northwest Harris County MUD 16	16	25	28	30	32	37	4.0	6.1	6.8	7.2	7.5	8.4
Oak Hollow Utility	7	11	12	14	15	18	3.1	4.8	5.2	6.0	6.4	7.7
Oak Ridge North	16	31	39	45	43	45	4.5	7.4	8.8	9.0	8.7	9.1
Onalaska WSC	15	28	32	39	44	55	3.7	6.3	7.0	8.2	8.8	10.6
One Five O WSC	9	15	16	18	20	23	3.4	5.6	6.1	7.0	7.9	9.3
Oyster Creek	8	12	13	14	13	13	5.9	8.9	9.7	10.8	10.5	11.0
P B & S C WSC	8	12	13	14	14	16	3.8	5.7	6.3	7.0	7.2	8.6
Palmer Plantation MUD 1	12	17	18	19	20	23	5.7	8.0	8.5	9.0	9.3	10.3
Palmer Plantation MUD 2	10	16	17	19	21	24	3.3	5.3	5.6	6.2	6.9	7.9
Panorama Village	20	28	31	35	38	44	6.0	8.1	8.7	9.6	10.2	11.5
Parkway MUD	20	35	39	44	48	57	2.7	4.7	5.2	5.9	6.5	7.7
Pasadena	674	1,507	1,784	2,132	2,292	2,677	4.2	9.3	10.9	13.0	14.0	16.4
Pattison WSC	7	10	12	13	14	16	4.2	5.9	6.8	7.1	7.5	8.4

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Patton Village	4	8	11	16	19	24	4.3	7.4	8.2	9.2	10.7	13.2
Pearland	725	1,747	2,250	2,881	3,337	4,075	4.2	9.2	11.4	14.0	15.8	19.0
Pecan Grove MUD 1	85	166	209	263	316	385	6.0	10.7	12.9	16.0	19.0	22.9
Pennington WSC[1]	4	7	7	7	7	8	5.6	10.4	11.1	11.7	12.3	14.9
Phelps SUD	6	10	12	13	15	18	2.9	4.7	5.5	5.8	6.5	7.6
Pine Village PUD	9	15	16	18	20	23	2.8	4.5	4.8	5.2	5.9	6.8
Pinehurst Decker Prairie WSC	5	9	12	16	20	24	2.9	4.2	4.8	5.3	6.1	7.0
Pinewood Community	3	5	6	7	7	9	2.9	4.6	5.4	6.2	5.9	7.6
Plantation MUD	13	22	25	29	32	38	3.0	4.9	5.3	6.1	6.6	7.6
Point Aquarius MUD	17	28	35	43	48	56	5.6	7.5	8.2	9.2	9.9	11.1
Porter SUD	92	201	254	318	366	460	2.8	5.0	5.7	6.7	7.4	8.9
Prairie View	25	40	47	56	64	74	5.9	7.7	8.3	9.1	9.4	10.2
Prairie View A&M University	33	61	68	79	87	106	4.9	8.9	9.8	11.3	12.3	14.8
Providence WSC	11	17	18	19	20	21	1.8	2.6	2.7	2.7	2.7	2.7
Quadvest	243	525	732	1,003	1,293	1,664	6.6	11.3	13.3	16.5	19.8	23.7
Quail Valley UD	60	123	155	198	245	306	4.7	9.4	11.6	14.0	16.8	20.4
Ranch Crest Water	6	9	11	12	13	14	4.7	6.0	7.1	7.7	8.2	8.7
Rayford Road MUD	53	81	91	101	106	119	5.6	8.4	9.1	10.0	10.2	11.1
Raywood WSC	5	8	8	10	11	14	6.3	10.1	10.1	12.2	12.5	14.3
Richmond	89	172	215	260	303	367	4.4	7.9	9.3	11.2	12.7	14.7
Richwood	14	22	23	26	27	31	2.7	4.4	4.6	5.4	5.8	6.9
River Plantation MUD	18	30	38	50	54	60	6.1	8.0	8.6	9.1	9.9	11.0
Riverside SUD	18	31	37	45	53	67	3.0	5.0	5.5	6.2	6.7	7.8
Rolling Fork PUD	12	17	20	22	22	24	4.5	6.2	7.1	7.7	7.8	8.5
Roman Forest Consolidated MUD	8	14	20	29	35	41	4.4	5.7	6.5	7.3	7.9	9.2
Rosenberg	192	417	551	711	828	1,051	3.2	5.6	6.3	7.4	8.1	9.7

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Royal Valley Utilities	22	30	33	39	42	48	6.8	8.3	8.8	9.1	9.6	10.5
Sagemeadow UD	25	37	40	45	48	57	3.1	4.5	4.9	5.6	5.9	6.8
San Jacinto SUD	11	18	20	22	23	27	4.2	7.0	8.0	9.0	9.7	11.8
San Leon MUD	27	43	49	56	61	72	3.9	5.9	6.6	7.5	8.0	9.4
Seabrook	63	140	188	248	310	387	4.1	8.9	11.7	15.4	19.3	24.1
Sealy	38	60	71	76	74	78	4.8	7.2	8.0	8.4	8.1	8.4
Sedona Lakes MUD 1	9	13	15	18	19	22	4.4	6.1	6.3	7.2	7.6	8.7
Sequoia Improvement District	4	7	7	8	8	9	4.0	7.0	7.0	8.0	8.1	9.1
Shenandoah	54	90	108	115	106	105	9.3	12.9	14.9	15.3	14.0	13.8
Shepherd	11	17	18	20	20	22	4.9	7.7	8.4	9.6	9.9	11.2
Shoreacres	10	14	15	16	17	19	5.8	8.1	8.7	9.2	9.8	10.9
Sienna Plantation	217	399	495	623	761	937	4.9	8.8	10.5	13.0	15.5	18.7
Soda WSC	7	12	14	17	19	23	3.4	5.3	6.0	7.0	7.5	8.7
South Cleveland WSC	19	43	77	114	153	218	2.2	3.3	4.4	5.3	5.9	7.1
South Houston	52	105	125	134	132	149	2.8	5.5	6.6	7.0	6.9	7.8
Southeast WSC	11	18	20	22	24	28	4.6	7.7	8.6	9.5	10.5	12.4
Southern Montgomery County MUD	32	51	76	94	99	119	2.9	4.4	6.6	8.1	8.3	9.8
Southern Water	15	24	27	31	33	38	2.8	4.4	4.7	5.2	5.7	6.6
Southside Place	8	13	14	15	15	16	3.8	6.0	6.4	6.9	7.1	7.7
Southwest Harris County MUD 1	5	3	3	4	3	4	2.6	1.5	1.5	2.0	1.5	2.0
Splendora	42	100	140	204	271	361	3.3	5.9	6.6	7.7	8.7	11.3
Spring Creek UD	45	91	105	125	142	176	4.0	7.8	8.7	10.0	11.1	13.3
Spring Meadows MUD	12	23	27	31	33	39	2.4	3.7	4.4	5.0	5.3	6.3
Spring Valley	34	51	56	61	62	68	7.0	10.2	11.2	12.2	12.5	13.8
Stanley Lake MUD	23	34	39	42	44	49	5.4	7.6	8.5	8.9	9.1	9.8
Suburban Utility	18	28	36	45	50	59	2.7	3.9	3.9	4.6	5.1	5.9

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Sugar Land	847	1,765	2,125	2,578	2,843	3,387	6.5	13.1	15.4	18.3	19.8	23.0
Sunbelt FWSD	94	188	213	250	274	329	3.1	6.1	6.8	7.8	8.7	10.4
Surfside Beach	9	19	22	23	21	20	12.8	26.9	31.8	34.9	33.5	33.9
Sweeny	17	27	30	32	32	34	4.9	7.7	8.6	9.3	9.4	10.4
T & W Water Service	90	182	328	488	663	880	8.4	14.7	22.6	30.1	37.4	47.2
Tarkington SUD	17	27	30	34	37	44	2.8	4.3	4.6	5.1	5.4	6.3
TDCJ Darrington Unit	19	23	23	25	25	27	9.7	11.8	12.0	13.0	13.2	14.4
TDCJ Ferguson Unit	27	32	33	35	37	39	10.0	11.8	12.2	12.9	13.7	14.4
TDCJ Jester Units	14	17	18	19	20	22	8.2	10.0	10.6	11.2	11.7	12.9
TDCJ Ramsey Area	70	87	91	97	102	111	18.9	23.5	24.6	26.2	27.6	30.0
Tempe WSC 1	8	14	16	16	17	18	2.4	3.8	4.2	4.0	4.1	4.1
Texas City	242	452	517	602	661	794	3.8	6.8	7.5	8.6	9.3	11.1
The Commons Water Supply	15	21	23	25	26	29	4.5	6.3	6.9	7.5	7.8	8.7
The Woodlands	289	1,432	1,885	2,309	2,414	3,003	2.6	12.1	15.5	18.8	18.9	21.3
Thunderbird UD	26	41	47	53	55	62	5.0	7.7	8.3	9.2	9.4	10.1
Tomball	124	282	363	425	421	483	6.7	14.0	15.7	17.5	16.2	18.2
Trail of the Lakes MUD	38	71	80	94	107	131	3.3	6.0	6.6	7.6	8.4	10.2
Trinity	13	20	21	22	23	26	3.7	6.1	6.9	7.6	8.3	10.0
Trinity Bay Conservation District	73	148	183	242	411	572	7.9	14.6	16.7	21.0	33.6	43.5
Trinity Rural WSC	12	18	18	19	20	22	3.7	5.9	6.3	7.0	7.8	9.0
Valley Ranch MUD 1	12	21	25	29	32	39	3.2	4.9	5.4	6.0	6.5	7.6
Varner Creek UD	11	18	19	21	22	24	4.2	6.8	7.4	8.1	8.6	9.6
Walker County SUD	37	63	93	121	148	197	3.5	5.6	7.4	8.7	9.7	11.7
Waller	18	31	37	41	44	49	5.6	8.7	9.8	10.7	11.1	12.1
Wallis	5	9	9	11	12	14	3.4	6.1	6.1	7.5	8.2	9.5
Waterwood MUD 1	5	8	8	9	9	10	15.2	24.5	25.1	29.0	30.0	34.5

Water User Group	Advanced Conservation Savings (ac ft/yr)						Advanced Conservation Savings (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Webster	80	238	332	403	430	513	6.3	18.2	25.3	30.6	32.5	38.9
West Columbia	15	26	28	31	33	39	3.1	5.4	5.9	6.6	7.2	8.7
West End WSC	4	6	7	8	8	10	3.2	4.7	5.5	6.3	6.3	7.9
West Hardin WSC[1]	0	3	3	3	3	4	0.0	6.0	6.0	6.0	6.0	8.0
West Harris County MUD 6	9	11	12	13	13	15	2.9	3.4	3.7	4.1	4.0	4.6
West Harris County Regional Water Auth.	2,545	5,722	6,519	7,473	8,081	9,469	3.8	8.2	9.3	10.6	11.2	12.8
West University Place	96	183	218	265	310	366	5.5	10.4	12.3	15.0	18.0	21.7
Westfield Garden Park	3	4	4	4	5	5	4.3	5.7	5.7	5.7	7.2	7.2
Westwood North WSC	17	26	31	35	36	44	4.5	6.4	6.8	7.5	7.7	8.0
Westwood Shores MUD	5	9	10	10	10	11	5.6	10.8	12.9	13.5	14.2	16.6
White Oak WSC	5	10	12	16	19	24	2.5	4.2	4.6	5.3	5.9	6.9
Willis	30	53	58	63	70	85	4.1	6.7	6.9	7.1	7.6	8.9
Willow Creek Farms MUD	26	37	45	53	56	61	5.7	7.6	7.9	8.7	9.0	9.8
Windfern Forest Utility District	23	31	33	37	39	43	4.3	5.7	6.0	6.7	7.1	7.8
Wood Branch Village	6	12	16	24	28	35	3.2	5.0	5.3	6.0	6.7	8.2
Wood Trace MUD 1	8	16	16	16	19	23	4.6	8.9	8.6	8.1	9.2	10.7
Woodcreek MUD	14	20	21	23	24	26	4.3	6.2	6.5	7.1	7.4	8.1
Woodcreek Water of Liberty	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Woodland Oaks Utility	13	22	26	32	37	45	2.9	4.4	4.8	5.5	6.1	7.2
Woodridge MUD	6	11	13	16	18	22	2.7	4.2	4.7	5.5	5.9	6.8

1. Vaues reflect recommended conservation using the Region H Advanced Municipal Conservation methodology. The primary interregional split of this WUG is located in Region I, and conservation allocations for the WUG are made by Region I in the TWDB DB27 database. Values shown in the table for this WUG may therefore vary slightly from the data in DB27.

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APPENDIX 5B-C

GALLONS PER-CAPITA DAILY GOALS FOR MUNICIPAL WUGS

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Table 5B-C1 – GPCD Goals for Municipal WUGs

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Alvin	106.5	106.0	106.0	106.0	106.0	106.0	103.0	99.4	98.7	97.5	96.8	95.1
Ames Minglewood WSC	104.6	103.9	103.7	103.7	103.8	103.5	100.9	98.0	97.8	96.3	96.2	94.9
Anahuac	101.5	101.1	101.0	101.0	100.9	101.0	98.0	95.7	95.2	94.3	93.7	92.6
Angleton	88.4	87.9	87.9	87.9	87.9	87.9	85.2	81.1	80.2	78.9	78.2	76.1
Austin County WSC	126.0	125.6	125.3	125.6	125.4	125.5	121.8	119.5	118.9	118.2	117.6	116.8
Bacliff MUD	70.7	70.2	70.1	70.2	70.2	70.2	68.0	65.6	65.1	64.5	64.0	62.7
Baker Road MUD	220.5	219.5	219.9	219.5	219.4	219.7	214.3	211.7	211.3	210.8	210.5	209.6
Baybrook MUD 1	128.4	127.8	127.7	127.6	127.7	127.7	125.7	123.9	123.1	122.6	123.5	123.4
Baytown	116.4	115.9	115.9	115.9	115.9	115.9	112.8	108.7	107.6	106.3	105.7	104.3
Bayview MUD	73.5	72.8	73.1	73.3	72.8	73.0	70.4	67.6	67.0	66.1	65.2	64.0
Bellaire	194.4	193.8	193.8	193.8	193.8	193.8	188.6	183.4	181.6	179.2	176.8	173.6
Bellville	243.1	242.5	242.6	242.6	242.7	242.5	236.3	231.6	230.0	229.6	230.4	230.0
Blaketree MUD 1 of Montgomery County	333.2	330.1	330.2	331.5	331.5	331.5	320.6	309.9	309.1	303.4	301.7	299.9
Blue Bell Manor Utility	98.4	97.9	98.0	98.0	97.9	97.9	95.4	93.5	93.3	92.7	92.3	91.4
Blue Ridge West MUD	116.5	116.1	116.2	116.1	116.1	116.1	112.9	110.8	110.5	109.8	109.3	108.3
Bolivar Peninsula SUD	373.9	373.9	374.1	374.0	374.0	373.9	358.4	347.3	344.1	340.6	339.2	334.8
Brazoria	113.1	112.5	112.7	112.5	112.7	112.7	109.0	105.9	105.4	104.1	103.7	101.7
Brazoria County FWSD 1	112.0	111.2	111.3	111.3	111.3	111.5	108.7	106.3	106.5	105.5	105.5	103.6
Brazoria County MUD 2	363.5	363.0	363.0	362.8	363.0	363.0	354.9	352.8	352.3	351.8	351.5	350.7
Brazoria County MUD 21	128.8	128.3	128.3	128.2	128.3	128.2	124.7	122.2	121.7	120.9	120.7	119.8
Brazoria County MUD 22	150.9	150.4	150.7	150.6	150.6	150.6	146.1	141.0	139.4	139.0	140.5	140.2
Brazoria County MUD 25	84.1	83.7	83.7	83.7	83.7	83.6	81.7	80.0	79.7	79.4	79.0	78.2
Brazoria County MUD 29	88.4	88.1	88.0	88.0	88.1	88.1	85.3	83.1	82.3	81.5	81.2	79.9
Brazoria County MUD 3	134.2	133.4	133.5	133.5	133.4	133.5	129.9	127.6	127.1	126.5	126.0	125.1
Brazoria County MUD 31	231.8	231.6	231.6	231.6	231.6	231.5	225.0	222.3	221.7	220.8	220.3	218.9

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Brazoria County MUD 39	357.1	356.4	356.4	356.6	356.5	356.8	348.1	345.8	345.3	344.8	344.3	343.4
Brazoria County MUD 55	197.8	197.3	197.5	197.6	197.8	197.4	190.8	186.3	185.3	184.3	183.7	181.4
Brazoria County MUD 6	188.5	187.7	187.6	187.7	187.7	187.7	183.8	181.9	181.3	181.1	181.0	180.4
Brookshire MWD	130.5	130.0	130.1	130.1	130.1	130.0	126.4	123.3	122.5	122.0	122.5	121.9
Buffalo	194.1	193.5	193.8	193.6	193.3	193.5	187.3	181.5	179.7	178.9	179.3	177.8
Bunker Hill Village	377.7	377.2	377.2	377.3	377.3	377.2	368.6	366.4	365.8	365.2	364.8	364.0
C C Water Works	104.3	104.0	104.0	104.0	104.0	104.0	101.3	100.1	99.6	99.2	98.8	98.1
Cape Royale UD	261.0	260.1	261.2	260.7	260.1	261.0	250.3	243.2	242.2	239.5	236.6	234.9
Centerville	161.8	161.8	161.6	161.4	161.1	161.2	155.6	148.3	145.8	145.4	145.9	145.6
Central Harris County Regional Water Auth.	86.7	86.1	86.1	86.1	86.1	86.1	83.9	80.9	80.3	79.4	78.7	77.2
Chambers County MUD 1	70.6	70.2	70.2	70.2	70.2	70.2	68.5	67.1	66.9	66.5	66.2	65.6
Chateau Woods MUD	97.9	97.5	97.5	97.5	97.5	97.5	94.5	92.5	91.7	90.8	90.3	89.1
Chimney Hill MUD	90.5	89.8	89.8	89.8	89.8	89.9	87.4	85.1	84.7	84.0	83.7	82.6
Clear Brook City MUD	86.7	86.0	86.0	86.0	86.0	86.0	83.6	80.3	79.6	78.6	77.9	76.2
Clear Lake City Water Authority	161.4	160.8	160.8	160.8	160.8	160.8	156.6	152.1	150.0	147.2	144.4	140.5
Cleveland	174.2	173.5	173.5	173.5	173.5	173.5	169.3	166.2	164.6	160.5	158.2	154.9
Clute	137.1	136.5	136.5	136.5	136.5	136.5	132.7	127.2	127.6	127.4	127.4	126.9
Concord0Robbins WSC	119.3	118.3	118.6	118.1	117.9	119.0	114.3	109.0	107.8	106.3	104.5	101.0
Conroe	149.2	148.7	148.7	148.7	148.7	148.7	144.8	141.0	138.4	136.8	135.9	134.0
Conroe Resort Utilities	152.5	151.9	152.7	152.1	152.6	152.6	146.6	142.0	140.5	138.9	141.2	140.4
Corinthian Point MUD 2	257.5	256.0	255.9	256.1	256.1	256.7	250.4	246.9	246.0	244.6	244.0	244.1
Country Terrace Water	107.8	107.8	107.6	107.6	107.5	107.8	103.9	101.3	100.5	99.2	98.5	96.7
County-Other, Austin	102.5	101.9	101.8	101.9	101.9	101.8	98.3	94.7	93.9	92.8	92.0	90.0
County-Other, Brazoria	132.5	131.9	131.9	131.9	131.9	131.9	128.2	125.6	125.0	124.1	123.5	122.2
County-Other, Chambers	97.4	96.8	96.8	96.8	96.8	96.8	94.7	93.3	93.1	92.7	92.4	91.7
County-Other, Fort Bend	121.9	121.4	121.4	121.4	121.4	121.4	118.0	116.1	115.5	114.5	113.9	112.5

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
County-Other, Galveston	107.1	106.6	106.6	106.6	106.6	106.6	103.8	101.8	101.3	100.7	100.2	99.2
County-Other, Harris	118.0	116.1	116.2	116.1	116.1	116.1	114.9	112.0	111.6	111.1	110.8	110.0
County-Other, Leon	96.6	95.8	96.0	96.1	95.7	96.0	93.4	90.0	89.2	89.1	87.1	84.4
County-Other, Liberty	105.7	105.2	105.3	105.3	105.2	105.3	101.8	99.3	98.8	97.9	97.1	95.6
County-Other, Madison	159.3	158.4	158.5	158.6	158.6	158.5	155.0	152.4	151.8	151.5	150.9	149.7
County-Other, Montgomery	106.2	105.7	105.7	105.7	105.7	105.7	102.8	101.0	100.6	99.8	99.3	98.2
County-Other, Polk	89.2	88.7	88.7	88.7	88.7	88.7	86.6	85.1	84.8	84.4	84.0	83.4
County-Other, San Jacinto	98.4	97.8	97.8	97.8	97.8	97.8	95.7	94.1	93.8	93.5	93.1	92.5
County-Other, Trinity	59.9	60.2	60.2	60.1	60.0	60.1	60.0	60.0	60.0	60.0	60.0	60.0
County-Other, Walker	182.8	182.3	182.2	182.3	182.2	182.2	178.0	175.7	175.2	174.4	173.8	172.5
County-Other, Waller	106.0	105.4	105.4	105.4	105.4	105.4	102.5	100.5	100.2	99.6	99.1	98.0
Crosby MUD	156.6	156.1	156.1	156.1	156.1	156.0	152.3	149.4	148.3	148.0	148.5	148.1
Cut & Shoot	75.4	74.9	74.9	74.9	74.9	74.9	72.4	69.2	68.4	67.3	66.5	64.2
Daisetta	99.7	98.8	98.8	98.8	98.8	98.8	95.9	93.0	93.0	92.1	91.1	90.1
Danbury	87.5	87.3	87.0	87.1	86.9	87.2	84.3	82.0	81.2	80.7	79.9	78.8
Dayton	195.5	194.9	194.9	194.9	194.9	194.9	189.9	185.9	184.2	182.4	180.5	178.1
Deer Park	137.4	136.7	136.7	136.7	136.7	136.7	132.8	127.6	125.4	122.8	120.1	116.5
Devers	194.0	192.4	192.4	192.4	193.3	192.2	187.4	184.1	184.1	182.5	183.5	180.8
Dobbin Plantersville WSC	64.6	64.3	64.3	64.2	64.2	64.2	62.6	61.4	60.5	60.0	60.0	60.0
Dodge Oakhurst WSC	99.9	99.6	99.6	99.6	99.6	99.5	97.0	95.5	95.0	94.7	94.3	93.4
Domestic Water	80.5	79.8	80.3	80.2	79.9	80.2	77.3	74.7	74.0	73.4	72.6	71.5
Douglas Utility	118.5	118.0	117.9	117.7	117.9	117.7	115.5	114.7	114.7	114.1	114.2	113.6
East Montgomery County MUD 6	114.1	113.7	113.5	113.6	113.6	113.6	110.4	108.2	108.0	107.4	107.0	105.3
East Plantation UD	172.2	172.1	172.1	172.1	171.9	171.9	166.9	165.4	165.3	164.5	163.2	162.3
El Dorado UD	111.9	111.2	111.2	111.4	111.2	111.4	108.7	106.6	106.5	106.0	105.3	104.5
Far Hills UD	230.0	229.7	229.2	229.7	229.4	229.7	223.2	220.2	218.4	217.9	216.7	215.4

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
First Colony MUD 9	153.3	152.9	152.9	152.9	152.9	152.8	148.8	146.4	146.0	145.4	145.1	144.4
Flo Community WSC	109.3	108.9	108.7	108.8	108.8	108.8	105.3	102.6	101.5	100.8	100.3	98.6
Forest Hills MUD	80.0	79.4	79.4	79.4	79.4	79.3	77.3	75.4	75.1	74.5	74.2	73.1
Fort Bend County FWSD 1	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Fort Bend County FWSD 2	65.6	65.2	65.1	65.2	65.1	65.1	63.7	62.5	62.3	62.0	61.7	60.9
Fort Bend County MUD 115	419.7	419.1	418.8	419.0	419.1	419.0	410.1	407.2	405.8	405.7	405.8	405.4
Fort Bend County MUD 116	202.4	201.8	201.7	201.7	201.7	201.8	196.9	194.5	193.6	192.9	192.7	191.9
Fort Bend County MUD 121	107.1	106.4	106.4	106.4	106.4	106.4	103.8	101.7	101.3	100.8	100.3	99.4
Fort Bend County MUD 128	199.3	198.8	198.8	198.8	198.8	198.8	193.7	189.5	187.7	185.3	182.9	179.8
Fort Bend County MUD 129	218.0	217.2	217.3	217.3	217.3	217.2	212.4	210.2	209.8	209.3	209.0	208.2
Fort Bend County MUD 131	141.6	140.9	141.1	141.3	141.1	140.9	135.8	131.2	130.3	129.1	128.1	125.8
Fort Bend County MUD 140	146.2	145.4	145.5	145.4	145.5	145.5	141.5	138.7	138.4	137.6	137.7	136.8
Fort Bend County MUD 149	276.9	276.3	276.3	276.4	276.3	276.3	270.2	268.2	267.8	267.4	266.8	266.1
Fort Bend County MUD 152	174.1	173.5	173.6	173.5	173.5	173.5	169.0	166.4	165.9	165.3	164.9	163.8
Fort Bend County MUD 155	137.0	136.3	136.4	136.4	136.3	136.3	132.8	130.9	130.6	129.9	129.4	128.6
Fort Bend County MUD 158	163.7	163.0	163.1	163.2	163.1	163.1	159.3	157.1	156.9	156.4	155.9	155.1
Fort Bend County MUD 162	83.4	83.0	82.9	83.0	83.0	83.1	80.6	78.6	78.2	77.7	77.7	76.5
Fort Bend County MUD 23	96.6	96.1	96.1	96.1	96.1	96.1	93.1	89.5	88.7	87.5	86.5	84.4
Fort Bend County MUD 24	86.0	85.3	85.3	85.3	85.3	85.5	83.0	80.7	80.2	79.7	79.1	78.2
Fort Bend County MUD 25	168.9	168.4	168.4	168.4	168.4	168.4	163.7	159.1	157.1	154.6	152.0	148.7
Fort Bend County MUD 26	99.4	99.0	98.9	98.9	99.0	98.9	96.2	94.2	93.7	93.1	92.6	91.5
Fort Bend County MUD 42	166.0	165.7	165.7	165.8	165.7	165.7	161.3	158.9	158.2	157.9	157.3	156.6
Fort Bend County MUD 46	227.2	226.8	226.7	226.9	226.6	226.6	221.1	218.6	217.7	217.3	217.1	216.5
Fort Bend County MUD 47	110.9	110.5	110.5	110.5	110.5	110.6	107.3	104.4	104.0	102.9	102.5	101.4
Fort Bend County MUD 48	107.3	106.7	106.8	106.7	106.7	106.7	103.9	101.6	101.1	100.6	99.9	98.7
Fort Bend County MUD 49	133.9	132.9	132.9	132.9	133.0	133.0	128.7	126.0	125.0	124.0	124.1	122.3

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Fort Bend County MUD 5	82.3	81.8	81.8	81.8	81.8	81.8	79.6	77.6	77.2	76.5	76.1	74.9
Fort Bend County MUD 81	530.2	529.8	529.6	529.8	529.8	529.8	517.3	514.5	514.4	513.5	512.5	511.2
Fort Bend County WCID 2	217.1	216.5	216.4	216.4	216.4	216.4	211.4	206.3	203.4	200.2	197.2	193.3
Fort Bend County WCID 3	520.9	520.0	520.0	520.0	521.2	520.3	509.3	505.6	505.6	505.6	506.5	505.0
Freeport	122.5	121.8	121.8	121.8	121.8	121.8	118.2	112.7	111.1	112.1	112.5	112.1
Friendswood	153.6	153.0	153.1	153.1	153.1	153.1	148.7	143.7	141.7	139.2	136.6	133.3
Fulshear	137.1	136.6	136.6	136.6	136.6	136.6	132.3	128.8	125.6	122.8	120.2	116.8
G & W WSC	59.9	59.9	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Galena Park	65.7	64.9	64.8	64.9	64.8	64.9	63.2	60.0	60.0	60.0	60.0	60.0
Galveston	286.1	285.5	285.5	285.4	285.4	285.5	277.8	270.1	267.4	264.6	263.1	259.7
Galveston County FWSD 6	175.8	175.0	175.0	175.0	175.0	175.0	168.5	162.9	161.3	159.7	158.9	156.5
Galveston County MUD 12	124.9	124.5	124.5	124.5	124.5	124.5	119.5	115.6	114.8	113.6	112.5	110.9
Galveston County WCID 1	95.8	95.3	95.3	95.3	95.3	95.3	92.5	88.7	87.9	86.7	86.0	84.1
Galveston County WCID 12	215.0	214.2	214.3	214.3	214.3	214.2	209.0	205.1	203.9	203.5	204.1	203.5
Galveston County WCID 8	109.4	108.7	108.6	108.8	108.7	108.8	105.6	102.4	101.6	100.8	99.9	98.5
Glendale WSC	122.5	121.7	122.6	122.7	122.7	121.1	115.8	110.9	111.1	108.6	107.9	105.4
Grand Oaks MUD	93.4	92.9	93.1	93.1	93.1	92.6	89.5	87.0	86.6	86.0	84.7	83.0
Green Trails MUD	269.0	268.2	268.5	268.3	268.5	268.5	262.3	258.9	258.4	257.7	257.7	257.0
Greenwood UD	64.6	64.2	64.2	64.1	64.1	64.1	62.2	60.0	60.0	60.0	60.0	60.0
Groveton	122.4	122.0	120.7	120.8	121.2	122.0	116.4	111.3	107.0	106.6	108.8	106.4
Hardin WSC	111.5	111.2	111.0	111.1	111.0	111.0	107.7	105.1	104.5	103.7	103.1	101.8
Harris County FWSD 10A	75.6	75.1	75.4	75.4	75.1	75.3	72.9	70.8	70.8	70.1	69.6	68.6
Harris County FWSD 27	91.6	91.0	91.2	91.1	91.2	91.1	88.9	87.2	87.0	86.4	86.3	85.2
Harris County FWSD 58	180.6	180.2	180.2	180.2	180.2	180.2	174.7	171.6	170.5	170.0	168.9	167.9
Harris County MUD 106	123.1	122.4	122.4	122.3	122.3	122.4	119.3	116.8	116.5	115.8	115.3	114.5
Harris County MUD 11	89.2	88.7	88.7	88.7	88.8	88.7	86.3	84.2	83.9	83.2	83.0	81.9

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Harris County MUD 119	103.6	103.0	103.0	103.1	103.0	103.0	100.6	99.0	98.6	98.3	97.8	97.2
Harris County MUD 122	87.8	86.8	87.0	86.6	86.7	87.0	85.1	82.3	81.9	80.9	81.0	80.5
Harris County MUD 132	259.2	258.6	258.6	258.6	258.6	258.6	252.8	250.1	249.4	248.9	248.8	248.3
Harris County MUD 148	85.2	84.7	84.6	84.6	84.6	84.7	82.3	80.1	79.6	79.0	78.4	77.4
Harris County MUD 151	146.5	145.9	145.9	145.9	145.8	145.9	142.1	139.7	139.4	138.7	138.3	137.5
Harris County MUD 152	105.6	104.8	104.8	104.8	104.9	104.9	102.3	100.1	99.7	99.2	98.7	97.8
Harris County MUD 153	148.4	147.7	147.7	147.8	147.7	147.7	144.0	140.9	140.1	139.7	139.7	139.1
Harris County MUD 154	110.7	110.1	110.1	110.1	110.1	110.1	107.3	104.2	103.7	102.6	101.9	100.3
Harris County MUD 180	75.8	75.2	75.3	75.2	75.2	75.3	73.3	71.4	71.1	70.5	70.1	69.3
Harris County MUD 189	137.1	136.3	136.4	136.5	136.5	136.4	134.2	132.6	132.4	132.3	132.2	132.0
Harris County MUD 216	180.7	180.0	180.0	180.0	179.9	179.7	177.0	175.4	175.3	175.0	175.3	174.7
Harris County MUD 221	84.5	83.8	83.8	83.7	83.8	83.7	81.9	80.1	80.0	79.4	79.1	78.4
Harris County MUD 23	94.5	94.0	94.0	94.0	94.1	94.0	91.4	89.4	89.1	88.4	88.0	86.9
Harris County MUD 261	242.0	241.7	241.8	241.8	241.7	241.8	235.2	232.6	232.2	231.5	230.5	229.9
Harris County MUD 278	84.9	84.3	84.3	84.3	84.3	84.3	81.9	79.6	78.9	75.9	74.7	72.5
Harris County MUD 290	106.3	106.0	105.9	105.9	105.9	105.9	103.1	101.1	100.3	97.6	96.6	94.6
Harris County MUD 321	183.0	181.7	181.6	181.8	181.6	181.7	179.4	177.1	175.9	176.1	176.5	177.3
Harris County MUD 342	153.8	153.3	153.2	153.3	153.2	153.2	149.9	147.9	147.7	147.3	146.7	146.3
Harris County MUD 344	219.7	219.0	219.0	219.0	218.9	218.9	214.1	212.1	211.4	210.9	210.5	209.9
Harris County MUD 345	219.5	218.9	219.0	218.9	219.0	219.1	213.7	211.3	211.0	210.2	209.8	209.0
Harris County MUD 36	292.6	290.2	290.3	290.2	290.4	290.4	285.3	278.8	278.2	277.8	278.9	279.9
Harris County MUD 361	117.9	117.3	117.1	117.2	117.2	117.2	114.2	111.6	111.1	110.4	109.9	108.8
Harris County MUD 372	265.2	264.5	264.4	264.3	264.5	264.2	258.7	256.3	255.5	254.8	254.6	253.8
Harris County MUD 400	141.9	141.4	141.3	141.3	141.4	141.3	136.7	129.9	126.7	120.7	118.8	114.4
Harris County MUD 412	181.4	181.1	181.0	181.0	181.0	180.9	176.2	173.8	173.4	172.7	172.4	171.4
Harris County MUD 420	76.2	75.1	75.4	75.4	75.2	75.2	73.6	70.9	71.0	70.4	69.6	68.6

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Harris County MUD 46	129.6	129.0	129.0	129.1	129.1	129.1	125.8	123.9	123.5	123.2	123.0	122.4
Harris County MUD 49	83.6	83.1	83.1	83.1	83.0	83.0	80.8	78.6	78.3	77.7	77.1	76.1
Harris County MUD 494	118.2	117.8	117.8	117.8	117.9	117.9	114.2	111.1	110.6	109.8	109.0	107.6
Harris County MUD 5	68.7	68.0	68.0	68.1	68.1	68.0	66.3	64.3	63.8	63.4	63.0	62.1
Harris County MUD 50	109.0	108.7	108.7	108.7	108.8	108.7	105.3	103.1	102.6	101.8	101.3	100.0
Harris County MUD 504	93.1	92.6	92.6	92.7	92.8	92.7	90.2	88.5	88.1	87.7	87.3	86.4
Harris County MUD 55	87.5	86.9	86.9	86.9	86.9	86.9	84.4	81.1	80.4	79.3	78.6	76.8
Harris County MUD 58	126.6	126.2	126.2	126.2	126.2	126.2	123.7	122.3	121.8	121.3	121.3	120.8
Harris County MUD 6	97.6	97.2	97.2	97.2	97.1	97.2	94.5	92.4	92.0	91.3	90.8	89.8
Harris County MUD 8	90.3	89.7	89.7	89.7	89.7	89.7	88.1	86.6	86.3	86.0	85.7	85.2
Harris County MUD 96	73.0	72.5	72.5	72.5	72.5	72.5	70.5	68.5	68.2	67.6	67.2	66.3
Harris County UD 14	60.0	60.0	60.1	59.9	60.1	59.9	60.0	60.0	60.0	60.0	60.0	60.0
Harris County UD 15	125.7	125.2	125.2	125.2	125.1	125.0	122.1	120.2	119.7	119.2	119.0	118.4
Harris County WCID 1	127.6	127.0	127.1	127.1	127.1	127.1	123.7	121.2	120.7	120.2	120.1	119.2
Harris County WCID 133	106.7	106.1	106.1	106.1	106.1	106.2	103.9	102.0	101.7	101.2	100.9	100.2
Harris County WCID 156	198.5	197.2	197.2	197.2	197.2	197.3	193.0	190.6	189.5	189.5	188.4	188.5
Harris County WCID 161	118.1	118.1	118.1	118.1	117.6	118.1	114.4	113.1	112.5	111.8	111.2	110.3
Harris County WCID 50	108.3	107.8	107.8	107.8	107.7	107.8	105.2	103.1	102.8	102.2	101.5	100.7
Harris County WCID 70	135.2	134.6	134.6	134.6	134.6	134.6	130.5	126.9	126.4	125.8	125.2	124.0
Harris County WCID 74	104.9	104.4	104.4	104.4	104.5	104.3	101.9	100.4	100.0	99.6	99.3	98.4
Harris County WCID 89	147.4	146.5	146.6	146.5	146.4	146.4	142.2	138.2	137.5	136.3	135.6	134.2
Harris County WCID 96	161.9	161.3	161.2	161.2	161.2	161.2	157.5	155.5	155.4	154.7	154.3	153.7
Harris County WCID-Fondren Road	80.4	80.0	80.0	79.9	79.9	80.2	77.6	75.7	75.1	74.5	74.1	73.1
Harris-Montgomery Counties MUD 386	123.2	122.6	122.4	122.7	122.7	122.7	119.3	116.6	116.1	115.4	115.2	114.1
Hempstead	169.2	168.6	168.7	168.6	168.7	168.6	164.3	161.3	160.4	159.9	160.0	159.4
High Prairie WSC	129.1	128.4	128.8	128.6	128.6	128.5	125.3	123.2	123.3	122.7	122.3	121.5

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Hillcrest Village	140.7	141.0	140.5	140.7	140.3	141.2	136.7	134.2	133.7	133.8	131.8	132.4
Hilltop Lakes WSC	168.5	168.0	167.8	167.9	167.9	168.0	163.2	159.8	159.1	157.8	157.5	156.8
Hilshire Village	229.5	228.4	228.4	229.2	228.7	228.8	222.9	219.6	219.6	219.3	218.7	217.6
Hitchcock	100.5	99.8	99.8	99.8	99.8	99.8	97.3	95.0	94.6	94.0	93.4	92.4
HMW SUD	114.3	113.8	113.8	113.8	113.8	113.8	110.3	107.1	104.2	102.0	100.7	97.8
Houston	177.3	176.7	176.7	176.7	176.7	176.7	172.5	167.8	166.5	164.8	164.1	162.2
Humble	177.0	176.2	176.2	176.2	176.2	176.2	172.0	166.1	163.9	161.1	158.8	155.2
Huntsville	158.2	157.8	157.8	157.8	157.8	157.8	153.8	149.0	146.9	144.6	142.5	139.4
Jacinto City	61.4	60.8	60.8	60.8	60.9	60.8	60.0	60.0	60.0	60.0	60.0	60.0
Jamaica Beach	231.2	230.4	230.4	230.6	230.6	230.6	221.3	214.8	213.1	211.7	210.1	206.8
Jersey Village	172.2	171.3	171.3	171.3	171.3	171.3	167.3	164.0	163.2	162.6	161.8	154.5
Jewett	141.6	140.3	140.6	142.3	139.7	141.8	136.9	129.1	128.4	129.4	127.5	125.2
Johnston Water Utility	351.4	350.8	350.8	350.7	350.8	350.8	343.3	341.7	341.2	340.6	340.3	339.6
Katy	211.7	211.1	211.2	211.1	211.1	211.2	205.5	201.1	198.9	196.5	194.9	192.2
Keenan WSC	87.0	86.7	86.5	86.7	86.7	86.5	83.8	82.1	81.5	80.8	79.9	78.5
Kendleton	280.0	279.2	279.2	279.2	279.3	278.9	270.6	269.0	265.0	262.8	261.9	259.3
Kings Manor MUD	123.6	122.8	122.8	122.8	122.9	122.9	119.8	117.6	116.9	116.4	116.2	115.3
Kirkmont MUD	141.6	141.2	141.3	141.1	141.0	141.1	137.2	135.2	134.9	134.2	133.5	132.8
La Marque	179.5	179.0	179.0	179.0	179.0	179.0	174.2	169.8	168.1	166.1	164.1	161.5
La Porte	121.1	120.2	120.2	120.2	120.2	120.2	116.7	110.8	108.0	105.0	101.6	98.3
Lake Bonanza WSC	84.9	84.8	84.7	84.5	84.6	84.5	82.0	79.9	79.4	78.4	78.0	76.6
Lake Conroe Hills MUD	100.8	100.2	100.3	100.3	100.4	100.2	97.2	94.0	93.4	92.5	91.9	90.1
Lake Jackson	170.2	169.5	169.6	169.5	169.5	169.5	165.0	159.4	156.8	153.6	150.2	145.6
Lake Livingston WSC	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Lake MUD	74.5	74.0	74.1	74.0	74.0	74.0	71.9	70.0	69.6	69.0	68.7	67.6
Lazy River Improvement District	207.4	206.8	206.6	207.1	207.0	207.1	201.9	198.7	198.1	198.3	198.0	197.2

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
League City	115.7	115.1	115.1	115.1	115.1	115.1	111.7	106.8	105.7	104.4	103.8	102.2
Leggett WSC	144.2	143.9	143.5	143.7	143.8	143.7	139.9	136.9	135.8	135.3	135.8	134.8
Liberty	166.4	165.9	165.8	165.8	165.8	165.8	161.7	158.4	157.2	156.9	157.3	157.0
Liberty County FWSD 1 Hull	156.1	156.1	156.1	156.1	156.1	156.1	150.6	147.0	147.0	145.1	145.1	143.3
Livingston	371.1	370.4	370.4	370.5	370.5	370.5	362.0	358.1	356.6	356.3	357.2	357.1
Longhorn Town UD	196.2	195.4	195.6	195.5	195.7	195.5	191.1	188.4	188.2	187.6	187.8	187.3
Luce Bayou PUD	157.3	157.0	157.6	157.0	157.0	156.8	153.4	151.9	150.5	150.0	149.0	147.8
Madisonville	180.3	179.8	179.8	179.8	179.7	179.9	175.2	171.3	170.0	169.6	169.9	169.6
Magnolia	195.9	195.3	195.2	195.3	195.3	195.3	190.2	186.3	185.1	184.4	184.6	184.2
Manvel	125.5	125.2	125.1	125.1	125.1	125.2	120.8	118.1	116.4	110.7	107.7	103.8
Mason Creek UD	167.5	166.9	167.0	166.9	167.0	167.0	162.8	160.4	160.0	159.4	159.1	158.5
Meadowcreek MUD	132.7	132.3	132.2	132.1	132.1	132.1	128.1	125.0	124.2	123.3	122.4	121.6
Meadows Place	144.2	143.9	143.9	143.8	143.8	143.8	139.9	137.9	137.4	136.8	136.4	135.6
Memorial Point UD	167.8	167.3	168.2	167.6	167.3	168.1	161.9	159.8	159.9	157.6	157.7	157.2
Memorial Villages Water Authority	485.0	484.4	484.5	484.5	484.4	484.5	473.3	467.8	466.2	463.5	460.9	457.5
Mercy WSC	83.3	82.9	83.0	82.9	83.1	83.1	81.1	79.7	79.4	79.1	79.0	78.5
Missouri City	136.7	136.2	136.2	136.2	136.2	136.2	132.4	129.9	127.0	124.5	122.5	119.4
Mont Belvieu	386.0	385.5	385.5	385.5	385.5	385.5	376.0	371.0	368.1	367.0	366.1	363.9
Montgomery	207.4	206.8	207.0	206.9	206.9	206.8	200.8	196.5	194.8	193.7	193.9	193.1
Montgomery County MUD 105	151.0	150.1	149.9	150.4	150.1	149.8	146.6	143.9	143.4	143.5	142.4	141.8
Montgomery County MUD 112	218.9	218.2	218.2	218.3	218.3	218.3	212.8	209.9	209.0	208.2	208.1	207.9
Montgomery County MUD 115	152.4	151.6	151.6	151.8	151.7	151.7	148.0	145.3	144.7	144.3	143.8	143.2
Montgomery County MUD 119	132.9	132.3	132.3	132.3	132.3	132.3	129.0	125.4	121.7	119.2	117.4	114.4
Montgomery County MUD 126	126.9	126.5	126.5	126.3	126.6	126.4	123.3	120.3	119.9	119.8	120.3	119.6
Montgomery County MUD 127	60.1	59.9	60.0	60.0	60.0	60.1	60.0	60.0	60.0	60.0	60.0	60.0
Montgomery County MUD 137	146.2	145.9	145.6	145.7	146.0	145.9	140.4	137.0	135.7	134.4	133.7	131.9

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Montgomery County MUD 139	140.5	140.1	140.1	140.1	140.1	140.1	136.0	131.8	130.1	129.7	130.8	130.6
Montgomery County MUD 15	68.2	67.7	67.7	67.7	67.7	67.7	65.7	63.7	63.3	62.7	62.4	61.4
Montgomery County MUD 18	389.1	388.5	388.5	388.5	388.4	388.5	379.0	375.6	374.9	373.8	373.3	372.1
Montgomery County MUD 19	231.7	231.1	231.1	231.1	231.1	231.0	226.8	225.0	224.8	224.5	224.8	224.7
Montgomery County MUD 24	140.1	139.9	139.9	139.9	139.7	139.8	135.0	131.7	130.0	129.0	129.2	128.6
Montgomery County MUD 56	81.2	80.7	80.7	80.6	80.4	80.5	78.9	76.2	75.9	75.2	74.5	74.0
Montgomery County MUD 8	269.5	269.1	269.0	269.0	269.0	269.0	260.0	254.7	253.3	251.4	250.5	248.2
Montgomery County MUD 83	163.1	162.4	162.4	162.2	162.3	162.3	158.2	155.3	154.8	154.1	153.9	152.7
Montgomery County MUD 84	192.5	192.2	192.1	192.0	192.0	192.1	186.7	184.2	183.5	182.4	181.9	180.9
Montgomery County MUD 88	160.6	159.9	160.0	159.9	159.9	160.0	156.0	152.9	152.3	151.7	151.6	151.0
Montgomery County MUD 89	150.6	149.8	149.9	149.9	149.9	149.9	146.2	143.7	143.2	142.7	142.6	141.9
Montgomery County MUD 9	378.8	378.2	378.2	378.2	378.2	378.1	367.8	363.0	361.9	360.5	359.4	357.5
Montgomery County MUD 94	123.1	122.7	122.6	122.6	122.6	122.6	119.3	117.1	116.5	115.8	115.4	114.6
Montgomery County MUD 95	141.9	141.5	141.5	141.4	141.4	141.4	137.1	133.5	131.8	130.7	131.5	131.0
Montgomery County MUD 98	98.2	97.4	97.7	97.5	97.6	97.6	94.9	92.4	92.2	91.5	91.1	89.7
Montgomery County MUD 99	193.7	192.9	193.1	193.1	192.9	193.2	187.9	183.3	182.5	181.6	181.9	181.4
Montgomery County UD 2	223.2	222.9	222.6	223.0	222.9	222.6	216.1	213.0	211.6	210.5	209.8	208.2
Montgomery County UD 3	343.0	342.5	342.5	342.4	342.2	342.2	330.4	322.7	320.5	318.1	316.4	313.4
Montgomery County UD 4	280.1	279.8	279.7	279.7	279.8	279.8	270.5	265.2	263.8	262.2	261.4	259.4
Montgomery County WCID 1	72.2	71.8	71.8	71.8	71.8	71.7	69.7	67.7	67.1	66.3	65.9	64.8
Morgans Point	446.4	439.5	439.5	439.5	440.8	442.0	434.6	422.9	420.1	420.1	421.3	421.8
Moscow WSC	130.0	127.0	126.4	128.6	127.0	128.5	125.7	115.1	114.9	113.9	112.9	111.6
Mount Houston Road MUD	84.9	84.4	84.5	84.5	84.4	84.4	82.5	80.8	80.6	80.1	79.8	79.1
MSEC Enterprises	201.4	200.9	200.9	200.9	200.9	200.9	195.2	190.6	188.9	186.1	183.0	179.8
Nassau Bay	229.1	228.5	228.5	228.5	228.5	228.4	223.3	220.8	220.0	219.6	219.8	219.2
Needville	90.1	89.7	89.6	89.7	89.7	89.6	86.8	85.1	84.1	83.0	82.4	81.0

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
New Caney MUD	93.7	93.2	93.3	93.3	93.2	93.3	90.4	87.2	86.3	85.1	84.2	82.1
New Waverly	144.7	144.6	143.8	144.3	143.9	143.5	139.6	135.3	132.2	132.3	131.7	131.5
Newport MUD	108.9	108.4	108.5	108.4	108.4	108.4	105.0	101.0	100.5	99.1	98.1	95.6
Nitsch and Son Utility	108.8	108.3	108.3	108.3	108.3	108.3	105.4	103.0	102.5	101.5	101.1	100.1
Normangee	188.9	189.2	191.0	190.9	187.3	193.4	181.1	175.9	174.4	170.3	168.6	178.5
North Belt UD	248.6	247.9	248.1	247.9	248.0	247.9	242.2	239.4	239.0	238.3	238.2	237.8
North Channel Water Authority	107.7	107.1	107.1	107.1	107.1	107.1	104.3	99.9	99.2	98.1	97.4	96.0
North Forest MUD	114.7	114.1	113.8	113.8	113.8	113.7	111.3	109.0	108.2	107.6	107.0	106.1
North Fort Bend Water Authority	182.1	181.6	181.5	181.5	181.6	181.6	176.3	170.1	168.0	165.0	162.9	159.6
North Green MUD	100.8	100.2	100.2	100.1	100.1	100.1	98.6	97.4	97.4	96.9	96.8	96.5
North Harris County Regional Water Auth.	147.6	147.0	147.0	147.0	147.0	147.0	142.7	135.8	133.4	130.1	128.1	124.3
North Zulch MUD	117.4	116.5	116.5	116.5	116.5	116.5	112.9	108.9	108.0	106.7	105.8	104.0
Northeast Harris County MUD 1	231.1	230.2	229.8	229.8	230.6	229.8	222.3	214.4	212.2	210.5	211.4	208.2
Northwest Harris County MUD 16	120.8	120.2	120.1	120.1	120.2	120.3	116.8	114.1	113.3	112.9	112.7	111.9
Oak Hollow Utility	84.4	83.9	83.9	83.7	84.1	84.1	81.4	79.1	78.6	77.7	77.7	76.4
Oak Ridge North	155.9	155.1	155.2	155.1	155.2	155.2	151.4	147.8	146.4	146.1	146.5	146.1
Onalaska WSC	88.4	87.9	87.9	88.0	87.9	88.0	84.7	81.6	80.9	79.8	79.1	77.4
One Five O WSC	91.5	91.0	91.3	91.2	91.3	90.8	88.1	85.4	85.1	84.2	83.4	81.5
Oyster Creek	193.5	192.7	192.5	192.9	192.2	192.6	187.6	183.9	182.9	182.1	181.8	181.6
P B & S C WSC	115.3	114.9	114.6	114.9	114.8	114.6	111.5	109.2	108.3	107.8	107.6	106.0
Palmer Plantation MUD 1	207.3	207.0	207.0	207.0	207.1	207.4	201.6	199.0	198.5	198.1	197.7	197.0
Palmer Plantation MUD 2	109.2	108.5	108.6	108.6	108.6	108.6	105.9	103.2	103.1	102.4	101.7	100.7
Panorama Village	200.2	199.9	200.0	199.9	199.9	200.0	194.2	191.8	191.3	190.3	189.7	188.5
Parkway MUD	73.4	72.7	72.8	72.7	72.7	72.7	70.6	68.0	67.6	66.8	66.3	65.0
Pasadena	128.3	127.6	127.5	127.6	127.5	127.5	124.1	118.2	116.6	114.5	113.5	111.1
Pattison WSC	134.6	134.1	134.2	134.1	134.0	134.3	130.4	128.1	127.5	127.0	126.5	125.9

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Patton Village	73.0	72.8	72.8	72.7	73.1	73.0	68.7	65.4	64.6	63.5	62.4	60.0
Pearland	124.7	124.2	124.2	124.2	124.2	124.2	120.5	115.0	112.8	110.2	108.4	105.2
Pecan Grove MUD 1	193.3	192.8	192.9	192.8	192.9	192.9	187.3	182.1	180.0	176.9	173.9	170.0
Pennington WSC	147.4	147.3	146.4	146.8	147.6	146.9	141.8	136.9	135.3	135.2	135.3	132.1
Phelps SUD	93.3	92.9	93.1	93.0	93.1	92.9	90.4	88.2	87.6	87.2	86.5	85.3
Pine Village PUD	87.2	86.9	86.7	86.8	86.9	86.7	84.4	82.4	82.0	81.6	81.0	79.9
Pinehurst Decker Prairie WSC	87.3	86.9	87.1	87.1	87.1	87.1	84.3	82.7	82.3	81.8	81.0	80.1
Pinewood Community	80.5	79.8	79.4	79.4	79.8	79.4	77.7	75.2	74.0	73.2	73.8	71.8
Plantation MUD	90.4	90.2	90.2	90.1	90.0	90.1	87.4	85.3	84.9	84.1	83.4	82.5
Point Aquarius MUD	178.5	178.1	177.9	178.0	177.9	178.0	173.0	170.6	169.7	168.8	168.0	166.9
Porter SUD	81.0	81.0	81.0	81.0	81.0	81.0	78.2	76.0	75.3	74.3	73.6	72.1
Prairie View	207.9	207.5	207.4	207.4	207.5	207.4	202.1	199.8	199.1	198.4	198.0	197.2
Prairie View A&M University	104.9	105.0	105.0	105.0	105.0	105.0	100.1	96.2	95.2	93.7	92.6	90.1
Providence WSC	63.1	62.7	62.7	62.6	62.7	62.7	61.3	60.1	60.0	60.0	60.0	60.0
Quadvest	195.2	194.7	194.7	194.7	194.7	194.7	188.6	183.4	181.4	178.2	174.9	171.0
Quail Valley UD	144.2	143.8	143.8	143.8	143.9	143.9	139.5	134.5	132.2	129.8	127.1	123.5
Ranch Crest Water	149.8	149.7	149.8	149.5	149.7	149.5	145.2	143.7	142.7	141.8	141.5	140.8
Rayford Road MUD	184.4	183.9	183.9	183.9	183.9	183.9	178.8	175.5	174.7	173.9	173.7	172.8
Raywood WSC	144.8	143.5	143.5	143.3	144.2	143.5	138.5	133.5	133.5	131.0	131.8	129.1
Richmond	142.3	141.9	141.9	141.9	141.9	141.9	137.9	134.0	132.6	130.7	129.2	127.2
Richwood	88.8	88.4	88.3	88.3	88.4	88.3	86.0	84.1	83.7	83.0	82.6	81.4
River Plantation MUD	212.3	212.0	212.0	212.0	211.9	212.0	206.3	204.0	203.4	202.9	202.0	200.9
Riverside SUD	85.9	86.1	86.0	85.9	86.0	86.0	82.8	81.1	80.5	79.7	79.3	78.1
Rolling Fork PUD	152.1	151.7	151.5	151.7	151.7	151.5	147.5	145.5	144.4	144.0	144.0	143.0
Roman Forest Consolidated MUD	123.3	123.0	123.1	123.2	123.3	123.2	118.9	117.2	116.6	116.0	115.3	113.9
Rosenberg	100.4	99.9	99.9	99.9	99.9	99.9	97.2	94.3	93.6	92.5	91.8	90.2

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Royal Valley Utilities	276.8	276.1	276.1	276.0	276.1	276.0	270.0	267.8	267.3	266.8	266.5	265.5
Sagemeadow UD	98.8	98.3	98.2	98.3	98.3	98.3	95.7	93.8	93.3	92.7	92.4	91.5
San Jacinto SUD	105.0	104.6	104.7	104.6	104.5	104.7	100.8	97.6	96.7	95.6	94.7	92.9
San Leon MUD	111.1	110.9	111.0	111.0	111.0	111.0	107.2	105.0	104.4	103.5	102.9	101.6
Seabrook	125.3	124.7	124.7	124.7	124.7	124.7	121.3	115.8	113.0	109.3	105.4	100.6
Sealy	178.1	177.4	177.3	177.3	177.4	177.3	173.3	170.2	169.3	168.9	169.3	168.9
Sedona Lakes MUD 1	135.9	135.6	135.4	135.6	135.2	135.3	131.5	129.5	129.1	128.3	127.6	126.6
Sequoia Improvement District	137.7	137.8	137.7	137.7	137.5	137.3	133.7	130.8	130.7	129.7	129.4	128.3
Shenandoah	384.8	384.0	384.0	383.9	383.9	384.0	375.5	371.1	369.1	368.6	370.0	370.2
Shepherd	143.4	142.7	142.7	142.9	142.9	142.8	138.5	135.0	134.4	133.3	133.0	131.5
Shoreacres	194.4	193.8	193.8	193.4	193.5	193.9	188.6	185.6	185.1	184.2	183.7	183.0
Sienna Plantation	163.2	162.7	162.7	162.7	162.7	162.6	158.2	153.8	152.2	149.7	147.1	144.0
Soda WSC	101.0	100.5	100.2	100.3	100.5	100.2	97.6	95.2	94.2	93.3	93.0	91.6
South Cleveland WSC	73.4	73.1	73.1	73.0	73.1	73.0	71.2	69.8	68.7	67.7	67.1	65.9
South Houston	98.5	97.9	97.8	97.8	97.8	97.8	95.7	92.3	91.3	90.8	90.9	90.1
Southeast WSC	113.4	112.8	112.6	112.8	113.0	112.8	108.8	105.2	104.0	103.3	102.5	100.4
Southern Montgomery County MUD	113.2	112.6	112.6	112.5	112.6	112.5	110.3	108.1	106.0	104.4	104.3	102.7
Southern Water	90.5	90.0	90.0	89.9	89.9	90.0	87.7	85.6	85.3	84.7	84.2	83.4
Southside Place	130.9	130.2	130.2	130.2	130.4	130.4	127.1	124.2	123.7	123.3	123.4	122.7
Southwest Harris County MUD 1	62.6	61.7	61.7	62.0	61.7	61.8	60.0	60.0	60.0	60.0	60.0	60.0
Splendora	84.4	83.9	83.9	83.9	83.9	83.9	81.2	78.0	77.3	76.2	75.2	72.6
Spring Creek UD	107.2	106.5	106.5	106.5	106.6	106.5	103.2	98.8	97.9	96.5	95.5	93.2
Spring Meadows MUD	69.2	68.6	68.5	68.5	68.5	68.5	66.8	64.9	64.1	63.5	63.1	62.2
Spring Valley	238.6	238.0	238.1	238.1	238.1	238.1	231.6	227.8	226.8	225.8	225.6	224.3
Stanley Lake MUD	192.6	192.0	191.9	192.0	191.9	191.9	187.3	184.4	183.4	183.1	182.8	182.1
Suburban Utility	82.9	82.3	82.3	82.3	82.3	82.3	80.3	78.4	78.4	77.7	77.2	76.4

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Sugar Land	218.3	217.9	217.9	217.9	217.9	217.9	211.8	204.7	202.5	199.5	198.1	194.9
Sunbelt FWSD	87.8	87.2	87.2	87.2	87.2	87.2	84.7	81.2	80.5	79.4	78.6	76.8
Surfside Beach	330.2	330.2	329.9	328.9	330.0	329.3	317.4	303.2	298.1	294.0	296.5	295.3
Sweeny	143.5	142.9	143.0	143.0	143.0	142.8	138.6	135.1	134.4	133.7	133.6	132.4
T & W Water Service	185.9	185.3	185.4	185.4	185.3	185.4	177.5	170.6	162.8	155.3	148.0	138.1
Tarkington SUD	91.5	91.0	91.0	91.0	90.9	91.0	88.7	86.7	86.3	85.9	85.5	84.7
TDCJ Darrington Unit	410.8	409.8	410.2	410.2	409.8	409.7	401.1	398.0	398.2	397.2	396.7	395.3
TDCJ Ferguson Unit	432.1	431.8	431.8	431.8	431.8	431.8	422.1	419.9	419.5	418.8	418.1	417.3
TDCJ Jester Units	321.6	321.1	321.1	321.1	321.1	321.1	313.4	311.1	310.5	309.9	309.3	308.1
TDCJ Ramsey Area	751.0	750.2	750.2	750.2	750.2	750.2	732.0	726.6	725.6	723.9	722.6	720.1
Tempe WSC 1	64.7	64.2	64.1	64.1	64.1	64.0	62.3	60.4	60.0	60.0	60.0	60.0
Texas City	119.4	118.8	118.8	118.8	118.8	118.8	115.6	112.0	111.2	110.2	109.5	107.7
The Commons Water Supply	156.7	156.1	156.1	156.1	156.1	156.1	152.2	149.7	149.1	148.5	148.2	147.3
The Woodlands	210.0	209.5	209.5	209.5	209.5	209.5	207.5	197.5	194.0	190.7	190.6	188.2
Thunderbird UD	158.1	157.7	157.7	157.8	157.8	157.8	153.1	150.0	149.5	148.6	148.4	147.6
Tomball	220.9	220.1	220.1	220.1	220.1	220.1	214.3	206.2	204.4	202.6	203.9	201.9
Trail of the Lakes MUD	99.7	99.2	99.2	99.3	99.2	99.2	96.5	93.2	92.6	91.6	90.8	89.0
Trinity	95.3	94.8	94.9	94.8	94.9	94.8	91.6	88.7	88.1	87.3	86.6	84.8
Trinity Bay Conservation District	153.4	152.9	152.9	153.0	153.0	152.9	145.5	138.3	136.2	131.9	119.4	109.4
Trinity Rural WSC	108.4	107.6	107.5	107.7	107.8	107.7	104.7	101.7	101.2	100.7	100.1	98.6
Valley Ranch MUD 1	97.0	96.5	96.5	96.4	96.5	96.4	93.8	91.6	91.1	90.3	90.0	88.8
Varner Creek UD	120.9	120.5	120.7	120.7	120.7	120.4	116.7	113.7	113.4	112.6	112.2	110.8
Walker County SUD	114.4	113.9	113.9	113.9	113.9	113.9	110.9	108.3	106.5	105.2	104.2	102.2
Waller	179.0	178.5	178.3	178.5	178.4	178.5	173.4	169.8	168.5	167.8	167.4	166.4
Wallis	104.4	103.7	103.7	103.7	103.5	103.6	101.0	97.6	97.6	96.2	95.3	94.2
Waterwood MUD 1	337.1	336.3	336.4	335.2	336.4	334.3	321.9	311.8	311.2	306.2	306.5	299.9

Water User Group[1]	Projected Per Capita Demand (gpcd)						Per Capita Demand after Demand Mgmt. (gpcd)					
	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Webster	224.2	223.4	223.3	223.3	223.3	223.4	217.9	205.2	198.0	192.7	190.8	184.4
West Columbia	95.1	94.7	94.5	94.6	94.7	94.6	92.0	89.3	88.6	88.0	87.5	85.9
West End WSC	93.4	92.6	92.6	92.6	92.6	92.6	90.2	87.8	87.1	86.3	86.3	84.7
West Hardin WSC	91.7	91.7	91.7	91.7	91.7	91.7	87.7	85.7	85.7	85.7	85.7	83.7
West Harris County MUD 6	116.3	115.7	115.5	115.7	115.6	115.6	113.5	112.3	111.7	111.6	111.5	111.0
West Harris County Regional Water Auth.	110.7	110.2	110.2	110.2	110.1	110.1	106.9	101.9	100.9	99.5	99.0	97.4
West University Place	168.5	168.0	168.0	168.0	168.0	168.0	163.0	157.6	155.7	153.0	150.0	146.4
Westfield Garden Park	126.3	125.3	125.3	125.3	126.5	126.5	122.0	119.6	119.6	119.6	119.3	119.3
Westwood North WSC	155.6	155.0	154.9	154.9	154.9	154.9	151.1	148.6	148.1	147.4	147.1	146.8
Westwood Shores MUD	131.9	131.1	131.4	131.2	131.0	131.2	126.2	120.3	118.5	117.7	116.8	114.6
White Oak WSC	80.5	80.2	80.4	80.3	80.1	80.1	77.9	76.0	75.7	75.0	74.1	73.2
Willis	120.2	119.6	119.7	119.6	119.7	119.6	116.2	112.9	112.8	112.5	112.1	110.7
Willow Creek Farms MUD	209.1	208.7	208.8	208.8	208.7	208.7	203.4	201.1	200.8	200.1	199.7	198.9
Windfern Forest Utility District	152.4	151.7	151.6	151.8	151.6	151.7	148.1	146.0	145.6	145.1	144.5	143.8
Wood Branch Village	98.2	98.0	97.9	98.0	98.0	97.9	95.0	93.0	92.6	92.0	91.3	89.7
Wood Trace MUD 1	120.1	120.0	119.7	119.8	119.7	120.0	115.6	111.1	111.1	111.7	110.5	109.3
Woodcreek MUD	156.7	156.1	156.1	156.1	156.1	156.1	152.4	149.9	149.6	149.0	148.7	148.1
Woodcreek Water of Liberty	82.1	82.1	85.4	82.9	88.6	86.2	82.1	82.1	85.4	82.9	82.3	80.0
Woodland Oaks Utility	80.7	80.1	80.0	80.2	80.2	80.2	77.7	75.7	75.3	74.7	74.1	73.0
Woodridge MUD	76.8	76.1	76.2	75.9	76.0	75.9	74.1	71.8	71.5	70.4	70.1	69.1

1. Italicized WUG names indicate WUGs for which the utility service area extends beyond the Region H boundary into other regional planning areas. Per-capita demands reflect projections for the entire WUG and are limited to demand reduction strategies recommended by the Region H Water Planning Group.

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APPENDIX 6-A

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY 303(D) LIST OF IMPAIRED WATERS

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Table 6A-1 – TCEQ 303(d) List of Impaired Waters

Segment ID	Segment Name	Size (Miles)	Segment Description
607	Pine Island Bayou	92.76	From the confluence with the Neches River in Hardin/Jefferson County to FM 787 in Hardin County
802	Trinity River Below Lake Livingston	75.94	From a point 3.1 km (1.9 mi) downstream of US 90 in Liberty County to Livingston Dam in Polk/San Jacinto County
804	Trinity River Above Lake Livingston	159.8	From a point 1.8 km (1.1 mi) upstream of Boggy Creek in Houston/Leon County to a point immediately upstream of the confluence of the Cedar Creek Reservoir discharge canal in Henderson/Navarro County
901	Cedar Bayou Tidal	19	From the confluence with Galveston Bay 1.0 km (0.6 mi) downstream of Tri-City Beach Road in Chambers County to a point 2.2 km (1.4 mi) upstream of IH 10 in Chambers/Harris County
1001	San Jacinto River Tidal	16.15	From a point 100 meters (110 yards) downstream of IH 10 in Harris County to Lake Houston Dam in Harris County
1002	Lake Houston	N/A	From Lake Houston Dam in Harris County to the confluence of Spring Creek on the West Fork San Jacinto Arm in Harris/Montgomery County and to the confluence of Caney Creek on the East Fork San Jacinto Arm in Harris County, up to the normal pool elevation of 44.5 feet
1005	Houston Ship Channel/San Jacinto River Tidal	16.78	From the confluence with Galveston Bay at Morgan's Point in Harris/Chambers County to a point 100 meters (110 yards) downstream of IH 10 in Harris County
1007	Houston Ship Channel/Buffalo Bayou Tidal	36.86	From a point immediately upstream of Greens Bayou in Harris County to a point 100 meters (110 yards) upstream of US 59 in Harris County, including tidal portion of tributaries
1008	Spring Creek	56.95	From the confluence with the West Fork of the San Jacinto River in Harris/Montgomery County to the confluence with Kickapoo Creek in Harris/Waller County
1011	Peach Creek	42.56	From the confluence with Caney Creek in Montgomery County to SH 150 in Walker County

Segment ID	Segment Name	Size (Miles)	Segment Description
1101	Clear Creek Tidal	12.23	From the Clear Lake confluence at a point 3.2 km (2.0 mi) downstream of El Camino Real in Galveston/Harris County to a point 100 m (110 yards) upstream of FM528 in Galveston/Harris County
1102	Clear Creek Above Tidal	31.12	From a point 100 meters (110 yards) upstream of FM 528 in Galveston/Harris County to Rouen Road in Fort Bend County
1103	Dickinson Bayou Tidal	14.58	From the Dickinson Bay confluence 2.1 km (1.3 mi) downstream of SH 146 in Galveston County to a point 4.0 km (2.5 mi) downstream of FM 517 in Galveston County
1105	Bastrop Bayou Tidal	22.92	From the confluence with Bastrop Bay 1.1 km (0.7 mi) downstream of the Intracoastal Waterway in Brazoria County to a point 8.6 km (5.3 mi) upstream of Business 288 at Lake Jackson in Brazoria County
1107	Chocolate Bayou Tidal	15.57	From the Chocolate Bay confluence 1.4 km (0.9 mi) downstream of FM 2004 to a point 4.2 km (2.6 mi) downstream of SH 35 in Brazoria County
1108	Chocolate Bayou Above Tidal	22.26	From a point 4.2 km (2.6 mi) downstream of SH 35 in Brazoria County to SH 6 in Brazoria County
1109	Oyster Creek Tidal	24.74	From the Intercoastal Waterway confluence to a point 100 meters (110 yards) upstream of FM 2004 in Brazoria County
1110	Oyster Creek Above Tidal	67.88	From a point 100 meters (110 yards) upstream of FM 2004 in Brazoria County to a point 4.3 km (2.7 mi) upstream of Scanlan Road in Fort Bend County
1113	Armand Bayou Tidal	9.39	From the Clear Lake confluence (at NASA Road 1 bridge) in Harris County to a point 0.8 km (0.5 mi) downstream of Genoa-Red Bluff Road in Pasadena in Harris County (includes Mud Lake/Pasadena Lake)
1209	Navasota River Below Lake Limestone	126.61	From the confluence with the Brazos River in Grimes County to Sterling C. Robertson Dam in Leon/Robertson County
1301	San Bernard River Tidal	33.69	From the confluence with the Intracoastal Waterway in Brazoria County to a point 3.2 km (2.0 mi) upstream of SH 35 in Brazoria County

Segment ID	Segment Name	Size (Miles)	Segment Description
1302	San Bernard River Above Tidal	110.13	From a point 3.2 km (2.0 mi) upstream of SH 35 in Brazoria County to the county road southeast of New Ulm in Austin County
0607C	Willow Creek	20.72	From the confluence of Pine Island Bayou north of Nome in Jefferson County to the upstream perennial portion of the stream east of Devers in Liberty County
0801C	Cotton Bayou	6.93	From the confluence of Cotton Lake southeast of Mont Belvieu in Chambers County upstream to a point (NHD RC 12040203000496) approximately 1 mi north of IH 10 in Chambers County
0801E	Cotton Bayou Above Tidal	4.35	From a point 1.19 km (0.74 mi) upstream of the confluence of Cotton Lake upstream to a point 1.89 km (1.17 mi) north of IH 10 in Mont Belvieu in Chambers County
0804H	Upper Keechi Creek	66.38	From confluence with segment 0804 Trinity River to the upper end of NHD stream Upper Keechi Creek (NHD RC 12030201001075)
1006L	Kennedy Gully	1.72	From the confluence with Halls Bayou to 0.15 km south of the intersection of Eastover St and Wedgefield St in Harris County
1007H	Pine Gully Above Tidal	1.06	From the Sims Bayou confluence to 0.11 km (0.07 mi) east of Broadway Street in Harris County
1007I	Plum Creek Above Tidal	3.55	From the Sims Bayou confluence to Telephone Road in Harris County
1007K	Country Club Bayou Above Tidal	1.25	From just downstream of South Lockwood Drive to the confluence with Brays Bayou to approximately 0.5 mi upstream of North Wayside Drive in Harris County
1007O	Unnamed Tributary of Buffalo Bayou	0.47	From the confluence with Buffalo Bayou to IH-10 between Hirsch Road and Lockwood in Harris County
1007R	Hunting Bayou Above Tidal	11.14	From the confluence with Hunting Bayou Tidal at IH-10 to Maury Street on the north fork and Bain Street on the south fork
1007W	Harris County Flood Control Ditch D 138	0.78	From the confluence with Brays Bayou to a point immediately south of Beechnut Street in Houston

Segment ID	Segment Name	Size (Miles)	Segment Description
1008A	Mill Creek	30.33	From the confluence of Spring Creek upstream to where the creek splits between Hurricane Creek and Kickapoo Creek
1008I	Walnut Creek	25.49	From the Spring Creek confluence to a point 41.1 km (25.5 mi) upstream
1008J	Brushy Creek	16.26	From the Spring Creek confluence upstream to a point 5.6 km (3.5 mi) upstream of FM 1488
1010C	Spring Branch	13.99	From the Caney Creek confluence to a point 0.54 km (0.34 mi) upstream of SH 105
1013A	Little White Oak Bayou	5.48	From the White Oak Bayou confluence to Yale Street in Harris County
1013C	Unnamed Non-Tidal Tributary of Buffalo Bayou Tidal	0.56	Located approximately 1.8 mi upstream of the Buffalo Bayou/White Oak Bayou confluence between IH-10 and Memorial Drive west of IH-45 in Harris County
1014C	Horsepen Creek	6.75	From the Langham Creek confluence upstream to a point 0.1 km (0.06 mi) west of Barker Cypress Road
1014M	Newman Branch (Neimans Bayou)	3.04	From the Buffalo Bayou Above Tidal confluence to 0.1 km (0.06 mi) upstream of Hammerly Blvd in Harris County
1015A	Mound Creek	15.38	From the confluence with Lake Creek to a point 0.69 km east of FM 149 near Conroe
1016D	Unnamed Tributary of Greens Bayou	4.49	From the confluence with Greens Bayou, west of El Dorado Country Club to Lee Road, west of US Hwy 59 in Harris County
1017D	Unnamed Tributary of Whiteoak Bayou	1.83	From the confluence with White Oak Bayou downstream of TC Jester, to Hempstead Hwy, north of US Hwy 290 in Harris County
1102F	Mary's Creek Bypass	2.37	From the Mary's Creek confluence NE of FM 518 to a point 0.96 km (0.60 mi) upstream to the Mary's Creek confluence (NW of County Road 126)
1103A	Bensons Bayou	2.38	From the Dickinson Bayou confluence to point 0.6 km (0.37 mi) upstream of FM 646 in Galveston County
1103C	Geisler Bayou	3.17	From the Dickinson Bayou Tidal confluence to a point 1.37 km (0.85 mi) upstream of FM 646 in Galveston County

Segment ID	Segment Name	Size (Miles)	Segment Description
1105A	Flores Bayou	12.44	From a point 2.6 km (1.6 mi) downstream of County Road 171 upstream to SH 35 in Brazoria County
1105B	Austin Bayou Tidal	5.99	From the Bastrop Bayou Tidal confluence to the FM 2004 bridge crossing in Brazoria County
1105C	Austin Bayou Above Tidal	21.7	From FM 2004 upstream (Austin Bayou Tidal upper boundary) to 1.73 mi upstream from where the water body crosses county road 51.
1105E	Brushy Bayou	5.15	From the confluence with Austin Bayou Above Tidal (1105C) upstream to end of canal approximately 0.4 mi upstream of FM 210 crossing east of the City of Angleton in Brazoria County.
1113A	Armand Bayou Above Tidal	4.57	From the upper segment boundary of Armand Bayou Tidal, 0.8 km (0.5 mi) downstream of Genoa-Red Bluff Road), upstream to Beltway 8 in Harris County
1202H	Allen's Creek	18.05	From the confluence with the Brazos River, two miles northeast of Wallis, to the headwaters one mile north of IH 10 in Austin County.
1202I	Bessie's Creek	52.08	Bessie's Creek from the confluence of the Brazos River in Fort Bend County upstream to the headwater north of Pattison
1202J	Big Creek	34.41	Big Creek - from the confluence of the Brazos River upstream to the confluence of Cottonwood Creek and Coon Creek
1202K	Mill Creek	18.05	From confluence of East and West Mill Creeks downstream to confluence with Brazos River
1209J	Shepherd Creek	16.33	From the confluence with the Navasota River in Madison County to a point 0.7 mi upstream of FM 1452 in Madison County
1245C	Bullhead Bayou	11.76	From its confluence with Steep Bank Creek in Fort Colony, upstream to its headwaters in Pecan Grove in Fort Bend County
1245D	Unnamed Tributary of Bullhead Bayou	1.34	Tributary to Bullhead Bayou in Fort Bend County
1245F	Alcorn Bayou	8.63	From the confluence with Steep Bank Creek upstream to its headwaters 0.5 km east of Pecan Grove in Fort Bend county

Segment ID	Segment Name	Size (Miles)	Segment Description
1245I	Steep Bank Creek	5.11	From confluence with Oyster Creek (Flat Bank Creek portion) upstream to end of water body, 0.2 km east of US 59 in city of First Colony, Fort Bend County.
1302D	Peach Creek	29.02	From the confluence with the San Bernard River in Wharton Co. to the headwaters approximately 8 km upstream of FM-102 in Wharton Co.
1304A	Linnville Bayou	20.61	From the confluence with Caney Creek in Matagorda County upstream to a point 0.7 km above SH 35 in Brazoria/Matagorda Counties
2422B	Double Bayou West Fork	14.47	From the Trinity Bay confluence to Belton Road in Chambers County
2422D	Double Bayou East Fork	17.01	From the Trinity Bay confluence to a point 2.6 km (1.6 mi) upstream of SH 65
2423A	Oyster Bayou	21.95	From the East Bay confluence to a point 2.2 km (1.4 mi) upstream from SH 65 in Chambers County
2424A	Highland Bayou	13.78	From Jones Bay confluence to Avenue Q 0.8 km (0.5 mi) north of SH 6 between Arcadia and Alta Loma in Galveston County
2424C	Marchand Bayou	1.83	From Highland Bayou confluence to 0.72 km (0.45 mi) north of IH 45 in Galveston County
2424G	Highland Bayou Diversion Canal	8.91	From the confluence with an unnamed tributary adjacent to Jones Bay upstream to the Highland Bayou confluence
2425B	Jarbo Bayou	2.13	From Clear Lake confluence with Clear Lake to 1.1 km (0.67 mi) upstream of FM 518 in Galveston County
2426C	Goose Creek Tidal	3.79	From the Tabbs Bay confluence upstream to the East Fork of Goose Creek confluence
2431A	Moses Bayou	4.49	From Moses Lake confluence to 2.2 km (1.4 mi) upstream of SH 3 in Galveston County
2431C	Unnamed Tributary to the Southern Arm of Moses Lake (West)	2.79	From the confluence with the southern arm (west) of Moses Lake to a point 0.45 mi upstream of State Highway 3 near La Marque
2432C	Halls Bayou Tidal	20.89	From the Chocolate Bay confluence upstream to a point 31.5 km (19.6 mi) upstream

APPENDIX 6-B

IMPACTS TO AGRICULTURAL AND NATURAL RESOURCES

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Appendix 6-B – Impacts to Resources

6-B-1. OVERVIEW

The Region H Water Planning Group (RHWPG), in developing the 2026 Regional Water Plan (RWP), balanced meeting water needs with good stewardship of the water, agricultural, and natural resources within the region to promote a balance of economic, social, aesthetic, and ecological viability. The Region H strategy selection and evaluation process, described in ***Chapter 5***, included application of rating criteria for impacts to environmental land and habitat, instream flows, and bay and estuary inflow. As part of the evaluation of impacts of the 2026 RWP, the RHWPG conducted a quantitative assessment of potential impacts of strategies and projects on agricultural and natural resources in accordance with Title 31, Texas Administrative Code (TAC) § 357.34(e)(3) and Texas Water Development Board (TWDB) guidance.

Multiple agricultural and environmental impacts matrices were developed to quantify and compare the potential impacts of strategies and projects. Impact matrices were developed to take into consideration the following categories:

- Agricultural Resources
- Wildlife Habitat – Project Acreage
- Wildlife Habitat – Environmental Land and Habitat
- Environmental Water Needs
- Bays, Estuaries, and Arms of The Gulf of Mexico
- Cultural Resources

Each category was quantitatively assessed, with a corresponding ranking from 1 to 5 assigned based upon the results of this assessment. Where possible, numerical inputs such as total project acreage or acreage impacted were utilized as inputs to the evaluation process. Where numerical inputs were not available or variable, impacts were categorized by level of impact and assigned a corresponding ranking. Evaluation methodologies and ranking assignments for each category are discussed in the following sections.

6-B-2. AGRICULTURAL RESOURCES

Potential impacts to agricultural resources were quantified and scored based on direct impacts to agricultural acreage; strategies and projects in the RWP are not expected to reduce the availability of firm water supplies of irrigation users. A quantitative assessment was conducted to assess the impact to agricultural acreage for each key project. Where data on disturbed or developed acreage was not available from project sponsors, acreage was estimated using project-specific assumptions or based upon project components types and standard RWP assumptions on component acreage as applied in the TWDB Unified Costing Model. This assessment considered the infrastructure required for a project, as well as the presence of agricultural resources in the project area. *Table 6-B-1* describes the quantitative thresholds used to score each key project for its impact on agricultural acreage and resources.

The following assumptions and observations were made for this criterion:

- Non-infrastructure projects do not impact agricultural lands or production.
- Projects developed in an urban setting do not impact agricultural lands or production.
- WUG-level infrastructure, pipelines, and groundwater wells can generally be located in areas avoiding most or all agricultural impacts.
- If the location of a project is known and data is available to estimate impacts to agricultural resources, this information was used to evaluate the project and assign an impact score.
- Scoring for groundwater reduction plans (GRPs) considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.
- For projects that have positive impacts to agricultural resources and/or provide additional water supply or demand management to agriculture, the project is rated as "positive".

Table 6-B-1 – Agricultural Resources Impact Scoring Matrix

Estimated Agricultural Acres Impacted	Impact Description	Agricultural Resources Score
>10,000 acres	High Impact	1
5,001-10,000 acres	Medium High	2
2,001-5,000 acres	Medium	3
101-2,000 acres	Medium Low	4
1-100 acres	Low	5
No area impacted	None	5
Positive acreage impacts and provides water supply or demand management to agriculture	Positive	5

6-B-3. WILDLIFE HABITAT – PROJECT ACREAGE

This criterion evaluates the potential degree of impact to wildlife habitat based on total estimated project acreage. A quantitative assessment was conducted to estimate the total acreage impacted by the infrastructure of each key project. Where data on disturbed or developed acreage was not available from project sponsors, acreage was estimated using project-specific assumptions or based upon project components types and standard RWP assumptions on component acreage as applied in the TWDB Unified Costing Model. This estimate of total acreage was applied to evaluate and assign a score to each key project for this criteria, based on the quantitative thresholds shown in *Table 6-B-2.* It should be noted that application of total acreage is a highly conservative indicator of potential wildlife habitat impact, as many of the key projects recommended in the 2026 RWP are associated with infrastructure expansion at existing water facility sites or would be developed in heavily urbanized areas.

The following assumptions and observations were made for this criterion:

- If the location of the project is known and data is available regarding impacts to specific wildlife habitats or a detailed study has been conducted, this information was used to evaluate a project and assign an impact score.
- Non-infrastructure projects do not impact wildlife habitat.
- The majority of projects evaluated require infrastructure that will have low impact on wildlife habitat acreage.
- Scoring for GRPs considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.
- Projects with potential medium high to high impacts to habitat acreage are expected to be those with a large geographic footprint, including reservoirs.

Table 6-B-2 –Habitat Project Acreage Impact Scoring Matrix

Summary	Impact Description	Wildlife Habitat Score
>10,000 acres	High	1
5,001-10,000 acres	Medium High	2
2,001-5,000 acres	Medium	3
101-2,000 acres	Medium Low	4
1-100 acres	Low	5
Non-infrastructure projects	None	5

6-B-4. WILDLIFE HABITAT - ENVIRONMENTAL LAND AND HABITAT

This criterion evaluates the degree of potential environmental land and habitat impacts based on project-specific considerations associated with development setting, degree of expected disturbance, impacts to surrounding areas, mitigation opportunities, and degree of opposition. *Table 6-B-3* explains the categories used to evaluate and score each key project for impacts on environmental land and habitat.

The "Environmental Land and Habitat" criterion was also evaluated and scored for each key project under the second phase (the Matrix Evaluation phase) of WMS evaluation described in ***Section 5.3.4*** of the RWP. The scoring for this criterion is consistent with the Region H WMS Rating Criteria matrix in ***Table 5-2***. More detailed discussions regarding environmental land and habitat impacts for each key project can be found in the technical memoranda in ***Appendix 5-B***.

The following assumptions and observations were made for this criterion:

- If environmental land impacts have been already been evaluated in a detailed study, this information was used to evaluate a project and assign an impact score.
- Non-infrastructure projects do not impact wildlife habitat.
- Projects with anticipated development on existing water facility sites or in urban settings are typically expected to have low to medium impacts.
- Large scale conveyance projects are typically expected to have medium impacts due to urbanized settings or the ability to select routes to reduce habitat impacts.

Table 6-B-3 – Environmental Land and Habitat Impact Scoring Matrix

Summary	Impact Description	Wildlife Habitat Score
Significant environmental issues and opposition.	High	1
Some environmental issues and opposition.	Medium High	2
Environmental impacts can be mitigated. Limited concerns.	Medium	3
Minimal mitigation of impacts needed. Minimal concerns.	Medium Low	4
Limited or no known impacts.	Low	5

6-B-5. ENVIRONMENTAL WATER NEEDS

This criterion evaluates the degree of impact that a project could have on an area's overall environmental water needs. Water is vital to the environmental health of a region. Therefore, it is imperative to consider the extent to which water supply projects could impact the amount of water that will be available to the environment, and how this could affect environmental needs and health. The evaluation of environmental water needs focused on impacts to instream flows regimes upstream and downstream of the project. While Senate Bill 3 environmental flow parameters were considered as part of the evaluation process, the assessment of environmental water needs was not constrained to statutory flow requirements and incorporated project and site-specific considerations regarding potential impacts to both upstream and downstream flows. *Table 6-B-4* presents the categories used to evaluate and score each key project for this criterion. More detailed discussions regarding environmental flows, including instream flows, for each key project can be found in their respective technical memoranda in ***Appendix 5-B***.

The following assumptions and observations were made for this criterion:

- If impacts on environmental water needs and instream flows have been already been evaluated in a detailed study, this information was used to evaluate a project and assign an impact score.
- Groundwater development projects, excluding aquifer storage and recovery, potentially increase instream flows through return flows from points of use.

- The majority of recommended treatment and transmission projects do not directly impact instream flows directly, as they are supplied through other source development projects.
- Source development projects such as intake expansions, reuse, and reservoir development are typically associated with reduced instream flows.
- Scoring for GRPs considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.

Table 6-B-4 – Environmental Water Needs Impact Scoring Matrix

Environmental Water Needs	Impact Description	Environmental Needs Score
Significantly reduces instream flows.	Significant Decrease	1
Reduces instream flows.	Moderate Decrease	2
Limited or no impact.	None or Limited	3
Increases instream flows.	Moderate Increase	4
Significantly increases instream flows.	Significant Increase	5

6-B-6. BAYS, ESTUARIES, AND ARMS OF THE GULF OF MEXICO

This criterion evaluates the degree of potential environmental impact that the implementation of a project could have on nearby bays and estuaries, as well as arms of the Gulf of Mexico. Region H includes the Galveston and Trinity Bay estuaries and touches portions of the Gulf of Mexico. As a result, some projects included in the 2026 Region H Water Plan could have an environmental impact on these bays, estuaries, or the Gulf of Mexico. This criterion was primarily evaluated based on the degree of impact that a project could have on bay and estuary (B&E) flows. While Senate Bill 3 environmental flow parameters were considered as part of the evaluation process, the assessment of bay and estuary impacts was not constrained to statutory flow requirements and incorporated project and site-specific considerations regarding potential impacts to flows. It should be noted that the TCEQ water right permitting process as well as the rules for RWP development preclude the inclusion of strategy or project supply availability inconsistent with established instream flow requirements. *Table 6-B-5* depicts the categories used to evaluate and score each key project for this criterion. More detailed discussions regarding environmental flows, including B&E flows, for each key project can be found in the technical memoranda in ***Appendix 5-B***.

The following assumptions and observations were made for this criterion:

- If impacts to environmental flows into bays and estuaries or the Gulf of Mexico have been evaluated in a detailed study, this information was used to evaluate a project and assign an impact score.
- Groundwater development projects, excluding aquifer storage and recovery, potentially increase flows through return flows from points of use.

- The majority of recommended treatment and transmission projects do not directly impact bay and estuary inflows directly, as they are supplied through other source development projects.
- Source development projects such as intake expansions, reuse, and reservoir development are typically associated with reduced bay and estuary inflows.
- Scoring for GRPs considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.

Table 6-B-5 – Bay and Estuary Scoring Matrix

Environmental Water Needs	Impact Description	Environmental Needs Score
Significantly reduces B&E inflow.	Significant Decrease	1
Reduces B&E flows.	Moderate Decrease	2
Limited or no impact.	None or Limited	3
Increases B&E flows.	Moderate Increase	4
Significantly increases B&E flows.	Significant Increase	5

6-B-7. CULTURAL RESOURCES

This criterion evaluates the degree to which a project could impact cultural resources located within the area. Cultural resources are defined as the collective evidence of the past activities and accomplishments of people. Locations, buildings, and features with scientific, cultural, or historic value are considered to be cultural resources. *Table 6-B-6* lists the categories used to evaluate and score each key project for this criterion.

The following assumptions and observations were made for this criterion:

- If impacts to cultural resources have been discussed in a detailed study, this information was used to evaluate a project and assign an impact score.
- Non-infrastructure projects do not impact cultural resources.
- In most cases, Region H projects are expected to have no or low impact on cultural resources because they are located in areas that avoid areas of known cultural resources.
- Impacts to cultural resources can often be avoided during detailed design. Many of the projects in the RWP have not yet reached this point, but would be expected during the detailed design phase to investigate options for avoiding and mitigating impacts.
- Projects that primarily involve wells, conveyance, or development of infrastructure at existing facilities or heavily developed areas were assumed to have a low impact on cultural resources.
- New treatment and facilities that have siting flexibility to mitigate impacts to cultural resources were assumed to have a medium low impact.

- Reservoirs were assumed to have a medium to medium high impact, depending upon where the site will be located.

Table 6-B-6 – Cultural Resources Scoring Matrix

Summary	Impact Description	Cultural Resources Score
Projects with known high cultural impacts	High	1
Reservoirs with potential for above-average cultural impacts or development on natural lands	Medium High	2
Default assumption for reservoirs primarily on pre-disturbed sites	Medium	3
New treatment and other facilities with some flexibility in siting	Medium Low	4
Wells, transmission, development at existing facility or heavily developed area	Low	5
Non-infrastructure projects	None	5

6-B-8. SUMMARY OF IMPACTS ANALYSIS

Results of the analyses of impacts to agricultural, natural, and cultural resources for key WMS and projects evaluated in the RWP are summarized in *Table 6-B-7*. The table provides reference information on locations, development settings, and recommendation status. The table also provides reference information on the corresponding technical memoranda included in ***Appendix 5-B*** for each key water management strategy and project.

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Table 6-B-7 – Summary of Quantified Impacts to Agricultural, Natural, and Cultural Resources

Key WMS and Project Overview					Agricultural Impacts		Wildlife Habitat				Environmental Water Needs		Bays, Estuaries, and Arms of the Gulf of Mexico		Cultural Resources	
Name	Technical Memorandum	Considered or Recommended	Primary Counties	Primary Development Setting	Agricultural Impact Description	Score	Project Acreage Description	Score	Environmental Land and Habitat Impact Description	Score	Instream Flow Impact Description	Score	Bay and Estuary Impact Description	Score	Cultural Resource Impact Description	Score
Adv. Municipal Conservation and Water Loss Reduction	CNSV-001	Recommended	All	Urban	None	5	None	5	Low	5	None or Limited	3	None or Limited	3	None	5
Industrial Conservation	CNSV-002	Recommended	Multiple	Urban	None	5	None	5	Low	5	None or Limited	3	None or Limited	3	None	5
Irrigation Conservation	CNSV-003	Recommended	Multiple	Rural	Positive	5	High	1	Medium Low	4	None or Limited	3	None or Limited	3	None	5
BWA Transmission and Storage Expansion	CONV-001	Recommended	Brazoria	Rural	None	5	Medium Low	4	Low	5	None or Limited	3	None or Limited	3	Low	5
CHCRWA Transmission and Internal Distribution	CONV-002	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Houston GRP Transmission	CONV-003	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Houston Transmission Expansion	CONV-004	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
CWA Transmission Expansion	CONV-005	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
East Texas Transfer	CONV-006	Recommended	Multiple	Rural	Medium Low	4	Medium Low	4	Medium High	2	Moderate Decrease	2	Moderate Decrease	2	Low	5
LNVA Neches-Trinity Basin Interconnect	CONV-007	Recommended	Liberty	Rural	Positive	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
Manvel Supply Expansion	CONV-008	Recommended	Brazoria	Mixed	Medium Low	4	Medium Low	4	Medium	3	None or Limited	3	None or Limited	2	Low	5
NFBWA Phase 2 Distribution Segments	CONV-009	Recommended	Fort Bend	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA Distribution Expansion	CONV-010	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA Transmission Lines	CONV-011	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
Southeast Transmission Line Improvements	CONV-012	Recommended	Harris	Urban	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
WHCRWA Distribution Expansion	CONV-013	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
WHCRWA/NFBWA Transmission Line	CONV-014	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
Aquifer Storage and Recovery	GWDV-001	Considered	Montgomery	Urban	None	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
Brackish Groundwater Development and Groundwater Blending	GWDV-002	Recommended	Montgomery	Urban	None	5	Low	5	Medium Low	4	Moderate Increase	4	Moderate Increase	4	Low	5
BWA Brackish Groundwater Development	GWDV-003	Recommended	Brazoria	Urban	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
City of Houston Area 2 Groundwater Infrastructure	GWDV-004	Recommended	Harris	Urban	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
City of Houston Repump and Groundwater Plant Improvements	GWDV-005	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
Expanded Use of Groundwater	GWDV-006	Recommended	Multiple	Mixed	Positive	5	Low	5	Medium Low	4	Moderate Increase	4	Moderate Increase	4	Low	5
Fairchilds Supply Infrastructure	GWDV-007	Recommended	Fort Bend	Rural	None	5	Low	5	Low	5	Moderate Increase	4	Moderate Increase	4	Low	5
GCWA Groundwater Well Development	GWDV-008	Recommended	Galveston	Rural	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
SJRA Catahoula Aquifer Supplies	GWDV-009	Recommended	Montgomery	Urban	None	5	Low	5	Low	5	Moderate Increase	4	Moderate Increase	4	Low	5
CHCRWA GRP	GWRP-001	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Houston GRP	GWRP-002	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Missouri City GRP	GWRP-003	Recommended	Fort Bend	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
City of Richmond GRP	GWRP-004	Recommended	Fort Bend	Urban	Positive	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
City of Rosenberg GRP	GWRP-005	Recommended	Fort Bend	Urban	None	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
City of Sugar Land IWRP	GWRP-006	Recommended	Fort Bend	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Fort Bend County MUD 25 GRP	GWRP-007	Recommended	Fort Bend	Urban	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
Fort Bend County WCID 2 GRP	GWRP-008	Recommended	Fort Bend	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Montgomery County MUDs 8 and 9 Supply Expansion	GWRP-009	Recommended	Montgomery	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Montgomery County Supply Expansion	GWRP-010	Recommended	Montgomery	Mixed	Medium Low	4	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
NFBWA GRP	GWRP-011	Recommended	Fort Bend	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA GRP	GWRP-012	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
WHCRWA GRP	GWRP-013	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Houston Reuse	REUS-001	Recommended	Harris	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5

Key WMS and Project Overview					Agricultural Impacts		Wildlife Habitat				Environmental Water Needs		Bays, Estuaries, and Arms of the Gulf of Mexico		Cultural Resources	
Name	Technical Memorandum	Considered or Recommended	Primary Counties	Primary Development Setting	Agricultural Impact Description	Score	Project Acreage Description	Score	Environmental Land and Habitat Impact Description	Score	Instream Flow Impact Description	Score	Bay and Estuary Impact Description	Score	Cultural Resource Impact Description	Score
City of Pearland Reuse	REUS-002	Recommended	Brazoria, Harris	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
League City Effluent Reuse	REUS-003	Recommended	Galveston	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
NFBWA Member District Reuse	REUS-004	Recommended	Fort Bend	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
NHCRWA Member District Reuse	REUS-005	Recommended	Harris	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
River Plantation Reuse	REUS-006	Recommended	Montgomery	Urban	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
San Jacinto Basin Regional Return Flows	REUS-007	Recommended	Harris, Montgomery	Mixed	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	None	5
Texas City Industrial Complex Reuse	REUS-008	Recommended	Galveston	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Wastewater Reclamation for Industry	REUS-009	Considered	Harris	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Wastewater Reclamation for Municipal Irrigation	REUS-010	Recommended	Multiple	Rural	None	5	Medium Low	4	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
Westwood Shores MUD Reuse	REUS-011	Recommended	Trinity	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Allens Creek Reservoir	SWDV-001	Recommended	Austin	Rural	Medium	3	Medium High	2	Medium Low	4	None or Limited	3	None or Limited	3	Medium	3
BWSC Reservoir and Pump Station Expansion	SWDV-002	Recommended	Brazoria	Rural	Medium Low	4	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Medium	3
GCWA Coastal Desalination	SWDV-003	Recommended	Galveston	Urban	None	5	Low	5	Medium	3	None or Limited	3	Moderate Decrease	2	Low	5
Lake Somerville Augmentation	SWDV-004	Considered	Burleson, Brazos	Rural	Medium Low	4	Medium Low	4	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
BAWA East SWTP Expansion	TRET-001	Recommended	Chambers	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
BWA Conventional Treatment Expansion	TRET-002	Recommended	Brazoria	Urban	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
City of Houston EWPP Enhancement	TRET-003	Recommended	Harris	Urban	None	5	Medium Low	4	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Harris County MUD 50 Surface Water Treatment Plant	TRET-004	Recommended	Harris	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Northeast Water Purification Plant Expansion	TRET-005	Recommended	Harris	Urban	None	5	Medium Low	4	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Pearland Surface Water Treatment Plant	TRET-006	Recommended	Brazoria	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
SEWPP Expansion	TRET-007	Recommended	Harris	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Brazos Saltwater Barrier	OTHR-001	Recommended	Brazoria	Rural	None	5	Low	5	Medium High	2	Moderate Decrease	2	Moderate Decrease	2	Low	5
GCWA Canal Lining and Loss Mitigation	OTHR-002	Recommended	Fort Bend	Rural	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
GCWA Shannon Pump Station Expansion	OTHR-003	Recommended	Fort Bend	Rural	None	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
LNVA Devers Pump Station Relocation	OTHR-004	Recommended	Chambers, Liberty	Rural	Positive	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
Municipal Drought Management	OTHR-005	Considered	All	Urban	None	5	None	5	Low	5	None or Limited	3	None or Limited	3	None	5
New and Expanded Contracts	OTHR-006	Recommended	Multiple	Mixed	None	5	None	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	None	5

APPENDIX 6-C

AGRICULTURAL CENSUS AND TEXAS LAND TRENDS DATA

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Table 6C-1 – Land in Farms

County	Land in Farms (Acres)						% Change ('97 22)
	1997	2002	2007	2012	2017	2022	
Austin	367,432	367,497	333,928	369,960	330,481	258,883	-29.54%
Brazoria	566,809	613,891	528,957	631,021	460,005	419,260	-26.03%
Chambers	241,933	274,853	267,343	253,743	205,397	199,088	-17.71%
Fort Bend	431,582	415,251	382,740	339,295	279,483	320,377	-25.77%
Galveston	104,941	127,280	103,387	89,554	73,125	34,117	-67.49%
Harris	311,005	304,868	259,039	236,402	218,659	193,556	-37.76%
Leon	514,724	562,615	569,101	594,393	487,598	423,117	-17.80%
Liberty	306,783	304,574	297,855	286,793	252,488	234,400	-23.59%
Madison	223,690	244,524	273,109	291,350	245,552	214,931	-3.92%
Montgomery	193,375	197,892	169,914	155,362	144,872	100,081	-48.25%
Polk	135,988	129,956	131,664	139,199	125,133	82,869	-39.06%
San Jacinto	84,620	93,497	95,492	111,900	84,442	66,844	-21.01%
Trinity	98,748	104,724	108,974	111,262	98,887	67,100	-32.05%
Walker	183,988	206,311	224,050	280,512	227,230	194,887	5.92%
Waller	238,110	277,000	271,004	314,981	253,194	211,993	-10.97%
Region H	**4,003,728**	**4,224,733**	**4,016,557**	**4,205,727**	**3,486,546**	**3,021,503**	**-24.53%**

Source: United States Department of Agriculture, Census of Agriculture

Table 6C-2 – Total Cropland

County	Total Cropland (Acres)						% Change ('97 22)
	1997	2002	2007	2012	2017	2022	
Austin	161,192	134,793	96,559	71,224	74,067	49,714	-69.16%
Brazoria	203,341	224,640	186,201	175,913	131,802	124,340	-38.85%
Chambers	118,316	134,492	115,588	92,779	98,953	93,123	-21.29%
Fort Bend	193,138	194,001	152,112	135,854	140,694	96,295	-50.14%
Galveston	30,285	45,773	21,819	17,562	16,984	8,259	-72.73%
Harris	118,827	124,340	91,438	59,879	52,722	74,411	-37.38%
Leon	182,633	184,627	121,142	74,011	71,219	59,974	-67.16%
Liberty	159,841	156,413	127,704	101,071	68,327	66,290	-58.53%
Madison	79,105	91,864	39,646	35,322	33,964	34,659	-56.19%
Montgomery	47,711	57,776	33,782	31,559	25,345	18,470	-61.29%
Polk	42,208	44,673	23,720	23,208	22,586	20,476	-51.49%
San Jacinto	28,355	35,427	21,027	24,262	16,910	14,274	-49.66%
Trinity	49,188	42,771	27,340	17,913	20,051	10,658	-78.33%
Walker	60,192	61,715	37,146	38,639	27,459	10,658	-82.29%
Waller	116,477	124,431	103,518	79,906	71,422	65,983	-43.35%
Region H	**1,590,809**	**1,657,736**	**1,198,742**	**979,102**	**872,505**	**747,584**	**-53.01%**

Source: United States Department of Agriculture, Census of Agriculture

Table 6C-3 – Irrigated Land

County	Irrigated Land (Acres)						% Change ('97 22)
	1997	2002	2007	2012	2017	2022	
Austin	4,954	3,541	1,559	4,253	3,980	2,217	-55.25%
Brazoria	29,596	17,138	11,980	20,439	20,048	21,106	-28.69%
Chambers	24,894	16,152	11,508	15,184	21,029	28,360	13.92%
Fort Bend	17,039	15,751	8,339	10,309	9,620	10,720	-37.09%
Galveston	1,449	1,703	614	424	1,107	1,029	-28.99%
Harris	10,454	7,295	7,037	5,945	7,266	15,312	46.47%
Leon	1,667	1,383	2,831	759	1,991	930	-44.21%
Liberty	14,092	11,828	5,313	5,242	5,215	10,117	-28.21%
Madison	208	243	456	2,256	1,268	2,384	1046.15%
Montgomery	474	1,287	2,262	1,188	682	1,201	153.38%
Polk	377	99	1,440	443	281	251	-33.42%
San Jacinto	104	292	943	538	1,007	353	239.42%
Trinity	52	213	310	152	266	29	-44.23%
Walker	325	600	885	522	584	475	46.15%
Waller	8,120	11,908	9,904	10,067	11,639	12,296	51.43%
Region H	**113,805**	**89,433**	**65,381**	**77,721**	**85,983**	**106,780**	**-6.17%**

Source: United States Department of Agriculture, Census of Agriculture

Table 6C-4 – Rice Production

County	Rice (Hundredweight)						% Change ('97 22)
	1997	2002	2007	2012	2017	2022	
Austin	175,843	130,601	0	27,900	0	27,080	-84.60%
Brazoria	1,134,188	1,013,213	572,285	1,222,931	813,054	1,245,184	9.79%
Chambers	949,505	713,173	639,692	676,453	1,010,653	1,370,104	44.30%
Fort Bend	658,485	803,346	278,716	356,338	765,709	748,910	13.73%
Galveston	51,563	75,527	(D)	(D)	0	(D)	-100.00%
Harris	356,432	107,876	62,265	(D)	0	0	-100.00%
Leon	0	0	0	0	0	0	N/A
Liberty	604,582	464,751	193,188	154,837	(D)	416,857	-31.05%
Madison	0	0	0	0	0	0	N/A
Montgomery	0	0	0	0	0	0	N/A
Polk	0	0	0	0	0	0	N/A
San Jacinto	0	0	0	0	0	0	N/A
Trinity	0	0	0	0	0	0	N/A
Walker	0	0	0	0	0	0	N/A
Waller	468,471	679,960	581,785	537,648	866,716	755,290	61.22%
Region H	**4,399,069**	**3,988,447**	**2,327,931**	**2,976,107**	**3,456,132**	**4,563,425**	**3.74%**

Source: United States Department of Agriculture, Census of Agriculture

Table 6C-5 – Land Trends

County	Year	Land (acres)					
		Cropland	Grazing Land	Timber	Wildlife Management	Other	Total
Austin	1997	15,350	321,076	722	665	287	338,100
	2002	13,065	321,093	563	2,583	304	337,608
	2007	11,571	317,299	0	7,544	259	336,673
	2012	11,201	311,909	0	13,582	362	337,054
	2017	10,131	304,884	0	20,879	893	336,787
	2022	9,612	294,125	0	27,873	2,299	333,909
	Δ	**-5,738**	**-26,951**	**-722**	**27,208**	**2,012**	**-4,191**
Brazoria	1997	141,712	351,067	554	33	24,127	517,493
	2002	127,647	397,474	580	4,971	4,141	534,813
	2007	110,832	393,763	846	8,590	6,467	520,498
	2012	106,898	388,889	494	7,529	6,242	510,052
	2017	97,553	380,180	167	12,104	4,709	494,713
	2022	83,564	368,113	20	15,849	4,369	471,915
	Δ	**-58,148**	**17,046**	**-534**	**15,816**	**-19,758**	**-45,578**
Chambers	1997	110,603	136,939	12,748	0	601	260,891
	2002	64,405	165,494	13,296	0	1,386	244,581
	2007	51,081	188,599	14,054	0	1,402	255,136
	2012	41,249	196,868	13,913	0	1,180	253,210
	2017	42,426	190,463	12,853	31	1,751	247,524
	2022	40,400	184,756	11,731	67	2,577	239,531
	Δ	**-70,203**	**47,817**	**-1,017**	**67**	**1,976**	**-21,360**
Fort Bend	1997	161,434	284,207	121	110	3,270	449,142
	2002	139,117	255,940	170	110	3,460	398,797
	2007	126,168	247,688	182	112	3,549	377,699
	2012	119,066	251,729	63	1,373	4,509	376,740
	2017	103,170	249,004	0	4,827	4,677	361,678
	2022	85,759	233,524	0	6,470	5,699	331,452
	Δ	**-75,675**	**-50,683**	**-121**	**6,360**	**2,429**	**-117,690**
Galveston	1997	25,815	59,679	0	272	567	86,333
	2002	25,075	61,653	0	459	486	87,673
	2007	24,566	58,425	0	966	689	84,646
	2012	23,986	55,068	0	4,412	1,787	85,253
	2017	9,757	60,172	0	3,078	560	73,567
	2022	9,366	58,486	0	766	575	69,193
	Δ	**-16,449**	**-1,193**	**0**	**494**	**8**	**-17,140**

County	Year	Land (acres)					
		Cropland	Grazing Land	Timber	Wildlife Management	Other	Total
Harris	1997	86,613	254,748	57,488	882	9,907	409,638
	2002	70,769	244,181	51,101	3,317	23,045	392,413
	2007	59,644	219,222	45,622	6,077	13,966	344,531
	2012	49,763	206,849	42,948	7,526	14,831	321,917
	2017	42,749	201,770	35,905	11,108	8,870	300,402
	2022	30,048	172,007	26,897	16,926	8,919	254,797
	Δ	**-56,565**	**-82,741**	**-30,591**	**16,044**	**-988**	**-154,841**
Leon	1997	0	478,126	21,898	348	181,929	682,301
	2002	0	534,469	25,677	554	122,017	682,717
	2007	6	657,319	30,534	0	240	688,099
	2012	74	663,533	34,187	3,141	1	700,936
	2017	70	617,564	41,376	51,142	1	710,153
	2022	112	617,050	48,626	51,779	835	718,402
	Δ	**112**	**138,924**	**26,728**	**51,431**	**-181,094**	**36,101**
Liberty	1997	106,667	213,585	303,236	0	691	624,179
	2002	83,740	216,749	308,343	2,138	857	611,827
	2007	68,205	210,626	320,448	2,765	1,278	603,322
	2012	55,857	214,614	316,787	1,665	2,111	591,034
	2017	52,710	213,236	314,131	3,426	2,522	586,025
	2022	45,662	218,733	298,081	5,703	2,877	571,056
	Δ	**-61,005**	**5,148**	**-5,155**	**5,703**	**2,186**	**-53,123**
Madison	1997	0	284,978	4,252	0	0	289,230
	2002	170	283,424	4,498	0	9	288,101
	2007	0	278,866	4,864	2,220	0	285,950
	2012	0	274,736	4,916	3,750	13	283,415
	2017	0	274,919	2,707	5,843	6	283,475
	2022	0	273,158	2,331	8,207	177	283,873
	Δ	**0**	**-11,820**	**-1,921**	**8,207**	**177**	**-5,357**
Montgomery	1997	317	146,426	265,346	0	312	412,401
	2002	317	149,305	222,039	123	224	372,008
	2007	0	153,358	208,615	123	167	362,263
	2012	22	147,464	195,466	134	758	343,844
	2017	0	148,181	169,571	415	740	318,907
	2022	0	129,017	151,027	1,773	1,152	282,969
	Δ	**-317**	**-17,409**	**-114,319**	**1,773**	**840**	**-129,432**
Polk	1997	0	95,235	446,830	0	473	542,538
	2002	0	89,041	444,979	0	440	534,460
	2007	0	101,804	433,444	0	405	535,653
	2012	0	86,303	434,834	0	1,216	522,353
	2017	0	87,215	436,389	0	785	524,389
	2022	0	86,927	432,193	0	764	519,884
	Δ	**0**	**-8,308**	**-14,637**	**0**	**291**	**-22,654**

County	Year	Land (acres)					
		Cropland	Grazing Land	Timber	Wildlife Management	Other	Total
San Jacinto	1997	640	72,338	126,192	0	10	199,180
	2002	2,049	76,527	122,158	792	76	201,602
	2007	1,946	80,612	135,791	793	263	219,405
	2012	2,220	80,672	119,835	644	423	203,794
	2017	3,122	67,798	114,110	4,377	222	189,629
	2022	0	66,498	112,189	12,992	524	192,203
	Δ	**-640**	**-5,840**	**-14,003**	**12,992**	**514**	**-6,977**
Trinity	1997	90	122,593	266,896	692	32	390,303
	2002	79	120,683	269,261	855	38	390,916
	2007	70	120,769	268,274	929	38	390,080
	2012	47	118,265	269,996	963	184	389,455
	2017	51	120,687	266,405	1,496	75	388,714
	2022	10	117,294	268,253	2,344	98	387,999
	Δ	**-80**	**-5,299**	**1,357**	**1,652**	**66**	**-2,304**
Walker	1997	0	176,761	142,374	0	7	319,142
	2002	0	179,235	140,983	149	7	320,374
	2007	0	178,340	139,722	1,891	58	320,011
	2012	0	156,454	156,675	6,818	262	320,209
	2017	6	162,238	140,094	13,714	272	316,324
	2022	6	156,728	137,084	21,621	571	316,010
	Δ	**6**	**-20,033**	**-5,290**	**21,621**	**564**	**-3,132**
Waller	1997	43,026	121,042	551	85	997	165,701
	2002	41,321	122,916	362	350	1,009	165,958
	2007	35,907	122,960	113	1,720	2,843	163,543
	2012	36,052	120,074	165	3,895	3,336	163,522
	2017	34,923	120,446	0	4,949	2,902	163,220
	2022	28,371	118,501	0	8,953	4,333	160,158
	Δ	-14,655	-2,541	-551	8,868	3,336	-5,543

Source: Texas Land Trends, Texas A&M Institute of Renewable Natural Resources

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APPENDIX 6-D

THREATENED AND ENDANGERED SPECIES

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Table 6D-1 – State- and Federally- Listed Threatened and Endangered Species by County

Species	County														
	Austin	Brazoria	Chambers	Fort Bend	Galveston	Harris	Leon	Liberty	Madison	Montgomery	Polk	San Jacinto	Trinity	Walker	Waller
Alligator snapping turtle		X	X		X	X	X	X	X	X	X	X	X	X	X
American alligator	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic hawksbill sea turtle		X	X		X	X									
Atlantic spotted dolphin		X	X		X	X									
Attwater's greater prairie-chicken	X			X	X										
Bachman's sparrow							X	X	X		X	X	X	X	
Black bear											X				
Black rail	X	X	X	X	X	X	X	X	X	X		X		X	X
Blackside darter								X							
Blue whale		X	X		X	X									
Brazos heelsplitter	X	X		X											X
Bryde's whale		X	X		X	X									
Chub shiner								X		X	X	X			
Cuvier's beaked whale		X	X		X	X									
Dwarf sperm whale		X	X		X	X									
Eskimo curlew					X										
False killer whale		X	X		X	X									
Finback whale		X	X		X	X									
Gervais's beaked whale		X	X		X	X									
Giant manta ray		X	X		X	X									
Great hammerhead		X	X		X	X									
Green sea turtle		X	X		X	X									
Houston daisy				X	X	X									
Houston toad	X			X		X	X	X	X						X
Humpback whale		X	X		X	X									
Interior least tern	X			X			X	X	X	X	X	X	X	X	X
Kemp's ridley sea turtle		X	X		X	X									
Killer whale		X	X		X	X									
Large-fruited sand-verbena							X								
Leatherback sea turtle		X	X		X	X									
Loggerhead sea turtle		X	X		X	X									
Louisiana pigtoe						X	X	X	X	X	X	X	X	X	
Louisiana pine snake								X		X	X	X	X	X	
Navasota ladies'-tresses							X		X						
Neches river rose-mallow													X		
North atlantic right whale		X	X		X	X									
Oceanic whitetip shark		X	X		X	X									
Paddlefish											X		X	X	
Piping plover	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pygmy killer whale		X	X		X	X									

Species	County														
	Austin	Brazoria	Chambers	Fort Bend	Galveston	Harris	Leon	Liberty	Madison	Montgomery	Polk	San Jacinto	Trinity	Walker	Waller
Pygmy sperm whale		X	X		X	X									
Rafinesque's big-eared bat		X	X	X	X	X		X	X	X	X	X	X	X	X
Red-cockaded woodpecker							X	X	X	X	X	X	X	X	
Reddish egret		X	X		X	X									
Rice's whale		X	X		X	X									
Roughtoothed dolphin		X	X		X	X									
Rufa red knot	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Sandbank pocketbook						X	X	X	X	X	X	X	X	X	
Sei whale		X	X		X	X									
Shortfin mako shark		X	X		X	X									
Short-finned pilot whale		X	X		X	X									
Small-headed pipewort							X								
Smalltooth sawfish					X										
South texas siren (large form)									X						
Southern hickorynut											X		X		
Sperm whale		X	X		X	X									
Swallow-tailed kite	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Texas fawnsfoot	X	X		X			X	X	X		X	X			X
Texas heelsplitter							X	X	X		X	X	X	X	
Texas horned lizard	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Texas pigtoe											X		X		
Texas prairie dawn				X		X							X		
Texas trailing phlox											X				
Tricolored bat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trinity pigtoe							X		X				X	X	
West indian manatee		X	X		X	X									
Western creek chubsucker						X				X	X	X		X	
White-faced ibis	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White-tailed hawk	X	X	X	X	X	X									X
Whooping crane	X	X		X		X	X		X	X				X	X
Wood stork	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yellow-billed cuckoo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

APPENDIX 7-A

CURRENT DROUGHT PREPARATIONS IN REGION H

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Table 7-A1 – Current Preparations for WUGs

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type													Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
BRAZOS RIVER AUTHORITY	Brazos River Authority	Multiple	1			•				•	•						•	•					•	•							•	•							5	%
BRAZOS RIVER AUTHORITY	Brazos River Authority	Multiple	2			•				•	•						•	•					•	•							•	•							10	%
BRAZOS RIVER AUTHORITY	Brazos River Authority	Multiple	3			•					•						•	•	•				•	•	•			•			•		•							20	%
BRAZOS RIVER AUTHORITY	Brazos River Authority	Multiple	4				•				•						•	•					•	•							•						•			-	-
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	Chambers-Liberty Counties Navigation District	Multiple	1								•		•											•											•				14	ac-ft
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	Chambers-Liberty Counties Navigation District	Multiple	2								•		•											•							•				•				14	ac-ft
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	Chambers-Liberty Counties Navigation District	Multiple	3								•		•											•							•					•			-	-
LOWER NECHES VALLEY AUTHORITY	Lower Neches Valley Authority	Multiple	1								•							•		•					•			•			•	•							10	%
LOWER NECHES VALLEY AUTHORITY	Lower Neches Valley Authority	Multiple	2								•							•		•				•	•			•	•		•	•							20	%
LOWER NECHES VALLEY AUTHORITY	Lower Neches Valley Authority	Multiple	3								•							•		•				•	•			•				•							30	%
LOWER NECHES VALLEY AUTHORITY	Lower Neches Valley Authority	Multiple	4	•				•										•		•	•				•							•					•		-	-
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority GRP	Multiple	1			•		•									•							•						•		•							5	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority GRP	Multiple	2			•		•									•						•	•								•							10	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority GRP	Multiple	3			•		•									•						•	•								•							20	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority GRP	Multiple	4			•		•									•						•	•								•							30	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority GRP	Multiple	Emergency	•			•	•									•	•					•	•							•					•		-	-
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Highlands Division	Multiple	1			•					•	•					•							•						•		•							5	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Highlands Division	Multiple	2			•					•	•					•						•	•								•							10	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Highlands Division	Multiple	3			•					•						•							•						•		•							20	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Highlands Division	Multiple	4			•					•												•	•								•							30	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Highlands Division	Multiple	Emergency	•			•	•									•	•					•	•							•					•		-	-
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Lake Conroe Division	Multiple	1			•					•						•							•						•		•							5	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Lake Conroe Division	Multiple	2			•					•						•						•	•								•							10	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Lake Conroe Division	Multiple	3			•					•						•						•	•								•							20	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Lake Conroe Division	Multiple	4			•					•												•	•								•							30	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Lake Conroe Division	Multiple	Emergency	•			•	•									•	•					•	•							•					•		-	-
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Woodlands Division	Multiple	1			•		•									•							•						•		•							5	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Woodlands Division	Multiple	2			•		•									•							•	•								•							10	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Woodlands Division	Multiple	3			•		•									•							•	•								•							20	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Woodlands Division	Multiple	4			•		•									•							•	•								•							30	%
SAN JACINTO RIVER AUTHORITY	San Jacinto River Authority Woodlands Division	Multiple	Emergency	•			•	•									•	•						•	•							•						•			-	-
TRINITY RIVER AUTHORITY	Trinity River Authority of Texas	Multiple	1								•														•							•		•							5	%
TRINITY RIVER AUTHORITY	Trinity River Authority of Texas	Multiple	2								•													•	•			•				•	•	•							10	%
TRINITY RIVER AUTHORITY	Trinity River Authority of Texas	Multiple	3								•													•	•			•	•			•		•							25	%
TRINITY RIVER AUTHORITY	Trinity River Authority of Texas	Multiple	Emergency	•			•	•									•	•							•							•						•			-	-
BAYBROOK MUD 1	Baybrook MUD No. 1	Harris	1			•																			•	•						•									10	%
BAYBROOK MUD 1	Baybrook MUD No. 1	Harris	2			•													•			•		•	•								•									20	%
BAYBROOK MUD 1	Baybrook MUD No. 1	Harris	3			•													•	•					•	•				•			•									30	%
BAYBROOK MUD 1	Baybrook MUD No. 1	Harris	Emergency				•														•													•						•			-	-
BELLAIRE	City of Bellaire	Harris	1	•		•		•					•				•					•	•	•	•							•									5	%
BELLAIRE	City of Bellaire	Harris	2	•		•							•				•					•		•	•	•						•									10	%
BELLAIRE	City of Bellaire	Harris	3			•		•						•			•		•			•			•	•			•				•									20	%
BELLAIRE	City of Bellaire	Harris	4	•		•		•					•	•			•		•			•			•	•			•				•									30	%
BELLAIRE	City of Bellaire	Harris	5	•		•		•					•	•			•		•						•	•				•		•	•	•									35	%
BRAZORIA COUNTY MUD 21	Brazoria County MUD No. 21	Brazoria	1			•																•			•							•									10	%
BRAZORIA COUNTY MUD 21	Brazoria County MUD No. 21	Brazoria	2			•													•			•		•	•								•									15	%
BRAZORIA COUNTY MUD 21	Brazoria County MUD No. 21	Brazoria	3			•													•	•					•	•				•		•	•									20	%
BRAZORIA COUNTY MUD 21	Brazoria County MUD No. 21	Brazoria	Emergency				•														•													•						•			-	-
BRAZORIA COUNTY MUD 25	Brazoria County MUD No. 25	Brazoria	1			•																•			•							•									10	%
BRAZORIA COUNTY MUD 25	Brazoria County MUD No. 25	Brazoria	2			•													•			•		•	•								•									15	%
BRAZORIA COUNTY MUD 25	Brazoria County MUD No. 25	Brazoria	3			•													•	•					•	•				•		•	•									20	%
BRAZORIA COUNTY MUD 25	Brazoria County MUD No. 25	Brazoria	Emergency				•														•													•						•			-	-
BRAZORIA COUNTY MUD 29	Brazoria County MUD No. 29	Brazoria	1			•																•			•							•									10	%
BRAZORIA COUNTY MUD 29	Brazoria County MUD No. 29	Brazoria	2			•																•		•	•								•									15	%
BRAZORIA COUNTY MUD 29	Brazoria County MUD No. 29	Brazoria	3			•													•	•					•	•				•		•	•									20	%
BRAZORIA COUNTY MUD 29	Brazoria County MUD No. 29	Brazoria	Emergency				•														•													•						•			-	-
BRAZORIA COUNTY MUD 31	Brazoria County MUD No. 31	Brazoria	1			•																•			•							•									10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
BRAZORIA COUNTY MUD 31	Brazoria County MUD No. 31	Brazoria	2			•													•			•		•	•														15	%
BRAZORIA COUNTY MUD 31	Brazoria County MUD No. 31	Brazoria	3			•													•	•					•	•				•		•								20	%
BRAZORIA COUNTY MUD 31	Brazoria County MUD No. 31	Brazoria	Emergency				•														•																	•		-	-
CAPE ROYALE UD	Cape Royale Utility District	San Jacinto	1												•															•								•		-	-
CAPE ROYALE UD	Cape Royale Utility District	San Jacinto	2												•							•		•														•		-	-
CAPE ROYALE UD	Cape Royale Utility District	San Jacinto	3												•				•						•														•		-	-
CAPE ROYALE UD	Cape Royale Utility District	San Jacinto	4												•				•	•						•														•		-	-
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Central Harris County Regional Water Authority	Harris	1			•																			•						•								•		-	-
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Central Harris County Regional Water Authority	Harris	2			•													•					•	•														•		-	-
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Central Harris County Regional Water Authority	Harris	3			•													•						•						•								•		-	-
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Central Harris County Regional Water Authority	Harris	Emergency				•														•																	•		-	-
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Rankin Road West MUD	Harris	1			•									•	•									•			•		•	•		•							5	%
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Rankin Road West MUD	Harris	2			•									•	•	•				•		•	•	•		•					•								10	%
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Rankin Road West MUD	Harris	3			•								•	•	•					•			•	•		•	•			•								15	%
CONROE	City of Conroe	Montgomery	1			•																			•						•								•		5	%
CONROE	City of Conroe	Montgomery	2			•																		•	•	•														•		10	%
CONROE	City of Conroe	Montgomery	3			•														•						•	•			•	•									•		15	%
COUNTY-OTHER, AUSTIN	New Ulm Water Supply Corporation	Austin	1			•								•										•	•			•												•		-	-
COUNTY-OTHER, AUSTIN	New Ulm Water Supply Corporation	Austin	2			•								•											•	•														•		-	-
COUNTY-OTHER, AUSTIN	New Ulm Water Supply Corporation	Austin	3	•		•								•	•			•								•														•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 22	Brazoria	1			•																•			•						•								•		10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 22	Brazoria	2			•														•		•		•	•														•		15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 22	Brazoria	3			•														•	•				•	•				•		•								•		20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 22	Brazoria	Emergency				•														•																	•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 24	Brazoria	1																					•						•								•		10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 24	Brazoria	2																			•	•	•	•														•		15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 24	Brazoria	3																			•	•	•	•														•		20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 24	Brazoria	4																			•	•	•	•			•			•								•		25	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 24	Brazoria	5																			•	•	•				•											•		30	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 24	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 32	Brazoria	1			•																•			•						•		•						10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 32	Brazoria	2			•													•				•		•								•						15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 32	Brazoria	3			•													•	•					•	•		•		•		•		•						20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 32	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 39	Brazoria	1												•							•			•						•		•						10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 39	Brazoria	2												•				•				•		•								•						15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 39	Brazoria	3												•				•	•					•	•		•		•		•		•						20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 39	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 40	Brazoria	1												•							•			•						•		•						10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 40	Brazoria	2												•				•				•		•								•						15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 40	Brazoria	3												•				•	•					•	•		•		•		•		•						20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 40	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 44	Brazoria	1			•									•	•						•	•	•	•	•		•			•	•		•						10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 44	Brazoria	2			•									•	•						•	•	•	•	•		•			•	•		•						20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 44	Brazoria	3			•									•	•						•	•	•	•	•		•			•	•		•						30	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 44	Brazoria	4	•				•								•						•	•	•	•	•		•		•	•	•		•						40	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 44	Brazoria	5														•		•					•	•			•								•						40	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 44	Brazoria	Emergency						•								•		•					•				•	•							•						50	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 53	Brazoria	1			•																•								•			•						10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 53	Brazoria	2			•													•			•		•	•								•						15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 53	Brazoria	3			•													•	•					•	•			•		•		•						20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 53	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 55	Brazoria	1												•							•			•						•		•						10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 55	Brazoria	2												•				•				•		•								•						15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 55	Brazoria	3												•				•	•					•	•		•		•		•		•						20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 55	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 56	Brazoria	1												•							•			•						•		•						10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 56	Brazoria	2												•				•				•		•								•						15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 56	Brazoria	3												•				•	•					•	•		•		•		•		•						20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 56	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 57	Brazoria	1												•							•								•			•							10	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 57	Brazoria	2												•				•				•		•								•							15	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 57	Brazoria	3												•				•	•				•	•		•		•		•		•							20	%
COUNTY-OTHER, BRAZORIA	Brazoria County MUD No. 57	Brazoria	Emergency				•														•																•		-	-
COUNTY-OTHER, CHAMBERS	Chambers County Improvement District No. 1	Chambers	1			•																•			•						•			•							5	%
COUNTY-OTHER, CHAMBERS	Chambers County Improvement District No. 1	Chambers	2			•													•				•		•								•							10	%
COUNTY-OTHER, CHAMBERS	Chambers County Improvement District No. 1	Chambers	3			•													•	•				•	•				•				•							15	%
COUNTY-OTHER, CHAMBERS	Chambers County Improvement District No. 1	Chambers	Emergency				•														•																•		-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 141	Fort Bend	1			•																•			•						•			•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 141	Fort Bend	2			•																•		•	•								•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 141	Fort Bend	3			•													•	•				•	•				•		•		•							20	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 141	Fort Bend	Emergency				•														•																•		-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 184	Fort Bend	1			•		•							•							•	•							•			•							5	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 184	Fort Bend	2			•		•							•						•		•	•	•								•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 184	Fort Bend	3			•		•							•				•		•		•	•				•	•				•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 184	Fort Bend	4					•							•	•			•		•		•	•	•			•					•							20	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 184	Fort Bend	5	•				•											•						•	•				•			•							25	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 184	Fort Bend	6													•									•						•						•		-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 189	Fort Bend	1			•																•			•						•			•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 189	Fort Bend	2			•													•				•		•								•							16	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 189	Fort Bend	3			•													•	•				•	•				•		•		•							25	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 189	Fort Bend	Emergency				•								•						•																•		-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 19	Fort Bend	1												•									•						•										-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 19	Fort Bend	2												•							•		•	•					•			•							5	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 19	Fort Bend	3												•							•		•	•								•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 19	Fort Bend	4												•							•		•	•			•	•		•		•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 19	Fort Bend	5	•			•	•														•															•		-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 19	Fort Bend	Emergency				•															•																•		-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 192	Fort Bend	1		•																				•						•									-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 192	Fort Bend	2			•							•									•			•	•					•								5	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 192	Fort Bend	3			•							•									•			•	•							•								10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 192	Fort Bend	4			•							•												•	•			•	•		•		•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 195	Fort Bend	1			•																•			•						•			•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 195	Fort Bend	2			•													•					•	•									•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 195	Fort Bend	3			•													•	•					•	•						•		•							20	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 195	Fort Bend	Emergency				•														•																			-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 197	Fort Bend	1		•																									•								•		-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 197	Fort Bend	2			•							•									•		•	•	•				•			•							5	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 197	Fort Bend	3			•							•									•		•	•	•							•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 197	Fort Bend	4			•							•				•					•			•	•			•	•		•		•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 198	Fort Bend	1			•																•			•						•			•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 198	Fort Bend	2			•													•					•	•									•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 198	Fort Bend	3			•													•	•					•	•						•		•							20	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 198	Fort Bend	Emergency				•														•																			-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 213	Fort Bend	1			•																•			•						•										-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 213	Fort Bend	2			•													•					•	•									•							-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 213	Fort Bend	3			•													•	•					•	•				•		•									-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 213	Fort Bend	Emergency				•														•																			-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250	Fort Bend	1												•							•			•						•			•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250	Fort Bend	2												•					•				•	•									•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250	Fort Bend	3												•					•	•				•	•						•		•							20	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250	Fort Bend	Emergency				•														•																			-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250A	Fort Bend	1												•							•			•						•			•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250A	Fort Bend	2												•					•				•	•									•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250A	Fort Bend	3												•					•	•				•	•						•		•							20	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 250A	Fort Bend	Emergency				•														•																			-	-
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 255	Fort Bend	1			•																•			•						•			•							10	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 255	Fort Bend	2			•													•					•	•									•							15	%
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 255	Fort Bend	3			•													•	•					•	•						•		•							20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, FORT BEND	Fort Bend County MUD No. 255	Fort Bend	Emergency				•														•																		-	-
COUNTY-OTHER, FORT BEND	Sienna MUD No. 5	Fort Bend	1													•									•						•			•						10	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 5	Fort Bend	2													•					•				•									•						10	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 5	Fort Bend	3													•							•		•									•						15	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 5	Fort Bend	4													•				•					•	•					•		•		•						20	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 5	Fort Bend	Emergency				•														•																	•		-	-
COUNTY-OTHER, FORT BEND	Sienna MUD No. 6	Fort Bend	1													•									•						•			•						10	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 6	Fort Bend	2													•					•				•									•						10	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 6	Fort Bend	3													•							•		•									•						15	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 6	Fort Bend	4													•				•					•	•					•		•		•						20	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 6	Fort Bend	Emergency				•														•																	•		-	-
COUNTY-OTHER, FORT BEND	Sienna MUD No. 7	Fort Bend	1													•									•						•			•						10	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 7	Fort Bend	2													•					•				•									•						10	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 7	Fort Bend	3													•							•		•									•						15	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 7	Fort Bend	4													•				•					•	•					•		•		•						20	%
COUNTY-OTHER, FORT BEND	Sienna MUD No. 7	Fort Bend	Emergency				•														•																	•		-	-
COUNTY-OTHER, FORT BEND	Sienna Regional MUD	Fort Bend	1													•									•						•			•						10	%
COUNTY-OTHER, FORT BEND	Sienna Regional MUD	Fort Bend	2													•					•				•									•						10	%
COUNTY-OTHER, FORT BEND	Sienna Regional MUD	Fort Bend	3													•							•		•									•						15	%
COUNTY-OTHER, FORT BEND	Sienna Regional MUD	Fort Bend	4													•				•					•	•					•		•		•						20	%
COUNTY-OTHER, FORT BEND	Sienna Regional MUD	Fort Bend	Emergency				•														•																	•		-	-
COUNTY-OTHER, FORT BEND	Simonton Management District No. 1	Fort Bend	1			•																•			•						•									-	-
COUNTY-OTHER, FORT BEND	Simonton Management District No. 1	Fort Bend	2			•													•				•		•															-	-
COUNTY-OTHER, FORT BEND	Simonton Management District No. 1	Fort Bend	3			•													•	•					•	•						•								-	-
COUNTY-OTHER, FORT BEND	Simonton Management District No. 1	Fort Bend	Emergency				•														•																	•		-	-
COUNTY-OTHER, FORT BEND	Williams Ranch MUD No. 1	Fort Bend	1		•																	•			•						•									-	-
COUNTY-OTHER, FORT BEND	Williams Ranch MUD No. 1	Fort Bend	2			•							•									•			•		•	•			•			•						5	%
COUNTY-OTHER, FORT BEND	Williams Ranch MUD No. 1	Fort Bend	3			•							•									•			•	•		•						•						10	%
COUNTY-OTHER, FORT BEND	Williams Ranch MUD No. 1	Fort Bend	4			•							•				•					•			•	•		•	•	•		•		•						15	%
COUNTY-OTHER, GALVESTON	City of Kemah MUD No. 1	Galveston	1			•			•				•				•					•		•	•		•	•			•		•							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, GALVESTON	City of Kemah MUD No. 1	Galveston	2			•			•		•		•				•						•			•	•				•								15	%
COUNTY-OTHER, GALVESTON	City of Kemah MUD No. 1	Galveston	3	•		•	•	•			•		•						•			•	•	•	•	•	•					•							25	%
COUNTY-OTHER, GALVESTON	City of Kemah MUD No. 1	Galveston	4	•			•	•									•						•		•	•	•	•	•		•		•							35	%
COUNTY-OTHER, HARRIS	Fort Bend County MUD No. 231	Harris	1			•																•	•	•	•						•									5	%
COUNTY-OTHER, HARRIS	Fort Bend County MUD No. 231	Harris	2			•													•			•	•		•								•							10	%
COUNTY-OTHER, HARRIS	Fort Bend County MUD No. 231	Harris	3			•													•				•		•	•							•							15	%
COUNTY-OTHER, HARRIS	Fort Bend County MUD No. 231	Harris	4			•													•				•									•									20	%
COUNTY-OTHER, HARRIS	Fort Bend County MUD No. 231	Harris	Emergency				•														•																•			-	-
COUNTY-OTHER, HARRIS	Greens Parkway MUD	Harris	1			•																	•	•						•						•				5	%
COUNTY-OTHER, HARRIS	Greens Parkway MUD	Harris	2			•													•				•	•												•				10	%
COUNTY-OTHER, HARRIS	Greens Parkway MUD	Harris	3			•													•				•	•				•		•						•				15	%
COUNTY-OTHER, HARRIS	Greens Parkway MUD	Harris	Emergency				•										•				•																•			-	-
COUNTY-OTHER, HARRIS	Harris County ID No. 13	Harris	1			•																•		•						•			•							10	%
COUNTY-OTHER, HARRIS	Harris County ID No. 13	Harris	2			•													•				•	•	•								•							15	%
COUNTY-OTHER, HARRIS	Harris County ID No. 13	Harris	3			•													•	•					•	•						•	•							20	%
COUNTY-OTHER, HARRIS	Harris County ID No. 13	Harris	Emergency				•														•																•			-	-
COUNTY-OTHER, HARRIS	Harris County ID No. 14	Harris	1			•																•		•						•			•							10	%
COUNTY-OTHER, HARRIS	Harris County ID No. 14	Harris	2			•													•				•	•									•							15	%
COUNTY-OTHER, HARRIS	Harris County ID No. 14	Harris	3			•													•	•					•	•						•	•							20	%
COUNTY-OTHER, HARRIS	Harris County ID No. 14	Harris	Emergency				•														•																•			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 155	Harris	1			•							•				•								•						•									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 155	Harris	2			•							•				•		•				•		•								•							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 155	Harris	3			•							•				•		•	•					•	•				•		•	•							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 155	Harris	Emergency	•			•	•								•	•				•																•			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 171	Harris	1												•										•						•									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 171	Harris	2												•									•	•									•							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 171	Harris	3												•					•		•		•	•	•								•							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 171	Harris	Emergency				•														•																•			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 182	Harris	1			•																•		•						•	•		•							5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 182	Harris	2			•												•	•					•	•							•	•							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, HARRIS	Harris County MUD No. 182	Harris	3			●									●	●			●	●				●	●				●		●		●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 182	Harris	4	●				●									●				●																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 182	Harris	Emergency				●										●				●																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 191	Harris	1			●									●	●						●		●							●			●							5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 191	Harris	2			●									●	●			●			●	●										●							10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 191	Harris	3			●									●	●			●														●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 191	Harris	4			●									●	●			●														●							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 191	Harris	Emergency					●												●																	●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 319	Harris	1												●						●			●							●			●							10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 319	Harris	2												●								●	●										●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 319	Harris	3												●						●		●	●	●						●			●							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 319	Harris	Emergency				●														●																●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 346	Harris	1												●									●			●				●			●							10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 346	Harris	2												●						●		●	●	●		●							●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 346	Harris	3											●	●				●		●			●	●		●	●			●	●		●							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 346	Harris	4														●																							-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 406	Harris	1																		●			●							●			●							10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 406	Harris	2																				●	●								●			●							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 406	Harris	3																	●				●	●	●				●		●			●							30	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 406	Harris	Emergency				●														●																●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 422	Harris	1			●									●							●		●							●			●							10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 422	Harris	2			●									●				●					●	●									●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 422	Harris	3			●									●				●	●					●	●			●		●			●							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 422	Harris	4												●										●												●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 422	Harris	5													●		●							●													●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 422	Harris	6													●									●																-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 422	Harris	Emergency				●														●																●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 423	Harris	1			●									●						●		●	●			●			●	●			●							5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 423	Harris	2			●									●			●				●	●	●	●	●		●				●	●		●							10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 423	Harris	3			●									●				●						●	●		●		●		●			●							20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																	Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, HARRIS	Harris County MUD No. 423	Harris	4			●									●				●						●						●									35	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 423	Harris	5					●								●	●																							-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 423	Harris	Emergency																																		●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 438	Harris	1			●																●			●						●									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 438	Harris	2			●													●					●	●									●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 438	Harris	3			●													●	●					●	●				●		●									20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 438	Harris	Emergency				●														●																	●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 457	Harris	1												●										●						●									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 457	Harris	2												●									●	●									●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 457	Harris	3												●						●			●	●	●						●									20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 457	Harris	Emergency				●														●																	●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 477	Harris	1			●																●			●						●									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 477	Harris	2			●													●					●	●									●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 477	Harris	3			●													●	●					●	●						●									20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 477	Harris	Emergency				●														●																	●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 478	Harris	1			●																●			●						●									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 478	Harris	2			●													●					●	●									●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 478	Harris	3			●													●	●					●	●						●									20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 478	Harris	Emergency				●														●																	●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 494	Harris	1												●							●	●		●			●						●							5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 494	Harris	2												●							●	●	●	●	●		●						●							10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 494	Harris	3												●				●					●	●			●						●							16	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 494	Harris	4												●				●	●				●	●	●		●		●		●		●							25	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 494	Harris	5														●	●							●																	-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 494	Harris	Emergency				●														●																	●			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 502	Harris	1			●							●				●								●						●									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 502	Harris	2			●							●				●		●					●	●									●							15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 502	Harris	3			●							●				●		●	●					●	●			●		●			●							20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 502	Harris	4	●				●									●				●																					-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 502	Harris	Emergency				●										●				●																	●			-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, HARRIS	Harris County MUD No. 503	Harris	1			•																		•						•									-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 503	Harris	2			•																•		•						•			•						5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 503	Harris	3			•													•			•		•	•									•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 503	Harris	4			•													•			•			•	•									•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 503	Harris	5			•													•	•						•	•							•			•				30	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 503	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 504	Harris	1			•																•			•						•			•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 504	Harris	2			•													•					•	•									•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 504	Harris	3			•													•	•						•	•					•		•			•				20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 504	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 525	Harris	1										•									•	•		•									•						5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 525	Harris	2			•							•	•			•					•		•	•									•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 525	Harris	3			•							•	•			•								•	•									•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 525	Harris	4			•							•	•									•	•					•						•						35	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 531	Harris	1			•															•	•		•							•									10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 531	Harris	2			•																•	•	•																	10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 531	Harris	3			•														•				•	•	•				•		•									15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 531	Harris	4												•				•					•	•																20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 531	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 532	Harris	1												•							•			•									•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 532	Harris	2												•							•		•	•									•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 532	Harris	3												•							•			•	•									•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 532	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 533	Harris	1												•							•			•									•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 533	Harris	2												•							•		•	•									•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 533	Harris	3												•							•			•	•									•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 533	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 534	Harris	1												•							•			•									•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 534	Harris	2												•							•		•	•									•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 534	Harris	3												•							•			•	•									•						20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, HARRIS	Harris County MUD No. 534	Harris	Emergency				•														•																		-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 538	Harris	1			•																•			•					•			•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 538	Harris	2			•													•					•	•								•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 538	Harris	3			•													•	•					•	•				•		•		•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 538	Harris	Emergency				•														•																•			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 540	Harris	1			•																•			•					•			•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 540	Harris	2			•													•					•	•								•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 540	Harris	3			•													•	•					•	•						•		•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 540	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 542	Harris	1												•							•	•		•								•						5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 542	Harris	2												•				•			•	•	•	•								•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 542	Harris	3												•				•	•					•	•				•		•		•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 542	Harris	4												•				•						•									•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 542	Harris	Emergency				•									•					•																•			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 559	Harris	1			•																•			•					•			•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 559	Harris	2			•													•					•	•								•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 559	Harris	3			•													•	•					•	•						•		•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 559	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 560	Harris	1			•																•	•		•								•						5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 560	Harris	2			•																•	•	•	•								•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 560	Harris	3			•																•			•	•							•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 560	Harris	4												•				•						•									•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 560	Harris	Emergency				•									•					•																•			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 572	Harris	1			•																•			•					•			•						10	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 572	Harris	2			•													•					•	•								•						15	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 572	Harris	3			•													•	•					•	•						•		•						20	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 572	Harris	Emergency				•														•																			-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 63	Harris	1			•										•	•					•			•					•			•						2	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 63	Harris	2			•										•	•					•	•		•								•						5	%
COUNTY-OTHER, HARRIS	Harris County MUD No. 63	Harris	3			•										•	•					•	•		•	•				•			•						10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, HARRIS	Harris County MUD No. 63	Harris	4			●													●						●													●		-	-
COUNTY-OTHER, HARRIS	Harris County MUD No. 63	Harris	Emergency				●														●																	●		-	-
COUNTY-OTHER, HARRIS	Spanish Cove PUD	Harris	1			●																●			●							●	●		●						5	%
COUNTY-OTHER, HARRIS	Spanish Cove PUD	Harris	2			●												●	●					●	●								●								10	%
COUNTY-OTHER, HARRIS	Spanish Cove PUD	Harris	3			●													●	●						●	●				●		●		●						15	%
COUNTY-OTHER, HARRIS	Spanish Cove PUD	Harris	4	●				●									●				●																				-	-
COUNTY-OTHER, HARRIS	Spanish Cove PUD	Harris	Emergency				●										●				●																				-	-
COUNTY-OTHER, MONTGOMERY	City of Woodbranch Village	Montgomery	1			●																		●	●						●			●							10	%
COUNTY-OTHER, MONTGOMERY	City of Woodbranch Village	Montgomery	2			●																●		●	●	●								●							20	%
COUNTY-OTHER, MONTGOMERY	City of Woodbranch Village	Montgomery	3			●													●			●		●	●	●				●				●							25	%
COUNTY-OTHER, MONTGOMERY	City of Woodbranch Village	Montgomery	4			●													●			●		●	●	●			●					●							30	%
COUNTY-OTHER, MONTGOMERY	City of Woodbranch Village	Montgomery	5	●				●											●					●	●	●				●				●							40	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 12	Montgomery	1												●							●			●						●			●							10	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 12	Montgomery	2												●				●					●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 12	Montgomery	3												●				●	●					●	●							●							20	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 12	Montgomery	Emergency				●														●																				-	-
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 13	Montgomery	1												●							●			●						●			●							10	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 13	Montgomery	2												●				●					●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 13	Montgomery	3												●				●	●					●	●							●							20	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 13	Montgomery	Emergency				●														●																				-	-
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 14	Montgomery	1												●							●			●						●			●							10	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 14	Montgomery	2												●				●					●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 14	Montgomery	3												●				●	●					●	●							●							20	%
COUNTY-OTHER, MONTGOMERY	East Montgomery County MUD No. 14	Montgomery	Emergency				●														●																				-	-
COUNTY-OTHER, MONTGOMERY	Grand Oaks MUD	Montgomery	1							●												●			●	●														●	-	-
COUNTY-OTHER, MONTGOMERY	Grand Oaks MUD	Montgomery	2							●												●			●	●														●	-	-
COUNTY-OTHER, MONTGOMERY	Grand Oaks MUD	Montgomery	3							●												●							●											●	-	-
COUNTY-OTHER, MONTGOMERY	Grand Oaks MUD	Montgomery	Emergency				●	●														●			●					●										-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type													Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 1	Montgomery	1												●							●											●							10	%
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 1	Montgomery	2												●						●		●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 1	Montgomery	3												●								●	●	●							●								20	%
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 1	Montgomery	Emergency				●														●																			-	-
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 2	Montgomery	1												●							●											●							10	%
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 2	Montgomery	2												●							●		●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 2	Montgomery	3												●								●	●	●							●								20	%
COUNTY-OTHER, MONTGOMERY	Magnolia Woods MUD No. 2	Montgomery	Emergency				●														●																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 100	Montgomery	1			●																●			●							●								10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 100	Montgomery	2			●													●					●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 100	Montgomery	3			●													●	●					●	●						●								20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 100	Montgomery	Emergency				●														●																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 105	Montgomery	1			●																●			●						●								10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 105	Montgomery	2			●													●					●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 105	Montgomery	3			●													●	●					●	●				●		●								20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 105	Montgomery	Emergency				●														●																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 127	Montgomery	1			●		●									●					●			●							●								5	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 127	Montgomery	2			●		●									●		●						●									●							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 127	Montgomery	3			●		●									●						●	●										●							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 127	Montgomery	4			●		●									●			●				●	●							●								30	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 127	Montgomery	5	●			●	●									●				●																	●		-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 127	Montgomery	Emergency				●														●																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 137	Montgomery	1			●																●			●						●								10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 137	Montgomery	2			●													●					●	●									●							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 137	Montgomery	3			●													●	●					●	●				●		●								20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 137	Montgomery	Emergency				●														●																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 138	Montgomery	1			●																●									●								5	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 138	Montgomery	2			●															●	●	●									●								10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type														Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 138	Montgomery	3			•													•						•	•			•	•			•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 145	Montgomery	1			•										•							•		•	•			•				•							5	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 145	Montgomery	2			•										•						•		•	•								•							5	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 145	Montgomery	3			•										•			•				•		•	•				•				•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 145	Montgomery	4			•										•			•				•		•	•			•					•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 145	Montgomery	5	•				•								•			•				•		•	•				•				•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 145	Montgomery	6			•										•							•																	-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 150	Montgomery	1													•							•							•				•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 150	Montgomery	2													•					•		•	•	•									•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 150	Montgomery	3													•			•		•		•	•					•				•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 150	Montgomery	4													•			•		•		•	•			•			•			•							25	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 150	Montgomery	5													•			•				•	•				•					•							30	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 150	Montgomery	Emergency				•													•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 162	Montgomery	1			•																•			•					•				•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 162	Montgomery	2			•													•				•		•	•								•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 162	Montgomery	3			•													•	•					•	•								•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 162	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 164	Montgomery	1												•							•			•					•				•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 164	Montgomery	2												•				•				•	•										•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 164	Montgomery	3												•				•	•					•	•								•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 164	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 166	Montgomery	1														•							•						•									•	-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 166	Montgomery	2			•											•					•	•		•			•		•				•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 166	Montgomery	3			•											•			•		•	•	•	•	•		•						•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 166	Montgomery	4	•		•		•														•		•	•		•		•					•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 170	Montgomery	1			•														•									•											10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 170	Montgomery	2			•													•					•	•									•							15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 170	Montgomery	3			•													•	•					•	•					•		•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 170	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 180	Montgomery	1												•							•			•						•			•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 180	Montgomery	2												•				•					•	•									•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 180	Montgomery	3												•				•	•					•	•						•		•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 180	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 185	Montgomery	1												•							•			•						•			•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 185	Montgomery	2												•				•					•	•									•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 185	Montgomery	3												•				•	•					•	•						•		•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 185	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 186	Montgomery	1			•																•			•						•			•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 186	Montgomery	2			•													•					•	•									•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 186	Montgomery	3			•													•	•					•	•						•		•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 186	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 191	Montgomery	1	•				•					•			•	•																							-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 191	Montgomery	2	•				•					•			•	•				•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 191	Montgomery	3	•				•					•				•																					•		-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 191	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 197	Montgomery	1												•							•			•						•			•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 197	Montgomery	2												•				•					•	•									•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 197	Montgomery	3												•				•	•					•	•						•		•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 197	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 211	Montgomery	1														•								•						•								•		-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 211	Montgomery	2			•											•					•	•		•			•			•			•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 211	Montgomery	3			•											•					•	•		•	•		•			•			•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 211	Montgomery	4	•		•		•															•		•	•		•		•				•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 212	Montgomery	1	•		•		•														•			•						•			•							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 212	Montgomery	2	•		•		•											•					•	•								•							15	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 212	Montgomery	3	•		•		•											•	•					•	•						•		•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 212	Montgomery	Emergency				•														•																			-	-
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 96	Montgomery	1			•																		•	•			•			•	•		•							5	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 96	Montgomery	2			•												•					•		•	•	•					•		•							10	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 96	Montgomery	3			•													•				•		•	•		•	•			•		•							20	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 96	Montgomery	4			•													•				•		•	•		•	•			•		•							30	%
COUNTY-OTHER, MONTGOMERY	Montgomery County MUD No. 96	Montgomery	Emergency	•			•	•									•		•					•	•	•		•	•			•					•				-	-
COUNTY-OTHER, MONTGOMERY	Wood Trace MUD No. 1	Montgomery	1												•	•	•									•	•			•	•		•							5	%
COUNTY-OTHER, MONTGOMERY	Wood Trace MUD No. 1	Montgomery	2												•	•	•					•			•	•	•				•		•							10	%
COUNTY-OTHER, MONTGOMERY	Wood Trace MUD No. 1	Montgomery	3												•	•	•		•							•	•		•		•		•							20	%
COUNTY-OTHER, MONTGOMERY	Wood Trace MUD No. 1	Montgomery	4												•	•	•		•							•	•				•		•							30	%
COUNTY-OTHER, MONTGOMERY	Wood Trace MUD No. 1	Montgomery	Emergency	•				•								•	•		•							•	•				•						•				-	-
COUNTY-OTHER, MONTGOMERY	Woodridge MUD	Montgomery	1			•		•									•					•	•			•	•			•			•							10	%
COUNTY-OTHER, MONTGOMERY	Woodridge MUD	Montgomery	2			•		•									•		•	•		•		•	•	•							•							20	%
COUNTY-OTHER, MONTGOMERY	Woodridge MUD	Montgomery	3			•		•									•		•			•		•	•	•							•							35	%
COUNTY-OTHER, MONTGOMERY	Woodridge MUD	Montgomery	4			•		•									•		•			•		•	•	•							•							35	%
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 4	Waller	1	•				•					•			•	•																							-	-
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 4	Waller	2	•				•					•			•	•				•																				-	-
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 4	Waller	3	•				•					•				•																								-	-
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 4	Waller	Emergency				•														•																				-	-
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 5	Waller	1	•				•					•			•	•																								-	-
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 5	Waller	2	•				•					•			•	•				•																				-	-
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 5	Waller	3	•				•					•				•																								-	-
COUNTY-OTHER, WALLER	Harris-Waller Counties MUD No. 5	Waller	Emergency				•														•																				-	-
COUNTY-OTHER, WALLER	Waller County Improvement District No. 2	Waller	1	•		•		•										•					•	•	•						•		•							5	%
COUNTY-OTHER, WALLER	Waller County Improvement District No. 2	Waller	2	•		•		•										•				•		•	•	•		•				•		•							10	%
COUNTY-OTHER, WALLER	Waller County Improvement District No. 2	Waller	3	•		•		•														•		•	•	•				•		•		•							15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type															Response Type																			Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
COUNTY-OTHER, WALLER	Waller County Improvement District No. 2	Waller	4	●		●		●														●		●	●	●						●											20	%
COUNTY-OTHER, WALLER	Waller County MUD No. 18	Waller	1			●																●			●						●											-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 18	Waller	2			●													●					●	●																		-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 18	Waller	3			●													●	●					●	●						●											-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 18	Waller	Emergency				●														●																							-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 19	Waller	1			●																●			●						●											-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 19	Waller	2			●													●					●	●																		-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 19	Waller	3			●													●	●					●	●						●											-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 19	Waller	Emergency				●														●																							-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 37	Waller	1	●				●					●			●	●																												-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 37	Waller	2	●				●					●			●	●																												-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 37	Waller	3	●				●					●				●																												-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 37	Waller	Emergency				●														●																							-	-
COUNTY-OTHER, WALLER	Waller County MUD No. 41	Waller	1												●							●			●						●			●										10	%
COUNTY-OTHER, WALLER	Waller County MUD No. 41	Waller	2												●					●				●	●									●										15	%
COUNTY-OTHER, WALLER	Waller County MUD No. 41	Waller	3												●					●	●				●	●						●			●										20	%
COUNTY-OTHER, WALLER	Waller County MUD No. 41	Waller	Emergency				●														●																							-	-
COUNTY-OTHER, WALLER	Willow Creek Farms MUD	Waller	1			●																			●						●			●										10	%
COUNTY-OTHER, WALLER	Willow Creek Farms MUD	Waller	2			●													●			●			●									●										15	%
COUNTY-OTHER, WALLER	Willow Creek Farms MUD	Waller	3			●													●	●				●	●	●				●		●		●										20	%
COUNTY-OTHER, WALLER	Willow Creek Farms MUD	Waller	Emergency				●														●																							-	-
DAISETTA	City of Daiseita	Liberty	1			●																		●			●			●		●	●										5	%
DAISETTA	City of Daiseita	Liberty	2			●																●		●	●	●	●				●			●										10	%
DAISETTA	City of Daiseita	Liberty	3			●													●			●			●		●			●			●										13	%
DAISETTA	City of Daiseita	Liberty	4			●													●			●		●	●	●	●	●			●			●										15	%
DAISETTA	City of Daiseita	Liberty	5	●				●											●						●	●	●		●		●			●										15	%
DAISETTA	City of Daiseita	Liberty	6			●													●						●						●											-	-
FORT BEND COUNTY MUD 115	Fort Bend County MUD No. 115	Fort Bend	1			●																●			●						●			●										10	%
FORT BEND COUNTY MUD 115	Fort Bend County MUD No. 115	Fort Bend	2			●													●					●	●									●										15	%
FORT BEND COUNTY MUD 115	Fort Bend County MUD No. 115	Fort Bend	3			●													●	●					●	●				●		●		●										20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
FORT BEND COUNTY MUD 115	Fort Bend County MUD No. 115	Fort Bend	Emergency				●														●																●		-	-
FORT BEND COUNTY MUD 116	Fort Bend County MUD No. 116	Fort Bend	1			●																●			●						●								10	%
FORT BEND COUNTY MUD 116	Fort Bend County MUD No. 116	Fort Bend	2			●													●					●	●								●							15	%
FORT BEND COUNTY MUD 116	Fort Bend County MUD No. 116	Fort Bend	3			●													●	●					●	●				●		●		●							20	%
FORT BEND COUNTY MUD 116	Fort Bend County MUD No. 116	Fort Bend	Emergency				●														●																●		-	-
FORT BEND COUNTY MUD 121	Fort Bend County MUD No. 121	Fort Bend	1		●																			●						●								●		-	-
FORT BEND COUNTY MUD 121	Fort Bend County MUD No. 121	Fort Bend	2			●							●									●			●	●					●			●							5	%
FORT BEND COUNTY MUD 121	Fort Bend County MUD No. 121	Fort Bend	3			●							●									●			●	●							●							10	%
FORT BEND COUNTY MUD 121	Fort Bend County MUD No. 121	Fort Bend	4			●							●				●								●	●			●	●		●			●							15	%
FORT BEND COUNTY MUD 128	Fort Bend County MUD No. 128	Fort Bend	1		●																				●						●									●	-	-
FORT BEND COUNTY MUD 128	Fort Bend County MUD No. 128	Fort Bend	2			●							●									●			●	●					●										5	%
FORT BEND COUNTY MUD 128	Fort Bend County MUD No. 128	Fort Bend	3			●							●									●			●	●							●							10	%
FORT BEND COUNTY MUD 128	Fort Bend County MUD No. 128	Fort Bend	4			●							●				●								●	●			●	●		●			●							15	%
FORT BEND COUNTY MUD 129	Fort Bend County MUD No. 129	Fort Bend	1			●																●			●						●										-	-
FORT BEND COUNTY MUD 129	Fort Bend County MUD No. 129	Fort Bend	2			●													●					●	●																-	-
FORT BEND COUNTY MUD 129	Fort Bend County MUD No. 129	Fort Bend	3			●													●	●					●	●				●		●									-	-
FORT BEND COUNTY MUD 129	Fort Bend County MUD No. 129	Fort Bend	4					●									●		●						●	●				●			●									-	-
FORT BEND COUNTY MUD 129	Fort Bend County MUD No. 129	Fort Bend	Emergency				●														●																●		-	-
FORT BEND COUNTY MUD 149	Fort Bend County MUD No. 149	Fort Bend	1			●																●			●						●										10	%
FORT BEND COUNTY MUD 149	Fort Bend County MUD No. 149	Fort Bend	2			●													●					●	●								●							15	%
FORT BEND COUNTY MUD 149	Fort Bend County MUD No. 149	Fort Bend	3			●													●	●					●	●				●		●		●							20	%
FORT BEND COUNTY MUD 149	Fort Bend County MUD No. 149	Fort Bend	Emergency				●														●																●		-	-
FORT BEND COUNTY MUD 155	Fort Bend County MUD No. 155	Fort Bend	1			●		●								●								●	●					●										5	%
FORT BEND COUNTY MUD 155	Fort Bend County MUD No. 155	Fort Bend	2			●		●								●						●		●	●	●							●							10	%
FORT BEND COUNTY MUD 155	Fort Bend County MUD No. 155	Fort Bend	3			●		●								●			●			●			●				●	●			●							15	%
FORT BEND COUNTY MUD 155	Fort Bend County MUD No. 155	Fort Bend	4					●			●					●			●			●		●	●	●			●				●							20	%
FORT BEND COUNTY MUD 155	Fort Bend County MUD No. 155	Fort Bend	5	●				●											●						●	●				●								●		25	%
FORT BEND COUNTY MUD 155	Fort Bend County MUD No. 155	Fort Bend	Emergency														●														●									-	-
FORT BEND COUNTY MUD 158	Fort Bend County MUD No. 158	Fort Bend	1			●		●								●								●	●					●										5	%
FORT BEND COUNTY MUD 158	Fort Bend County MUD No. 158	Fort Bend	2			●		●								●						●		●	●	●							●							10	%
FORT BEND COUNTY MUD 158	Fort Bend County MUD No. 158	Fort Bend	3			●		●								●			●			●			●				●	●			●							15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
FORT BEND COUNTY MUD 158	Fort Bend County MUD No. 158	Fort Bend	4					●			●					●			●				●		●	●			●					●							20	%
FORT BEND COUNTY MUD 158	Fort Bend County MUD No. 158	Fort Bend	5	●				●											●						●	●				●							●				25	%
FORT BEND COUNTY MUD 158	Fort Bend County MUD No. 158	Fort Bend	Emergency														●														●										-	-
FORT BEND COUNTY MUD 162	Fort Bend County MUD No. 162	Fort Bend	1			●		●								●							●	●						●			●								5	%
FORT BEND COUNTY MUD 162	Fort Bend County MUD No. 162	Fort Bend	2			●		●								●						●	●	●									●								10	%
FORT BEND COUNTY MUD 162	Fort Bend County MUD No. 162	Fort Bend	3			●		●								●			●			●							●	●				●								15	%
FORT BEND COUNTY MUD 162	Fort Bend County MUD No. 162	Fort Bend	4					●			●					●			●			●	●	●				●					●								20	%
FORT BEND COUNTY MUD 162	Fort Bend County MUD No. 162	Fort Bend	5	●				●											●						●	●				●							●				25	%
FORT BEND COUNTY MUD 162	Fort Bend County MUD No. 162	Fort Bend	Emergency														●														●										-	-
FORT BEND COUNTY MUD 23	Fort Bend County MUD No. 23	Fort Bend	1			●																●			●						●											10	%
FORT BEND COUNTY MUD 23	Fort Bend County MUD No. 23	Fort Bend	2			●													●					●	●									●								15	%
FORT BEND COUNTY MUD 23	Fort Bend County MUD No. 23	Fort Bend	3			●													●	●					●	●				●		●			●							20	%
FORT BEND COUNTY MUD 23	Fort Bend County MUD No. 23	Fort Bend	Emergency				●														●																●				-	-
FORT BEND COUNTY MUD 24	Fort Bend County MUD No. 24	Fort Bend	1			●																●			●						●											10	%
FORT BEND COUNTY MUD 24	Fort Bend County MUD No. 24	Fort Bend	2			●																●		●	●									●								15	%
FORT BEND COUNTY MUD 24	Fort Bend County MUD No. 24	Fort Bend	3			●														●				●	●	●				●		●			●							20	%
FORT BEND COUNTY MUD 24	Fort Bend County MUD No. 24	Fort Bend	Emergency				●														●																●				-	-
FORT BEND COUNTY MUD 26	Fort Bend County MUD No. 26	Fort Bend	1			●																●			●						●											-	-
FORT BEND COUNTY MUD 26	Fort Bend County MUD No. 26	Fort Bend	2			●													●					●	●																	-	-
FORT BEND COUNTY MUD 26	Fort Bend County MUD No. 26	Fort Bend	3			●													●	●					●	●						●										-	-
FORT BEND COUNTY MUD 26	Fort Bend County MUD No. 26	Fort Bend	4	●		●	●	●											●						●							●										20	%
FORT BEND COUNTY MUD 26	Fort Bend County MUD No. 26	Fort Bend	Emergency				●														●																●				-	-
FORT BEND COUNTY MUD 42	Fort Bend County MUD No. 42	Fort Bend	1			●																●			●						●											10	%
FORT BEND COUNTY MUD 42	Fort Bend County MUD No. 42	Fort Bend	2			●													●					●	●									●								15	%
FORT BEND COUNTY MUD 42	Fort Bend County MUD No. 42	Fort Bend	3			●													●	●					●	●				●		●			●							20	%
FORT BEND COUNTY MUD 42	Fort Bend County MUD No. 42	Fort Bend	Emergency	●			●	●													●																●				-	-
FORT BEND COUNTY MUD 48	Fort Bend County MUD No. 48	Fort Bend	1			●																●			●						●											10	%
FORT BEND COUNTY MUD 48	Fort Bend County MUD No. 48	Fort Bend	2																			●		●	●									●								10	%
FORT BEND COUNTY MUD 48	Fort Bend County MUD No. 48	Fort Bend	3																					●	●									●								15	%
FORT BEND COUNTY MUD 48	Fort Bend County MUD No. 48	Fort Bend	4																	●					●	●				●		●			●							20	%
FORT BEND COUNTY MUD 48	Fort Bend County MUD No. 48	Fort Bend	Emergency				●														●																●				-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
FORT BEND COUNTY WCID 2	Fort Bend County WCID No. 2	Fort Bend	1												●							●			●				●			●								10	%
FORT BEND COUNTY WCID 2	Fort Bend County WCID No. 2	Fort Bend	2												●				●				●		●			●					●								15	%
FORT BEND COUNTY WCID 2	Fort Bend County WCID No. 2	Fort Bend	3												●				●	●					●			●		●		●								20	%
FORT BEND COUNTY WCID 2	Fort Bend County WCID No. 2	Fort Bend	Emergency				●														●																	●		-	-
HARRIS COUNTY MUD 106	Harris County MUD No. 106	Harris	1			●																●			●						●									10	%
HARRIS COUNTY MUD 106	Harris County MUD No. 106	Harris	2			●													●					●	●								●								15	%
HARRIS COUNTY MUD 106	Harris County MUD No. 106	Harris	3			●													●	●					●	●				●		●								20	%
HARRIS COUNTY MUD 106	Harris County MUD No. 106	Harris	Emergency				●														●																	●		-	-
HARRIS COUNTY MUD 148	Harris County MUD No. 148	Harris	1														●					●	●		●								●								5	%
HARRIS COUNTY MUD 148	Harris County MUD No. 148	Harris	2			●							●	●								●			●	●							●								10	%
HARRIS COUNTY MUD 148	Harris County MUD No. 148	Harris	3			●							●	●											●	●							●								20	%
HARRIS COUNTY MUD 148	Harris County MUD No. 148	Harris	4			●							●	●											●	●							●								35	%
HARRIS COUNTY MUD 148	Harris County MUD No. 148	Harris	5	●			●	●																	●																-	-
HARRIS COUNTY MUD 216	Harris County MUD No. 216	Harris	1			●																●			●						●									5	%
HARRIS COUNTY MUD 216	Harris County MUD No. 216	Harris	2			●													●					●	●								●								10	%
HARRIS COUNTY MUD 216	Harris County MUD No. 216	Harris	3			●													●	●					●	●				●		●								15	%
HARRIS COUNTY MUD 216	Harris County MUD No. 216	Harris	Emergency				●										●				●																	●		-	-
HARRIS COUNTY MUD 278	Harris County MUD No. 278	Harris	1			●																●	●		●			●			●									-	-
HARRIS COUNTY MUD 278	Harris County MUD No. 278	Harris	2			●																		●	●						●									10	%
HARRIS COUNTY MUD 278	Harris County MUD No. 278	Harris	3			●																		●	●	●							●								15	%
HARRIS COUNTY MUD 278	Harris County MUD No. 278	Harris	4			●														●					●	●						●								25	%
HARRIS COUNTY MUD 278	Harris County MUD No. 278	Harris	Emergency				●									●					●																	●		-	-
HARRIS COUNTY MUD 290	Harris County MUD No. 290	Harris	1			●																●			●						●									10	%
HARRIS COUNTY MUD 290	Harris County MUD No. 290	Harris	2			●													●					●	●								●								15	%
HARRIS COUNTY MUD 290	Harris County MUD No. 290	Harris	3			●													●	●					●	●				●		●								20	%
HARRIS COUNTY MUD 290	Harris County MUD No. 290	Harris	Emergency				●														●																	●		-	-
HARRIS COUNTY MUD 321	Harris County MUD No. 321	Harris	1																			●			●						●									10	%
HARRIS COUNTY MUD 321	Harris County MUD No. 321	Harris	2																					●	●								●								20	%
HARRIS COUNTY MUD 321	Harris County MUD No. 321	Harris	3																	●				●	●	●				●		●	●								30	%
HARRIS COUNTY MUD 321	Harris County MUD No. 321	Harris	Emergency				●														●																	●		-	-
HARRIS COUNTY MUD 361	Harris County MUD No. 361	Harris	1			●																●			●						●									10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
HARRIS COUNTY MUD 361	Harris County MUD No. 361	Harris	2			●													●				●	●									●							15	%
HARRIS COUNTY MUD 361	Harris County MUD No. 361	Harris	3			●													●	●				●	●				●		●		●							20	%
HARRIS COUNTY MUD 361	Harris County MUD No. 361	Harris	Emergency				●														●																	●		-	-
HARRIS COUNTY MUD 372	Harris County MUD No. 372	Harris	1			●																●			●						●			●							10	%
HARRIS COUNTY MUD 372	Harris County MUD No. 372	Harris	2			●													●					●	●								●							15	%
HARRIS COUNTY MUD 372	Harris County MUD No. 372	Harris	3			●													●	●					●	●				●		●		●							20	%
HARRIS COUNTY MUD 372	Harris County MUD No. 372	Harris	Emergency				●														●																	●		-	-
HARRIS COUNTY MUD 412	Harris County MUD No. 412	Harris	1			●																●			●						●			●							10	%
HARRIS COUNTY MUD 412	Harris County MUD No. 412	Harris	2			●													●			●			●									●							15	%
HARRIS COUNTY MUD 412	Harris County MUD No. 412	Harris	3			●													●	●					●	●				●		●		●							20	%
HARRIS COUNTY MUD 412	Harris County MUD No. 412	Harris	4														●							●								●					●		-	-
HARRIS COUNTY MUD 412	Harris County MUD No. 412	Harris	Emergency				●														●																	●		-	-
HARRIS COUNTY MUD 420	Harris County MUD No. 420	Harris	1			●																●			●						●			●							10	%
HARRIS COUNTY MUD 420	Harris County MUD No. 420	Harris	2			●																		●	●								●							15	%
HARRIS COUNTY MUD 420	Harris County MUD No. 420	Harris	3			●														●				●	●	●				●		●		●							20	%
HARRIS COUNTY MUD 420	Harris County MUD No. 420	Harris	4													●								●	●													●		-	-
HARRIS COUNTY MUD 420	Harris County MUD No. 420	Harris	Emergency				●															●																	●		-	-
HARRIS COUNTY MUD 49	Harris County MUD No. 49	Harris	1			●																●			●						●			●							5	%
HARRIS COUNTY MUD 49	Harris County MUD No. 49	Harris	2			●													●					●	●								●							10	%
HARRIS COUNTY MUD 49	Harris County MUD No. 49	Harris	3			●													●	●					●	●				●				●							15	%
HARRIS COUNTY MUD 49	Harris County MUD No. 49	Harris	Emergency				●															●										●						●		-	-
HARRIS COUNTY MUD 58	Harris County MUD No. 58	Harris	1													●		●					●									●										15	%
HARRIS COUNTY MUD 58	Harris County MUD No. 58	Harris	2													●		●		●				●	●								●										25	%
HARRIS COUNTY MUD 58	Harris County MUD No. 58	Harris	3													●		●		●	●				●	●				●				●										33	%
HARRIS COUNTY MUD 58	Harris County MUD No. 58	Harris	Emergency				●															●																	●		-	-
HARRIS COUNTY MUD 6	Harris County MUD No. 6	Harris	1													●									●							●										10	%
HARRIS COUNTY MUD 6	Harris County MUD No. 6	Harris	2													●				●				●	●								●										16	%
HARRIS COUNTY MUD 6	Harris County MUD No. 6	Harris	3													●				●	●				●	●				●		●		●										25	%
HARRIS COUNTY MUD 6	Harris County MUD No. 6	Harris	Emergency				●															●																	●		-	-
HOUSTON	City of Houston	Harris	1										●										●	●		●								●										5	%
HOUSTON	City of Houston	Harris	2			●							●	●				●						●		●	●								●										10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type															Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
HOUSTON	City of Houston	Harris	3			•							•	•			•							•	•								•							20	%
HOUSTON	City of Houston	Harris	4			•							•	•									•	•					•				•							35	%
HUNTSVILLE	City of Huntsville	Walker	1			•										•	•					•			•		•								•						80	%
HUNTSVILLE	City of Huntsville	Walker	2			•							•				•					•			•	•		•								•						80	%
HUNTSVILLE	City of Huntsville	Walker	3	•		•	•										•								•	•		•		•		•	•			•						50	%
KATY	City of Katy	Fort Bend	1	•		•		•										•						•	•	•					•			•							5	%
KATY	City of Katy	Fort Bend	2	•		•		•										•					•	•	•	•		•			•			•							10	%
KATY	City of Katy	Fort Bend	3	•		•		•															•	•	•	•			•		•			•							15	%
KATY	City of Katy	Fort Bend	4	•		•		•															•		•	•	•					•			•							20	%
LAZY RIVER IMPROVEMENT DISTRICT	Lazy River ID	Harris	1			•		•									•						•							•			•							5	%
LAZY RIVER IMPROVEMENT DISTRICT	Lazy River ID	Harris	2			•		•									•		•					•									•							10	%
LAZY RIVER IMPROVEMENT DISTRICT	Lazy River ID	Harris	3			•		•									•						•	•									•							20	%
LAZY RIVER IMPROVEMENT DISTRICT	Lazy River ID	Harris	4			•		•									•			•				•	•									•							30	%
LAZY RIVER IMPROVEMENT DISTRICT	Lazy River ID	Harris	Emergency	•			•	•									•				•																•			-	-
LEAGUE CITY	City of League City	Galveston	1			•										•	•	•				•			•		•	•			•		•		•							2	%
LEAGUE CITY	City of League City	Galveston	2			•										•	•		•	•		•		•	•	•		•				•	•	•							10	%
LEAGUE CITY	City of League City	Galveston	3			•										•	•		•			•		•	•	•		•		•		•	•	•							20	%
LEAGUE CITY	City of League City	Galveston	4	•		•		•						•		•	•		•					•	•	•		•		•		•		•							35	%
LIVINGSTON	City of Livingston	Polk	1			•					•											•		•	•						•			•							5	%
LIVINGSTON	City of Livingston	Polk	2			•					•											•		•	•	•								•							15	%
LIVINGSTON	City of Livingston	Polk	3			•					•								•					•	•	•				•				•							25	%
LIVINGSTON	City of Livingston	Polk	4	•		•		•									•					•		•	•	•				•				•							35	%
LIVINGSTON	City of Livingston	Polk	5	•				•			•											•		•	•	•				•		•		•							50	%
MAGNOLIA	City of Magnolia	Montgomery	1			•																•		•	•						•			•							5	%
MAGNOLIA	City of Magnolia	Montgomery	2			•																•		•	•	•								•							15	%
MAGNOLIA	City of Magnolia	Montgomery	3			•													•			•		•	•	•				•				•							20	%
MAGNOLIA	City of Magnolia	Montgomery	4			•													•			•		•	•	•			•					•							25	%
MAGNOLIA	City of Magnolia	Montgomery	5	•		•		•											•					•	•	•				•				•							30	%
MAGNOLIA	City of Magnolia	Montgomery	6			•		•													•				•												•			-	-
MASON CREEK UD	Mason Creek UD	Harris	1				•	•					•				•	•				•		•	•						•			•							5	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
MASON CREEK UD	Mason Creek UD	Harris	2				●	●					●				●	●				●	●	●		●		●					●							10	%
MASON CREEK UD	Mason Creek UD	Harris	3				●	●					●				●	●				●	●	●		●		●			●		●							15	%
MASON CREEK UD	Mason Creek UD	Harris	4				●	●					●				●	●				●	●	●		●		●			●		●							20	%
MASON CREEK UD	Mason Creek UD	Harris	5				●	●					●				●	●					●	●		●		●		●			●							25	%
MASON CREEK UD	Mason Creek UD	Harris	6																																					-	-
MASON CREEK UD	Mason Creek UD	Harris	Emergency																																					-	-
MISSOURI CITY	City of Missouri City	Fort Bend	1			●					●					●								●		●	●			●	●		●							5	%
MISSOURI CITY	City of Missouri City	Fort Bend	2			●					●					●						●		●	●	●	●	●				●		●							10	%
MISSOURI CITY	City of Missouri City	Fort Bend	3			●					●					●						●		●	●	●	●	●		●		●		●							15	%
MISSOURI CITY	City of Missouri City	Fort Bend	4			●					●					●						●		●	●	●	●	●	●	●		●		●							20	%
MISSOURI CITY	City of Missouri City	Fort Bend	5	●				●								●	●						●		●	●	●	●	●		●		●	●			●				-	-
MISSOURI CITY	City of Missouri City	Fort Bend	Emergency										●					●					●		●							●	●								-	-
MONTGOMERY COUNTY MUD 115	Montgomery County MUD No. 115	Montgomery	1			●		●									●					●			●						●										5	%
MONTGOMERY COUNTY MUD 115	Montgomery County MUD No. 115	Montgomery	2			●		●									●		●						●																10	%
MONTGOMERY COUNTY MUD 115	Montgomery County MUD No. 115	Montgomery	3			●		●									●						●	●									●								20	%
MONTGOMERY COUNTY MUD 115	Montgomery County MUD No. 115	Montgomery	4			●		●									●			●				●	●								●								30	%
MONTGOMERY COUNTY MUD 115	Montgomery County MUD No. 115	Montgomery	Emergency	●			●	●									●				●																	●			-	-
MONTGOMERY COUNTY MUD 18	Montgomery County MUD No. 18	Montgomery	1			●																		●						●							●			-	-
MONTGOMERY COUNTY MUD 18	Montgomery County MUD No. 18	Montgomery	2			●													●					●	●								●								10	%
MONTGOMERY COUNTY MUD 18	Montgomery County MUD No. 18	Montgomery	3			●													●	●					●	●				●		●		●							20	%
MONTGOMERY COUNTY MUD 18	Montgomery County MUD No. 18	Montgomery	Emergency				●														●																	●			-	-
MONTGOMERY COUNTY MUD 19	Montgomery County MUD No. 19	Montgomery	1			●		●									●					●		●						●			●							5	%
MONTGOMERY COUNTY MUD 19	Montgomery County MUD No. 19	Montgomery	2			●		●									●		●					●									●								10	%
MONTGOMERY COUNTY MUD 19	Montgomery County MUD No. 19	Montgomery	3			●		●									●							●	●								●								20	%
MONTGOMERY COUNTY MUD 19	Montgomery County MUD No. 19	Montgomery	4			●		●									●			●				●	●								●								30	%
MONTGOMERY COUNTY MUD 19	Montgomery County MUD No. 19	Montgomery	Emergency	●			●	●									●				●																	●			-	-
MONTGOMERY COUNTY MUD 89	Montgomery County MUD No. 89	Montgomery	1													●	●					●				●	●				●	●		●							10	%
MONTGOMERY COUNTY MUD 89	Montgomery County MUD No. 89	Montgomery	2													●	●					●		●		●	●	●				●		●							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
MONTGOMERY COUNTY MUD 89	Montgomery County MUD No. 89	Montgomery	3												●		●		●						●	●	●	●	●		●		●							15	%
MONTGOMERY COUNTY MUD 89	Montgomery County MUD No. 89	Montgomery	4												●		●		●						●	●	●	●	●		●		●							20	%
MONTGOMERY COUNTY MUD 89	Montgomery County MUD No. 89	Montgomery	5					●								●	●																						-	-
MONTGOMERY COUNTY MUD 99	Montgomery County MUD No. 99	Montgomery	1			●		●									●				●			●							●		●							5	%
MONTGOMERY COUNTY MUD 99	Montgomery County MUD No. 99	Montgomery	2			●		●									●		●						●								●							10	%
MONTGOMERY COUNTY MUD 99	Montgomery County MUD No. 99	Montgomery	3			●		●									●						●	●									●							20	%
MONTGOMERY COUNTY MUD 99	Montgomery County MUD No. 99	Montgomery	4			●		●									●			●				●	●								●							30	%
MONTGOMERY COUNTY MUD 99	Montgomery County MUD No. 99	Montgomery	Emergency	●			●	●									●				●																●			-	-
NEWPORT MUD	Newport MUD	Harris	1			●					●	●												●	●							●								5	%
NEWPORT MUD	Newport MUD	Harris	2			●					●	●							●						●								●							10	%
NEWPORT MUD	Newport MUD	Harris	3			●					●								●					●	●								●							20	%
NEWPORT MUD	Newport MUD	Harris	4			●					●								●						●	●							●							30	%
NEWPORT MUD	Newport MUD	Harris	Emergency	●			●	●									●				●																●			-	-
NORTH BELT UD	North Belt Utility District	Harris	1			●																	●		●						●								5	%
NORTH BELT UD	North Belt Utility District	Harris	2			●													●			●	●		●								●							10	%
NORTH BELT UD	North Belt Utility District	Harris	3			●													●						●					●				●							15	%
NORTH BELT UD	North Belt Utility District	Harris	4			●													●						●							●								20	%
NORTH BELT UD	North Belt Utility District	Harris	Emergency	●				●									●				●																●			-	-
NORTH CHANNEL WATER AUTHORITY	Harris County FWSD No. 51	Harris	1			●																●			●							●								10	%
NORTH CHANNEL WATER AUTHORITY	Harris County FWSD No. 51	Harris	2			●													●					●	●								●							15	%
NORTH CHANNEL WATER AUTHORITY	Harris County FWSD No. 51	Harris	3			●													●	●					●	●				●		●		●							20	%
NORTH CHANNEL WATER AUTHORITY	Harris County FWSD No. 51	Harris	Emergency				●														●																●			-	-
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 285	Harris	1			●																●			●							●								10	%
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 285	Harris	2			●													●					●	●								●							15	%
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 285	Harris	3			●													●	●					●	●				●		●		●							20	%
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 285	Harris	Emergency				●														●																●			-	-
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 421	Harris	1			●																●			●							●								5	%
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 421	Harris	2			●													●					●	●								●							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 421	Harris	3			•							•			•			•	•				•	•					•			•							15	%
NORTH CHANNEL WATER AUTHORITY	Harris County MUD No. 421	Harris	Emergency				•														•																	•			-	-
NORTH CHANNEL WATER AUTHORITY	North Channel Water Authority	Harris	1										•			•	•								•						•			•							10	%
NORTH CHANNEL WATER AUTHORITY	North Channel Water Authority	Harris	2										•			•	•		•						•									•							15	%
NORTH CHANNEL WATER AUTHORITY	North Channel Water Authority	Harris	3										•			•	•		•				•		•							•			•							20	%
NORTH CHANNEL WATER AUTHORITY	North Channel Water Authority	Harris	Emergency				•									•					•																	•			-	-
NORTH CHANNEL WATER AUTHORITY	Northeast Harris County MUD No. 1	Harris	1			•																•			•						•			•							10	%
NORTH CHANNEL WATER AUTHORITY	Northeast Harris County MUD No. 1	Harris	2			•													•				•		•									•							15	%
NORTH CHANNEL WATER AUTHORITY	Northeast Harris County MUD No. 1	Harris	3			•													•	•					•	•				•		•		•							20	%
NORTH CHANNEL WATER AUTHORITY	Northeast Harris County MUD No. 1	Harris	Emergency				•														•																	•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 1	Fort Bend	1														•								•						•			•							5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 1	Fort Bend	2			•															•				•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 1	Fort Bend	3			•													•				•		•									•							15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 1	Fort Bend	4			•													•	•					•	•						•		•							20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 1	Fort Bend	5				•												•						•	•				•				•							25	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 1	Fort Bend	Emergency				•														•																	•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 10	Fort Bend	1														•								•						•			•							5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 10	Fort Bend	2			•															•				•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 10	Fort Bend	3			•													•				•		•									•							15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 10	Fort Bend	4			•													•	•					•	•						•		•							20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 10	Fort Bend	5				•												•						•	•				•				•							25	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 10	Fort Bend	Emergency				•														•																	•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 12	Fort Bend	1														•								•						•			•							5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 12	Fort Bend	2			•															•				•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 12	Fort Bend	3			•													•				•		•									•							15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 12	Fort Bend	4			•													•	•					•	•						•		•							20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 12	Fort Bend	5				•												•						•	•				•				•							25	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 12	Fort Bend	Emergency				•														•																•		-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 14	Fort Bend	1														•								•						•			•					5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 14	Fort Bend	2			•																•			•						•			•					10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 14	Fort Bend	3			•													•				•		•									•					15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 14	Fort Bend	4			•													•	•					•							•			•					20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 14	Fort Bend	5				•												•						•	•					•				•					25	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 14	Fort Bend	Emergency				•														•																•		-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 3	Fort Bend	1														•								•						•			•					5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 3	Fort Bend	2			•																•			•						•			•					10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 3	Fort Bend	3			•													•				•		•									•					15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 3	Fort Bend	4			•													•	•					•							•			•					20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 3	Fort Bend	5				•												•						•	•					•				•					25	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 3	Fort Bend	Emergency				•														•																•		-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 5	Fort Bend	1			•											•					•			•						•			•					10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 5	Fort Bend	2			•											•		•			•		•	•						•			•					15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 5	Fort Bend	3			•											•		•	•					•	•					•			•					20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 5	Fort Bend	Emergency				•														•																•		-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 6	Fort Bend	1														•								•						•			•					5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 6	Fort Bend	2			•																•			•						•			•					10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 6	Fort Bend	3			•													•				•		•									•					15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 6	Fort Bend	4			•													•	•					•							•			•					20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 6	Fort Bend	5				•												•						•	•					•				•					25	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 6	Fort Bend	Emergency				•														•																•		-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 7	Fort Bend	1														•								•						•			•					5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 7	Fort Bend	2			•																•			•						•			•					10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 7	Fort Bend	3			•													•				•		•									•					15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 7	Fort Bend	4			•													•	•					•							•			•					20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 7	Fort Bend	5				•												•						•	•				•				•						25	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 7	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 9	Fort Bend	1														•							•							•								5	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 9	Fort Bend	2			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 9	Fort Bend	3			•													•					•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 9	Fort Bend	4			•													•	•					•	•						•								20	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 9	Fort Bend	5				•												•						•	•				•										25	%
NORTH FORT BEND WATER AUTHORITY	Cinco MUD No. 9	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 1	Fort Bend	1														•							•						•										5	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 1	Fort Bend	2			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 1	Fort Bend	3			•													•					•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 1	Fort Bend	4			•													•	•					•	•						•								20	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 1	Fort Bend	5				•												•						•	•				•										25	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 1	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 2	Fort Bend	1														•							•						•										5	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 2	Fort Bend	2			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 2	Fort Bend	3			•													•					•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 2	Fort Bend	4			•													•	•					•	•						•								20	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 2	Fort Bend	5				•												•						•	•				•										25	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 2	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 3	Fort Bend	1														•							•						•										5	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 3	Fort Bend	2			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 3	Fort Bend	3			•													•					•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 3	Fort Bend	4			•													•	•					•	•						•								20	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 3	Fort Bend	5				•												•						•	•				•										25	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 3	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 4	Fort Bend	1														•							•						•										5	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																	Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 4	Fort Bend	2			•																•		•	•	•				•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 4	Fort Bend	3			•																•		•	•								•							15	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 4	Fort Bend	4			•														•		•		•	•	•						•										20	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 4	Fort Bend	5				•												•						•	•				•				•							25	%
NORTH FORT BEND WATER AUTHORITY	Cinco Southwest MUD No. 4	Fort Bend	Emergency				•														•																•				-	-
NORTH FORT BEND WATER AUTHORITY	Cornerstones MUD	Harris	1												•							•		•	•						•			•							5	%
NORTH FORT BEND WATER AUTHORITY	Cornerstones MUD	Harris	2												•				•			•		•	•									•							10	%
NORTH FORT BEND WATER AUTHORITY	Cornerstones MUD	Harris	3												•				•	•					•	•				•				•							15	%
NORTH FORT BEND WATER AUTHORITY	Cornerstones MUD	Harris	Emergency				•														•																•				-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 119	Fort Bend	1			•																•			•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 119	Fort Bend	2			•																•	•		•									•							15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 119	Fort Bend	3			•														•			•	•	•				•		•			•							20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 119	Fort Bend	Emergency				•														•																•				-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 122	Fort Bend	1			•																•			•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 122	Fort Bend	2			•													•			•	•		•									•							15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 122	Fort Bend	3			•													•	•					•	•				•		•			•							20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 122	Fort Bend	Emergency				•														•																•				-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 123	Fort Bend	1			•																•			•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 123	Fort Bend	2			•													•			•	•		•									•							15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 123	Fort Bend	3			•													•	•					•	•				•		•			•							20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 123	Fort Bend	Emergency				•														•																•				-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 124	Fort Bend	1												•							•			•						•			•				•			10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 124	Fort Bend	2												•				•			•	•		•									•				•			15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 124	Fort Bend	3												•				•	•					•	•		•		•		•			•				•			25	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 124	Fort Bend	Emergency				•														•																•				-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 130	Fort Bend	1			•																•			•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 130	Fort Bend	2			•													•			•	•		•									•							16	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 130	Fort Bend	3			•													•	•					•	•			•		•		•						25	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 130	Fort Bend	Emergency				•										•				•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 133	Fort Bend	1			•																•			•						•			•						10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 133	Fort Bend	2			•													•				•		•	•							•						15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 133	Fort Bend	3			•													•	•					•	•			•		•		•						20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 133	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 143	Fort Bend	1												•										•			•			•			•						15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 143	Fort Bend	2												•					•		•		•	•		•				•			•						25	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 143	Fort Bend	3												•					•				•	•		•	•	•					•						33	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 146	Fort Bend	1			•															•			•						•							•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 146	Fort Bend	2			•													•				•	•													•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 146	Fort Bend	3			•													•	•				•	•				•		•							•	-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 146	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 151	Fort Bend	1			•																•			•						•									-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 151	Fort Bend	2			•																•		•	•						•									-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 151	Fort Bend	3			•														•					•	•			•	•	•		•						20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 151	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 156	Fort Bend	1			•																•			•						•									10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 156	Fort Bend	2			•																•		•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 156	Fort Bend	3			•														•				•	•	•			•		•		•							20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 156	Fort Bend	Emergency				•														•																•			-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 165	Fort Bend	1												•		•								•			•			•			•						15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 165	Fort Bend	2												•		•			•		•		•	•	•		•			•			•						25	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 165	Fort Bend	3												•		•			•				•	•		•	•	•					•						33	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 165	Fort Bend	Emergency													•																•								-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 190	Fort Bend	1												•							•			•						•									10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 190	Fort Bend	2												•				•					•	•															15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 190	Fort Bend	3												•				•	•				•	•		•		•		•		•							20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 190	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 194	Fort Bend	1			•																•			•						•								-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 194	Fort Bend	2			•													•				•	•															-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 194	Fort Bend	3			•													•	•				•	•				•		•								-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 194	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 2	Fort Bend	1			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 2	Fort Bend	2			•													•				•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 2	Fort Bend	3			•													•	•				•	•				•		•								20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 2	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 206	Fort Bend	1			•																•			•						•								-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 206	Fort Bend	2			•													•				•	•															-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 206	Fort Bend	3			•													•	•				•	•						•								-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 206	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 30	Fort Bend	1			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 30	Fort Bend	2			•													•				•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 30	Fort Bend	3			•													•	•				•	•				•		•								20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 30	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 5	Fort Bend	1			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 5	Fort Bend	2			•													•				•	•															15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 5	Fort Bend	3			•													•	•				•	•				•		•								20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 5	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 50	Fort Bend	1			•																•			•						•								10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 50	Fort Bend	2			•													•				•	•															16	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 50	Fort Bend	3			•													•	•				•	•				•		•								25	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 50	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 57	Fort Bend	1			•																•			•						•								10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 57	Fort Bend	2			•													•					•	•								•							15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 57	Fort Bend	3			•													•	•					•	•				•		•		•							20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 57	Fort Bend	Emergency				•														•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 58	Fort Bend	1			•																			•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 58	Fort Bend	2			•																		•	•									•							15	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 58	Fort Bend	3			•														•				•	•	•				•		•		•							20	%
NORTH FORT BEND WATER AUTHORITY	Fort Bend County MUD No. 58	Fort Bend	Emergency				•									•					•																	•		-	-
NORTH FORT BEND WATER AUTHORITY	North Fort Bend Water Authority	Fort Bend	1										•			•	•							•	•						•			•							10	%
NORTH FORT BEND WATER AUTHORITY	North Fort Bend Water Authority	Fort Bend	2										•			•	•							•	•									•							15	%
NORTH FORT BEND WATER AUTHORITY	North Fort Bend Water Authority	Fort Bend	3										•			•	•							•	•						•			•							20	%
NORTH FORT BEND WATER AUTHORITY	North Fort Bend Water Authority	Fort Bend	Emergency				•									•					•																	•		-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Creek Utility District	Harris	1			•																•	•		•						•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Creek Utility District	Harris	2			•													•			•	•		•									•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Creek Utility District	Harris	3			•													•						•	•								•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Creek Utility District	Harris	4			•													•						•							•			•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Creek Utility District	Harris	Emergency				•														•																	•		-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Forest PUD	Harris	1			•																•	•		•						•				•							50	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Forest PUD	Harris	2			•													•			•	•	•	•										•							65	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Forest PUD	Harris	3			•													•						•	•				•		•				•							75	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Forest PUD	Harris	4			•													•						•																		-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypress Forest PUD	Harris	Emergency				•														•																	•		-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypresswood UD	Harris	1			•									•							•	•		•						•										5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypresswood UD	Harris	2			•									•					•		•	•	•	•										•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypresswood UD	Harris	3			•									•					•	•				•	•	•				•		•		•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypresswood UD	Harris	4												•					•						•																		20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypresswood UD	Harris	5	•				•												•						•	•																	-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Cypresswood UD	Harris	Emergency				•														•																	•		-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Dowdell PUD	Harris	1			•																•		•					•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Dowdell PUD	Harris	2			•													•			•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Dowdell PUD	Harris	3			•													•						•	•							•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Dowdell PUD	Harris	4			•													•						•						•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Dowdell PUD	Harris	Emergency	•				•								•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Emerald Forest Utility District	Harris	1			•																•	•		•						•		•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Emerald Forest Utility District	Harris	2			•													•			•	•	•	•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Emerald Forest Utility District	Harris	3			•													•	•					•	•				•		•	•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Emerald Forest Utility District	Harris	4			•													•	•					•	•						•	•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Emerald Forest Utility District	Harris	Emergency				•														•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 118	Fort Bend	1			•																•	•	•	•					•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 118	Fort Bend	2			•													•			•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 118	Fort Bend	3			•													•						•	•							•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 118	Fort Bend	4			•													•						•						•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 118	Fort Bend	Emergency	•			•	•													•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 275	Fort Bend	1			•																•	•	•	•					•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 275	Fort Bend	2			•													•			•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 275	Fort Bend	3			•													•						•	•							•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 275	Fort Bend	4			•													•						•						•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Fort Bend County MUD No. 275	Fort Bend	Emergency				•														•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Retail)	Harris	1			•											•						•	•			•			•			•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Retail)	Harris	2			•											•					•		•	•	•							•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Retail)	Harris	3			•											•		•				•	•		•		•					•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Retail)	Harris	4														•		•			•	•	•		•	•						•							40	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Retail)	Harris	5	•				•									•						•	•		•		•					•							50	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Retail)	Harris	6														•						•							•						•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Wholesale)	Harris	1			•											•						•			•							•							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Wholesale)	Harris	2			•											•							•			•				•		•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Wholesale)	Harris	3			•											•							•	•		•				•		•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County FWSD No. 61 (Wholesale)	Harris	4	•				•									•	•						•							•	•					•		-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County ID No. 18	Harris	1			•															•			•							•		•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County ID No. 18	Harris	2			•													•			•		•	•									•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County ID No. 18	Harris	3			•													•	•					•	•				•		•		•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County ID No. 18	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 1	Harris	1			•															•	•		•							•		•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 1	Harris	2			•															•	•	•	•									•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 1	Harris	3			•																	•	•	•						•		•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 1	Harris	4			•																	•	•							•		•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 1	Harris	Emergency				•										•				•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 104	Harris	1			•																•		•							•		•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 104	Harris	2			•													•			•	•		•									•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 104	Harris	3			•													•						•					•		•		•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 104	Harris	4			•													•						•							•		•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 104	Harris	Emergency	•			•	•									•				•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 16	Harris	1												•	•	•					•	•		•									•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 16	Harris	2												•	•	•					•	•		•									•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 16	Harris	3												•	•	•		•						•	•								•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 16	Harris	4												•	•	•		•						•						•			•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 16	Harris	Emergency													•	•								•						•						•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 18	Harris	1												•							•	•		•									•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 18	Harris	2												•							•	•	•	•									•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 18	Harris	3												•					•					•	•				•		•		•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 18	Harris	4												•							•			•									•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 18	Harris	Emergency				•									•					•																•			-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 202	Harris	1			•											•				•	•		•						•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 202	Harris	2			•											•		•			•	•		•						•			•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 202	Harris	3			•											•		•						•	•					•			•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 202	Harris	4			•											•		•												•			•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 202	Harris	5	•				•									•			•																					-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 202	Harris	Emergency				•										•			•																	•				-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 220	Harris	1													•								•						•			•							8	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 220	Harris	2													•			•					•									•							16	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 220	Harris	3													•			•					•									•							25	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 220	Harris	4													•			•					•									•							33	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 220	Harris	5	•				•									•		•					•													•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 220	Harris	Emergency				•										•			•																	•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 222	Harris	1												•						•	•		•									•				•			5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 222	Harris	2												•				•		•	•	•	•									•				•			10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 222	Harris	3												•				•				•	•	•				•		•		•				•			15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 222	Harris	4												•				•	•				•									•				•			20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 222	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 230	Harris	1			•																		•						•			•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 230	Harris	2			•													•				•	•									•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 230	Harris	3			•													•	•				•	•				•		•		•							25	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 230	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248	Harris	1			•																	•							•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248	Harris	2			•													•		•	•		•									•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248	Harris	3			•													•	•				•	•				•		•		•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248	Harris	4			•													•					•									•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248	Harris	5	•				•									•			•				•													•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248	Harris	Emergency				•										•			•																	•			-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248 (Wholesale)	Harris	1			•											•							•			•						•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248 (Wholesale)	Harris	2			•											•						•	•			•				•		•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248 (Wholesale)	Harris	3			•											•							•	•		•				•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 248 (Wholesale)	Harris	4	•				•									•	•							•							•	•				•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 25	Harris	1												•	•	•					•	•		•									•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 25	Harris	2												•	•	•					•	•		•									•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 25	Harris	3												•	•	•		•						•	•								•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 25	Harris	4												•	•	•		•						•							•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 25	Harris	Emergency													•	•						•								•						•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 261	Harris	1			•																	•		•						•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 261	Harris	2			•													•			•	•		•									•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 261	Harris	3			•													•						•					•				•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 261	Harris	4			•													•						•							•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 261	Harris	Emergency	•				•									•				•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 275	Harris	1			•																•	•		•						•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 275	Harris	2			•																•	•	•	•									•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 275	Harris	3			•																	•	•	•				•		•			•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 275	Harris	4			•													•						•							•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 275	Harris	5	•				•									•				•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 275	Harris	Emergency				•										•				•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 358	Harris	1			•																•	•		•						•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 358	Harris	2			•													•					•	•									•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 358	Harris	3			•													•	•					•	•				•		•		•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 358	Harris	4												•				•					•	•									•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 358	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 365	Harris	1												•						•			•										•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 365	Harris	2												•								•	•										•							15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 365	Harris	3												•									•	•	•					•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 365	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 367	Harris	1			•																•	•		•						•						•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 367	Harris	2			•													•			•	•	•	•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 367	Harris	3			•																•	•		•					•			•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 367	Harris	4			•														•				•	•					•		•		•							25	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 367	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 383	Harris	1			•																•	•		•						•						•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 383	Harris	2			•													•			•	•	•	•						•		•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 383	Harris	3			•															•		•	•									•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 383	Harris	4			•														•				•	•						•		•							25	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 383	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 391	Harris	1												•							•			•						•						•			10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 391	Harris	2												•				•					•	•								•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 391	Harris	3												•				•	•					•	•				•		•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 391	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 468	Harris	1			•																•	•		•								•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 468	Harris	2			•													•				•	•	•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 468	Harris	3			•													•	•					•	•				•		•		•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 468	Harris	4			•													•						•								•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 468	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 480	Harris	1												•							•			•						•						•			10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 480	Harris	2												•				•			•		•	•								•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 480	Harris	3												•				•	•					•	•				•		•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 480	Harris	Emergency				•									•					•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 530	Harris	1			•																•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 530	Harris	2			•															•		•	•	•								•							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 530	Harris	3			•														•				•	•				•		•		•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 530	Harris	4												•				•						•								•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 530	Harris	Emergency				•														•																			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 82	Harris	1			•																•			•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 82	Harris	2			•													•				•	•									•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 82	Harris	3			•													•	•					•	•				•		•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 82	Harris	Emergency				•									•					•																•				-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 109	Harris	1			•		•							•									•	•			•			•	•		•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 109	Harris	2			•		•							•			•		•		•	•	•	•	•		•					•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 109	Harris	3			•		•							•				•	•				•	•			•			•	•		•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 109	Harris	4			•		•							•				•	•				•							•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 113	Harris	1			•							•				•							•						•			•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 113	Harris	2			•							•				•		•				•	•									•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 113	Harris	3			•							•				•		•	•				•	•				•	•	•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 113	Harris	4	•				•									•				•																			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County WCID No. 113	Harris	Emergency				•										•				•																			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery Counties MUD No. 386	Harris	1			•																	•	•			•			•	•		•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery Counties MUD No. 386	Harris	2			•											•	•				•	•	•	•	•		•					•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery Counties MUD No. 386	Harris	3			•											•		•					•			•				•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery Counties MUD No. 386	Harris	4			•		•									•		•					•			•				•		•							30	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery County MUD No. 530	Harris	1			•															•			•						•			•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery County MUD No. 530	Harris	2			•													•				•	•									•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery County MUD No. 530	Harris	3			•													•	•					•	•			•		•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris-Montgomery County MUD No. 530	Harris	Emergency				•														•																•				-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Lake Forest Utility District	Harris	1			•																	•	•						•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Lake Forest Utility District	Harris	2			•													•			•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Lake Forest Utility District	Harris	3			•													•						•				•				•							15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Lake Forest Utility District	Harris	4			•											•		•					•							•								20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Lake Forest Utility District	Harris	Emergency	•				•									•				•																•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Malcomson Road Utility District	Harris	1			•											•					•	•	•			•			•			•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Malcomson Road Utility District	Harris	2			•											•				•		•	•	•		•						•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Malcomson Road Utility District	Harris	3			•											•		•		•			•	•		•						•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Malcomson Road Utility District	Harris	4			•											•		•		•		•	•	•		•	•					•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Malcomson Road Utility District	Harris	5	•				•									•		•					•	•		•		•				•						50	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Malcomson Road Utility District	Harris	6														•							•							•					•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Memorial Hills Utility District	Harris	1			•																•		•						•			•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Memorial Hills Utility District	Harris	2			•													•			•	•		•								•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Memorial Hills Utility District	Harris	3			•													•						•				•		•		•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Memorial Hills Utility District	Harris	4			•													•						•						•		•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Memorial Hills Utility District	Harris	5	•				•									•				•															•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Memorial Hills Utility District	Harris	Emergency				•										•				•															•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	North Park Utility District	Harris	1			•																•		•						•			•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	North Park Utility District	Harris	2			•													•			•	•		•								•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	North Park Utility District	Harris	3			•													•						•				•				•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	North Park Utility District	Harris	4			•													•						•						•		•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	North Park Utility District	Harris	Emergency	•				•									•				•															•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 10	Harris	1			•																•		•						•			•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 10	Harris	2			•													•			•	•		•								•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 10	Harris	3			•													•						•				•				•						15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 10	Harris	4			•													•						•						•		•						20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 10	Harris	Emergency	•				•									•				•															•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 19	Harris	1												•	•						•	•		•								•						5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 19	Harris	2												•	•			•			•	•		•								•						10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 19	Harris	3												•	•			•						•				•				•						15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																	Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 19	Harris	4												•	•			•						•							•								20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 19	Harris	Emergency													•	•															•						•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 5	Harris	1			•																	•		•						•								5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 5	Harris	2			•													•			•	•		•								•								10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 5	Harris	3			•													•						•					•			•								15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 5	Harris	4			•													•						•							•	•								20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 5	Harris	Emergency	•				•									•				•																	•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 6	Harris	1			•																	•							•			•								5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 6	Harris	2			•													•			•	•		•								•								10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 6	Harris	3			•													•						•	•				•		•	•								15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 6	Harris	4			•													•						•							•	•								20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 6	Harris	5	•				•									•				•																	•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 6	Harris	Emergency				•										•				•																	•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 9	Harris	1			•																	•							•			•								5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 9	Harris	2			•													•			•	•		•								•								10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 9	Harris	3			•													•						•					•			•								15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 9	Harris	4			•													•						•							•	•								20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 9	Harris	Emergency	•				•									•				•																	•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Park MUD	Harris	1			•																•			•								•								15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Park MUD	Harris	2			•													•					•	•								•								25	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Park MUD	Harris	3			•													•	•					•	•				•			•								35	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Park MUD	Harris	Emergency					•									•																					•			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Reid Road MUD No. 1	Harris	1			•																	•							•			•								5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Reid Road MUD No. 1	Harris	2			•													•			•	•		•								•								10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Reid Road MUD No. 1	Harris	3			•													•						•					•			•								15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Reid Road MUD No. 1	Harris	4			•													•						•							•	•								20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Reid Road MUD No. 1	Harris	Emergency	•				•									•				•																	•			-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Spring Creek Forest Public Utility District	Harris	1			•																•		•					•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Spring Creek Forest Public Utility District	Harris	2			•													•			•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Spring Creek Forest Public Utility District	Harris	3			•													•						•					•			•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Spring Creek Forest Public Utility District	Harris	4			•													•						•						•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Spring Creek Forest Public Utility District	Harris	5	•				•									•				•																			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Spring Creek Forest Public Utility District	Harris	Emergency				•										•				•																			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Tattor Road Municipal District	Harris	1			•																•		•					•			•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Tattor Road Municipal District	Harris	2			•													•			•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Tattor Road Municipal District	Harris	3			•													•						•					•			•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Tattor Road Municipal District	Harris	4			•													•						•						•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Tattor Road Municipal District	Harris	Emergency	•				•									•				•																			-	-
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 1	Harris	1												•	•						•	•		•								•							5	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 1	Harris	2												•	•			•			•	•		•								•							10	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 1	Harris	3												•	•			•						•					•			•							15	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 1	Harris	4												•	•			•						•						•		•							20	%
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 1	Harris	Emergency													•	•														•						•			-	-
OAK RIDGE NORTH	City of Oak Ridge North	Montgomery	1							•					•								•	•			•			•			•							15	%
OAK RIDGE NORTH	City of Oak Ridge North	Montgomery	2							•					•							•		•	•	•		•						•							25	%
OAK RIDGE NORTH	City of Oak Ridge North	Montgomery	3							•					•				•			•			•	•		•						•							35	%
OAK RIDGE NORTH	City of Oak Ridge North	Montgomery	4							•					•				•			•			•	•		•	•	•				•							45	%
OAK RIDGE NORTH	City of Oak Ridge North	Montgomery	5	•				•											•						•	•		•		•		•		•							50	%
PECAN GROVE MUD 1	Pecan Grove MUD	Fort Bend	1													•	•								•						•										5	%
PECAN GROVE MUD 1	Pecan Grove MUD	Fort Bend	2			•		•								•	•						•	•										•							10	%
PECAN GROVE MUD 1	Pecan Grove MUD	Fort Bend	3			•		•								•	•		•				•	•	•				•		•			•							20	%
PECAN GROVE MUD 1	Pecan Grove MUD	Fort Bend	Emergency				•													•																		•			-	-
POINT AQUARIUS MUD	Point Aquarius MUD	Montgomery	1			•		•									•					•			•								•							5	%
POINT AQUARIUS MUD	Point Aquarius MUD	Montgomery	2			•		•						•			•		•						•								•							10	%
POINT AQUARIUS MUD	Point Aquarius MUD	Montgomery	3			•		•									•						•	•								•							20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type															Response Type																	Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
POINT AQUARIUS MUD	Point Aquarius MUD	Montgomery	4			●		●									●			●				●	●						●		●							30	%
POINT AQUARIUS MUD	Point Aquarius MUD	Montgomery	5	●			●	●					●				●				●																●			-	-
POINT AQUARIUS MUD	Point Aquarius MUD	Montgomery	Emergency				●														●																			-	-
PORTER SUD	Porter SUD	Montgomery	1			●		●									●					●	●		●		●	●				●							10	%
PORTER SUD	Porter SUD	Montgomery	2			●		●									●		●	●		●		●	●	●							●							20	%
PORTER SUD	Porter SUD	Montgomery	3			●		●									●		●			●		●	●	●							●							35	%
PORTER SUD	Porter SUD	Montgomery	4			●		●									●		●				●	●	●	●							●							35	%
RICHMOND	City of Richmond	Fort Bend	1		●																			●						●							●			-	-
RICHMOND	City of Richmond	Fort Bend	2			●							●									●			●	●						●									5	%
RICHMOND	City of Richmond	Fort Bend	3			●							●									●			●	●							●							10	%
RICHMOND	City of Richmond	Fort Bend	4			●							●				●							●	●			●	●		●			●							15	%
RICHMOND	Fort Bend County MUD No. 187	Fort Bend	1		●																			●						●										-	-
RICHMOND	Fort Bend County MUD No. 187	Fort Bend	2			●							●									●			●	●						●									5	%
RICHMOND	Fort Bend County MUD No. 187	Fort Bend	3			●							●									●			●	●							●							10	%
RICHMOND	Fort Bend County MUD No. 187	Fort Bend	4			●							●				●							●	●			●	●		●			●							15	%
ROSENBERG	City of Rosenberg	Fort Bend	1			●		●								●							●							●			●							5	%
ROSENBERG	City of Rosenberg	Fort Bend	2			●		●								●						●	●		●								●							10	%
ROSENBERG	City of Rosenberg	Fort Bend	3			●		●								●						●					●	●					●							15	%
ROSENBERG	City of Rosenberg	Fort Bend	4					●			●					●						●		●			●						●							20	%
ROSENBERG	City of Rosenberg	Fort Bend	5	●				●								●								●				●					●							25	%
ROSENBERG	City of Rosenberg	Fort Bend	6														●														●									-	-
SEQUOIA IMPROVEMENT DISTRICT	Sequoia Improvement District	Harris	1												●							●	●		●						●									5	%
SEQUOIA IMPROVEMENT DISTRICT	Sequoia Improvement District	Harris	2												●				●					●	●									●							10	%
SEQUOIA IMPROVEMENT DISTRICT	Sequoia Improvement District	Harris	3												●				●	●					●	●				●				●							15	%
SEQUOIA IMPROVEMENT DISTRICT	Sequoia Improvement District	Harris	4			●													●						●						●			●							20	%
SEQUOIA IMPROVEMENT DISTRICT	Sequoia Improvement District	Harris	Emergency	●				●										●				●															●			-	-
SIENNA PLANTATION	Sienna Management District	Fort Bend	1														●							●						●			●							10	%
SIENNA PLANTATION	Sienna Management District	Fort Bend	2														●					●		●									●							10	%
SIENNA PLANTATION	Sienna Management District	Fort Bend	3														●						●	●									●							15	%
SIENNA PLANTATION	Sienna Management District	Fort Bend	4														●			●				●	●				●		●			●							20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
SIENNA PLANTATION	Sienna Management District	Fort Bend	Emergency				•														•																•		-	-
SIENNA PLANTATION	Sienna MUD No. 10	Fort Bend	1													•								•							•		•						10	%
SIENNA PLANTATION	Sienna MUD No. 10	Fort Bend	2													•						•		•										•						10	%
SIENNA PLANTATION	Sienna MUD No. 10	Fort Bend	3													•							•	•										•						15	%
SIENNA PLANTATION	Sienna MUD No. 10	Fort Bend	4													•			•					•	•					•		•		•						20	%
SIENNA PLANTATION	Sienna MUD No. 10	Fort Bend	Emergency				•														•																•		-	-
SIENNA PLANTATION	Sienna MUD No. 12	Fort Bend	1													•								•							•		•						10	%
SIENNA PLANTATION	Sienna MUD No. 12	Fort Bend	2													•						•		•										•						10	%
SIENNA PLANTATION	Sienna MUD No. 12	Fort Bend	3													•							•	•										•						15	%
SIENNA PLANTATION	Sienna MUD No. 12	Fort Bend	4													•			•					•	•					•		•		•						20	%
SIENNA PLANTATION	Sienna MUD No. 12	Fort Bend	Emergency				•														•																•		-	-
SIENNA PLANTATION	Sienna MUD No. 3	Fort Bend	1													•								•							•		•						10	%
SIENNA PLANTATION	Sienna MUD No. 3	Fort Bend	2													•						•		•										•						10	%
SIENNA PLANTATION	Sienna MUD No. 3	Fort Bend	3													•							•	•										•						15	%
SIENNA PLANTATION	Sienna MUD No. 3	Fort Bend	4													•			•					•	•					•		•		•						20	%
SIENNA PLANTATION	Sienna MUD No. 3	Fort Bend	Emergency				•														•																•		-	-
SIENNA PLANTATION	Sienna MUD No. 4	Fort Bend	1													•								•							•		•						10	%
SIENNA PLANTATION	Sienna MUD No. 4	Fort Bend	2													•						•		•										•						10	%
SIENNA PLANTATION	Sienna MUD No. 4	Fort Bend	3													•							•	•										•						15	%
SIENNA PLANTATION	Sienna MUD No. 4	Fort Bend	4													•			•					•	•					•		•		•						20	%
SIENNA PLANTATION	Sienna MUD No. 4	Fort Bend	Emergency				•														•																•		-	-
SIENNA PLANTATION	Sienna Plantation Management District	Fort Bend	1																					•							•		•						10	%
SIENNA PLANTATION	Sienna Plantation Management District	Fort Bend	2																			•		•										•						10	%
SIENNA PLANTATION	Sienna Plantation Management District	Fort Bend	3																			•		•										•						15	%
SIENNA PLANTATION	Sienna Plantation Management District	Fort Bend	4																	•					•	•				•		•		•						20	%
SIENNA PLANTATION	Sienna Plantation Management District	Fort Bend	Emergency																		•																•		-	-
SIENNA PLANTATION	Sienna Plantation MUD No. 10	Fort Bend	1																					•							•		•						10	%
SIENNA PLANTATION	Sienna Plantation MUD No. 10	Fort Bend	2																			•		•										•						10	%
SIENNA PLANTATION	Sienna Plantation MUD No. 10	Fort Bend	3																			•	•	•										•						15	%
SIENNA PLANTATION	Sienna Plantation MUD No. 10	Fort Bend	4																	•					•	•				•		•		•						20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
SIENNA PLANTATION	Sienna Plantation MUD No. 10	Fort Bend	Emergency																		●																●		-	-
SIENNA PLANTATION	Sienna Plantation MUD No. 2	Fort Bend	1																					●							●								10	%
SIENNA PLANTATION	Sienna Plantation MUD No. 2	Fort Bend	2																			●		●															10	%
SIENNA PLANTATION	Sienna Plantation MUD No. 2	Fort Bend	3																			●	●	●															15	%
SIENNA PLANTATION	Sienna Plantation MUD No. 2	Fort Bend	4																	●				●	●				●		●								20	%
SIENNA PLANTATION	Sienna Plantation MUD No. 2	Fort Bend	Emergency																		●																●		-	-
SIENNA PLANTATION	Sienna Plantation MUD No. 3	Fort Bend	1																					●							●								10	%
SIENNA PLANTATION	Sienna Plantation MUD No. 3	Fort Bend	2																			●		●															10	%
SIENNA PLANTATION	Sienna Plantation MUD No. 3	Fort Bend	3																			●	●	●															15	%
SIENNA PLANTATION	Sienna Plantation MUD No. 3	Fort Bend	4																	●				●	●				●		●								20	%
SIENNA PLANTATION	Sienna Plantation MUD No. 3	Fort Bend	Emergency																		●																●		-	-
SOUTH HOUSTON	City of South Houston	Harris	1			●																		●	●			●			●								10	%
SOUTH HOUSTON	City of South Houston	Harris	2			●																●		●	●	●		●				●								10	%
SOUTH HOUSTON	City of South Houston	Harris	3	●		●		●						●						●				●	●	●		●		●		●								10	%
SOUTHERN MONTGOMERY COUNTY MUD	Southern Montgomery County MUD	Montgomery	1			●		●								●							●																5	%
SOUTHERN MONTGOMERY COUNTY MUD	Southern Montgomery County MUD	Montgomery	2			●		●								●							●																10	%
SOUTHERN MONTGOMERY COUNTY MUD	Southern Montgomery County MUD	Montgomery	3			●		●								●							●																20	%
SOUTHERN MONTGOMERY COUNTY MUD	Southern Montgomery County MUD	Montgomery	4			●		●								●				●			●																30	%
SOUTHERN MONTGOMERY COUNTY MUD	Southern Montgomery County MUD	Montgomery	Emergency				●	●									●				●																●		-	-
SOUTHWEST HARRIS COUNTY MUD 1	Southwest Harris County MUD No. 1	Harris	1			●																●			●						●								5	%
SOUTHWEST HARRIS COUNTY MUD 1	Southwest Harris County MUD No. 1	Harris	2			●														●				●	●														10	%
SOUTHWEST HARRIS COUNTY MUD 1	Southwest Harris County MUD No. 1	Harris	3			●														●	●				●	●				●								15	%
SOUTHWEST HARRIS COUNTY MUD 1	Southwest Harris County MUD No. 1	Harris	Emergency				●										●				●																●		-	-
SUGAR LAND	City of Sugar Land (Retail)	Fort Bend	1		●																			●						●								-	-
SUGAR LAND	City of Sugar Land (Retail)	Fort Bend	2			●							●									●		●			●			●								5	%
SUGAR LAND	City of Sugar Land (Retail)	Fort Bend	3			●							●									●		●	●		●												5	%
SUGAR LAND	City of Sugar Land (Retail)	Fort Bend	4			●							●											●	●		●	●	●		●								10	%
SUGAR LAND	City of Sugar Land (Wholesale)	Fort Bend	1		●																			●						●								-	-
SUGAR LAND	City of Sugar Land (Wholesale)	Fort Bend	2			●							●									●		●			●			●								5	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
SUGAR LAND	City of Sugar Land (Wholesale)	Fort Bend	3			•							•									•			•							•							10	%
SUGAR LAND	City of Sugar Land (Wholesale)	Fort Bend	4			•							•				•								•	•		•	•	•		•							15	%
THE WOODLANDS	Montgomery County MUD No. 6 7 36 39 40 46 47 60 67	Montgomery	1			•		•								•	•					•			•					•		•							5	%
THE WOODLANDS	Montgomery County MUD No. 6 7 36 39 40 46 47 60 67	Montgomery	2			•		•								•	•				•		•	•		•							•							10	%
THE WOODLANDS	Montgomery County MUD No. 6 7 36 39 40 46 47 60 67	Montgomery	3			•		•								•	•				•		•	•		•							•							20	%
THE WOODLANDS	Montgomery County MUD No. 6 7 36 39 40 46 47 60 67	Montgomery	4			•		•								•							•	•	•	•							•							30	%
THE WOODLANDS	Montgomery County MUD No. 6 7 36 39 40 46 47 60 67	Montgomery	5	•			•	•								•	•	•						•													•		-	-
THE WOODLANDS	The Woodlands MUDs	Montgomery	1			•		•								•	•					•		•					•			•							5	%
THE WOODLANDS	The Woodlands MUDs	Montgomery	2			•		•								•	•				•		•	•		•							•							10	%
THE WOODLANDS	The Woodlands MUDs	Montgomery	3			•		•								•	•				•		•	•		•							•							20	%
THE WOODLANDS	The Woodlands MUDs	Montgomery	4			•		•								•							•	•	•	•							•							30	%
THE WOODLANDS	The Woodlands MUDs	Montgomery	5	•			•	•								•	•	•						•													•		-	-
VALLEY RANCH MUD 1	Valley Ranch MUD No. 1	Montgomery	1			•		•									•					•	•		•		•	•					•							10	%
VALLEY RANCH MUD 1	Valley Ranch MUD No. 1	Montgomery	2			•		•									•		•	•		•		•	•	•							•							20	%
VALLEY RANCH MUD 1	Valley Ranch MUD No. 1	Montgomery	3			•		•									•			•		•		•	•	•						•							35	%
VALLEY RANCH MUD 1	Valley Ranch MUD No. 1	Montgomery	4			•		•									•					•		•	•	•							•							35	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Chelford One MUD	Harris	1			•										•						•							•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Chelford One MUD	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Chelford One MUD	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Chelford One MUD	Harris	Emergency				•														•																•		-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Cimarron MUD	Harris	1			•																	•							•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Cimarron MUD	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Cimarron MUD	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Cimarron MUD	Harris	Emergency				•														•																•		-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Clay Road MUD	Harris	1			•										•						•							•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Clay Road MUD	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Clay Road MUD	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Clay Road MUD	Harris	4													•		•						•	•												•			-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Clay Road MUD	Harris	Emergency				•														•																		-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 105	Harris	1			•							•				•								•						•		•						10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 105	Harris	2			•							•				•		•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 105	Harris	3			•							•				•		•	•				•	•				•				•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 105	Harris	Emergency	•				•								•					•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 120	Harris	1			•															•				•								•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 120	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 120	Harris	3			•													•	•				•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 120	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 147	Harris	1			•															•				•								•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 147	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 147	Harris	3			•													•	•				•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 147	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 156	Harris	1										•			•	•					•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 156	Harris	2										•			•	•		•				•		•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 156	Harris	3										•			•	•		•				•	•	•								•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 156	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 157	Fort Bend	1			•																•			•								•							5	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 157	Fort Bend	2			•													•				•	•									•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 157	Fort Bend	3			•													•					•	•				•				•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 157	Fort Bend	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 158	Harris	1													•								•	•													•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 158	Harris	2													•			•						•													•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 158	Harris	3													•			•						•													•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 158	Harris	4													•			•						•													•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 158	Harris	5	•				•								•			•		•				•																-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 158	Harris	Emergency				•										•				•																•			-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 162	Harris	1			•		•								•							•	•						•			•							5	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 162	Harris	2			•		•								•						•	•	•									•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 162	Harris	3					•								•			•			•	•				•	•					•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 162	Harris	4					•								•	•		•			•	•	•			•						•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 162	Harris	5	•				•											•						•	•				•				•							25	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 162	Harris	6														•								•							•					•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 165	Harris	1			•																•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 165	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 165	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 165	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 167	Harris	1			•																•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 167	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 167	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 167	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 173	Harris	1										•			•	•					•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 173	Harris	2										•			•	•		•				•		•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 173	Harris	3										•			•	•		•	•					•	•				•			•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 173	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 185	Harris	1			•							•				•							•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 185	Harris	2			•							•				•		•				•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 185	Harris	3			•							•				•		•	•				•	•				•				•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 185	Harris	Emergency	•				•								•					•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 188	Harris	1			•																•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 188	Harris	2			•													•					•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 188	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 188	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 196	Harris	1										•			•	•					•			•		•			•			•							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 196	Harris	2										•			•	•		•				•	•	•		•						•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 196	Harris	3										•			•	•		•					•			•				•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 196	Harris	Emergency				•										•				•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 255	Harris	1			•							•				•					•			•								•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 255	Harris	2			•							•				•		•				•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 255	Harris	3			•							•				•		•	•				•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 255	Harris	4	•				•									•				•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 255	Harris	Emergency				•										•				•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 264	Harris	1			•											•							•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 264	Harris	2			•											•		•				•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 264	Harris	3			•											•		•	•				•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 264	Harris	Emergency														•				•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 287	Harris	1											•										•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 287	Harris	2											•					•				•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 287	Harris	3											•					•	•				•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 287	Harris	4													•					•			•																-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 287	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 371	Harris	1			•							•			•	•					•		•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 371	Harris	2			•							•			•	•		•			•		•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 371	Harris	3			•							•			•	•		•	•				•	•						•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 371	Harris	4	•				•									•				•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 371	Harris	Emergency				•										•				•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 374	Harris	1			•															•			•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 374	Harris	2			•													•				•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 374	Harris	3			•													•	•				•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 374	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 418	Harris	1			•		•								•	•				•		•	•							•	•	•							10	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 418	Harris	2			•		•								•	•	•					•	•	•							•	•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 418	Harris	3			•		•								•	•		•					•	•				•			•	•							40	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 418	Harris	Emergency																																					-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 449	Harris	1			•																		•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 449	Harris	2			•													•			•			•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 449	Harris	3			•													•					•	•	•						•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 449	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 458	Harris	1												•							•			•									•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 458	Harris	2												•							•		•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 458	Harris	3												•							•			•	•						•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 458	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 495	Harris	1			•																•			•					•				•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 495	Harris	2			•													•					•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 495	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 495	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 500	Harris	1			•																		•	•																-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 500	Harris	2			•																•			•					•			•							5	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 500	Harris	3			•													•			•		•	•								•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 500	Harris	4			•													•			•			•	•							•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 500	Harris	5			•													•	•					•	•						•	•							30	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 500	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 501	Harris	1			•																		•	•																-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 501	Harris	2			•																•			•					•			•							5	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 501	Harris	3			•													•			•		•	•								•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 501	Harris	4			•													•			•			•	•							•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 501	Harris	5			•													•	•					•	•						•	•							30	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 501	Harris	Emergency				•														•																	•			-	-

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type																Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 61	Harris	1												●	●	●					●		●	●			●				●								15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 61	Harris	2												●	●	●	●				●	●	●	●			●					●	●							25	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 61	Harris	3												●	●	●		●			●			●	●			●			●		●							30	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 61	Harris	4					●						●	●	●	●	●	●				●		●	●			●					●							33	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 64	Fort Bend	1			●																●			●						●									5	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 64	Fort Bend	2			●													●					●	●															10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 64	Fort Bend	3			●													●	●					●	●				●										15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 64	Fort Bend	Emergency				●														●															●				-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 71	Harris	1												●							●			●					●										10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 71	Harris	2												●				●					●	●									●							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 71	Harris	3												●				●	●					●	●				●		●									20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 71	Harris	Emergency				●														●															●				-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 81	Harris	1			●																●			●						●									10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 81	Harris	2			●													●					●	●															15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 81	Harris	3			●													●	●					●	●				●		●									20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County MUD No. 81	Harris	Emergency				●														●															●				-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County UD No. 6	Harris	1			●																●			●						●									5	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County UD No. 6	Harris	2			●													●					●	●															10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County UD No. 6	Harris	3			●													●	●					●	●				●		●									15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Harris County UD No. 6	Harris	Emergency				●									●					●															●				-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Horsepen Bayou MUD	Harris	1			●																●			●						●									10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Horsepen Bayou MUD	Harris	2			●													●	●					●	●															15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Horsepen Bayou MUD	Harris	3			●													●	●					●	●				●		●									20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Horsepen Bayou MUD	Harris	Emergency				●														●															●				-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Interstate MUD	Harris	1			●																●			●						●									10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Interstate MUD	Harris	2			●													●					●	●															15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Interstate MUD	Harris	3			●													●	●					●	●				●		●									20	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type														Response Type															Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Interstate MUD	Harris	Emergency				•														•																•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mayde Creek MUD	Harris	1			•																•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mayde Creek MUD	Harris	2			•													•			•		•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mayde Creek MUD	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mayde Creek MUD	Harris	Emergency				•									•					•																			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 1	Harris	1			•																•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 1	Harris	2			•													•			•		•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 1	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 1	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 2	Harris	1			•																•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 2	Harris	2			•													•			•		•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 2	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Mission Bend MUD No. 2	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 12	Harris	1			•											•							•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 12	Harris	2			•											•						•	•									•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 12	Harris	3			•											•		•	•				•	•				•				•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Northwest Harris County MUD No. 12	Harris	Emergency	•				•								•					•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Renn Road MUD	Harris	1			•																•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Renn Road MUD	Harris	2			•													•			•		•	•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Renn Road MUD	Harris	3			•													•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Renn Road MUD	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 15	Harris	1			•										•						•			•					•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 15	Harris	2			•										•			•			•			•								•							15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 15	Harris	3			•										•			•	•					•	•				•		•		•							20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 15	Harris	Emergency				•														•																	•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 4	Harris	1			•							•				•							•						•			•							10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 4	Harris	2			•							•				•		•					•	•								•							15	%

WUG or WWP Name	DCP Entity Name	Primary County	Stage	Trigger Type															Response Type																		Reduction Type							Reduction	
				Contamination	Customer Awareness	Demand/Capacity Based	Emergency Condition	Failures and Damages	Groundwater Level	Production Rate	Reservoir Level	Stream Flow Rate	Supply Based	System Pressure	Well Run Time	Wholesale Provider	Other	Assessment and Identification	Continue Previous Stage Response(s)	Emergency Rate	Invoke All/Any Response Measures	Outdoor Watering Schedule	Leak Detection and Repair	Mandatory Reduction	Stakeholder Notification	Prohibited Use	Public Information	System Control	Terminate Contracts	Terminate Outdoor Watering	Voluntary Reduction	Water Allocation	Other	Percent Demand	Percent Demand Remaining	Percent Limit	Unit Reduction	Max Production	Other	N/A	Value	Unit
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 4	Harris	3			•							•				•		•	•				•	•				•		•		•								20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 4	Harris	4	•				•								•					•																		•			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 4	Harris	Emergency				•										•				•																					-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 5	Harris	1			•										•						•		•						•												-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 5	Harris	2			•										•			•				•	•																			-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 5	Harris	3			•										•			•	•				•	•				•														-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 5	Harris	Emergency				•														•																					-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 7	Harris	1										•				•					•		•						•			•									10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 7	Harris	2										•				•		•				•	•									•									15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 7	Harris	3										•				•		•	•				•	•				•				•									20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County MUD No. 7	Harris	Emergency				•										•				•																					-	-
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County Regional Water Authority	Harris	1										•			•				•				•	•						•			•									10	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County Regional Water Authority	Harris	2										•			•				•				•	•									•									15	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County Regional Water Authority	Harris	3										•			•				•				•	•							•		•									20	%
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	West Harris County Regional Water Authority	Harris	Emergency				•														•																					-	-
WEST UNIVERSITY PLACE	City of West University Place	Harris	1																						•						•												-	-
WEST UNIVERSITY PLACE	City of West University Place	Harris	2			•							•										•		•						•				•								60	%
WEST UNIVERSITY PLACE	City of West University Place	Harris	3	•		•		•								•						•	•	•	•	•								•								65	%
WEST UNIVERSITY PLACE	City of West University Place	Harris	4	•		•		•								•			•				•	•	•	•								•								70	%

APPENDIX 7-B

LIST OF ENTITIES WITH EXISTING AND POTENTIAL EMERGENCY INTERCONNECTS IN REGION H

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Table 7-B1 – List of Entities with Existing and Potential Emergency Interconnects in Region H

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
AMES MINGLEWOOD WSC	AMES MINGLEWOOD WSC	CITY OF LIBERTY	yes	E
ANAHUAC	CITY OF ANAHUAC	TRINITY BAY CONSERVATION DISTRICT		E
AUSTIN COUNTY WSC	AUSTIN COUNTY WSC 3	AUSTIN COUNTY WSC 1		
BACLIFF MUD	BACLIFF MUD	BAYVIEW MUD	yes	E
BACLIFF MUD	BACLIFF MUD	GULF COAST WATER AUTHORITY		
BACLIFF MUD	BACLIFF MUD	SAN LEON MUD	yes	
BAKER ROAD MUD	BAKER ROAD MUD	GREEN TRAILS MUD		
BAYTOWN	CITY OF BAYTOWN	BAYTOWN AREA WATER AUTHORITY		
BAYVIEW MUD	BAYVIEW MUD	BACLIFF MUD	yes	E
BAYVIEW MUD	BAYVIEW MUD	GULF COAST WATER AUTHORITY		
BLUE BELL MANOR UTILITY	QUAILWOOD WATER SYSTEM	HARRIS COUNTY MUD 304		
BLUE RIDGE WEST MUD	BLUE RIDGE WEST MUD	FORT BEND COUNTY MUD 26 QUAIL GREEN WEST	yes	E
BOLIVAR PENINSULA SUD	BOLIVAR PENINSULA SUD	LOWER NECHES VALLEY AUTHORITY		
BRAZORIA COUNTY MUD 22	BRAZORIA COUNTY MUD 22	BRAZORIA COUNTY MUD 21		
BRAZORIA COUNTY MUD 25	BRAZORIA COUNTY MUD 25	BRAZORIA COUNTY MUD 6		E
BRAZORIA COUNTY MUD 25	BRAZORIA COUNTY MUD 25	CITY OF PEARLAND		E
BRAZORIA COUNTY MUD 3	BRAZORIA COUNTY MUD 3	BRAZORIA COUNTY MUD 2		
BRAZORIA COUNTY MUD 39	BRAZORIA COUNTY MUD 39	BRAZORIA COUNTY MUD 25		E
BRAZORIA COUNTY MUD 39	BRAZORIA COUNTY MUD 39	BRAZORIA COUNTY MUD 40	yes	
BRAZORIA COUNTY MUD 6	BRAZORIA COUNTY MUD 6	BRAZORIA COUNTY MUD 2		
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	FALLBROOK UTILITY DISTRICT	CITY OF HOUSTON		
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	FALLBROOK UTILITY DISTRICT	HARRIS COUNTY MUD 11	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 33	HARRIS COUNTY MUD 11	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 33	HARRIS COUNTY MUD 5	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 33	HARRIS COUNTY UD 14	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 33	HARRIS COUNTY UD 15	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 150	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY		
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 150	HARRIS COUNTY MUD 180	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 150	HARRIS COUNTY UD 15	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 217	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY		
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 217	HARRIS COUNTY MUD 304	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 217	HARRIS COUNTY MUD 5	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 200 CRANBROOK	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 200 CRANBROOK	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY		
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 200 CRANBROOK	HARRIS COUNTY MUD 189	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 200 CRANBROOK	HARRIS COUNTY MUD 205	yes	
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 200 CRANBROOK	HARRIS COUNTY MUD 215	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 200 CRANBROOK	HARRIS COUNTY MUD 399	yes	
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 200 CRANBROOK	RANKIN ROAD WEST MUD	yes	
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	RANKIN ROAD WEST MUD	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY		
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	RANKIN ROAD WEST MUD	HARRIS COUNTY MUD 200 CRANBROOK	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	RANKIN ROAD WEST MUD	HARRIS COUNTY MUD 304	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 205	HARRIS COUNTY MUD 200 CRANBROOK	yes	
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 215	HARRIS COUNTY MUD 120		E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 215	HARRIS COUNTY MUD 200 CRANBROOK	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 304	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY		
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 304	HARRIS COUNTY MUD 217	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 304	RANKIN ROAD WEST MUD	yes	E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY UD 16	HARRIS COUNTY MUD 44		E
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 399	HARRIS COUNTY MUD 200 CRANBROOK	yes	
CHAMBERS COUNTY MUD 1	CHAMBERS COUNTY MUD 1	CITY OF BAYTOWN		
CHIMNEY HILL MUD	CHIMNEY HILL MUD	CAMFIELD MUD		E
CHIMNEY HILL MUD	CHIMNEY HILL MUD	CITY OF HOUSTON		
CHIMNEY HILL MUD	CHIMNEY HILL MUD	SPENCER ROAD PUD	yes	E
CLEAR LAKE CITY WATER AUTHORITY	CLEAR LAKE CITY WATER AUTHORITY	CITY OF HOUSTON		
CLEAR LAKE CITY WATER AUTHORITY	CLEAR LAKE CITY WATER AUTHORITY	CITY OF NASSAU BAY	yes	E
CLEAR LAKE CITY WATER AUTHORITY	CLEAR LAKE CITY WATER AUTHORITY	CITY OF PASADENA		
CLEAR LAKE CITY WATER AUTHORITY	CLEAR LAKE CITY WATER AUTHORITY	LYNDON B JOHNSON SPACE CENTER		E
CLUTE	CITY OF CLUTE	BRAZOSPORT WATER AUTHORITY		
CLUTE	CITY OF CLUTE	CITY OF LAKE JACKSON	yes	E
CLUTE	CITY OF CLUTE	CITY OF RICHWOOD	yes	E
CONCORD-ROBBINS WSC	CONCORD-ROBBINS WSC	CITY OF MARQUEZ		E
COUNTRY TERRACE WATER	COUNTRY TERRACE SUBDIVISION	BAYTOWN AREA WATER AUTHORITY		
COUNTY-OTHER, AUSTIN	SETTLERS MEADOWS WATER SYSTEM	SETTLERS ESTATES SEC II	yes	E
COUNTY-OTHER, AUSTIN	SETTLERS ESTATES SEC II	SETTLERS MEADOWS WATER SYSTEM	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
COUNTY-OTHER, AUSTIN	SETTLERS CROSSING WATER SYSTEM	SETTLERS CROSSING WATER SYSTEM 2		E
COUNTY-OTHER, BRAZORIA	TREASURE ISLAND MUD	CITY OF GALVESTON		
COUNTY-OTHER, BRAZORIA	FLORA 6	WELLBORN ACRES	yes	E
COUNTY-OTHER, BRAZORIA	CENTENNIAL PLACE	WINDSONG SUBDIVISION	yes	E
COUNTY-OTHER, BRAZORIA	WELLBORN ACRES	FLORA 6	yes	E
COUNTY-OTHER, BRAZORIA	WINDSONG SUBDIVISION	CENTENNIAL PLACE	yes	E
COUNTY-OTHER, BRAZORIA	SOUTH MEADOWS WEST	ASHLEY OAKS MHP		E
COUNTY-OTHER, BRAZORIA	SOUTH MEADOWS WEST	SOUTH MEADOWS EAST		E
COUNTY-OTHER, BRAZORIA	OAK MEADOWS ESTATES SUBDIVISION	ROSHARON TOWNSHIP		
COUNTY-OTHER, BRAZORIA	STONERIDGE LAKE SUBDIVISION	GRASSLANDS		
COUNTY-OTHER, BRAZORIA	BRAZORIA COUNTY MUD 32	BRAZORIA COUNTY MUD 31		
COUNTY-OTHER, BRAZORIA	BRAZORIA COUNTY MUD 40	BRAZORIA COUNTY MUD 25		
COUNTY-OTHER, BRAZORIA	BRAZORIA COUNTY MUD 40	BRAZORIA COUNTY MUD 39	yes	
COUNTY-OTHER, BRAZORIA	BRAZORIA COUNTY MUD 24	CITY OF ALVIN		
COUNTY-OTHER, FORT BEND	FORT BEND COUNTY MUD 19	CITY OF RICHMOND		
COUNTY-OTHER, FORT BEND	FORT BEND COUNTY MUD 66	CITY OF ROSENBERG		
COUNTY-OTHER, FORT BEND	FORT BEND COUNTY MUD 145 RIO VISTA	CITY OF RICHMOND		
COUNTY-OTHER, FORT BEND	CITY OF ARCOLA	FORT BEND COUNTY FWSD 1		
COUNTY-OTHER, FORT BEND	CITY OF ARCOLA	FORT BEND COUNTY MUD 141		E
COUNTY-OTHER, FORT BEND	FORT BEND COUNTY MUD 192	CITY OF SUGAR LAND - GREATWOOD		
COUNTY-OTHER, FORT BEND	FORT BEND COUNTY MUD 184	CITY OF ROSENBERG		
COUNTY-OTHER, FORT BEND	FORT BEND COUNTY MUD 218	CITY OF ROSENBERG		
COUNTY-OTHER, GALVESTON	TIFFANY WATER	CITY OF GALVESTON		
COUNTY-OTHER, HARRIS	CEDAR BAYOU PARK	BAYTOWN AREA WATER AUTHORITY		
COUNTY-OTHER, HARRIS	LONGHORN MOBILE HOME COMMUNITY	BRITTMOORE UTILITY		
COUNTY-OTHER, HARRIS	HARRIS COUNTY FWSD 1B	BAYTOWN AREA WATER AUTHORITY		
COUNTY-OTHER, HARRIS	FAIRVIEW ACRES MOBILE HOME SUBDIVISION	GLENWOOD MOBILE HOME SUBDIVISION		E
COUNTY-OTHER, HARRIS	TALLOWS MOBILE HOME PARK	SUNSET MOBILE HOME PARK 1	yes	E
COUNTY-OTHER, HARRIS	SOUTH TAYLOR LAKE VILLAGE WSC	CLEAR LAKE CITY WATER AUTHORITY		
COUNTY-OTHER, HARRIS	SUNSET MOBILE HOME PARK 1	TALLOWS MOBILE HOME PARK	yes	E
COUNTY-OTHER, HARRIS	HARRIS COUNTY MUD 423	HARRIS COUNTY MUD 400 - EAST		
COUNTY-OTHER, HARRIS	HARRIS COUNTY MUD 213-A	CITY OF BAYTOWN		
COUNTY-OTHER, LEON	CITY OF LEONA	SOUTHEAST WSC SYSTEM 3		E
COUNTY-OTHER, LIBERTY	HUNTERS COVE SEC 1	HUNTERS COVE SUB SOUTH		E
COUNTY-OTHER, MONTGOMERY	OLD TAMINA WSC	CHATEAU WOODS MUD		
COUNTY-OTHER, MONTGOMERY	SWEETGUM FOREST	GREENFIELD FOREST		
COUNTY-OTHER, MONTGOMERY	PIONEER TRAILS SUBDIVISION	DEER GLEN WATER SYSTEM		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
COUNTY-OTHER, MONTGOMERY	PIONEER TRAILS SUBDIVISION	WESTERN HILLS CRYSTAL SPRINGS WATER		
COUNTY-OTHER, MONTGOMERY	LAKE LORRAINE WS	MONTGOMERY COUNTY UD 4		
COUNTY-OTHER, MONTGOMERY	MONTGOMERY COUNTY MUD 16 WHITE OAK PLANT	CITY OF SPLENDORA		E
COUNTY-OTHER, MONTGOMERY	ROMAN FOREST PUD 4	ROMAN FOREST CONSOLIDATED MUD	yes	
COUNTY-OTHER, MONTGOMERY	ROMAN FOREST PUD 3	ROMAN FOREST CONSOLIDATED MUD	yes	
COUNTY-OTHER, MONTGOMERY	MONTGOMERY COUNTY MUD 42	CITY OF CONROE		
COUNTY-OTHER, MONTGOMERY	CLOVER CREEK MUD	INDIGO LAKES WATER SYSTEM		E
COUNTY-OTHER, MONTGOMERY	MONTGOMERY COUNTY MUD 96	MONTGOMERY COUNTY MUD 83	yes	E
COUNTY-OTHER, MONTGOMERY	MONTGOMERY COUNTY MUD 141	LAKE WINDCREST WATER SYSTEM		
COUNTY-OTHER, MONTGOMERY	EAST MONTGOMERY COUNTY MUD 7	EAST MONTGOMERY COUNTY MUD 5		
COUNTY-OTHER, MONTGOMERY	MONTGOMERY COUNTY MUD 111	MONTGOMERY COUNTY MUD 157		
COUNTY-OTHER, POLK	MONARCH UTILITIES I	LAKE LIVINGSTON PINESHADOWS EAST		
CROSBY MUD	CROSBY MUD	SAN JACINTO RIVER AUTHORITY		
CUT & SHOOT	TOWN OF CUT & SHOOT	CITY OF CONROE		E
DAISETTA	CITY OF DAISETTA	LIBERTY COUNTY FWSD 1 HULL	yes	
DEVERS	CITY OF DEVERS	RAYWOOD WSC		E
DOBBIN PLANTERSVILLE WSC	DOBBIN PLANTERSVILLE WSC 2	DOBBIN PLANTERSVILLE WSC 1		E
EAST MONTGOMERY COUNTY MUD 6	EAST MONTGOMERY COUNTY MUD 6	EAST MONTGOMERY COUNTY MUD 5		
FIRST COLONY MUD 9	FIRST COLONY MUD 9	CITY OF PEARLAND		
FIRST COLONY MUD 9	FIRST COLONY MUD 9	CITY OF SUGAR LAND	yes	E
FIRST COLONY MUD 9	FIRST COLONY MUD 9	FORT BEND COUNTY MUD 42 WAT PLAT	yes	E
FOREST HILLS MUD	FOREST HILLS MUD	HARRIS COUNTY MUD 11	yes	E
FOREST HILLS MUD	FOREST HILLS MUD	MOUNT HOUSTON ROAD MUD		
FORT BEND COUNTY FWSD 2	FORT BEND COUNTY FWSD 2	KINGSBRIDGE MUD		
FORT BEND COUNTY MUD 115	FORT BEND COUNTY MUD 115 RIVERSTONE	CITY OF MISSOURI CITY		
FORT BEND COUNTY MUD 115	FORT BEND COUNTY MUD 115 RIVERSTONE	FORT BEND COUNTY MUD 129		
FORT BEND COUNTY MUD 116	FORT BEND COUNTY MUD 116 CANYON GATE	CITY OF SUGAR LAND - GREATWOOD		E
FORT BEND COUNTY MUD 116	FORT BEND COUNTY MUD 116 CANYON GATE	FORT BEND COUNTY MUD 1		E
FORT BEND COUNTY MUD 121	FORT BEND COUNTY MUD 121	CITY OF RICHMOND		
FORT BEND COUNTY MUD 128	FORT BEND COUNTY MUD 128	CITY OF SUGAR LAND	yes	
FORT BEND COUNTY MUD 128	FORT BEND COUNTY MUD 128	FORT BEND COUNTY MUD 129		E
FORT BEND COUNTY MUD 129	FORT BEND COUNTY MUD 129	FORT BEND COUNTY MUD 149		
FORT BEND COUNTY MUD 140	FORT BEND COUNTY MUD 140 RIVERS EDGE	CITY OF RICHMOND		
FORT BEND COUNTY MUD 152	FORT BEND COUNTY MUD 152	CITY OF ROSENBERG		
FORT BEND COUNTY MUD 155	FORT BEND COUNTY MUD 155	CITY OF ROSENBERG		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
FORT BEND COUNTY MUD 158	FORT BEND COUNTY MUD 158	CITY OF ROSENBERG		
FORT BEND COUNTY MUD 24	FORT BEND COUNTY MUD 24	FORT BEND COUNTY MUD 23		
FORT BEND COUNTY MUD 26	FORT BEND COUNTY MUD 26 QUAIL GREEN WEST	BLUE RIDGE WEST MUD	yes	E
FORT BEND COUNTY MUD 26	FORT BEND COUNTY MUD 26 QUAIL GREEN WEST	MEADOWCREEK MUD	yes	E
FORT BEND COUNTY MUD 26	FORT BEND COUNTY MUD 26 QUAIL GREEN WEST	THUNDERBIRD UTILITY DISTRICT SYSTEM 2		E
FORT BEND COUNTY MUD 42	FORT BEND COUNTY MUD 42 WAT PLAT	FIRST COLONY MUD 9	yes	E
FORT BEND COUNTY MUD 42	FORT BEND COUNTY MUD 42 WAT PLAT	QUAIL VALLEY UTILITY DISTRICT	yes	E
FORT BEND COUNTY MUD 46	FORT BEND COUNTY MUD 46	CITY OF MISSOURI CITY		
FORT BEND COUNTY MUD 46	FORT BEND COUNTY MUD 46	FORT BEND COUNTY MUD 115 RIVERSTONE		E
FORT BEND COUNTY MUD 46	FORT BEND COUNTY MUD 46	PALMER PLANTATION MUD		
FORT BEND COUNTY MUD 49	FORT BEND COUNTY MUD 49	PALMER PLANTATION MUD 1	yes	
FORT BEND COUNTY MUD 49	FORT BEND COUNTY MUD 49	PALMER PLANTATION MUD 2	yes	
FORT BEND COUNTY MUD 5	FORT BEND COUNTY MUD 5	CITY OF ROSENBERG	yes	E
FORT BEND COUNTY WCID 2	FORT BEND COUNTY WCID 2	5TH STREET WATER SYSTEM	yes	E
FORT BEND COUNTY WCID 2	FORT BEND COUNTY WCID 2	BLUE RIDGE WEST MUD		E
FORT BEND COUNTY WCID 2	FORT BEND COUNTY WCID 2	CITY OF MISSOURI CITY		E
FORT BEND COUNTY WCID 2	FORT BEND COUNTY WCID 2	CITY OF SUGAR LAND	yes	E
FORT BEND COUNTY WCID 2	FORT BEND COUNTY WCID 2	HARRIS COUNTY MUD 122	yes	E
FORT BEND COUNTY WCID 2	5TH STREET WATER SYSTEM	FORT BEND COUNTY WCID 2	yes	
FORT BEND COUNTY WCID 3	FORT BEND COUNTY WCID 3	PECAN GROVE MUD	yes	E
G & W WSC	G & W WSC	G & W WSC	yes	E
GALVESTON	CITY OF GALVESTON	CITY OF HOUSTON		
GALVESTON	CITY OF GALVESTON	GULF COAST WATER AUTHORITY		
GALVESTON COUNTY FWSD 6	GALVESTON COUNTY FWSD 6 TIKI ISLAND	CITY OF GALVESTON		
GALVESTON COUNTY FWSD 6	GALVESTON COUNTY FWSD 6 TIKI ISLAND	GULF COAST WATER AUTHORITY		
GALVESTON COUNTY MUD 12	GALVESTON COUNTY MUD 12	CITY OF GALVESTON		
GALVESTON COUNTY MUD 12	GALVESTON COUNTY MUD 12	GULF COAST WATER AUTHORITY		
GALVESTON COUNTY WCID 1	GALVESTON COUNTY WCID 1	GULF COAST WATER AUTHORITY		
GALVESTON COUNTY WCID 12	GALVESTON COUNTY WCID 12	CITY OF LEAGUE CITY		
GALVESTON COUNTY WCID 12	GALVESTON COUNTY WCID 12	GULF COAST WATER AUTHORITY		
GALVESTON COUNTY WCID 8	GALVESTON COUNTY WCID 8	CITY OF GALVESTON		
GALVESTON COUNTY WCID 8	GALVESTON COUNTY WCID 8	GULF COAST WATER AUTHORITY		
GLENDALE WSC	GLENDALE WSC	TRINITY RIVER AUTHORITY		
GRAND OAKS MUD	GRAND OAKS MUD	CITY OF MAGNOLIA	yes	
GREEN TRAILS MUD	GREEN TRAILS MUD	MASON CREEK UTILITY DISTRICT	yes	E
GREENWOOD UD	GREENWOOD UTILITY DISTRICT	CITY OF HOUSTON		
GREENWOOD UD	GREENWOOD UTILITY DISTRICT	PARKWAY UTILITY DISTRICT	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
GROVETON	CITY OF GROVETON	PENNINGTON WSC		
GROVETON	CITY OF GROVETON	TRINITY RIVER AUTHORITY		
HARRIS COUNTY FWSD 1-A	HARRIS COUNTY FWSD 1A	BAYTOWN AREA WATER AUTHORITY		
HARRIS COUNTY FWSD 27	HARRIS COUNTY FWSD 27	BAYTOWN AREA WATER AUTHORITY		
HARRIS COUNTY MUD 106	HARRIS COUNTY MUD 106	HARRIS COUNTY MUD 278		
HARRIS COUNTY MUD 106	HARRIS COUNTY MUD 106	HARRIS COUNTY MUD 290	yes	
HARRIS COUNTY MUD 106	HARRIS COUNTY MUD 106	HARRIS COUNTY MUD 46	yes	E
HARRIS COUNTY MUD 11	HARRIS COUNTY MUD 11	FALLBROOK UTILITY DISTRICT	yes	E
HARRIS COUNTY MUD 11	HARRIS COUNTY MUD 11	FOREST HILLS MUD	yes	E
HARRIS COUNTY MUD 11	HARRIS COUNTY MUD 11	HARRIS COUNTY MUD 33	yes	E
HARRIS COUNTY MUD 119	HARRIS COUNTY MUD 119	CITY OF HOUSTON		
HARRIS COUNTY MUD 119	HARRIS COUNTY MUD 119	HARRIS COUNTY MUD 118	yes	E
HARRIS COUNTY MUD 122	HARRIS COUNTY MUD 122	CITY OF HOUSTON		E
HARRIS COUNTY MUD 122	HARRIS COUNTY MUD 122	FORT BEND COUNTY WCID 2	yes	
HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 109	yes	E
HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 151	yes	E
HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 152	yes	E
HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 132	HARRIS COUNTY MUD 153		E
HARRIS COUNTY MUD 148	HARRIS COUNTY MUD 148 KINGSLAKE	CITY OF HOUSTON		
HARRIS COUNTY MUD 151	HARRIS COUNTY MUD 151	HARRIS COUNTY MUD 109	yes	E
HARRIS COUNTY MUD 151	HARRIS COUNTY MUD 151	HARRIS COUNTY MUD 132	yes	E
HARRIS COUNTY MUD 151	HARRIS COUNTY MUD 151	HARRIS COUNTY MUD 153		E
HARRIS COUNTY MUD 152	HARRIS COUNTY MUD 152	HARRIS COUNTY MUD 132	yes	E
HARRIS COUNTY MUD 152	HARRIS COUNTY MUD 152	HARRIS COUNTY MUD 153	yes	E
HARRIS COUNTY MUD 153	HARRIS COUNTY MUD 153	HARRIS COUNTY MUD 152	yes	E
HARRIS COUNTY MUD 154	HARRIS COUNTY MUD 154	HARRIS COUNTY MUD 221	yes	E
HARRIS COUNTY MUD 154	HARRIS COUNTY MUD 154	HARRIS COUNTY MUD 233		
HARRIS COUNTY MUD 154	HARRIS COUNTY MUD 154	NORTH PARK PUD		E
HARRIS COUNTY MUD 180	HARRIS COUNTY MUD 180	HARRIS COUNTY MUD 150	yes	E
HARRIS COUNTY MUD 180	HARRIS COUNTY MUD 180	HARRIS COUNTY MUD 202	yes	E
HARRIS COUNTY MUD 180	HARRIS COUNTY MUD 180	HARRIS COUNTY UD 14		E
HARRIS COUNTY MUD 189	HARRIS COUNTY MUD 189	HARRIS COUNTY MUD 200 CRANBROOK	yes	E
HARRIS COUNTY MUD 189	HARRIS COUNTY MUD 189	NORTH FOREST MUD	yes	E
HARRIS COUNTY MUD 216	HARRIS COUNTY MUD 216	LONGHORN TOWN UTILITY DISTRICT	yes	E
HARRIS COUNTY MUD 221	HARRIS COUNTY MUD 221	HARRIS COUNTY MUD 154	yes	E
HARRIS COUNTY MUD 221	HARRIS COUNTY MUD 221	HARRIS COUNTY MUD 216		E
HARRIS COUNTY MUD 221	HARRIS COUNTY MUD 221	HARRIS COUNTY MUD 36	yes	E
HARRIS COUNTY MUD 261	HARRIS COUNTY MUD 261	CITY OF HOUSTON		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
HARRIS COUNTY MUD 261	HARRIS COUNTY MUD 261	ROLLING FORK PUD	yes	E
HARRIS COUNTY MUD 261	HARRIS COUNTY MUD 261	WINDFERN FOREST UTILITY DISTRICT		
HARRIS COUNTY MUD 278	HARRIS COUNTY MUD 278	CITY OF HOUSTON		
HARRIS COUNTY MUD 278	HARRIS COUNTY MUD 278	TRAIL OF THE LAKES MUD	yes	E
HARRIS COUNTY MUD 290	HARRIS COUNTY MUD 290	HARRIS COUNTY MUD 106	yes	
HARRIS COUNTY MUD 321	HARRIS COUNTY MUD 321	CITY OF HOUSTON		
HARRIS COUNTY MUD 321	HARRIS COUNTY MUD 321	FALLBROOK UTILITY DISTRICT		E
HARRIS COUNTY MUD 342	HARRIS COUNTY MUD 342	HARRIS COUNTY MUD 344		
HARRIS COUNTY MUD 345	HARRIS COUNTY MUD 345	HARRIS COUNTY MUD 216		
HARRIS COUNTY MUD 36	HARRIS COUNTY MUD 36	HARRIS COUNTY MUD 221	yes	E
HARRIS COUNTY MUD 36	HARRIS COUNTY MUD 36	HARRIS COUNTY UD 16		E
HARRIS COUNTY MUD 361	HARRIS COUNTY MUD 361	HARRIS COUNTY MUD 344		
HARRIS COUNTY MUD 400	HARRIS COUNTY MUD 400 - WEST	CITY OF HOUSTON		
HARRIS COUNTY MUD 400	HARRIS COUNTY MUD 400 - WEST	CITY OF HOUSTON		E
HARRIS COUNTY MUD 400	HARRIS COUNTY MUD 400 - WEST	HARRIS COUNTY WCID 96		E
HARRIS COUNTY MUD 46	HARRIS COUNTY MUD 46	HARRIS COUNTY MUD 106	yes	E
HARRIS COUNTY MUD 46	HARRIS COUNTY MUD 46	HARRIS COUNTY MUD 109	yes	E
HARRIS COUNTY MUD 49	HARRIS COUNTY MUD 49	CITY OF HOUSTON		
HARRIS COUNTY MUD 49	HARRIS COUNTY MUD 49	HARRIS COUNTY MUD 400 - WEST		
HARRIS COUNTY MUD 49	HARRIS COUNTY MUD 49	HARRIS COUNTY WCID 96		E
HARRIS COUNTY MUD 494	HARRIS COUNTY MUD 494	HARRIS COUNTY MUD 153		
HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 5	CITY OF HOUSTON		
HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 150		E
HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 217	yes	E
HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 33	yes	E
HARRIS COUNTY MUD 504	HARRIS COUNTY MUD 504	HARRIS COUNTY MUD 412		
HARRIS COUNTY MUD 58	HARRIS COUNTY MUD 58	PONDEROSA FOREST UTILITY DISTRICT	yes	E
HARRIS COUNTY MUD 6	HARRIS COUNTY MUD 6 CARRIAGE LANE	CITY OF HOUSTON		
HARRIS COUNTY MUD 6	HARRIS COUNTY MUD 6 CARRIAGE LANE	ROLLING FORK PUD	yes	E
HARRIS COUNTY MUD 96	HARRIS COUNTY MUD 96	CITY OF HOUSTON		
HARRIS COUNTY MUD 96	HARRIS COUNTY MUD 96	NORTH GREEN MUD		E
HARRIS COUNTY UD 14	HARRIS COUNTY UD 14	HARRIS COUNTY MUD 33	yes	E
HARRIS COUNTY UD 14	HARRIS COUNTY UD 14	NORTHWEST HARRIS COUNTY MUD 24	yes	E
HARRIS COUNTY UD 15	HARRIS COUNTY UD 15	HARRIS COUNTY MUD 150	yes	E
HARRIS COUNTY UD 15	HARRIS COUNTY UD 15	HARRIS COUNTY MUD 180		E
HARRIS COUNTY UD 15	HARRIS COUNTY UD 15	HARRIS COUNTY MUD 33	yes	E
HARRIS COUNTY UD 15	HARRIS COUNTY UD 15	HARRIS COUNTY UD 14		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
HARRIS COUNTY WCID 1	HARRIS COUNTY WCID 1	BAYTOWN AREA WATER AUTHORITY		
HARRIS COUNTY WCID 133	HARRIS COUNTY WCID 133	NORTHWEST PARK MUD	yes	E
HARRIS COUNTY WCID 156	HARRIS COUNTY WCID 156	CLEAR LAKE CITY WATER AUTHORITY		
HARRIS COUNTY WCID 161	HARRIS COUNTY WCID 161	CLEAR LAKE CITY WATER AUTHORITY		
HARRIS COUNTY WCID 50	HARRIS COUNTY WCID 50 EL LAGO	CITY OF PASADENA		
HARRIS COUNTY WCID 50	HARRIS COUNTY WCID 50 EL LAGO	CITY OF SEABROOK		
HARRIS COUNTY WCID 96	HARRIS COUNTY WCID 96	CITY OF HOUSTON		
HARRIS COUNTY WCID-FONDREN ROAD	HARRIS COUNTY WCID FONDREN ROAD	CITY OF HOUSTON		
HARRIS COUNTY WCID-FONDREN ROAD	HARRIS COUNTY WCID FONDREN ROAD	HARRIS COUNTY MUD 1		E
HARRIS-MONTGOMERY COUNTIES MUD 386	HARRIS MONTGOMERY COUNTIES MUD 386 MAY V	SJRA (THE WOODLANDS)		
HIGH PRAIRIE WSC	MADISON COUNTY WSC	CITY OF MADISONVILLE		E
HILLCREST VILLAGE	CITY OF HILLCREST VILLAGE	CITY OF ALVIN		E
HITCHCOCK	CITY OF HITCHCOCK	GULF COAST WATER AUTHORITY		
HMW SUD	RED OAK TERRACE	CITY OF TOMBALL		
HMW SUD	SHADY ACRES	WALNUT SPRINGS		
HOUSTON	CITY OF HOUSTON BELLEAU WOODS	CITY OF HUMBLE		
HUNTSVILLE	CITY OF HUNTSVILLE	TRINITY RIVER AUTHORITY		
HUNTSVILLE	CITY OF HUNTSVILLE	WALKER COUNTY SUD		
JAMAICA BEACH	CITY OF JAMAICA BEACH	CITY OF GALVESTON		
JERSEY VILLAGE	CITY OF JERSEY VILLAGE	CITY OF HOUSTON		
JERSEY VILLAGE	CITY OF JERSEY VILLAGE	HARRIS COUNTY MUD 168		E
KATY	CITY OF KATY	FORT BEND COUNTY MUD 37	yes	E
KATY	CITY OF KATY	WILLOW CREEK FARMS MUD		
KIRKMONT MUD	KIRKMONT MUD	CITY OF HOUSTON		
KIRKMONT MUD	KIRKMONT MUD	SAGEMEADOW UTILITY DISTRICT	yes	
LA MARQUE	CITY OF LA MARQUE	GULF COAST WATER AUTHORITY		
LAKE JACKSON	CITY OF LAKE JACKSON	CITY OF CLUTE	yes	E
LAKE MUD	LAKE MUD	BAYTOWN AREA WATER AUTHORITY		
LEAGUE CITY	CITY OF LEAGUE CITY	CITY OF HOUSTON		
LEAGUE CITY	CITY OF LEAGUE CITY	CITY OF WEBSTER	yes	
LEAGUE CITY	CITY OF LEAGUE CITY	GALVESTON COUNTY WCID 1		E
LEAGUE CITY	CITY OF LEAGUE CITY	GULF COAST WATER AUTHORITY		
LEAGUE CITY	CITY OF LEAGUE CITY	GULF COAST WATER AUTHORITY		
LIBERTY	CITY OF LIBERTY	AMES MINGLEWOOD WSC	yes	E
LIBERTY COUNTY FWSD 1 HULL	LIBERTY COUNTY FWSD 1 HULL	CITY OF DAISETTA	yes	E
LIVINGSTON	CITY OF LIVINGSTON	TRINITY RIVER AUTHORITY		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
LONGHORN TOWN UD	LONGHORN TOWN UTILITY DISTRICT	HARRIS COUNTY MUD 216	yes	E
LONGHORN TOWN UD	LONGHORN TOWN UTILITY DISTRICT	HARRIS COUNTY MUD 345		E
LUCE BAYOU PUD	LUCE BAYOU PUD	FAIRWAY CROSSING		E
MAGNOLIA	CITY OF MAGNOLIA	GRAND OAKS MUD	yes	
MASON CREEK UD	MASON CREEK UTILITY DISTRICT	GREEN TRAILS MUD	yes	E
MASON CREEK UD	MASON CREEK UTILITY DISTRICT	HARRIS COUNTY MUD 81	yes	E
MASON CREEK UD	MASON CREEK UTILITY DISTRICT	INTERSTATE MUD		E
MASON CREEK UD	MASON CREEK UTILITY DISTRICT	MEMORIAL MUD		
MASON CREEK UD	MASON CREEK UTILITY DISTRICT	NOTTINGHAM COUNTRY MUD		
MEADOWCREEK MUD	MEADOWCREEK MUD	FORT BEND COUNTY MUD 26 QUAIL GREEN WEST	yes	E
MEADOWCREEK MUD	MEADOWCREEK MUD	QUAIL VALLEY UTILITY DISTRICT	yes	E
MEADOWS PLACE	CITY OF MEADOWS PLACE	FORT BEND COUNTY WCID 2		E
MISSOURI CITY	CITY OF MISSOURI CITY MUSTANG BAYOU WATE	FORT BEND COUNTY MUD 23		E
MISSOURI CITY	CITY OF MISSOURI CITY MUSTANG BAYOU WATE	SIENNA PLANTATION		E
MISSOURI CITY	CITY OF MISSOURI CITY MUSTANG BAYOU WATE	SIENNA REGIONAL MUD		E
MISSOURI CITY	CITY OF MISSOURI CITY MUSTANG BAYOU WATE	VICKSBURG JOINT POWERS AUTHORITY		
MONTGOMERY COUNTY MUD 112	MONTGOMERY COUNTY MUD 112	CITY OF CONROE		E
MONTGOMERY COUNTY MUD 112	MONTGOMERY COUNTY MUD 112	RED OAK RANCH WATER SYSTEM		E
MONTGOMERY COUNTY MUD 115	MONTGOMERY COUNTY MUD 115	MONTGOMERY COUNTY MUD 99		
MONTGOMERY COUNTY MUD 119	MONTGOMERY COUNTY MUD 119 SPRING TRAILS	MONTGOMERY COUNTY MUD 94	yes	E
MONTGOMERY COUNTY MUD 127	MONTGOMERY COUNTY MUD 127	MONTGOMERY COUNTY MUD 115		
MONTGOMERY COUNTY MUD 19	MONTGOMERY COUNTY MUD 19	SOUTHERN MONTGOMERY COUNTY MUD	yes	E
MONTGOMERY COUNTY MUD 56	MONTGOMERY COUNTY MUD 56	PORTER SUD	yes	E
MONTGOMERY COUNTY MUD 8	MONTGOMERY COUNTY MUD 8	MONTGOMERY COUNTY MUD 9	yes	
MONTGOMERY COUNTY MUD 83	MONTGOMERY COUNTY MUD 83	CITY OF HOUSTON		
MONTGOMERY COUNTY MUD 83	MONTGOMERY COUNTY MUD 83	CITY OF HOUSTON UD 5 - KINGWOOD		E
MONTGOMERY COUNTY MUD 83	MONTGOMERY COUNTY MUD 83	MONTGOMERY COUNTY MUD 84	yes	E
MONTGOMERY COUNTY MUD 83	MONTGOMERY COUNTY MUD 83	MONTGOMERY COUNTY MUD 96	yes	E
MONTGOMERY COUNTY MUD 84	MONTGOMERY COUNTY MUD 84	MONTGOMERY COUNTY MUD 83	yes	
MONTGOMERY COUNTY MUD 84	MONTGOMERY COUNTY MUD 84	PORTER SUD	yes	
MONTGOMERY COUNTY MUD 88	MONTGOMERY COUNTY MUD 88	MONTGOMERY COUNTY MUD 89	yes	
MONTGOMERY COUNTY MUD 88	MONTGOMERY COUNTY MUD 88	SPRING CREEK UTILITY DISTRICT		
MONTGOMERY COUNTY MUD 89	MONTGOMERY COUNTY MUD 89	MONTGOMERY COUNTY MUD 88	yes	E
MONTGOMERY COUNTY MUD 89	MONTGOMERY COUNTY MUD 89	SPRING CREEK UTILITY DISTRICT	yes	E
MONTGOMERY COUNTY MUD 9	MONTGOMERY COUNTY MUD 9	MONTGOMERY COUNTY MUD 8	yes	
MONTGOMERY COUNTY MUD 94	MONTGOMERY COUNTY MUD 94	HARRIS COUNTY WCID 92	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
MONTGOMERY COUNTY MUD 94	MONTGOMERY COUNTY MUD 94	MONTGOMERY COUNTY MUD 119 SPRING TRAILS	yes	E
MONTGOMERY COUNTY MUD 95	MONTGOMERY COUNTY MUD 95	CITY OF CONROE		
MONTGOMERY COUNTY MUD 95	MONTGOMERY COUNTY MUD 95	MONTGOMERY COUNTY MUD 15		
MONTGOMERY COUNTY MUD 99	MONTGOMERY COUNTY MUD 99	RAYFORD ROAD MUD	yes	E
MONTGOMERY COUNTY MUD 99	MONTGOMERY COUNTY MUD 99	SAN JACINTO RIVER AUTHORITY		E
MONTGOMERY COUNTY MUD 99	MONTGOMERY COUNTY MUD 99	WHITE OAK ESTATES WSC		E
MONTGOMERY COUNTY MUD 99	MONTGOMERY COUNTY MUD 99	WHITE OAK WATER SUPPLY CORPORATION		E
MONTGOMERY COUNTY UD 3	MONTGOMERY COUNTY UD 3	MONTGOMERY COUNTY UD 4	yes	
MONTGOMERY COUNTY UD 4	MONTGOMERY COUNTY UD 4	MONTGOMERY COUNTY UD 3	yes	
MSEC ENTERPRISES	CROWN RANCH SUBDIVISION	DOBBIN PLANTERSVILLE WSC 1		E
NASSAU BAY	CITY OF NASSAU BAY	CLEAR LAKE CITY WATER AUTHORITY	yes	
NORTH BELT UD	NORTH BELT UTILITY DISTRICT	GREENS PARKWAY MUD		E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 84	HARRIS COUNTY FWSD 47	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 84	NORTH CHANNEL WATER AUTHORITY		
NORTH CHANNEL WATER AUTHORITY	ROYALWOOD MUD	HARRIS COUNTY MUD 285		E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 51	HARRIS COUNTY MUD 53	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 51	HARRIS COUNTY WCID 36	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 51	NORTH CHANNEL WATER AUTHORITY		
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 51	PINE TRAILS UTILITY		
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 36	HARRIS COUNTY FWSD 47	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 36	HARRIS COUNTY FWSD 51	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 36	NORTH CHANNEL WATER AUTHORITY		
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 47	HARRIS COUNTY MUD 53	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 47	HARRIS COUNTY WCID 36	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 47	HARRIS COUNTY WCID 84	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 47	NORTH CHANNEL WATER AUTHORITY		
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY MUD 53	HARRIS COUNTY FWSD 47	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY MUD 53	HARRIS COUNTY FWSD 51	yes	E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY MUD 53	HARRIS COUNTY MUD 285		E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY MUD 53	HARRIS COUNTY WCID 84		E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY MUD 53	NORTH CHANNEL WATER AUTHORITY		
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY FWSD 6	HARRIS COUNTY WCID 21		E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 21	HARRIS COUNTY FWSD 47		E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 21	HARRIS COUNTY WCID 84		E
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY WCID 21	NORTH CHANNEL WATER AUTHORITY		
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY MUD 285	HARRIS COUNTY FWSD 51		
NORTH CHANNEL WATER AUTHORITY	HARRIS COUNTY MUD 285	NORTH CHANNEL WATER AUTHORITY		
NORTH CHANNEL WATER AUTHORITY	NORTHEAST HARRIS COUNTY MUD 1 SHELDON RI	SHELDON ROAD MUD		
NORTH FOREST MUD	NORTH FOREST MUD	CNP UTILITY DISTRICT	yes	E
NORTH FOREST MUD	NORTH FOREST MUD	HARRIS COUNTY MUD 189	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 2	FORT BEND COUNTY MUD 119	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 2	KINGSBRIDGE MUD	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 2	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 2	RENN ROAD MUD	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 30	MISSION BEND MUD 1	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 30	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	KINGSBRIDGE MUD	FORT BEND COUNTY MUD 2	yes	E
NORTH FORT BEND WATER AUTHORITY	KINGSBRIDGE MUD	MISSION BEND MUD 1	yes	E
NORTH FORT BEND WATER AUTHORITY	KINGSBRIDGE MUD	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	KINGSBRIDGE MUD	RENN ROAD MUD	yes	E
NORTH FORT BEND WATER AUTHORITY	NORTH MISSION GLEN MUD	FORT BEND COUNTY MUD 30		E
NORTH FORT BEND WATER AUTHORITY	NORTH MISSION GLEN MUD	MISSION BEND MUD 1		E
NORTH FORT BEND WATER AUTHORITY	NORTH MISSION GLEN MUD	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 37	CITY OF KATY	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 37	HARRIS FORT BEND COUNTIES MUD 1	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 34	FORT BEND COUNTY MUD 50	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 34	GRAND LAKES MUD 4		E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 34	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	HARRIS FORT BEND COUNTIES MUD 1	FORT BEND COUNTY MUD 37	yes	E
NORTH FORT BEND WATER AUTHORITY	HARRIS FORT BEND COUNTIES MUD 1	HARRIS FORT BEND COUNTIES MUD 5	yes	
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 41	FORT BEND COUNTY MUD 25		E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 41	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 50	FORT BEND COUNTY MUD 122	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 50	FORT BEND COUNTY MUD 133	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 50	FORT BEND COUNTY MUD 34	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 50	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	CINCO MUD 5	CINCO MUD 1		
NORTH FORT BEND WATER AUTHORITY	CINCO MUD 3	CINCO MUD 1		
NORTH FORT BEND WATER AUTHORITY	CINCO MUD 2	CINCO MUD 1		
NORTH FORT BEND WATER AUTHORITY	CINCO MUD 6	CINCO MUD 1		
NORTH FORT BEND WATER AUTHORITY	CINCO MUD 8	CINCO MUD 1		
NORTH FORT BEND WATER AUTHORITY	BIG OAKS MUD	FORT BEND COUNTY MUD 190	yes	E
NORTH FORT BEND WATER AUTHORITY	BIG OAKS MUD	FORT BEND COUNTY MUD 30		E
NORTH FORT BEND WATER AUTHORITY	BIG OAKS MUD	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	CINCO MUD 12	CINCO MUD 1		
NORTH FORT BEND WATER AUTHORITY	HARRIS FORT BEND COUNTIES MUD 5	FORT BEND COUNTY MUD 37		E
NORTH FORT BEND WATER AUTHORITY	HARRIS FORT BEND COUNTIES MUD 5	HARRIS FORT BEND COUNTIES MUD 1	yes	
NORTH FORT BEND WATER AUTHORITY	GRAND LAKES MUD 4	CINCO MUD 1		E
NORTH FORT BEND WATER AUTHORITY	GRAND LAKES MUD 4	FORT BEND COUNTY MUD 35		E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 118	FORT BEND COUNTY MUD 146		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 118	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 119	FORT BEND COUNTY MUD 2	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 119	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	GRAND LAKES MUD 2	FORT BEND COUNTY MUD 122		
NORTH FORT BEND WATER AUTHORITY	GRAND LAKES MUD 2	GRAND LAKES MUD 4		
NORTH FORT BEND WATER AUTHORITY	GRAND LAKES MUD 1	GRAND LAKES MUD 4		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 124	CINCO MUD 1		E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 122	FORT BEND COUNTY MUD 123	yes	
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 122	FORT BEND COUNTY MUD 50	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 122	GRAND MISSION MUD 1	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 122	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	CINCO MUD 14	CINCO MUD 1		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 142	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	GRAND MISSION MUD 1	FORT BEND COUNTY MUD 122	yes	E
NORTH FORT BEND WATER AUTHORITY	GRAND MISSION MUD 1	NORTH FORT BEND WATER AUTHORITY		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 35	FORT BEND COUNTY MUD 34		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 133	FORT BEND COUNTY MUD 132	yes	
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 133	FORT BEND COUNTY MUD 50	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 133	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 123	FORT BEND COUNTY MUD 122	yes	
NORTH FORT BEND WATER AUTHORITY	GRAND MISSION MUD 2	GRAND MISSION MUD 1		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 57	FORT BEND COUNTY MUD 58	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 57	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 58	FORT BEND COUNTY MUD 57	yes	
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 58	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 165	GRAND MISSION MUD 1		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 165	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 143 WATER VIEW ESTA	FORT BEND COUNTY MUD 118		E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 143 WATER VIEW ESTA	GRAND MISSION MUD 1		
NORTH FORT BEND WATER AUTHORITY	CINCO SOUTHWEST MUD 2	CINCO SOUTHWEST MUD 1		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 182	CITY OF FULSHEAR		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 182	FORT BEND COUNTY MUD 151		E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 190	BIG OAKS MUD	yes	E
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 190	FORT BEND COUNTY MUD 130		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 190	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	CINCO SOUTHWEST MUD 3 DAYCARE	CINCO SOUTHWEST MUD 1		
NORTH FORT BEND WATER AUTHORITY	CINCO SOUTHWEST MUD 4	CINCO SOUTHWEST MUD 1		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 134B	FORT BEND COUNTY MUD 134A		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 134C	FORT BEND COUNTY MUD 134A		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 156	FORT BEND COUNTY MUD 57		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 194	FORT BEND COUNTY MUD 146		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 206 VICTORIAN GARDE	FORT BEND COUNTY MUD 30		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 206 VICTORIAN GARDE	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FULSHEAR MUD 3A	WILLOW CREEK FARMS MUD		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 134D	PECAN GROVE MUD		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 132	FORT BEND COUNTY MUD 133	yes	

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 132	NORTH FORT BEND WATER AUTHORITY		
NORTH FORT BEND WATER AUTHORITY	FORT BEND COUNTY MUD 134E	PECAN GROVE MUD		E
NORTH FORT BEND WATER AUTHORITY	CORNERSTONES MUD	MEMORIAL MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 91	HARRIS COUNTY MUD 86	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 91	PONDEROSA FOREST UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	PITCAIRN WSC	FAULKEY GULLY MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BAMMEL FOREST UTILITY	PONDEROSA FOREST UTILITY DISTRICT	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 92	MONTGOMERY COUNTY MUD 94	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	INVERNESS FOREST IMPROVEMENT DISTRICT	TIMBER LANE UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CHAMPIONS MUD	CY CHAMP PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CHAMPIONS MUD	CYPRESS FOREST PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CHAMPIONS MUD	HARRIS COUNTY WCID 116	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CHAMPIONS MUD	HEATHERLOCH MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY FWSD 61	EMERALD FOREST UTILITY DISTRICT	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY FWSD 61	HARRIS COUNTY MUD 188		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY FWSD 61	HARRIS COUNTY MUD 222	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY FWSD 61	HARRIS COUNTY MUD 248	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY FWSD 61	TIMBERLAKE IMPROVEMENT DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 113 ENCHANTED VILLAGE	HARRIS COUNTY MUD 364		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTADOR MUD	CNP UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTADOR MUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	TIMBER LANE UTILITY DISTRICT	HARRIS COUNTY MUD 82	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	TIMBER LANE UTILITY DISTRICT	HARRIS COUNTY WCID 136		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	TIMBER LANE UTILITY DISTRICT	INVERNESS FOREST IMPROVEMENT DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	MEMORIAL HILLS UTILITY DISTRICT	TIMBER LANE UTILITY DISTRICT		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	MEMORIAL HILLS UTILITY DISTRICT	WOODCREEK MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 114	CYPRESS FOREST PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 114	KLEINWOOD MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 114	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHAMPTON MUD	OAKMONT PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 136	HARRIS COUNTY MUD 43	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 109	FOUNTAINHEAD MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 109	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BAMMEL UTILITY DISTRICT	HARRIS COUNTY MUD 16	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BAMMEL UTILITY DISTRICT	HARRIS COUNTY MUD 44	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BAMMEL UTILITY DISTRICT	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	PONDEROSA FOREST UTILITY DISTRICT	BAMMEL FOREST UTILITY	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	PONDEROSA FOREST UTILITY DISTRICT	HARRIS COUNTY MUD 58	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	PONDEROSA FOREST UTILITY DISTRICT	HARRIS COUNTY MUD 86		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	PONDEROSA FOREST UTILITY DISTRICT	HARRIS COUNTY WCID 91	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	MEADOWHILL REGIONAL MUD	SHASLA PUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	MEADOWHILL REGIONAL MUD	SPRING WEST MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	SPRING CREEK FOREST PUD	BILMA PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	SPRING CREEK FOREST PUD	HARRIS COUNTY MUD 24	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	SPRING CREEK FOREST PUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 132	CYPRESSWOOD UTILITY DISTRICT	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 132	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 25 BROOK HOLLOW WEST S	CITY OF HOUSTON		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 25 BROOK HOLLOW WEST S	CITY OF JERSEY VILLAGE		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 25 BROOK HOLLOW WEST S	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CNP UTILITY DISTRICT	NORTH FOREST MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CNP UTILITY DISTRICT	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CNP UTILITY DISTRICT	WESTADOR MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS CREEK UTILITY DISTRICT	HARRIS COUNTY MUD 230	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS CREEK UTILITY DISTRICT	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESSWOOD UTILITY DISTRICT	HARRIS COUNTY WCID 132	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESSWOOD UTILITY DISTRICT	KLEIN PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESSWOOD UTILITY DISTRICT	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESSWOOD UTILITY DISTRICT	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	KLEINWOOD MUD	CYPRESS KLEIN UTILITY DISTRICT WIMBLETON		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	KLEINWOOD MUD	HARRIS COUNTY WCID 114	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	KLEINWOOD MUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	TIMBERLAKE IMPROVEMENT DISTRICT	HARRIS COUNTY FWSD 61	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	PRESTONWOOD FOREST UTILITY DISTRICT	HARRIS COUNTY MUD 191	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	PRESTONWOOD FOREST UTILITY DISTRICT	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 110	HARRIS COUNTY MUD 249	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 110	HARRIS COUNTY WCID 99	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 110	SPRING WEST MUD		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LAKE FOREST UTILITY DISTRICT	GRANT ROAD PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LAKE FOREST UTILITY DISTRICT	HARRIS COUNTY MUD 18 HEATHERWOOD HUNTERS	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LAKE FOREST UTILITY DISTRICT	HARRIS COUNTY MUD 286		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LAKE FOREST UTILITY DISTRICT	MALCOMSON ROAD UTILITY DISTRICT		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 116	CHAMPIONS MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 116	CYPRESS FOREST PUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 116	HARRIS COUNTY MUD 48		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 116	HEATHERLOCH MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 119	CHARTERWOOD MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 119	LOUETTA NORTH PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 119	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 18 HEATHERWOOD HUNTERS	FAULKEY GULLY MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 18 HEATHERWOOD HUNTERS	LAKE FOREST UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 18 HEATHERWOOD HUNTERS	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LOUETTA ROAD UTILITY DISTRICT	TERRANOVA WEST MUD	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 1	NORTHWEST HARRIS COUNTY MUD 19	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	EMERALD FOREST UTILITY DISTRICT	CITY OF HOUSTON		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	EMERALD FOREST UTILITY DISTRICT	HARRIS COUNTY FWSD 61	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	EMERALD FOREST UTILITY DISTRICT	MILLS ROAD MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	EMERALD FOREST UTILITY DISTRICT	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	EMERALD FOREST UTILITY DISTRICT	REID ROAD MUD 1	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	EMERALD FOREST UTILITY DISTRICT	REID ROAD MUD 2		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HEATHERLOCH MUD	BAMMEL UTILITY DISTRICT		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HEATHERLOCH MUD	HARRIS COUNTY MUD 48	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HEATHERLOCH MUD	HARRIS COUNTY WCID 116	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HEATHERLOCH MUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 43	HARRIS COUNTY MUD 82	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 43	HARRIS COUNTY WCID 136	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 24	CYPRESS KLEIN UTILITY DISTRICT WIMBLETON		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 24	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 24	SPRING CREEK FOREST PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	DOWDELL PUD	HARRIS COUNTY MUD 401	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST PARK MUD	HARRIS COUNTY WCID 133	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 69	HARRIS COUNTY FWSD 61		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 69	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HUNTERS GLEN MUD	HARRIS COUNTY MUD 26	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 109	HARRIS COUNTY MUD 132	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 109	HARRIS COUNTY MUD 151	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 109	HARRIS COUNTY MUD 46	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	TATTOR ROAD MUD	POSTWOOD MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 82	HARRIS COUNTY MUD 43	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 82	POSTWOOD MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 82	TIMBER LANE UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	POSTWOOD MUD	TATTOR ROAD MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CHARTERWOOD MUD	HARRIS COUNTY MUD 468	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CHARTERWOOD MUD	HARRIS COUNTY WCID 119	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CHARTERWOOD MUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY WCID 99	HARRIS COUNTY WCID 110	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	ENCANTO REAL UTILITY DISTRICT	NORTHAMPTON MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 26	HUNTERS GLEN MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 44	BAMMEL UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTH PARK PUD	WEST HARRIS COUNTY MUD 21		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BAMMEL OAKS ESTATES 1	NORTHWEST HARRIS COUNTY MUD 24		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	REID ROAD MUD 1	EMERALD FOREST UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	REID ROAD MUD 1	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	REID ROAD MUD 1	REID ROAD MUD 2	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	REID ROAD MUD 1	WHITE OAK BEND MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 5	FAULKEY GULLY MUD	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 5	GRANT ROAD PUD	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 5	HARRIS COUNTY MUD 360		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 5	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 48	HARRIS COUNTY WCID 109		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 48	HEATHERLOCH MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 118	HARRIS COUNTY MUD 119	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 118	MOUNT HOUSTON ROAD MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS FOREST PUD	CHAMPIONS MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS FOREST PUD	CY CHAMP PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS FOREST PUD	HARRIS COUNTY WCID 114	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS FOREST PUD	LOUETTA NORTH PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS FOREST PUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 1	HARRIS COUNTY MUD 25 BROOK HOLLOW WEST S		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 6	HARRIS COUNTY MUD 202	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 6	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	OAKLAND VILLAGE MOBILE HOME COMMUN	MAPLE LEAF MOBILE HOME SUBDIVISION		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	MILLS ROAD MUD	EMERALD FOREST UTILITY DISTRICT	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	MILLS ROAD MUD	NORTHWEST HARRIS COUNTY MUD 9	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	KLEIN PUD	CYPRESSWOOD UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	KLEIN PUD	HARRIS COUNTY MUD 36		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	TERRANOVA WEST MUD	LOUETTA ROAD UTILITY DISTRICT	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	TERRANOVA WEST MUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WHITE OAK BEND MUD	REID ROAD MUD 2		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CY CHAMP PUD	CHAMPIONS MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CY CHAMP PUD	CITY OF HOUSTON WILLOW CHASE		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CY CHAMP PUD	CYPRESS FOREST PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CY CHAMP PUD	HARRIS COUNTY MUD 191	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CY CHAMP PUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	RAMBLEWOOD UTILITY & WSC	CITY OF HUMBLE		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 104	HARRIS COUNTY WCID 110		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 104	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BRIDGESTONE MUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BRIDGESTONE MUD	NORTHWEST HARRIS COUNTY MUD 30	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BRIDGESTONE MUD	NORTHWEST HARRIS COUNTY MUD 32	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 9	CYPRESS CREEK UTILITY DISTRICT		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 9	MILLS ROAD MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 15	HARRIS COUNTY MUD 280	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 15	HARRIS COUNTY MUD 281	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 15	HARRIS COUNTY MUD 281	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 15	HARRIS COUNTY MUD 368	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	FAULKEY GULLY MUD	GRANT ROAD PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	FAULKEY GULLY MUD	HARRIS COUNTY MUD 18 HEATHERWOOD HUNTERS	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	FAULKEY GULLY MUD	MALCOMSON ROAD UTILITY DISTRICT		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	FAULKEY GULLY MUD	NORTHWEST HARRIS COUNTY MUD 5	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 16	BAMMEL UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 16	CITY OF HOUSTON		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 16	HARRIS COUNTY MUD 44		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 16	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 16	NORTHWEST HARRIS COUNTY MUD 22		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 22	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 22	NORTHWEST HARRIS COUNTY MUD 21		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 23	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 168	HARRIS COUNTY MUD 170		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 168	NORTHWEST HARRIS COUNTY MUD 29	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 168	WEST HARRIS COUNTY MUD 9	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 9	HARRIS COUNTY MUD 168	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 9	WEST HARRIS COUNTY MUD 10	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 170	HARRIS COUNTY FWSD 61		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LOUETTA NORTH PUD	CYPRESS FOREST PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LOUETTA NORTH PUD	HARRIS COUNTY WCID 119	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	LOUETTA NORTH PUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BILMA PUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BILMA PUD	NORTHWEST HARRIS COUNTY MUD 36		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BILMA PUD	SPRING CREEK FOREST PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	BILMA PUD	TERRANOVA WEST MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 368	HARRIS COUNTY MUD 281		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 368	NORTHWEST HARRIS COUNTY MUD 15	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 19	HARRIS COUNTY MUD 1	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 19	HARRIS COUNTY MUD 387	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	REID ROAD MUD 2	REID ROAD MUD 1	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	REID ROAD MUD 2	WEST HARRIS COUNTY MUD 21	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	RICHEY ROAD MUD	WOODCREEK MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	GRANT ROAD PUD	FAULKEY GULLY MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	GRANT ROAD PUD	LAKE FOREST UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	GRANT ROAD PUD	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	GRANT ROAD PUD	NORTHWEST HARRIS COUNTY MUD 5	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 20	HARRIS COUNTY MUD 211		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 20	HARRIS COUNTY MUD 44		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	ALBURY MANOR UTILITY COMPANY	HARRIS COUNTY MUD 401	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 10	WEST HARRIS COUNTY MUD 11	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 10	WEST HARRIS COUNTY MUD 9	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 24	HARRIS COUNTY UD 14	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 211	HARRIS COUNTY MUD 233		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 211	HARRIS COUNTY MUD 44		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 211	NEWPORT MUD		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 29	HARRIS COUNTY MUD 168	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 29	HARRIS COUNTY MUD 222	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 202	HARRIS COUNTY MUD 180	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 202	NORTHWEST HARRIS COUNTY MUD 6	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 191	CITY OF HOUSTON		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 191	CY CHAMP PUD	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 191	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 191	PRESTONWOOD FOREST UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS HILL MUD 1	HARRIS COUNTY MUD 391	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 275	CYPRESSWOOD UTILITY DISTRICT		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 275	LOUETTA ROAD UTILITY DISTRICT		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 233	HARRIS COUNTY MUD 44		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 233	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 233	NORTHWEST HARRIS COUNTY MUD 20		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 322 FAIRFIELD VILLAGE	HARRIS COUNTY MUD 358		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 230	CYPRESS CREEK UTILITY DISTRICT	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 230	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 316	CYPRESS KLEIN UTILITY DISTRICT WIMBLETON		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 36	HARRIS COUNTY MUD 104		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 36	KLEIN PUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 36	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 36	NORTHWEST HARRIS COUNTY MUD 28	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 11	WEST HARRIS COUNTY MUD 10	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 21	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 21	REID ROAD MUD 2	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 360	HARRIS COUNTY MUD 364	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 30	BRIDGESTONE MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 30	NORTHWEST HARRIS COUNTY MUD 32	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 86	HARRIS COUNTY WCID 91	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 86	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 354	HARRIS COUNTY MUD 358		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	OAKMONT PUD	NORTHAMPTON MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 365	HARRIS COUNTY MUD 364	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 365	NORTHWEST HARRIS COUNTY MUD 10		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	SPRING WEST MUD	MEADOWHILL REGIONAL MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 32	BRIDGESTONE MUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 32	HARRIS COUNTY MUD 530		E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 32	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 32	NORTHWEST HARRIS COUNTY MUD 30	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 367	HARRIS COUNTY MUD 383	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 367	HARRIS COUNTY WCID 119		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 367	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 222	HARRIS COUNTY FWSD 61	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 222	NORTHWEST HARRIS COUNTY MUD 29	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 280	HARRIS COUNTY MUD 281	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 280	NORTHWEST HARRIS COUNTY MUD 15	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHGATE CROSSING MUD 1	NORTHGATE CROSSING MUD 2	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHGATE CROSSING MUD 2	NORTHGATE CROSSING MUD 1	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	SUGARBERRY PLACE	COTTAGE GARDENS		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 364	HARRIS COUNTY MUD 360	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 364	HARRIS COUNTY MUD 365	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 249	HARRIS COUNTY WCID 110	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 281	HARRIS COUNTY MUD 280	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 281	HARRIS COUNTY MUD 282	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 281	NORTHWEST HARRIS COUNTY MUD 15	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 383	HARRIS COUNTY MUD 119		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 383	HARRIS COUNTY MUD 367	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 391	CNP UTILITY DISTRICT		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 391	CYPRESS HILL MUD 1	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 391	HARRIS COUNTY MUD 367		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 28	MEADOWHILL REGIONAL MUD		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 28	MEADOWHILL REGIONAL MUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 28	NORTHWEST HARRIS COUNTY MUD 36	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 28	SHASLA PUD		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 401	ALBURY MANOR UTILITY COMPANY	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 401	DOWDELL PUD	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 397	HARRIS COUNTY MUD 358		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	CYPRESS CREEK RANCH	HARRIS COUNTY MUD 371		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS MONTGOMERY COUNTIES MUD 386	HARRIS COUNTY MUD 387		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 248	HARRIS COUNTY FWSD 61	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 220	HARRIS COUNTY MUD 23		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 396	HARRIS COUNTY MUD 358		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 387	NORTHWEST HARRIS COUNTY MUD 19	yes	E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 468	CHARTERWOOD MUD	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 468	HARRIS COUNTY MUD 286		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 468	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 282	HARRIS COUNTY MUD 281	yes	
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 282	NORTHWEST HARRIS COUNTY MUD 15		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 480	NORTH WOODS ESTATES		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 542	TOWERING OAKS AND ROSEWOOD HILLS SUBDIVI		E
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	VILLAS OF WILLOWBROOK	HARRIS COUNTY MUD 191		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 231	NORTHWOOD MUD 1		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 551	HEATHERLOCH MUD		
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 558	HARRIS COUNTY MUD 542		
NORTHEAST HARRIS COUNTY MUD 1	NORTHEAST HARRIS COUNTY MUD 1 EDGEWOOD V	HARRIS COUNTY MUD 421		
NORTHWEST HARRIS COUNTY MUD 16	NORTHWEST HARRIS COUNTY MUD 16	BARKER CYPRESS MUD		E
NORTHWEST HARRIS COUNTY MUD 16	NORTHWEST HARRIS COUNTY MUD 16	HARRIS COUNTY MUD 149		E
NORTHWEST HARRIS COUNTY MUD 16	NORTHWEST HARRIS COUNTY MUD 16	LANGHAM CREEK UTILITY DISTRICT		E
OAK RIDGE NORTH	CITY OF OAK RIDGE NORTH	SAN JACINTO RIVER AUTHORITY		
OAK RIDGE NORTH	CITY OF OAK RIDGE NORTH	SOUTHERN MONTGOMERY COUNTY MUD	yes	E
PALMER PLANTATION MUD 1	PALMER PLANTATION MUD 1	FORT BEND COUNTY MUD 49	yes	
PALMER PLANTATION MUD 1	PALMER PLANTATION MUD 1	PALMER PLANTATION MUD 2	yes	
PALMER PLANTATION MUD 1	PALMER PLANTATION MUD 1	QUAIL VALLEY UTILITY DISTRICT		E
PALMER PLANTATION MUD 1	PALMER PLANTATION MUD 1	THUNDERBIRD UTILITY DISTRICT 1	yes	E
PALMER PLANTATION MUD 2	PALMER PLANTATION MUD 2	FORT BEND COUNTY MUD 49	yes	
PALMER PLANTATION MUD 2	PALMER PLANTATION MUD 2	PALMER PLANTATION MUD 1	yes	
PALMER PLANTATION MUD 2	PALMER PLANTATION MUD 2	QUAIL VALLEY UTILITY DISTRICT	yes	E
PALMER PLANTATION MUD 2	PALMER PLANTATION MUD 2	THUNDERBIRD UTILITY DISTRICT 1	yes	E
PARKWAY MUD	PARKWAY UTILITY DISTRICT	CITY OF HOUSTON		
PARKWAY MUD	PARKWAY UTILITY DISTRICT	GREENWOOD UTILITY DISTRICT	yes	
PASADENA	CITY OF PASADENA EL CARY ESTATES	CITY OF PASADENA		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
PASADENA	CITY OF PASADENA EL CARY ESTATES	CLEAR LAKE CITY WATER AUTHORITY		
PEARLAND	CITY OF PEARLAND MUD 1	BRAZORIA COUNTY MUD 2		
PEARLAND	CITY OF PEARLAND MUD 1	CITY OF PEARLAND		
PECAN GROVE MUD 1	PECAN GROVE MUD	FORT BEND COUNTY WCID 3	yes	E
PLANTATION MUD	PLANTATION MUD	CITY OF SUGAR LAND - GREATWOOD	yes	E
PLANTATION MUD	PLANTATION MUD	FORT BEND COUNTY MUD 1		E
PORTER SUD	PORTER SUD	MONTGOMERY COUNTY MUD 56	yes	E
PORTER SUD	PORTER SUD	MONTGOMERY COUNTY MUD 84	yes	
PORTER SUD	PORTER SUD	VALLEY RANCH MUD 1	yes	
PRAIRIE VIEW	CITY OF PRAIRIE VIEW	PRAIRIE VIEW A&M UNIVERSITY	yes	E
PRAIRIE VIEW A&M UNIVERSITY	PRAIRIE VIEW A&M UNIVERSITY	CITY OF PRAIRIE VIEW	yes	E
QUADVEST	RANCHO SAN VICENTE	BELLA VISTA		
QUADVEST	GRANDE SAN JACINTO WATER SYSTEM	CAMINO REAL		E
QUADVEST	INDIGO LAKES WATER SYSTEM	CLOVERCREEK MUD		E
QUADVEST	SENDERA RANCH	RED OAK RANCH WATER SYSTEM		E
QUADVEST	LAKE WINDCREST WATER SYSTEM	MOSTYN MANOR	yes	E
QUADVEST	MOSTYN MANOR	LAKE WINDCREST WATER SYSTEM	yes	E
QUADVEST	CREEKSIDE VILLAGE	BENDERS LANDING WATER PLANT 1 & 2		E
QUAIL VALLEY UD	QUAIL VALLEY UTILITY DISTRICT	FORT BEND COUNTY MUD 42 WAT PLAT	yes	E
QUAIL VALLEY UD	QUAIL VALLEY UTILITY DISTRICT	FORT BEND COUNTY WCID 2		E
QUAIL VALLEY UD	QUAIL VALLEY UTILITY DISTRICT	MEADOWCREEK MUD	yes	E
QUAIL VALLEY UD	QUAIL VALLEY UTILITY DISTRICT	PALMER PLANTATION MUD 2	yes	E
QUAIL VALLEY UD	QUAIL VALLEY UTILITY DISTRICT	THUNDERBIRD UTILITY DISTRICT 1	yes	E
QUAIL VALLEY UD	QUAIL VALLEY UTILITY DISTRICT	THUNDERBIRD UTILITY DISTRICT SYSTEM 2	yes	E
RAYFORD ROAD MUD	RAYFORD ROAD MUD	MONTGOMERY COUNTY MUD 115		E
RAYFORD ROAD MUD	RAYFORD ROAD MUD	MONTGOMERY COUNTY MUD 99	yes	E
RAYFORD ROAD MUD	RAYFORD ROAD MUD	SAN JACINTO RIVER AUTHORITY		
RAYFORD ROAD MUD	RAYFORD ROAD MUD	SPRING CREEK UTILITY DISTRICT	yes	E
RICHMOND	CITY OF RICHMOND	CITY OF ROSENBERG	yes	E
RICHWOOD	CITY OF RICHWOOD	BRAZOSPORT WATER AUTHORITY		
RICHWOOD	CITY OF RICHWOOD	CITY OF CLUTE	yes	E
RIVER PLANTATION MUD	RIVER PLANTATION MUD	EAST PLANTATION UTILITY DISTRICT		E
RIVERSIDE SUD	RIVERSIDE SUD	TRINITY RIVER AUTHORITY		
RIVERSIDE SUD	RIVERSIDE SUD	WALKER COUNTY SUD D		
ROLLING FORK PUD	ROLLING FORK PUD	CITY OF HOUSTON		
ROLLING FORK PUD	ROLLING FORK PUD	HARRIS COUNTY MUD 261	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
ROLLING FORK PUD	ROLLING FORK PUD	HARRIS COUNTY MUD 6 CARRIAGE LANE	yes	
ROLLING FORK PUD	ROLLING FORK PUD	WINDFERN FOREST UTILITY DISTRICT	yes	E
ROMAN FOREST CONSOLIDATED MUD	ROMAN FOREST CONSOLIDATED MUD	CITY OF WOOD BRANCH VILLAGE	yes	E
ROMAN FOREST CONSOLIDATED MUD	ROMAN FOREST CONSOLIDATED MUD	ROMAN FOREST PUD 3	yes	
ROMAN FOREST CONSOLIDATED MUD	ROMAN FOREST CONSOLIDATED MUD	ROMAN FOREST PUD 4	yes	
ROSENBERG	CITY OF ROSENBERG	BRAZOSPORT WATER AUTHORITY		
ROSENBERG	CITY OF ROSENBERG	CITY OF RICHMOND	yes	E
ROSENBERG	CITY OF ROSENBERG	FORT BEND COUNTY MUD 5	yes	E
SAGEMEADOW UD	SAGEMEADOW UTILITY DISTRICT	CITY OF HOUSTON		
SAGEMEADOW UD	SAGEMEADOW UTILITY DISTRICT	CLEAR BROOK CITY MUD		E
SAGEMEADOW UD	SAGEMEADOW UTILITY DISTRICT	KIRKMONT MUD	yes	
SAN LEON MUD	SAN LEON MUD	BACLIFF MUD	yes	
SAN LEON MUD	SAN LEON MUD	GULF COAST WATER AUTHORITY		
SHENANDOAH	CITY OF SHENANDOAH	SJRA (THE WOODLANDS)		E
SHENANDOAH	CITY OF SHENANDOAH	THE WOODLANDS METRO CENTER MUD		E
SIENNA PLANTATION	SIENNA PLANTATION MANAGEMENT DISTRICT	SIENNA REGIONAL MUD		
SIENNA PLANTATION	SIENNA PLANTATION MUD 12	SIENNA REGIONAL MUD		
SOUTH CLEVELAND WSC	SOUTH CLEVELAND WSC	CITY OF CLEVELAND		E
SOUTHEAST WSC	SOUTHEAST WSC	SOUTHEAST WSC SYSTEM 2		E
SOUTHEAST WSC	SOUTHEAST WSC	CONCORD-ROBBINS WSC		E
SOUTHERN MONTGOMERY COUNTY MUD	SOUTHERN MONTGOMERY COUNTY MUD	CITY OF OAK RIDGE NORTH	yes	E
SOUTHERN MONTGOMERY COUNTY MUD	SOUTHERN MONTGOMERY COUNTY MUD	MONTGOMERY COUNTY MUD 19	yes	E
SOUTHERN MONTGOMERY COUNTY MUD	SOUTHERN MONTGOMERY COUNTY MUD	RAYFORD ROAD MUD		E
SOUTHERN MONTGOMERY COUNTY MUD	SOUTHERN MONTGOMERY COUNTY MUD	SAN JACINTO RIVER AUTHORITY		
SOUTHWEST HARRIS COUNTY MUD 1	SOUTHWEST HARRIS COUNTY MUD 1	CITY OF HOUSTON		
SOUTHWEST HARRIS COUNTY MUD 1	SOUTHWEST HARRIS COUNTY MUD 1	HARRIS COUNTY WCID FONDREN ROAD		
SPRING CREEK UD	SPRING CREEK UTILITY DISTRICT	MONTGOMERY COUNTY MUD 89	yes	E
SPRING CREEK UD	SPRING CREEK UTILITY DISTRICT	RAYFORD ROAD MUD	yes	E
SPRING MEADOWS MUD	SPRING MEADOWS MUD	BAYTOWN AREA WATER AUTHORITY		
SPRING MEADOWS MUD	SPRING MEADOWS MUD	CITY OF BAYTOWN		
SUGAR LAND	CITY OF SUGAR LAND	FIRST COLONY MUD 9	yes	E
SUGAR LAND	CITY OF SUGAR LAND	FORT BEND COUNTY MUD 128	yes	E
SUGAR LAND	CITY OF SUGAR LAND	FORT BEND COUNTY MUD 25		
SUGAR LAND	CITY OF SUGAR LAND	FORT BEND COUNTY WCID 2	yes	E
SUGAR LAND	CITY OF SUGAR LAND - GREATWOOD	FORT BEND COUNTY MUD 108		E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
SUGAR LAND	CITY OF SUGAR LAND - GREATWOOD	FORT BEND COUNTY MUD 109		E
SUGAR LAND	CITY OF SUGAR LAND - GREATWOOD	FORT BEND COUNTY MUD 117		E
SUGAR LAND	CITY OF SUGAR LAND - GREATWOOD	PLANTATION MUD	yes	E
TEXAS CITY	CITY OF TEXAS CITY	GULF COAST WATER AUTHORITY		
THE WOODLANDS	MONTGOMERY COUNTY MUD 6	SJRA (THE WOODLANDS)		
THE WOODLANDS	MONTGOMERY COUNTY MUD 36	SJRA (THE WOODLANDS)		
THE WOODLANDS	MONTGOMERY COUNTY MUD 7	SJRA (THE WOODLANDS)		
THE WOODLANDS	THE WOODLANDS METRO CENTER MUD	SJRA (THE WOODLANDS)		
THE WOODLANDS	MONTGOMERY COUNTY MUD 39	SJRA (THE WOODLANDS)		
THE WOODLANDS	MONTGOMERY COUNTY MUD 46	SJRA (THE WOODLANDS)		
THE WOODLANDS	MONTGOMERY COUNTY MUD 47	SJRA (THE WOODLANDS)		
THE WOODLANDS	MONTGOMERY COUNTY MUD 60	SJRA (THE WOODLANDS)		
THE WOODLANDS	THE WOODLANDS MUD 1	SJRA (THE WOODLANDS)		
THE WOODLANDS	MONTGOMERY COUNTY MUD 67	SJRA (THE WOODLANDS)		
THUNDERBIRD UD	THUNDERBIRD UTILITY DISTRICT 1	FORT BEND COUNTY MUD 46		E
THUNDERBIRD UD	THUNDERBIRD UTILITY DISTRICT 1	PALMER PLANTATION MUD 1	yes	E
THUNDERBIRD UD	THUNDERBIRD UTILITY DISTRICT 1	PALMER PLANTATION MUD 2	yes	E
THUNDERBIRD UD	THUNDERBIRD UTILITY DISTRICT 1	QUAIL VALLEY UTILITY DISTRICT	yes	E
THUNDERBIRD UD	THUNDERBIRD UTILITY DISTRICT SYSTEM 2	QUAIL VALLEY UTILITY DISTRICT	yes	E
TRAIL OF THE LAKES MUD	TRAIL OF THE LAKES MUD	HARRIS COUNTY MUD 278	yes	E
TRINITY	CITY OF TRINITY	TRINITY RIVER AUTHORITY		
TRINITY RURAL WSC	TRINITY RURAL WSC	CITY OF TRINITY		E
TRINITY RURAL WSC	TRINITY RURAL WSC	TRINITY RIVER AUTHORITY		E
TRINITY RURAL WSC	TRINITY RURAL WSC	CITY OF TRINITY		E
TRINITY RURAL WSC	TRINITY RURAL WSC	TRINITY RURAL WSC 1		
TRINITY RURAL WSC	TRINITY RURAL WSC	TRINITY RIVER AUTHORITY		E
VALLEY RANCH MUD 1	VALLEY RANCH MUD 1	PORTER SUD	yes	
WALKER COUNTY SUD	WALKER COUNTY SUD	WALKER COUNTY SUD D		E
WALKER COUNTY SUD	WALKER COUNTY SUD	WALKER COUNTY SUD C		E
WALKER COUNTY SUD	WALKER COUNTY SUD	WALKER COUNTY SUD E		E
WALKER COUNTY SUD	WALKER COUNTY SUD	WALKER COUNTY SUD B CRABBS PRAIRIE		E
WALKER COUNTY SUD	WALKER COUNTY SUD	WALKER COUNTY SUD F		E
WALKER COUNTY SUD	WALKER COUNTY SUD	WALKER COUNTY SUD A		E
WALKER COUNTY SUD	WALKER COUNTY SUD	WALKER COUNTY SUD C		E
WEBSTER	CITY OF WEBSTER	BAYBROOK MUD 1		E
WEBSTER	CITY OF WEBSTER	CITY OF HOUSTON		
WEBSTER	CITY OF WEBSTER	CITY OF LEAGUE CITY	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEBSTER	CITY OF WEBSTER	CLEAR LAKE CITY WATER AUTHORITY		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 102	HARRIS COUNTY MUD 185	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 102	HARRIS COUNTY MUD 250	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 102	HORSEPEN BAYOU MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 102	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	JACKRABBIT ROAD PUD	BARKER CYPRESS MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	JACKRABBIT ROAD PUD	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	JACKRABBIT ROAD PUD	HARRIS COUNTY MUD 136	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	JACKRABBIT ROAD PUD	HARRIS COUNTY MUD 276		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	JACKRABBIT ROAD PUD	HARRIS COUNTY UTILITY DISTRICT 6		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	JACKRABBIT ROAD PUD	LANGHAM CREEK UTILITY DISTRICT	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST MEMORIAL MUD	CIMARRON MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST MEMORIAL MUD	INTERSTATE MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 81	CIMARRON MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 81	MASON CREEK UTILITY DISTRICT	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 81	MEMORIAL MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 136	BARKER CYPRESS MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 136	HARRIS COUNTY MUD 183	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 136	JACKRABBIT ROAD PUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 136	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTON MUD	CASTLEWOOD MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTON MUD	FRY ROAD MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTON MUD	WEST HARRIS COUNTY MUD 7	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTLAKE MUD 1	FRY ROAD MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTLAKE MUD 1	MORTON ROAD MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTLAKE MUD 1	RICEWOOD MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WESTLAKE MUD 1	WEST PARK MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	SPENCER ROAD PUD	CHIMNEY HILL MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	SPENCER ROAD PUD	HARRIS COUNTY MUD 250	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	SPENCER ROAD PUD	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 61	HARRIS COUNTY MUD 62		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 61	WEST HARRIS COUNTY MUD 2 CHASE	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD ONE MUD	CHELFORD CITY MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD ONE MUD	FORT BEND COUNTY MUD 30		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD ONE MUD	HARRIS COUNTY MUD 120	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD ONE MUD	MISSION BEND MUD 1	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD ONE MUD	MISSION BEND MUD 2	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 120	CHELFORD ONE MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 120	CITY OF HOUSTON		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 120	HARRIS COUNTY MUD 147		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 120	MISSION BEND MUD 2		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD CITY MUD	CHELFORD ONE MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD CITY MUD	FORT BEND COUNTY MUD 30		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD CITY MUD	MISSION BEND MUD 1	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CHELFORD CITY MUD	MISSION BEND MUD 2	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	BISSONNET MUD	BEECHNUT MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	BISSONNET MUD	CITY OF HOUSTON		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 144	HARRIS COUNTY MUD 264	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 144	HARRIS COUNTY MUD 70	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	ADDICKS UTILITY DISTRICT	HARRIS COUNTY MUD 238		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	ADDICKS UTILITY DISTRICT	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 2 CHASE	HARRIS COUNTY MUD 61	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 2 CHASE	HARRIS COUNTY MUD 64		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 2 CHASE	HARRIS COUNTY MUD 71		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 105	HARRIS COUNTY MUD 157	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 105	HARRIS COUNTY MUD 165		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 105	HARRIS COUNTY MUD 167	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 105	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MEMORIAL MUD	CORNERSTONES MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MEMORIAL MUD	HARRIS COUNTY MUD 81	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MEMORIAL MUD	NOTTINGHAM COUNTRY MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 147	WEST HARRIS COUNTY MUD 4		E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	LANGHAM CREEK UTILITY DISTRICT	BARKER CYPRESS MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	LANGHAM CREEK UTILITY DISTRICT	HARRIS COUNTY MUD 136		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	LANGHAM CREEK UTILITY DISTRICT	HARRIS COUNTY MUD 149	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	LANGHAM CREEK UTILITY DISTRICT	JACKRABBIT ROAD PUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	LANGHAM CREEK UTILITY DISTRICT	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 149	LANGHAM CREEK UTILITY DISTRICT	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 149	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CIMARRON MUD	CINCO MUD 1		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CIMARRON MUD	HARRIS COUNTY MUD 81	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 157	HARRIS COUNTY MUD 105	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 157	HARRIS COUNTY MUD 165		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 157	HARRIS COUNTY MUD 239	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 157	HARRIS COUNTY MUD 249		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 157	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 64	HARRIS COUNTY MUD 65		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 64	WEST HARRIS COUNTY MUD 5		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 162	HARRIS COUNTY MUD 163		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 162	HARRIS COUNTY MUD 179		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 162	HARRIS COUNTY MUD 186		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 162	HARRIS COUNTY MUD 188	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 162	HARRIS COUNTY MUD 208		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 162	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	BARKER CYPRESS MUD	HARRIS COUNTY MUD 183	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	BARKER CYPRESS MUD	JACKRABBIT ROAD PUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	BARKER CYPRESS MUD	LANGHAM CREEK UTILITY DISTRICT	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	BARKER CYPRESS MUD	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 65	HARRIS COUNTY MUD 432		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	FRY ROAD MUD	WESTLAKE MUD 1	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	FRY ROAD MUD	WESTON MUD EAST		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CLAY ROAD MUD	HARRIS COUNTY MUD 284	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CLAY ROAD MUD	MAYDE CREEK MUD	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CLAY ROAD MUD	RICEWOOD MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CLAY ROAD MUD	ROLLING CREEK UTILITY DISTRICT		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CLAY ROAD MUD	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MORTON ROAD MUD	RICEWOOD MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MORTON ROAD MUD	WESTLAKE MUD 1	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MAYDE CREEK MUD	CLAY ROAD MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MAYDE CREEK MUD	HARRIS COUNTY MUD 238	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MAYDE CREEK MUD	RICEWOOD MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 70	HARRIS COUNTY MUD 144	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 70	HARRIS COUNTY MUD 264		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 70	LANGHAM CREEK UTILITY DISTRICT		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 70	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 1	CHELFORD CITY MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 1	CHELFORD ONE MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 1	FORT BEND COUNTY MUD 30	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 1	KINGSBRIDGE MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 1	MISSION BEND MUD 2	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HORSEPEN BAYOU MUD	HARRIS COUNTY MUD 102	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HORSEPEN BAYOU MUD	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 183	BARKER CYPRESS MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 183	HARRIS COUNTY MUD 136	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 183	LANGHAM CREEK UTILITY DISTRICT		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 183	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 2	CHELFORD CITY MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 2	CHELFORD ONE MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	MISSION BEND MUD 2	MISSION BEND MUD 1	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	CASTLEWOOD MUD	WESTON MUD EAST		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	RENN ROAD MUD	FORT BEND COUNTY MUD 2	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	RENN ROAD MUD	KINGSBRIDGE MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 179	HARRIS COUNTY MUD 130	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 179	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 179	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	NORTHWEST HARRIS COUNTY MUD 12	HARRIS COUNTY MUD 167	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 185	HARRIS COUNTY MUD 102	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST PARK MUD	FRY ROAD MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST PARK MUD	HARRIS COUNTY MUD 345		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST PARK MUD	WESTLAKE MUD 1	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 188	HARRIS COUNTY MUD 162	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 188	HARRIS COUNTY MUD 61		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 188	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 15	HARRIS COUNTY MUD 163		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 15	WEST HARRIS COUNTY MUD 14	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 14	WEST HARRIS COUNTY MUD 15	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 14	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	BEECHNUT MUD	BISSONNET MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 130	CHIMNEY HILL MUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 130	HARRIS COUNTY MUD 179	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 130	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 163	HARRIS COUNTY MUD 155	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 163	HARRIS COUNTY MUD 186		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 163	HARRIS COUNTY MUD 208		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 163	WEST HARRIS COUNTY MUD 14		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 163	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 186	HARRIS COUNTY MUD 149		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 186	HARRIS COUNTY MUD 208	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 186	HARRIS COUNTY MUD 257		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 186	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	RICEWOOD MUD	MAYDE CREEK MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	RICEWOOD MUD	WEST HARRIS COUNTY MUD 17	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 7	WEST HARRIS COUNTY MUD 17	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 7	WESTON MUD	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 127	HARRIS COUNTY MUD 167		E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 127	HARRIS COUNTY MUD 239	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 17	RICEWOOD MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	WEST HARRIS COUNTY MUD 17	WEST HARRIS COUNTY MUD 7	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	INTERSTATE MUD	WEST MEMORIAL MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 62	HARRIS COUNTY MUD 63		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 158	CITY OF HOUSTON		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	NOTTINGHAM COUNTRY MUD	HARRIS COUNTY MUD 81		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	NOTTINGHAM COUNTRY MUD	MEMORIAL MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 264	HARRIS COUNTY MUD 144	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 264	HARRIS COUNTY MUD 173	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 264	HARRIS COUNTY MUD 208		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 264	LANGHAM CREEK UTILITY DISTRICT		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 264	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 250	HARRIS COUNTY MUD 102	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 250	SPENCER ROAD PUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 155	HARRIS COUNTY MUD 163	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 155	HARRIS COUNTY MUD 172	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 155	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 238	MAYDE CREEK MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 238	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 239	HARRIS COUNTY MUD 127	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 239	HARRIS COUNTY MUD 157	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 239	HARRIS COUNTY MUD 167	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 239	LANGHAM CREEK UTILITY DISTRICT		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 208	HARRIS COUNTY MUD 186	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 208	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 255	HORSEPEN BAYOU MUD		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 167	HARRIS COUNTY MUD 105	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 167	HARRIS COUNTY MUD 239	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 167	HARRIS COUNTY MUD 284	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 167	NORTHWEST HARRIS COUNTY MUD 12	yes	E

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 341	BRITTMOORE UTILITY		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 341	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 172	HARRIS COUNTY MUD 155	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 172	HARRIS COUNTY MUD 156	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 172	HARRIS COUNTY MUD 501	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 172	REMINGTON MUD 1		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 172	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 173	HARRIS COUNTY MUD 144		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 173	HARRIS COUNTY MUD 155		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 173	HARRIS COUNTY MUD 172		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 173	HARRIS COUNTY MUD 264	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 173	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 257	HARRIS COUNTY MUD 149		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 257	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	REMINGTON MUD 1	HARRIS COUNTY MUD 196		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 370	HARRIS COUNTY MUD 341		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 284	CLAY ROAD MUD	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 284	HARRIS COUNTY MUD 167	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 166	HARRIS COUNTY MUD 276		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 166	JACKRABBIT ROAD PUD		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 156	HARRIS COUNTY MUD 155		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 156	HARRIS COUNTY MUD 172	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 419	HARRIS COUNTY MUD 418		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 433	HARRIS COUNTY MUD 371		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 433	HARRIS COUNTY MUD 374 CYPRESS CREEK LAKE	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 433	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 449	HARRIS COUNTY MUD 495	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 449	HARRIS COUNTY MUD 536	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 500	HARRIS COUNTY MUD 196		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 500	REMINGTON MUD 1		E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 500	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY		

WUG	Public Water System	Connection With	Two Way?	Emergency[1]
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 501	HARRIS COUNTY MUD 172	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 501	HARRIS COUNTY MUD 500		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 501	REMINGTON MUD 1		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 374 CYPRESS CREEK LAKE	HARRIS COUNTY MUD 371		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 374 CYPRESS CREEK LAKE	HARRIS COUNTY MUD 433	yes	
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 502	HARRIS COUNTY MUD 500		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 536	HARRIS COUNTY MUD 449	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 495	HARRIS COUNTY MUD 449	yes	E
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 457	HARRIS COUNTY MUD 171		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 489	HARRIS COUNTY MUD 418		
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	HARRIS COUNTY MUD 538	HARRIS COUNTY MUD 495		
WESTWOOD SHORES MUD	WESTWOOD SHORES MUD	TRINITY RURAL WSC 1		
WILLIS	CITY OF WILLIS	CITY OF CONROE		E
WINDFERN FOREST UTILITY DISTRICT	WINDFERN FOREST UTILITY DISTRICT	CITY OF HOUSTON		
WINDFERN FOREST UTILITY DISTRICT	WINDFERN FOREST UTILITY DISTRICT	ROLLING FORK PUD	yes	E
WINDFERN FOREST UTILITY DISTRICT	WINDFERN FOREST UTILITY DISTRICT	WEST HARRIS COUNTY MUD 1		E
WOOD BRANCH VILLAGE	CITY OF WOOD BRANCH VILLAGE	EAST MONTGOMERY COUNTY MUD 5		E
WOOD BRANCH VILLAGE	CITY OF WOOD BRANCH VILLAGE	ROMAN FOREST CONSOLIDATED MUD	yes	E
WOODCREEK MUD	WOODCREEK MUD	MEMORIAL HILLS UTILITY DISTRICT	yes	E
WOODCREEK MUD	WOODCREEK MUD	RICHEY ROAD MUD	yes	E
WOODRIDGE MUD	WOODRIDGE MUD	PORTER SUD		

1. "E" denotes emergency-only connections between entities.

APPENDIX 7-C

POTENTIAL EMERGENCY RESPONSES

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Table 7-C1 – Potential Emergency Responses

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
ALVIN	Blend					•		•				•			•	•	Well, Pipeline, Transportation	*FRIENDSWOOD*
AMES MINGLEWOOD WSC	Groundwater	yes	yes				•					•		•		•	Well, Transportation	CITY OF LIBERTY
ANAHUAC	Surface Water	yes	yes		•		•			•	•	•		•		•	Well, Transportation	TRINITY BAY CONSERVATION DISTRICT
ANGLETON	Blend				•	•	•	•		•	•	•			•	•	Well, Pipeline, Transportation	*LAKE JACKSON*
AUSTIN COUNTY WSC	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	AUSTIN COUNTY WSC 1
BACLIFF MUD	Blend				•		•	•		•	•	•		•		•	Well, Transportation	BAYVIEW MUD
BAKER ROAD MUD	Groundwater	yes	yes									•		•		•	Well, Transportation	GREEN TRAILS MUD
BAYBROOK MUD 1	Blend		yes		•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
BAYTOWN	Blend				•		•	•		•	•	•		•		•	Well, Transportation	BAYTOWN AREA WATER AUTHORITY
BAYVIEW MUD	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	BACLIFF MUD
BELLAIRE	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
BELLVILLE	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*AUSTIN COUNTY WSC*
BLAKETREE MUD 1 OF MONTGOMERY COUNTY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*DOBBIN PLANTERSVILLE WSC*
BLUE BELL MANOR UTILITY	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 304
BLUE RIDGE WEST MUD	Blend		yes				•					•		•		•	Well, Transportation	FORT BEND COUNTY MUD 26 QUAIL GREEN WEST

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
BOLIVAR PENINSULA SUD	Surface Water	yes	yes	•	•		•	•		•	•	•		•		•	Well, Transportation	LOWER NECHES VALLEY AUTHORITY
BRAZORIA	Surface Water	yes	yes		•		•			•	•	•				•	Well, Transportation	
BRAZORIA COUNTY FWSD 1	Groundwater	yes	yes			•						•				•	Well, Transportation	
BRAZORIA COUNTY MUD 2	Groundwater	yes	yes			•		•				•			•	•	Well, Pipeline, Transportation	*PEARLAND*
BRAZORIA COUNTY MUD 21	Groundwater	yes	yes			•		•				•			•	•	Well, Pipeline, Transportation	*PEARLAND*
BRAZORIA COUNTY MUD 22	Groundwater	yes	yes			•	•					•		•		•	Well, Transportation	BRAZORIA COUNTY MUD 21
BRAZORIA COUNTY MUD 25	Groundwater	yes	yes			•	•	•				•		•		•	Well, Transportation	BRAZORIA COUNTY MUD 6
BRAZORIA COUNTY MUD 29	Groundwater	yes	yes			•	•	•				•			•	•	Well, Pipeline, Transportation	*MANVEL*
BRAZORIA COUNTY MUD 3	Blend		yes			•	•					•		•		•	Well, Transportation	BRAZORIA COUNTY MUD 2
BRAZORIA COUNTY MUD 31	Groundwater	yes	yes			•		•				•			•	•	Well, Pipeline, Transportation	*BRAZORIA COUNTY MUD 55*
BRAZORIA COUNTY MUD 39	Groundwater	yes	yes			•	•	•				•		•		•	Well, Transportation	BRAZORIA COUNTY MUD 25
BRAZORIA COUNTY MUD 55	Groundwater	yes	yes			•						•			•	•	Well, Pipeline, Transportation	*BRAZORIA COUNTY MUD 31*
BRAZORIA COUNTY MUD 6	Groundwater	yes	yes			•	•					•		•		•	Well, Transportation	BRAZORIA COUNTY MUD 2
BROOKSHIRE MWD	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*PATTISON WSC*
BUFFALO	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*FLO COMMUNITY WSC*
BUNKER HILL VILLAGE	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
C C WATER WORKS	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*BAYTOWN*
CAPE ROYALE UD	Groundwater	yes	yes				•	•				•			•	•	Well, Pipeline, Transportation	*SAN JACINTO SUD*
CENTERVILLE	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*SOUTHEAST WSC*
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	Blend			•	•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
CHAMBERS COUNTY MUD 1	Surface Water	yes	yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF BAYTOWN
CHATEAU WOODS MUD	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*THE WOODLANDS*
CHIMNEY HILL MUD	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CAMFIELD MUD
CLEAR BROOK CITY MUD	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
CLEAR LAKE CITY WATER AUTHORITY	Blend				•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
CLEVELAND	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*MERCY WSC*
COUNTY-OTHER, TRINITY	Multiple		yes		•		•			•	•	•				•	Well, Transportation	
CLUTE	Blend				•	•	•	•		•	•	•		•		•	Well, Transportation	BRAZOSPORT WATER AUTHORITY
CONCORD-ROBBINS WSC	Groundwater		yes				•					•		•		•	Well, Transportation	CITY OF MARQUEZ
CONROE	Blend			•	•			•			•	•	•		•	•	Well, Pipeline, Transportation	*THE WOODLANDS*
CONROE RESORT UTILITIES	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*MONTGOMERY COUNTY MUD 18*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
CORINTHIAN POINT MUD 2	Blend		yes									•	•		•	•	Well, Pipeline, Transportation	*POINT AQUARIUS MUD*
COUNTRY TERRACE WATER	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	BAYTOWN AREA WATER AUTHORITY
COUNTY-OTHER, AUSTIN	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	SETTLERS ESTATES SEC II
COUNTY-OTHER, BRAZORIA	Multiple		yes		•	•	•	•		•	•	•		•		•	Well, Transportation	CITY OF GALVESTON
COUNTY-OTHER, CHAMBERS	Multiple		yes		•		•	•	•	•	•	•				•	Well, Transportation	
COUNTY-OTHER, FORT BEND	Multiple		yes		•		•	•		•	•	•		•		•	Well, Transportation	CITY OF RICHMOND
COUNTY-OTHER, GALVESTON	Multiple		yes		•			•		•	•	•		•		•	Well, Transportation	CITY OF GALVESTON
COUNTY-OTHER, HARRIS	Multiple		yes		•			•		•	•	•		•		•	Well, Transportation	BAYTOWN AREA WATER AUTHORITY
COUNTY-OTHER, LEON	Groundwater		yes				•					•		•		•	Well, Transportation	SOUTHEAST WSC SYSTEM 3
COUNTY-OTHER, LIBERTY	Groundwater	yes	yes				•					•		•		•	Well, Transportation	HUNTERS COVE SUB SOUTH
COUNTY-OTHER, MADISON	Groundwater		yes				•					•				•	Well, Transportation	
COUNTY-OTHER, MONTGOMERY	Multiple		yes					•	•			•		•		•	Well, Transportation	CHATEAU WOODS MUD
COUNTY-OTHER, POLK	Multiple		yes		•		•			•	•	•		•		•	Well, Transportation	LAKE LIVINGSTON PINESHADOWS EAST
COUNTY-OTHER, SAN JACINTO	Groundwater	yes	yes				•					•				•	Well, Transportation	
COUNTY-OTHER, WALKER	Groundwater		yes				•					•				•	Well, Transportation	
COUNTY-OTHER, WALLER	Groundwater	yes	yes				•	•				•				•	Well, Transportation	

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
CROSBY MUD	Blend		yes	•	•					•	•	•		•		•	Well, Transportation	SAN JACINTO RIVER AUTHORITY
CUT & SHOOT	Groundwater	yes	yes					•				•		•		•	Well, Transportation	CITY OF CONROE
DAISETTA	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	LIBERTY COUNTY FWSD 1 HULL
DANBURY	Groundwater	yes	yes			•						•				•	Well, Transportation	
DAYTON	Groundwater	yes	yes				•	•				•			•	•	Well, Pipeline, Transportation	*MONT BELVIEU*
DEER PARK	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*PASADENA*
DEVERS	Groundwater	yes	yes				•					•		•		•	Well, Transportation	RAYWOOD WSC
DOBBIN PLANTERSVILLE WSC	Groundwater	yes	yes									•	•	•		•	Well, Transportation	DOBBIN PLANTERSVILLE WSC 1
DODGE OAKHURST WSC	Groundwater	yes	yes				•		•			•			•	•	Well, Pipeline, Transportation	*RIVERSIDE SUD*
DOMESTIC WATER	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*CONROE*
DOUGLAS UTILITY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
EAST MONTGOMERY COUNTY MUD 6	Groundwater	yes	yes									•		•		•	Well, Transportation	EAST MONTGOMERY COUNTY MUD 5
EAST PLANTATION UD	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*CONROE*
EL DORADO UD	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
FAR HILLS UD	Groundwater	yes	yes				•		•			•	•		•	•	Well, Pipeline, Transportation	*CONROE*
FIRST COLONY MUD 9	Groundwater	yes	yes				•					•		•		•	Well, Transportation	CITY OF PEARLAND

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
FLO COMMUNITY WSC	Groundwater		yes				•					•			•	•	Well, Pipeline, Transportation	*SOUTHEAST WSC*
FOREST HILLS MUD	Blend		yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 11
FORT BEND COUNTY FWSD 1	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*PEARLAND*
FORT BEND COUNTY FWSD 2	Groundwater	yes	yes				•					•		•		•	Well, Transportation	KINGSBRIDGE MUD
FORT BEND COUNTY MUD 115	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	CITY OF MISSOURI CITY
FORT BEND COUNTY MUD 116	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	CITY OF SUGAR LAND - GREATWOOD
FORT BEND COUNTY MUD 121	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	CITY OF RICHMOND
FORT BEND COUNTY MUD 128	Blend				•			•		•	•	•		•		•	Well, Transportation	CITY OF SUGAR LAND
FORT BEND COUNTY MUD 129	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	FORT BEND COUNTY MUD 149
FORT BEND COUNTY MUD 131	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*BRAZORIA COUNTY MUD 31*
FORT BEND COUNTY MUD 140	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF RICHMOND
FORT BEND COUNTY MUD 149	Blend		yes		•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*SIENNA PLANTATION*
FORT BEND COUNTY MUD 152	Groundwater	yes	yes				•					•		•		•	Well, Transportation	CITY OF ROSENBERG
FORT BEND COUNTY MUD 155	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	CITY OF ROSENBERG
FORT BEND COUNTY MUD 158	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	CITY OF ROSENBERG

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
FORT BEND COUNTY MUD 162	Groundwater	yes	yes				•	•				•			•	•	Well, Pipeline, Transportation	*ROSENBERG*
FORT BEND COUNTY MUD 23	Groundwater	yes	yes				•	•				•			•	•	Well, Pipeline, Transportation	*FORT BEND COUNTY FWSD 1*
FORT BEND COUNTY MUD 24	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	FORT BEND COUNTY MUD 23
FORT BEND COUNTY MUD 25	Blend						•	•				•			•	•	Well, Pipeline, Transportation	*SUGAR LAND*
FORT BEND COUNTY MUD 26	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	BLUE RIDGE WEST MUD
FORT BEND COUNTY MUD 42	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	FIRST COLONY MUD 9
FORT BEND COUNTY MUD 46	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF MISSOURI CITY
FORT BEND COUNTY MUD 47	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*MISSOURI CITY*
FORT BEND COUNTY MUD 48	Blend		yes		•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*MISSOURI CITY*
FORT BEND COUNTY MUD 49	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	PALMER PLANTATION MUD 1
FORT BEND COUNTY MUD 5	Groundwater	yes	yes				•					•		•		•	Well, Transportation	CITY OF ROSENBERG
FORT BEND COUNTY MUD 81	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*FULSHEAR*
FORT BEND COUNTY WCID 2	Blend				•		•	•		•	•	•		•		•	Well, Transportation	5TH STREET WATER SYSTEM
FORT BEND COUNTY WCID 3	Groundwater	yes	yes				•					•		•		•	Well, Transportation	PECAN GROVE MUD
FREEPORT	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*LAKE JACKSON*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
FRIENDSWOOD	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*LEAGUE CITY*
FULSHEAR	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*NORTH FORT BEND WATER AUTHORITY*
G & W WSC	Groundwater	yes	yes				•					•		•		•	Well, Transportation	G & W WSC
GALENA PARK	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
GALVESTON	Blend				•		•	•	•	•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
GALVESTON COUNTY FWSD 6	Surface Water		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF GALVESTON
GALVESTON COUNTY MUD 12	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF GALVESTON
GALVESTON COUNTY WCID 1	Blend				•		•	•		•	•	•		•		•	Well, Transportation	GULF COAST WATER AUTHORITY
GALVESTON COUNTY WCID 12	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF LEAGUE CITY
GALVESTON COUNTY WCID 8	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF GALVESTON
GLENDALE WSC	Groundwater	yes	yes				•					•		•		•	Well, Transportation	TRINITY RIVER AUTHORITY
GRAND OAKS MUD	Groundwater	yes	yes					•				•		•		•	Well, Transportation	CITY OF MAGNOLIA
GREEN TRAILS MUD	Groundwater	yes	yes					•				•		•		•	Well, Transportation	MASON CREEK UTILITY DISTRICT
GREENWOOD UD	Blend				•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
GROVETON	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	PENNINGTON WSC
HARDIN WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*WEST HARDIN WSC*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
HARRIS COUNTY FWSD 1-A	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	BAYTOWN AREA WATER AUTHORITY
HARRIS COUNTY FWSD 27	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	BAYTOWN AREA WATER AUTHORITY
HARRIS COUNTY FWSD 58	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY MUD 106	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	HARRIS COUNTY MUD 278
HARRIS COUNTY MUD 11	Blend		yes									•		•		•	Well, Transportation	FALLBROOK UTILITY DISTRICT
HARRIS COUNTY MUD 119	Groundwater	yes	yes									•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 122	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 132	Groundwater	yes	yes				•					•		•		•	Well, Transportation	HARRIS COUNTY MUD 109
HARRIS COUNTY MUD 148	Blend		yes	•	•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 151	Groundwater	yes	yes				•					•		•		•	Well, Transportation	HARRIS COUNTY MUD 109
HARRIS COUNTY MUD 152	Groundwater	yes	yes				•					•		•		•	Well, Transportation	HARRIS COUNTY MUD 132
HARRIS COUNTY MUD 153	Groundwater	yes	yes					•				•		•		•	Well, Transportation	HARRIS COUNTY MUD 152
HARRIS COUNTY MUD 154	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 221
HARRIS COUNTY MUD 180	Groundwater	yes	yes				•					•		•		•	Well, Transportation	HARRIS COUNTY MUD 150
HARRIS COUNTY MUD 189	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 200 CRANBROOK
HARRIS COUNTY MUD 216	Groundwater	yes	yes					•				•		•		•	Well, Transportation	LONGHORN TOWN UTILITY DISTRICT
HARRIS COUNTY MUD 221	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 154

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
HARRIS COUNTY MUD 23	Blend		yes		•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY MUD 261	Groundwater	yes	yes									•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 278	Blend			•	•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 290	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	HARRIS COUNTY MUD 106
HARRIS COUNTY MUD 321	Blend		yes	•	•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 342	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 344
HARRIS COUNTY MUD 344	Blend		yes	•	•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY MUD 345	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 216
HARRIS COUNTY MUD 36	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 221
HARRIS COUNTY MUD 361	Groundwater	yes	yes					•				•		•		•	Well, Transportation	HARRIS COUNTY MUD 344
HARRIS COUNTY MUD 372	Blend		yes		•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY MUD 400	Blend			•	•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 412	Blend		yes	•	•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY MUD 420	Blend		yes		•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY MUD 46	Groundwater	yes	yes				•					•		•		•	Well, Transportation	HARRIS COUNTY MUD 106
HARRIS COUNTY MUD 49	Blend			•	•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 494	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 153

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
HARRIS COUNTY MUD 5	Blend		yes	●	●		●			●	●	●		●		●	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 50	Groundwater	yes	yes				●					●			●	●	Well, Pipeline, Transportation	*CROSBY MUD*
HARRIS COUNTY MUD 504	Surface Water	yes	yes	●	●		●			●	●	●		●		●	Well, Transportation	HARRIS COUNTY MUD 412
HARRIS COUNTY MUD 55	Blend				●		●	●		●	●	●			●	●	Well, Pipeline, Transportation	*FRIENDSWOOD*
HARRIS COUNTY MUD 58	Groundwater	yes	yes					●				●		●		●	Well, Transportation	PONDEROSA FOREST UTILITY DISTRICT
HARRIS COUNTY MUD 6	Blend		yes		●			●		●	●	●		●		●	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY MUD 8	Blend		yes		●		●			●	●	●			●	●	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY MUD 96	Blend			●	●		●			●	●	●		●		●	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY UD 14	Groundwater	yes	yes					●				●		●		●	Well, Transportation	HARRIS COUNTY MUD 33
HARRIS COUNTY UD 15	Groundwater	yes	yes									●		●		●	Well, Transportation	HARRIS COUNTY MUD 150
HARRIS COUNTY WCID 1	Blend				●		●			●	●	●		●		●	Well, Transportation	BAYTOWN AREA WATER AUTHORITY
HARRIS COUNTY WCID 133	Groundwater	yes	yes									●		●		●	Well, Transportation	NORTHWEST PARK MUD
HARRIS COUNTY WCID 156	Blend		yes		●		●			●	●	●		●		●	Well, Transportation	CLEAR LAKE CITY WATER AUTHORITY
HARRIS COUNTY WCID 161	Blend		yes		●		●			●	●	●		●		●	Well, Transportation	CLEAR LAKE CITY WATER AUTHORITY
HARRIS COUNTY WCID 50	Blend		yes		●		●			●	●	●		●		●	Well, Transportation	CITY OF PASADENA
HARRIS COUNTY WCID 70	Groundwater	yes	yes									●			●	●	Well, Pipeline, Transportation	*HOUSTON*

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
HARRIS COUNTY WCID 74	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY WCID 89	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HARRIS COUNTY WCID 96	Blend			•	•		•			•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS COUNTY WCID-FONDREN ROAD	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
HARRIS-MONTGOMERY COUNTIES MUD 386	Surface Water	yes	yes	•	•		•				•	•		•		•	Well, Transportation	SJRA (THE WOODLANDS)
HEMPSTEAD	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*G & W WSC*
HIGH PRAIRIE WSC	Groundwater	yes	yes				•					•		•		•	Well, Transportation	CITY OF MADISONVILLE
HILLCREST VILLAGE	Groundwater	yes	yes			•						•		•		•	Well, Transportation	CITY OF ALVIN
HILLTOP LAKES WSC	Groundwater		yes				•					•			•	•	Well, Pipeline, Transportation	*SOUTHEAST WSC*
HILSHIRE VILLAGE	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HITCHCOCK	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	GULF COAST WATER AUTHORITY
HMW SUD	Groundwater	yes	yes									•		•		•	Well, Transportation	CITY OF TOMBALL
HOUSTON	Blend				•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HUMBLE
HUMBLE	Blend			•	•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
HUNTSVILLE	Blend				•		•	•	•	•	•	•		•		•	Well, Transportation	TRINITY RIVER AUTHORITY
JACINTO CITY	Blend				•		•			•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
JAMAICA BEACH	Surface Water	yes	yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF GALVESTON
JERSEY VILLAGE	Blend				•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
JEWETT	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*CONCORD-ROBBINS WSC*
JOHNSTON WATER UTILITY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*QUADVEST*
KATY	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	FORT BEND COUNTY MUD 37
KEENAN WSC	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*DOBBIN PLANTERSVILLE WSC*
KENDLETON	Groundwater	yes	yes				•					•				•	Well, Transportation	
KINGS MANOR MUD	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
KIRKMONT MUD	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
LA MARQUE	Blend				•		•	•		•	•	•		•		•	Well, Transportation	GULF COAST WATER AUTHORITY
LA PORTE	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*PASADENA*
LAKE BONANZA WSC	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*MSEC ENTERPRISES*
LAKE CONROE HILLS MUD	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*POINT AQUARIUS MUD*
LAKE JACKSON	Blend				•	•	•	•		•	•	•		•		•	Well, Transportation	CITY OF CLUTE
LAKE LIVINGSTON WSC	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*SODA WSC*
LAKE MUD	Blend				•		•			•	•	•		•		•	Well, Transportation	BAYTOWN AREA WATER AUTHORITY

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
LAZY RIVER IMPROVEMENT DISTRICT	Blend		yes					•				•			•	•	Well, Pipeline, Transportation	*CONROE*
LEAGUE CITY	Blend				•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
LEGGETT WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*SODA WSC*
LIBERTY	Groundwater	yes	yes				•					•		•		•	Well, Transportation	AMES MINGLEWOOD WSC
WEST HARDIN WSC	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HARDIN WSC*
LIBERTY COUNTY FWSD 1 HULL	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	CITY OF DAISETTA
LIVINGSTON	Surface Water	yes	yes		•		•	•		•	•	•		•		•	Well, Transportation	TRINITY RIVER AUTHORITY
LONGHORN TOWN UD	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 216
LUCE BAYOU PUD	Groundwater	yes	yes									•		•		•	Well, Transportation	FAIRWAY CROSSING
MADISONVILLE	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HIGH PRAIRIE WSC*
MAGNOLIA	Groundwater	yes	yes					•				•		•		•	Well, Transportation	GRAND OAKS MUD
MANVEL	Groundwater	yes	yes			•	•					•			•	•	Well, Pipeline, Transportation	*PEARLAND*
MASON CREEK UD	Groundwater	yes	yes					•				•		•		•	Well, Transportation	GREEN TRAILS MUD
MEADOWCREEK MUD	Groundwater	yes	yes				•					•		•		•	Well, Transportation	FORT BEND COUNTY MUD 26 QUAIL GREEN WEST
MEADOWS PLACE	Blend		yes				•					•		•		•	Well, Transportation	FORT BEND COUNTY WCID 2
MEMORIAL POINT UD	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*LAKE LIVINGSTON WSC*

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
MEMORIAL VILLAGES WATER AUTHORITY	Blend				•			•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
MERCY WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*ONE FIVE O WSC*
MISSOURI CITY	Blend				•		•	•		•	•	•		•		•	Well, Transportation	FORT BEND COUNTY MUD 23
MONT BELVIEU	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*BAYTOWN*
MONTGOMERY	Groundwater	yes	yes				•		•			•	•		•	•	Well, Pipeline, Transportation	*DOBBIN PLANTERSVILLE WSC*
MONTGOMERY COUNTY MUD 105	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*QUADVEST*
MONTGOMERY COUNTY MUD 112	Groundwater	yes	yes					•				•		•		•	Well, Transportation	CITY OF CONROE
MONTGOMERY COUNTY MUD 115	Groundwater	yes	yes					•				•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 99
MONTGOMERY COUNTY MUD 119	Groundwater	yes	yes									•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 94
MONTGOMERY COUNTY MUD 126	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*CONROE*
MONTGOMERY COUNTY MUD 127	Groundwater	yes	yes									•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 115
MONTGOMERY COUNTY MUD 137	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY*
MONTGOMERY COUNTY MUD 139	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*CONROE*
MONTGOMERY COUNTY MUD 15	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*CONROE*
MONTGOMERY COUNTY MUD 18	Groundwater	yes	yes					•				•	•		•	•	Well, Pipeline, Transportation	*T & W WATER SERVICE*

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
MONTGOMERY COUNTY MUD 19	Groundwater	yes	yes					•				•		•		•	Well, Transportation	SOUTHERN MONTGOMERY COUNTY MUD
MONTGOMERY COUNTY MUD 24	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
MONTGOMERY COUNTY MUD 56	Groundwater	yes	yes									•		•		•	Well, Transportation	PORTER SUD
MONTGOMERY COUNTY MUD 8	Groundwater	yes	yes				•	•				•	•	•		•	Well, Transportation	MONTGOMERY COUNTY MUD 9
MONTGOMERY COUNTY MUD 83	Groundwater	yes	yes					•				•		•		•	Well, Transportation	CITY OF HOUSTON
MONTGOMERY COUNTY MUD 84	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 83
MONTGOMERY COUNTY MUD 88	Groundwater	yes	yes									•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 89
MONTGOMERY COUNTY MUD 89	Groundwater	yes	yes					•				•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 88
MONTGOMERY COUNTY MUD 9	Groundwater	yes	yes				•	•				•	•	•		•	Well, Transportation	MONTGOMERY COUNTY MUD 8
MONTGOMERY COUNTY MUD 94	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY WCID 92
MONTGOMERY COUNTY MUD 95	Groundwater	yes	yes				•					•		•		•	Well, Transportation	CITY OF CONROE
MONTGOMERY COUNTY MUD 98	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
MONTGOMERY COUNTY MUD 99	Blend		yes	•	•		•	•			•	•		•		•	Well, Transportation	RAYFORD ROAD MUD
MONTGOMERY COUNTY UD 2	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*POINT AQUARIUS MUD*
MONTGOMERY COUNTY UD 3	Groundwater	yes	yes					•				•	•	•		•	Well, Transportation	MONTGOMERY COUNTY UD 4

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
MONTGOMERY COUNTY UD 4	Groundwater	yes	yes					•				•	•	•		•	Well, Transportation	MONTGOMERY COUNTY UD 3
MONTGOMERY COUNTY WCID 1	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*THE WOODLANDS*
MORGANS POINT	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*LA PORTE*
MOUNT HOUSTON ROAD MUD	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
MSEC ENTERPRISES	Blend			•	•			•			•	•		•		•	Well, Transportation	DOBBIN PLANTERSVILLE WSC 1
NASSAU BAY	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CLEAR LAKE CITY WATER AUTHORITY
NEEDVILLE	Groundwater	yes	yes				•					•				•	Well, Transportation	
NEW CANEY MUD	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*PORTER SUD*
NEW WAVERLY	Groundwater	yes	yes				•					•				•	Well, Transportation	
NEWPORT MUD	Blend			•	•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*CROSBY MUD*
NITSCH AND SON UTILITY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
NORMANGEE	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HIGH PRAIRIE WSC*
NORTH BELT UD	Groundwater	yes	yes					•				•		•		•	Well, Transportation	GREENS PARKWAY MUD
NORTH CHANNEL WATER AUTHORITY	Blend				•			•		•	•	•		•		•	Well, Transportation	HARRIS COUNTY FWSD 47
NORTH FOREST MUD	Groundwater	yes	yes									•		•		•	Well, Transportation	CNP UTILITY DISTRICT
NORTH FORT BEND WATER AUTHORITY	Blend				•		•	•		•	•	•		•		•	Well, Transportation	FORT BEND COUNTY MUD 119

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
NORTH GREEN MUD	Blend		yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	Blend				•		•	•		•	•	•		•		•	Well, Transportation	HARRIS COUNTY MUD 86
NORTH ZULCH MUD	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HIGH PRAIRIE WSC*
NORTHEAST HARRIS COUNTY MUD 1	Groundwater	yes	yes									•		•		•	Well, Transportation	HARRIS COUNTY MUD 421
NORTHWEST HARRIS COUNTY MUD 16	Groundwater	yes	yes									•		•		•	Well, Transportation	BARKER CYPRESS MUD
OAK HOLLOW UTILITY	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*G & W WSC*
OAK RIDGE NORTH	Blend		yes	•	•			•			•	•		•		•	Well, Transportation	SAN JACINTO RIVER AUTHORITY
ONALASKA WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*LAKE LIVINGSTON WSC*
ONE FIVE O WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*MERCY WSC*
OYSTER CREEK	Blend		yes		•	•	•			•	•	•			•	•	Well, Pipeline, Transportation	*FREEPORT*
P B & S C WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*DODGE OAKHURST WSC*
PALMER PLANTATION MUD 1	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	FORT BEND COUNTY MUD 49
PALMER PLANTATION MUD 2	Groundwater	yes	yes				•	•				•		•		•	Well, Transportation	FORT BEND COUNTY MUD 49
PANORAMA VILLAGE	Blend		yes						•			•	•		•	•	Well, Pipeline, Transportation	*CONROE*
PARKWAY MUD	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	CITY OF HOUSTON

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
PASADENA	Blend				●		●	●		●	●	●		●		●	Well, Transportation	CITY OF PASADENA
PATTISON WSC	Groundwater	yes	yes				●					●			●	●	Well, Pipeline, Transportation	*BROOKSHIRE MWD*
PATTON VILLAGE	Groundwater	yes	yes									●			●	●	Well, Pipeline, Transportation	*SPLENDORA*
PEARLAND	Blend				●	●	●	●		●	●	●		●		●	Well, Transportation	BRAZORIA COUNTY MUD 2
PECAN GROVE MUD 1	Blend				●		●	●		●	●	●		●		●	Well, Transportation	FORT BEND COUNTY WCID 3
PHELPS SUD	Groundwater	yes	yes				●					●			●	●	Well, Pipeline, Transportation	*HUNTSVILLE*
PINE VILLAGE PUD	Blend		yes	●	●		●			●	●	●			●	●	Well, Pipeline, Transportation	*HOUSTON*
PINEHURST DECKER PRAIRIE WSC	Groundwater	yes	yes									●			●	●	Well, Pipeline, Transportation	*JOHNSTON WATER UTILITY*
PINEWOOD COMMUNITY	Groundwater	yes	yes									●			●	●	Well, Pipeline, Transportation	*NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY*
PLANTATION MUD	Blend		yes				●					●		●		●	Well, Transportation	CITY OF SUGAR LAND - GREATWOOD
POINT AQUARIUS MUD	Groundwater	yes	yes					●				●	●		●	●	Well, Pipeline, Transportation	*LAKE CONROE HILLS MUD*
PORTER SUD	Groundwater	yes	yes					●				●		●		●	Well, Transportation	MONTGOMERY COUNTY MUD 56
PRAIRIE VIEW	Groundwater	yes	yes				●					●		●		●	Well, Transportation	PRAIRIE VIEW A&M UNIVERSITY
PRAIRIE VIEW A&M UNIVERSITY	Groundwater	yes	yes				●					●		●		●	Well, Transportation	CITY OF PRAIRIE VIEW
PROVIDENCE WSC	Groundwater	yes	yes				●					●			●	●	Well, Pipeline, Transportation	*SODA WSC*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
QUADVEST	Groundwater	yes	yes			•	•	•	•			•		•		•	Well, Transportation	BELLA VISTA
QUAIL VALLEY UD	Blend						•	•				•		•		•	Well, Transportation	FORT BEND COUNTY MUD 42 WAT PLAT
RANCH CREST WATER	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*G & W WSC*
RAYFORD ROAD MUD	Blend			•	•			•			•	•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 115
RAYWOOD WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*LIBERTY*
MOSCOW WSC	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*DAMASCUS-STRYKER WSC*
RICHMOND	Blend				•		•	•		•	•	•		•		•	Well, Transportation	CITY OF ROSENBERG
RICHWOOD	Blend		yes		•	•	•			•	•	•		•		•	Well, Transportation	BRAZOSPORT WATER AUTHORITY
RIVER PLANTATION MUD	Blend		yes									•		•		•	Well, Transportation	EAST PLANTATION UTILITY DISTRICT
RIVERSIDE SUD	Groundwater		yes				•	•				•		•		•	Well, Transportation	TRINITY RIVER AUTHORITY
ROLLING FORK PUD	Blend		yes		•					•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
ROMAN FOREST CONSOLIDATED MUD	Groundwater	yes	yes					•				•		•		•	Well, Transportation	CITY OF WOOD BRANCH VILLAGE
ROSENBERG	Blend				•		•	•		•	•	•		•		•	Well, Transportation	BRAZOSPORT WATER AUTHORITY
ROYAL VALLEY UTILITIES	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*ROSENBERG*
SAGEMEADOW UD	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
SAN JACINTO SUD	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*ONE FIVE O WSC*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
PENNINGTON WSC	Groundwater	yes	yes				•	•				•			•	•	Well, Pipeline, Transportation	*GLENDALE WSC*
SAN LEON MUD	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	BACLIFF MUD
SEABROOK	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*PASADENA*
SEALY	Groundwater	yes	yes				•	•				•			•	•	Well, Pipeline, Transportation	*AUSTIN COUNTY WSC*
SEDONA LAKES MUD 1	Groundwater	yes	yes			•	•					•			•	•	Well, Pipeline, Transportation	*MANVEL*
SEQUOIA IMPROVEMENT DISTRICT	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*HOUSTON*
SHENANDOAH	Groundwater	yes	yes									•		•		•	Well, Transportation	SJRA (THE WOODLANDS)
SHEPHERD	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*LAKE LIVINGSTON WSC*
SHOREACRES	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*PASADENA*
SIENNA PLANTATION	Blend				•		•	•		•	•	•		•		•	Well, Transportation	SIENNA REGIONAL MUD
SODA WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*PROVIDENCE WSC*
SOUTH CLEVELAND WSC	Groundwater	yes	yes				•		•			•		•		•	Well, Transportation	CITY OF CLEVELAND
SOUTH HOUSTON	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
SOUTHEAST WSC	Groundwater	yes	yes				•					•		•		•	Well, Transportation	SOUTHEAST WSC SYSTEM 2
SOUTHERN MONTGOMERY COUNTY MUD	Blend			•	•			•			•	•		•		•	Well, Transportation	CITY OF OAK RIDGE NORTH
SOUTHERN WATER	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
SOUTHSIDE PLACE	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
SOUTHWEST HARRIS COUNTY MUD 1	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	CITY OF HOUSTON
SPLENDORA	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*QUADVEST*
SPRING CREEK UD	Groundwater	yes	yes					•				•		•		•	Well, Transportation	MONTGOMERY COUNTY MUD 89
SPRING MEADOWS MUD	Blend		yes		•		•			•	•	•		•		•	Well, Transportation	BAYTOWN AREA WATER AUTHORITY
SPRING VALLEY	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
STANLEY LAKE MUD	Groundwater	yes	yes						•			•	•		•	•	Well, Pipeline, Transportation	*MONTGOMERY*
SUBURBAN UTILITY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
SUGAR LAND	Blend				•		•	•		•	•	•		•		•	Well, Transportation	FIRST COLONY MUD 9
SUNBELT FWSD	Blend				•		•			•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
SURFSIDE BEACH	Blend		yes		•	•	•			•	•	•			•	•	Well, Pipeline, Transportation	*FREEPORT*
SWEENY	Groundwater	yes	yes			•						•				•	Well, Transportation	
T & W WATER SERVICE	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*PORTER SUD*
TARKINGTON SUD	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*SOUTH CLEVELAND WSC*
TDCJ DARRINGTON UNIT	Groundwater	yes	yes			•						•				•	Well, Transportation	
TDCJ FERGUSON UNIT	Blend		yes		•					•	•	•			•	•	Well, Pipeline, Transportation	*TDCJ EASTHAM UNIT*

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
TDCJ JESTER UNITS	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*NORTH FORT BEND WATER AUTHORITY*
TDCJ RAMSEY AREA	Blend		yes		•	•	•			•	•	•			•	•	Well, Pipeline, Transportation	*QUADVEST*
TEMPE WSC 1	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*LAKE LIVINGSTON WSC*
TEXAS CITY	Blend				•		•	•		•	•	•		•		•	Well, Transportation	GULF COAST WATER AUTHORITY
THE COMMONS WATER SUPPLY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
THE WOODLANDS	Blend			•	•			•			•	•		•		•	Well, Transportation	SJRA (THE WOODLANDS)
THUNDERBIRD UD	Groundwater	yes	yes				•					•		•		•	Well, Transportation	FORT BEND COUNTY MUD 46
TOMBALL	Groundwater	yes	yes					•				•			•	•	Well, Pipeline, Transportation	*NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY*
TRAIL OF THE LAKES MUD	Blend						•					•		•		•	Well, Transportation	HARRIS COUNTY MUD 278
TRINITY	Surface Water	yes	yes		•		•	•		•	•	•		•		•	Well, Transportation	TRINITY RIVER AUTHORITY
TRINITY BAY CONSERVATION DISTRICT	Surface Water				•		•			•	•	•			•	•	Well, Pipeline, Transportation	*ANAHUAC*
TRINITY RURAL WSC	Blend		yes		•		•	•		•	•	•		•		•	Well, Transportation	CITY OF TRINITY
VALLEY RANCH MUD 1	Groundwater	yes	yes					•				•		•		•	Well, Transportation	PORTER SUD
VARNER CREEK UD	Groundwater	yes	yes			•						•			•	•	Well, Pipeline, Transportation	*WEST COLUMBIA*
WALKER COUNTY SUD	Groundwater						•	•				•		•		•	Well, Transportation	WALKER COUNTY SUD D
WALLER	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*PRAIRIE VIEW*

WUG Name	Primary source of supply[1]	Entity relies on single source of supply?	WUG meets criteria for emergency response screening	Measures included in RWP through assumptions or recommendations				Measures that may be available beyond the recommended strategies in the RWP									Implementation requirements for emergency water supply sources	
				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
WALLIS	Groundwater	yes	yes				•					•				•	Well, Transportation	
WATERWOOD MUD 1	Blend		yes		•		•			•	•	•			•	•	Well, Pipeline, Transportation	*P B & S C WSC*
WEBSTER	Blend				•		•	•		•	•	•		•		•	Well, Transportation	BAYBROOK MUD 1
WEST COLUMBIA	Groundwater	yes	yes			•						•			•	•	Well, Pipeline, Transportation	*VARNER CREEK UD*
WEST END WSC	Groundwater	yes	yes				•					•			•	•	Well, Pipeline, Transportation	*FAYETTE WSC*
WEST HARRIS COUNTY MUD 6	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	Blend				•		•	•		•	•	•		•		•	Well, Transportation	HARRIS COUNTY MUD 185
WEST UNIVERSITY PLACE	Blend				•		•	•		•	•	•			•	•	Well, Pipeline, Transportation	*HOUSTON*
WESTFIELD GARDEN PARK	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*HOUSTON*
WESTWOOD NORTH WSC	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*THE WOODLANDS*
WESTWOOD SHORES MUD	Surface Water	yes	yes		•		•			•	•	•		•		•	Well, Transportation	TRINITY RURAL WSC 1
WHITE OAK WSC	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*RAYFORD ROAD MUD*
WILLIS	Groundwater	yes	yes				•					•	•	•		•	Well, Transportation	CITY OF CONROE
WILLOW CREEK FARMS MUD	Groundwater	yes	yes				•	•				•			•	•	Well, Pipeline, Transportation	*KATY*
WINDFERN FOREST UTILITY DISTRICT	Groundwater	yes	yes					•				•		•		•	Well, Transportation	CITY OF HOUSTON

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				No return flows	Maximum permitted amounts	Utilizing MAG peak factor	Management supply factors greater than 1.0	DCP measures	Early implementation of groundwater WMS	Release from upstream reservoir	Curtailment of junior water rights	Local groundwater well	Brackish groundwater development	Existing interconnect	New interconnect	Trucked in water	Type of infrastructure	Entities providing supply[2]
WOOD BRANCH VILLAGE	Groundwater	yes	yes									•		•		•	Well, Transportation	EAST MONTGOMERY COUNTY MUD 5
WOOD TRACE MUD 1	Blend		yes									•			•	•	Well, Pipeline, Transportation	*HMW SUD*
WOODCREEK MUD	Groundwater	yes	yes									•		•		•	Well, Transportation	MEMORIAL HILLS UTILITY DISTRICT
WOODCREEK WATER OF LIBERTY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*MONT BELVIEU*
WOODLAND OAKS UTILITY	Groundwater	yes	yes									•			•	•	Well, Pipeline, Transportation	*QUADVEST*
WOODRIDGE MUD	Groundwater	yes	yes									•		•		•	Well, Transportation	PORTER SUD

1. Named WUGs that use multiple source types (surface water, groundwater, and/or reuse) are indicated as using a blend. County-Other WUGs which include individual entities using more than one source type are indicated as using Multiple sources and may still refer to individual utilities that each use only one source type.

2. Italicized entities represent nearby utilities that could potentially provide supply via a new interconnect, but which are not currently connected.

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APPENDIX 7-D

MODEL DROUGHT CONTINGENCY PLANS

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APPENDIX 7-D1

MODEL DROUGHT CONTINGENCY PLAN FOR WHOLESALE PUBLIC WATER PROVIDERS

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Section I: Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and/or to protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the _____ (*name of your water supplier*) adopts the following Drought Contingency Plan (the Plan).

Section II: Public Involvement

Opportunity for the public and wholesale water customers to provide input into the preparation of the Plan was provided by _____ (*name of your water supplier*) by means of _____ (*describe methods used to inform the public and wholesale customers about the preparation of the plan and opportunities for input; for example, scheduling and proving public notice of a public meeting to accept input on the Plan*).

Section III: Wholesale Water Customer Education

The _____ (*name of your water supplier*) will periodically provide wholesale water customers with information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of _____ (*example: describe methods to be used to provide customers with information about the Plan; for example, providing a copy of the Plan or periodically including information about the Plan with invoices for water sales*).

Section IV: Coordination with Regional Water Planning Groups

The water service area of the _____ (*name of your water supplier*) is located within the _____ (*name of regional water planning area or areas*) and the _____ (*name of your water supplier*) has provided a copy of the Plan to the _____ (*name of your regional water planning group or groups*).

Section V: Authorization

The _____ (*designated official; for example, the general manager or executive director*), or his/her designee, is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The _____ or his/her designee, shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

Section VI: Application

The provisions of this Plan shall apply to all customers utilizing water provided by the _____ (*name of your water supplier*). The terms “person” and “customer” as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Definitions

For the purposes of this Plan, the following definitions shall apply:

- Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.
- Customer: any person, company, or organization using water supplied by _____ (name of your water supplier).
- Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.
- Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

(a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;
(b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
(c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
(d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
(e) flushing gutters or permitting water to run or accumulate in any gutter or street;
(f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or Jacuzzi-type pools;
(g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
(h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
(i) use of water from hydrants for construction purposes or any other purposes other than firefighting.

Section VIII: Criteria for Initiation and Termination of Drought Response Stages

The _____ (*designated official*), or his/her designee, shall monitor water supply and/or demand conditions on a (*example: weekly, monthly*) basis and shall determine when conditions warrant initiation or termination of each stage of the Plan. Customer notification of the initiation or termination of drought response stages will be made by mail or telephone. The news media will also be informed.

The triggering criteria described below are based on:

_____.

(*provide a brief description of the rationale for the triggering criteria; for example, triggering criteria are based on a statistical analysis of the vulnerability of the water source under drought of record conditions or based on known capacity limits).*

Utilization of alternative water sources and/or alternative delivery mechanisms:

Alternative water source(s) for _____ (*name of utility*) is/are: _____.

(Examples: Other well(s), Inter-connection with other system, Temporary use of a non-municipal water supply, Purchased water, Use of reclaimed water for non-potable purposes, etc.).

Stage 1 Triggers -- MILD Water Shortage Conditions

Requirements for initiation – The _____ (*name of your water supplier*) will recognize that a mild water shortage condition exists when _____ (*describe triggering criteria, see examples below).*

> ***Below are examples of the types of triggering criteria that might be used in a wholesale water supplier's drought contingency plan.*** *The wholesale water supplier may devise other triggering criteria and an appropriate number of stages tailored to its system; however, the plan must contain a minimum of three drought stages.* ***One or a combination of such criteria may be defined for each drought response stage:***
>
> > ***Example 1: Water in storage in the _____ (name of reservoir) is equal to or less than _____ (acre-feet and/or percentage of storage capacity).***
> >
> > ***Example 2: When the combined storage in the _____ (name of reservoirs) is equal to or less than _____ (acre-feet and/or percentage of storage capacity).***
> >
> > ***Example 3: Flows as measured by the U.S. Geological Survey gage on the _____ (name of river) near _____, Texas reaches _____ cubic feet per second (cfs).***
> >
> > ***Example 4: When total daily water demand equals or exceeds _____ million gallons for _____ consecutive days or _____ million gallons on a single day.***
> >
> > ***Example 5: When total daily water demand equals or exceeds _____ percent of the safe operating capacity of _____ million gallons per day for _____ consecutive days or _____ percent on a single day.***

Requirements for termination - Stage 1 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 30*) consecutive days. The _____ (*name of water supplier*) will notify its wholesale customers and the media of the termination of Stage 1.

Stage 2 Triggers -- MODERATE Water Shortage Conditions

Requirements for initiation – The _____ (*name of your water supplier*) will recognize that a moderate water shortage condition exists when _____ (*describe triggering criteria*).

Requirements for termination - Stage 2 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 30*) consecutive days. Upon termination of Stage 2, Stage 1, or the applicable drought response stage based on the triggering criteria, becomes operative. The _____ (*name of your water supplier*) will notify its wholesale customers and the media of the termination of Stage 2.

Stage 3 Triggers -- SEVERE Water Shortage Conditions

Requirements for initiation – The _____ (*name of your water supplier*) will recognize that a severe water shortage condition exists when _____ (*describe triggering criteria; see examples in Stage 1*).

Requirements for termination - Stage 3 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 30*) consecutive days. Upon termination of Stage 3, Stage 2, or the applicable drought response stage based on the triggering criteria, becomes operative. The _____ (*name of your water supplier*) will notify its wholesale customers and the media of the termination of Stage 3.

Stage 4 Triggers -- CRITICAL Water Shortage Conditions

Requirements for initiation - The _____ (*name of your water supplier*) will recognize that an emergency water shortage condition exists when _____ (*describe triggering criteria*; *see examples below*).

Example 1. ***Major water line breaks, or pump or system failures occur, which cause unprecedented loss of capability to provide water service; or***

Example 2. ***Natural or man-made contamination of the water supply source(s).***

Requirements for termination - Stage 4 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 30*) consecutive days. The _____ (*name of your water supplier*) will notify its wholesale customers and the media of the termination of Stage 4.

Section IX: Drought Response Stages

The _____ (*designated official*), or his/her designee, shall monitor water supply and/or demand conditions and, in accordance with the triggering criteria set forth in Section VIII, shall determine that mild, moderate, severe, or critical water shortage conditions exist or that an emergency condition exists and shall implement the following actions:

Stage 1 Response -- MILD Water Shortage Conditions

Target: Achieve a voluntary _____ percent reduction in _____ (*example: total water use, daily water demand, etc.*).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (designated official), or his/her designee(s), to manage limited water supplies and/or reduce water demand. Examples include modifying reservoir operations procedures, interconnection with another water system, and use of reclaimed water for nonpotable purposes.

Water Use Restrictions for Reducing Demand:

(a) The _____ (*designated official*), or his/her designee(s), will contact wholesale water customers to discuss water supply and/or demand conditions and will request that wholesale water customers initiate voluntary measures to reduce water use (*example: implement Stage 1 or appropriate stage of the customer's drought contingency plan*).

(b) The _____ (*designated official*), or his/her designee(s), will provide a weekly report to news media with information regarding current water supply and/or demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Stage 2 Response -- MODERATE Water Shortage Conditions

Target: Achieve a _____ percent reduction in _____ (*example: total water use, daily water demand, etc.*).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (designated official), or his/her designee(s), to manage limited water supplies and/or reduce water demand. Examples include modifying reservoir operations procedures, interconnection with another water system, and use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:

(a) The _____ (*designated official*), or his/her designee(s), will request wholesale water customers to initiate mandatory measures to reduce non-essential water use (*example: implement Stage 2 or appropriate stage of the customer's drought contingency plan*).

(b) The _____ (*designated official*), or his/her designee(s), will initiate weekly contact with wholesale water customers to discuss water supply and/or demand conditions and the possibility of pro rata curtailment of water diversions and/or deliveries.

(c) The _____ (*designated official*), or his/her designee(s), will further prepare for the implementation of pro rata curtailment of water diversions and/or deliveries by preparing a monthly water usage allocation baseline for each wholesale customer.

(d) The _____ (*designated official*), or his/her designee(s), will provide a weekly report to news media with information regarding current water supply and/or demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Stage 3 Response -- SEVERE Water Shortage Conditions

Target: Achieve a percent reduction in (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (designated official), or his/her designee(s), to manage limited water supplies and/or reduce water demand. Examples include modifying reservoir operations procedures, interconnection with another water system, and use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:

(a) The _____ (*designated official*), or his/her designee(s), will contact wholesale water customers to discuss water supply and/or demand conditions and will request that wholesale water customers initiate additional mandatory measures to reduce non-essential water use (example: implement Stage 3 or appropriate stage of the customer's drought contingency plan).

(b) The _____ (*designated official*), or his/her designee(s), will initiate pro rata curtailment of water diversions and/or deliveries for each wholesale customer.

(c) The _____ (*designated official*), or his/her designee(s), will provide a weekly report to news media with information regarding current water supply and/or demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Stage 4 Response -- EMERGENCY Water Shortage Conditions

Whenever emergency water shortage conditions exist as defined in Section VIII of the Plan, the _____ (*designated official*) shall:

1. Assess the severity of the problem and identify the actions needed and time required to solve the problem.

2. Inform the utility director or other responsible official of each wholesale water customer by telephone or in person and suggest actions, as appropriate, to alleviate problems (*example: notification of the public to reduce water use until service is restored*).

3. If appropriate, notify city, county, and/or state emergency response officials for assistance.

4. Undertake necessary actions, including repairs and/or clean-up as needed.

5. Prepare a post-event assessment report on the incident and critique of emergency response procedures and actions.

Section X: Pro Rata Curtailment

In the event that the triggering criteria specified in Section VIII of the Plan for Stage 3 – Severe Water Shortage Conditions have been met, the _____ (*designated official*) is hereby authorized to initiate allocation of water supplies on a pro rata basis in accordance with Texas Water Code, §11.039.

Section XI: Contract Provisions

The _____ (*name of your water supplier*) will include a provision in every wholesale water contract entered into or renewed after adoption of the plan, including contract extensions, that in case of a shortage of water resulting from drought, the water to be distributed shall be divided in accordance with Texas Water Code, §11.039.

Section XII: Enforcement

During any period when pro rata allocation of available water supplies is in effect, wholesale customers shall pay the following surcharges on excess water diversions and/or deliveries:

Example of surcharge:

_____ times the normal water charge per acre-foot for water diversions and/or deliveries in excess of the monthly allocation from _____ percent through _____ percent above the monthly allocation.

Mandatory water use restrictions or pro rata allocation of available water supplies may be imposed during drought stages and emergency water management actions. These water use restrictions will be enforced by warnings and penalties as follows:

- On the first violation, customers will be notified by written notice that they have violated the mandatory water use restriction.
- If the first violation has not been corrected after ten (10) days from the written notice, _____ *(name of your water supplier)* may assess a fine up to $_____ per violation.
- _____ *(name of your water supplier)* may install a flow restricting device in the line to limit the amount of water which will pass through the meter in a 24-hour period. The utility may charge the customer for the actual cost of installing and removing the flow restricting device, not to exceed fifty dollars ($50.00);
- _____ *(name of your water supplier)* maintains the right, at any violation or action level, to disconnect irrigation systems and/or suspend water services to a customer for public safety issues with reconnection fees and possible citations.

Subsequent violations of the plan shall result in increased fines or upon the occurrence of _____ violations, after notice, the discontinuation of services. Services discontinued under this provision shall be restored only upon payment of a reconnection fee and any other costs incurred by the utility in discontinuing service.

Section XIII: Variances

The _____ (*designated official*), or his/her designee, may, in writing, grant a temporary variance to the pro rata water allocation policies provided by this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the public health, welfare, or safety and if one or more of the following conditions are met:

(a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.
(b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Plan shall file a petition for variance with the _____ (*designated official*) within 5 days after pro rata allocation has been invoked. All petitions for variances shall be reviewed by the _____ (*governing body*), and shall include the following:

(a) Name and address of the petitioner(s).
(b) Detailed statement with supporting data and information as to how the pro rata allocation of water under the policies and procedures established in the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
(c) Description of the relief requested.
(d) Period of time for which the variance is sought.
(e) Alternative measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
(f) Other pertinent information.

Variances granted by the _____ (*governing body*) shall be subject to the following conditions, unless waived or modified by the _____ (*governing body*) or its designee:

(a) Variances granted shall include a timetable for compliance.
(b) Variances granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

Section XIV: Severability and Amendment

It is hereby declared to be the intention of the _____ (*governing body of your water supplier*) that the sections, paragraphs, sentences, clauses, and phrases of this Plan are severable and, if any phrase, clause, sentence, paragraph, or section of this Plan shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Plan, since the same would not have been enacted by the _____ (*governing body of your water supplier*) without the incorporation into this Plan of any such unconstitutional phrase, clause, sentence, paragraph, or section.

The _____ *(name of your water supplier)* reserves the right to review, change, amend, or alter any provision of this plan at any time. The _____ (*name of your water supplier*) shall review and update this Plan, as appropriate, at least every five years in consideration of new or updated information.

APPENDIX 7-D2

MODEL DROUGHT CONTINGENCY PLAN FOR RETAIL PUBLIC WATER PROVIDERS

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Section I: Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the _____ (*name of your water supplier*) hereby adopts the following regulations and restrictions on the delivery and consumption of water.

Water uses regulated or prohibited under this Drought Contingency Plan (the Plan) are considered to be non-essential and continuation of such uses during times of water shortage or other emergency water supply condition are deemed to constitute a waste of water which subjects the offender(s) to penalties as defined in Section X of this Plan.

Section II: Public Involvement

Opportunity for the public to provide input into the preparation of the Plan was provided by the _____ (*name of your water supplier*) by means of _____ (*describe methods used to inform the public about the preparation of the plan and provide opportunities for input; for example, scheduling and providing public notice of a public meeting to accept input on the Plan*).

Section III: Public Education

The _____ (*name of your water supplier*) will periodically provide the public with information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of _____ (*describe methods to be used to provide information to the public about the Plan; for example, public events, press releases or utility bill inserts*).

Section IV: Coordination with Regional Water Planning Groups

The service area of the _____ (*name of your water supplier*) is located within the _____ (*name of regional water planning area or areas*) and _____ (*name of your water supplier*) has provided a copy of this Plan to the _____ (*name of your regional water planning group or groups*).

Section V: Authorization

The _____ (*designated official; for example, the mayor, city manager, utility director, general manager, etc.*), or his/her designee is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The _____ (*designated official*) or his/her designee shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

Section VI: Application

The provisions of this Plan shall apply to all persons, customers, and property utilizing water provided by the _____ (*name of your water supplier*). The terms “person” and “customer” as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Definitions

For the purposes of this Plan, the following definitions shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Commercial and institutional water use: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer: any person, company, or organization using water supplied by _____ (*name of your water supplier*).

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Even number address: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, and rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

(a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;
(b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
(c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
(d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
(e) flushing gutters or permitting water to run or accumulate in any gutter or street;
(f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or Jacuzzi-type pools;
(g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;

(h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
(i) use of water from hydrants for construction purposes or any other purposes other than firefighting.

Odd numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.

Section VIII: Criteria for Initiation and Termination of Drought Response Stages

The _____ (*designated official*) or his/her designee shall monitor water supply and/or demand conditions on a _____ (*example: daily, weekly, monthly*) basis and shall determine when conditions warrant initiation or termination of each stage of the Plan, that is, when the specified "triggers" are reached.

The triggering criteria described below are based on:

_____.

(*Provide a brief description of the rationale for the triggering criteria; for example, triggering criteria / trigger levels based on a statistical analysis of the vulnerability of the water source under drought of record conditions, or based on known system capacity limits*).

Utilization of alternative water sources and/or alternative delivery mechanisms:

Alternative water source(s) for _____ (*name of utility*) is/are: _____.
(Examples: Other well(s), Inter-connection with other system, Temporary use of a non-municipal water supply, Purchased water, Use of reclaimed water for non-potable purposes, etc.).

Stage 1 Triggers -- MILD Water Shortage Conditions

Requirements for initiation

Customers shall be requested to voluntarily conserve water and adhere to the prescribed restrictions on certain water uses, defined in Section VII Definitions, when _____.

(*Describe triggering criteria / trigger levels; see examples below*).

Following are examples of the types of triggering criteria that might be used in one or more successive stages of a drought contingency plan. The public water supplier may devise other triggering criteria and an appropriate number of stages tailored to its system. One or a combination of the criteria selected by the public water supplier must be defined for each drought response stage, but usually not all will apply.

Example 1: Annually, beginning on May 1 through September 3

Example 2: When the water supply available to the _____ (name of your water supplier) is equal to or less than _____ (acre-feet, percentage of storage, etc.).

Example 3: *When, pursuant to requirements specified in the _____ (name of your water supplier) wholesale water purchase contract with _____ (name of your wholesale water supplier), notification is received requesting initiation of Stage 1 of the Drought Contingency Plan.*

Example 4: *When flows in the _____ (name of stream or river) are equal to or less than _____ cubic feet per second.*

Example 5: *When the static water level in the _____ (name of your water supplier) well(s) is equal to or less than _____ feet above/below mean sea level.*

Example 6: *When the specific capacity of the _____ (name of your water supplier) well(s) is equal to or less than _____ percent of the well's original specific capacity.*

Example 7: *When total daily water demand equals or exceeds _____ million gallons for _____ consecutive days of _____ million gallons on a single day (example: based on the safe operating capacity of water supply facilities).*

Example 8: *Continually falling treated water reservoir levels which do not refill above _____ percent overnight (example: based on an evaluation of minimum treated water storage required to avoid system outage).*

Requirements for termination
Stage 1 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 3*) consecutive days.

Stage 2 Triggers – MODERATE Water Shortage Conditions

Requirements for initiation
Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses provided in Section IX of this Plan when _____ (*describe triggering criteria; see examples in Stage 1*).

Requirements for termination
Stage 2 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 3*) consecutive days. Upon termination of Stage 2, Stage 1, or the applicable drought response stage based on the triggering criteria, becomes operative.

Stage 3 Triggers – SEVERE Water Shortage Conditions

Requirements for initiation
Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 3 of this Plan when _____ (*describe triggering criteria; see examples in Stage 1*).

Requirements for termination
Stage 3 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 3*) consecutive days. Upon termination of Stage 3, Stage 2, or the applicable drought response stage based on the triggering criteria, becomes operative.

Stage 4 Triggers – CRITICAL Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 4 of this Plan when _____ (*describe triggering criteria; see examples in Stage 1*).

Requirements for termination
Stage 4 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 3*) consecutive days. Upon termination of Stage 4, Stage 3, or the applicable drought response stage based on the triggering criteria, becomes operative.

Stage 5 Triggers – EMERGENCY Water Shortage Conditions

Requirements for initiation
Customers shall be required to comply with the requirements and restrictions for Stage 5 of this Plan when _____ (*designated official*), or his/her designee, determines that a water supply emergency exists based on:

1. Major water line breaks, or pump or system failures occur, which cause unprecedented loss of capability to provide water service; or

2. Natural or man-made contamination of the water supply source(s).

Requirements for termination
Stage 5 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 3*) consecutive days.

Stage 6 Triggers – WATER ALLOCATION

Requirements for initiation
Customers shall be required to comply with the water allocation plan prescribed in Section IX of this Plan and comply with the requirements and restrictions for Stage 5 of this Plan when _____ (*describe triggering criteria, see examples in Stage 1*).

Requirements for termination - Water allocation may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of _____ (*example: 3*) consecutive days.

Note: The inclusion of WATER ALLOCATION as part of a drought contingency plan may not be required in all cases. For example, for a given water supplier, an analysis of water supply availability under drought of record conditions may indicate that there is essentially no risk of water supply shortage. Hence, a drought contingency plan for such a water supplier might only address facility capacity limitations and emergency conditions (example: supply source contamination and system capacity limitations).

Section IX: Drought Response Stages

The _____ (*designated official*), or his/her designee, shall monitor water supply and/or demand conditions on a daily basis and, in accordance with the triggering criteria set forth in Section VIII of this Plan, shall determine that a mild, moderate, severe, critical, emergency or water shortage condition exists and shall implement the following notification procedures:

Notification of the Public:
The _____ (*designated official*) or his/ her designee shall notify the public by means of:

Examples:
publication in a newspaper of general circulation,
direct mail to each customer,
public service announcements,
signs posted in public places
take-home fliers at schools.

Additional Notification:
The _____ (*designated official*) or his/ her designee shall notify directly, or cause to be notified directly, the following individuals and entities:

Examples:
Mayor / Chairman and members of the City Council / Utility Board
Fire Chief(s)
City and/or County Emergency Management Coordinator(s)
County Judge & Commissioner(s)
State Disaster District / Department of Public Safety
TCEQ *(required when* mandatory *restrictions are imposed)*
Major water users
Critical water users, i.e. hospitals
Parks / street superintendents & public facilities managers

Note: The plan should specify direct notice only as appropriate to respective drought stages.

Stage 1 Response – MILD Water Shortage Conditions

Target: Achieve a voluntary _____ percent reduction in _____ (*example: total water use, daily water demand, etc.*).

Best Management Practices for Supply Management:

D*escribe additional measures, if any, to be implemented directly by (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: system water loss control, activation and use of an alternative supply source(s); use of reclaimed water for non-potable purposes.*

Voluntary Water Use Restrictions for Reducing Demand:

(a) Water customers are requested to voluntarily limit the irrigation of landscaped areas to Sundays and Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8), and Saturdays and Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9), and to irrigate landscapes only between the hours of midnight and 10:00 a.m. and 8:00 p.m. to midnight on designated watering days.

(b) All operations of the _____ (*name of your water supplier*) shall adhere to water use restrictions prescribed for Stage 1 of the Plan.

(c) Water customers are requested to practice water conservation and to minimize or discontinue water use for non-essential purposes.

Stage 2 Response – MODERATE Water Shortage Conditions

Target: Achieve a percent reduction in (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: system water loss control, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Demand Reduction:
Under threat of penalty for violation, the following water use restrictions shall apply to all persons:

(a) Irrigation of landscaped areas with hose-end sprinklers or automatic irrigation systems shall be limited to Sundays and Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8), and Saturdays and Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9), and irrigation of landscaped areas is further limited to the hours of 12:00 midnight until 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on designated watering days. However, irrigation of landscaped areas is permitted at any time if it is by means of a hand-held hose, a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system.

(b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rises. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station. Further, such washing may be exempted from these regulations if the health, safety,

and welfare of the public is contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.

(c) Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight.

(d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.

(e) Use of water from hydrants shall be limited to firefighting, related activities, or other activities necessary to maintain public health, safety, and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the _____ (*name of your water supplier*).

(f) Use of water for the irrigation of golf course greens, tees, and fairways is prohibited except on designated watering days between the hours 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight. However, if the golf course utilizes a water source other than that provided by the _____ (*name of your water supplier*), the facility shall not be subject to these regulations.

(g) All restaurants are prohibited from serving water to patrons except upon request of the patron.

(h) The following uses of water are defined as non-essential and are prohibited:

1. wash down of any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
2. use of water to wash down buildings or structures for purposes other than immediate fire protection;
3. use of water for dust control;
4. flushing gutters or permitting water to run or accumulate in any gutter or street; and
5. failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

Stage 3 Response – SEVERE Water Shortage Conditions

Target: Achieve a percent reduction in (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: system water loss control, reduced or discontinued irrigation of public landscaped

areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Demand Reduction:
All requirements of Stage 2 shall remain in effect during Stage 3 except:

(a) Irrigation of landscaped areas shall be limited to designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight and shall be by means of hand-held hoses, hand-held buckets, drip irrigation, or permanently installed automatic sprinkler system only. The use of hose-end sprinklers is prohibited at all times.

(b) The watering of golf course tees is prohibited unless the golf course utilizes a water source other than that provided by the _____ (*name of your water supplier*).

(c) The use of water for construction purposes from designated fire hydrants under special permit is to be discontinued.

Stage 4 Response – CRITICAL Water Shortage Conditions

Target: Achieve a percent reduction in (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: system water loss control, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:
All requirements of Stage 2 and 3 shall remain in effect during Stage 4 except:

(a) Irrigation of landscaped areas shall be limited to designated watering days between the hours of 6:00 a.m. and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight and shall be by means of hand-held hoses, hand-held buckets, or drip irrigation only. The use of hose-end sprinklers or permanently installed automatic sprinkler systems are prohibited at all times.

(b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle not occurring on the premises of a commercial car wash and commercial service stations and not in the immediate interest of public health, safety, and welfare is prohibited. Further, such vehicle washing at commercial car washes and commercial service stations shall occur only between the hours of 6:00 a.m. and 10:00 a.m. and between 6:00 p.m. and 10 p.m.

(c) The filling, refilling, or adding of water to swimming pools, wading pools, and Jacuzzi-type pools is prohibited.

(d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.

(e) No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage or a higher-numbered stage shall be in effect.

Stage 5 Response – EMERGENCY Water Shortage Conditions

Target: Achieve a percent reduction in (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: system water loss control, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:
All requirements of Stage 2, 3, and 4 shall remain in effect during Stage 5 except:

(a) Irrigation of landscaped areas is absolutely prohibited.

(b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is absolutely prohibited.

Stage 6 Response – WATER ALLOCATION

In the event that water shortage conditions threaten public health, safety, and welfare, the _____ (*designated official*) is hereby authorized to allocate water according to the following water allocation plan:

Single-Family Residential Customers

The allocation to residential water customers residing in a single-family dwelling shall be as follows:

Persons per Household	Gallons per Month
1 or 2	6,000
3 or 4	7,000
5 or 6	8,000
7 or 8	9,000
9 or 10	10,000
11 or more	12,000

"Household" means the residential premises served by the customer's meter. "Persons per household" include only those persons currently physically residing at the premises and expected to reside there for the entire billing period. It shall be assumed that a particular customer's household is comprised of two (2) persons unless the customer notifies the _____ (*name of your water supplier*) of a greater number of persons per household on a form prescribed by the _____ (*designated official*). The _____ (*designated official*) shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every residential customer. If, however, a customer does not receive such a form, it shall be the customer's responsibility to go to the _____ (*name of your water supplier*) offices to complete and sign the form claiming more than two (2) persons per household. New customers may claim more persons per household at the time of applying for water service on the form prescribed by the _____ (*designated official*). When the number of persons per household increases so as to place the customer in a different allocation category, the customer may notify the _____ (*name of water supplier*) on such form and the change will be implemented in the next practicable billing period. If the number of persons in a household is reduced, the customer shall notify the _____ (*name of your water supplier*) in writing within two (2) days. In prescribing the method for claiming more than two (2) persons per household, the _____ (*designated official*) shall adopt methods to ensure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of persons in a household or fails to timely notify the _____ (*name of your water supplier*) of a reduction in the number of person in a household shall be fined not less than $_____.

Residential water customers shall pay the following surcharges:

$_____ for the first 1,000 gallons over allocation.
$_____ for the second 1,000 gallons over allocation.
$_____ for the third 1,000 gallons over allocation.
$_____ for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Master-Metered Multi-Family Residential Customers

The allocation to a customer billed from a master meter which jointly measures water to multiple permanent residential dwelling units (example: apartments, mobile homes) shall be allocated 6,000 gallons per month for each dwelling unit. It shall be assumed that such a customer's meter serves two dwelling units unless the customer notifies the _____ (*name of your water supplier*) of a greater number on a form prescribed by the _____ (*designated official*). The _____ (*designated official*) shall give his/her best effort to see that such forms

are mailed, otherwise provided, or made available to every such customer. If, however, a customer does not receive such a form, it shall be the customer's responsibility to go to the _____ (*name of your water supplier*) offices to complete and sign the form claiming more than two (2) dwellings. A dwelling unit may be claimed under this provision whether it is occupied or not. New customers may claim more dwelling units at the time of applying for water service on the form prescribed by the _____ (*designated official*). If the number of dwelling units served by a master meter is reduced, the customer shall notify the _____ (*name of your water supplier*) in writing within two (2) days. In prescribing the method for claiming more than two (2) dwelling units, the _____ (*designated official*) shall adopt methods to ensure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of dwelling units served by a master meter or fails to timely notify the _____ (*name of your water supplier*) of a reduction in the number of person in a household shall be fined not less than $_____. Customers billed from a master meter under this provision shall pay the following monthly surcharges:

$_____ for 1,000 gallons over allocation up through 1,000 gallons for each dwelling unit.
$_____, thereafter, for each additional 1,000 gallons over allocation up through a second 1,000 gallons for each dwelling unit.
$_____, thereafter, for each additional 1,000 gallons over allocation up through a third 1,000 gallons for each dwelling unit.
$_____, thereafter for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Commercial Customers

A monthly water allocation shall be established by the _____ (*designated official*), or his/her designee, for each nonresidential commercial customer other than an industrial customer who uses water for processing purposes. The non-residential customer's allocation shall be approximately _____ (*example: 75%*) percent of the customer's usage for corresponding month's billing period for the previous 12 months. If the customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists. Provided, however, a customer, _____ percent of whose monthly usage is less than _____ gallons, shall be allocated _____ gallons. The _____ (*designated official*) shall give his/her best effort to see that notice of each non-residential customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the _____ (*name of your water supplier*) to determine the allocation. Upon request of the customer or at the initiative of the _____ (*designated official*), the allocation may be reduced or increased if, (1) the designated period does not accurately reflect the customer's normal water usage, (2) one nonresidential customer agrees to transfer part of its allocation to another nonresidential customer, or (3) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the _____ (*designated official or alternatively, a special water allocation review committee*). Nonresidential commercial customers shall pay the following surcharges:

Customers whose allocation is _____ gallons through _____ gallons per month:

$_____ per thousand gallons for the first 1,000 gallons over allocation.
$_____ per thousand gallons for the second 1,000 gallons over allocation.
$_____ per thousand gallons for the third 1,000 gallons over allocation.
$_____ per thousand gallons for each additional 1,000 gallons over allocation.

Customers whose allocation is _____ gallons per month or more:

_____ times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.
_____ times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.
_____ times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.
_____ times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, "block rate" means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer's allocation.

Industrial Customers

A monthly water allocation shall be established by the _____ (*designated official*), or his/her designee, for each industrial customer, which uses water for processing purposes. The industrial customer's allocation shall be approximately _____ (*example: 90%*) percent of the customer's water usage baseline. Ninety (90) days after the initial imposition of the allocation for industrial customers, the industrial customer's allocation shall be further reduced to _____ (*example: 85%*) percent of the customer's water usage baseline. The industrial customer's water use baseline will be computed on the average water use for the _____ month period ending prior to the date of implementation of Stage 2 of the Plan. If the industrial water customer's billing history is shorter than _____ months, the monthly average for the period for which there is a record shall be used for any monthly period for which no billing history exists. The _____ (*designated official*) shall give his/her best effort to see that notice of each industrial customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the _____ (*name of your water supplier*) to determine the allocation, and the allocation shall be fully effective notwithstanding the lack of receipt of written notice. Upon request of the customer or at the initiative of the _____ (*designated official*), the allocation may be reduced or increased, (1) if the designated period does not accurately reflect the customer's normal water use because the customer had shut down a major processing unit for repair or overhaul during the period, (2) the customer has added or is in the process of adding significant additional processing capacity, (3) the customer has shut down or significantly reduced the production of a major processing unit, (4) the customer has previously implemented significant permanent water conservation measures such that the ability to further reduce water use is limited, (5) the customer agrees to transfer part of its allocation to another industrial customer, or (6) if other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the _____

(*designated official or alternatively, a special water allocation review committee*). Industrial customers shall pay the following surcharges:

Customers whose allocation is _____ gallons through _____ gallons per month:

$_____ per thousand gallons for the first 1,000 gallons over allocation.
$_____ per thousand gallons for the second 1,000 gallons over allocation.
$_____ per thousand gallons for the third 1,000 gallons over allocation.
$_____ per thousand gallons for each additional 1,000 gallons over allocation.

Customers whose allocation is _____ gallons per month or more:

_____ times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.
_____ times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.
_____ times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.
_____ times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, "block rate" means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer's allocation.

Section X: Enforcement

(a) No person shall knowingly or intentionally allow the use of water from the _____ (*name of your water supplier*) for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time pursuant to action taken by _____ (*designated official*), or his/her designee, in accordance with provisions of this Plan.

(b) Any person who violates this Plan is guilty of a misdemeanor and, upon conviction shall be punished by a fine of not less than _____ dollars ($_____) and not more than _____ dollars ($_____). Each day that one or more of the provisions in this Plan is violated shall constitute a separate offense. If a person is convicted of three or more distinct violations of this Plan, the _____ (*designated official*) shall, upon due notice to the customer, be authorized to discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a re-connection charge, hereby established at $ _____, and any other costs incurred by the _____ (*name of your water supplier*) in discontinuing service. In addition, suitable assurance must be given to the _____ (*designated official*) that the same action shall not be repeated while the Plan is in effect. Compliance with this plan may also be sought through injunctive relief in the district court.

(c) Any person, including a person classified as a water customer of the _____ (*name of your water supplier*), in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person's

property shall constitute a rebuttable presumption that the person in apparent control of the property committed the violation, but any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children and proof that a violation, committed by a child, occurred on property within the parents' control shall constitute a rebuttable presumption that the parent committed the violation, but any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation of this Plan and that the parent could not have reasonably known of the violation.

(d) Any employee of the _____ (*name of your water supplier*), police officer, or other _____ employee designated by the _____ (*designated official*), may issue a citation to a person he/she reasonably believes to be in violation of this Ordinance. The citation shall be prepared in duplicate and shall contain the name and address of the alleged violator, if known, the offense charged, and shall direct him/her to appear in the _____ (*example: municipal court*) on the date shown on the citation for which the date shall not be less than 3 days nor more than 5 days from the date the citation was issued. The alleged violator shall be served a copy of the citation. Service of the citation shall be complete upon delivery of the citation to the alleged violator, to an agent or employee of a violator, or to a person over 14 years of age who is a member of the violator's immediate family or is a resident of the violator's residence. The alleged violator shall appear in _____ (*example: municipal court*) to enter a plea of guilty or not guilty for the violation of this Plan. If the alleged violator fails to appear in _____ (*example: municipal court*), a warrant for his/her arrest may be issued. A summons to appear may be issued in lieu of an arrest warrant. These cases shall be expedited and given preferential setting in _____ (*example: municipal court*) before all other cases.

Section XI: Variances

The _____ (*designated official*), or his/her designee, may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance and if one or more of the following conditions are met:

(a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.
(b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Ordinance shall file a petition for variance with the _____ (*name of your water supplier*) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the _____ (*designated official*), or his/her designee, and shall include the following:

(a) Name and address of the petitioner(s).
(b) Purpose of water use.
(c) Specific provision(s) of the Plan from which the petitioner is requesting relief.

(d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
(e) Description of the relief requested.
(f) Period of time for which the variance is sought.
(g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
(h) Other pertinent information.

Section XII: Severability and Amendment

It is hereby declared to be the intention of the _____ *(governing body of your water supplier)* that the sections, paragraphs, sentences, clauses, and phrases of this Plan are severable and, if any phrase, clause, sentence, paragraph, or section of this Plan shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Plan, since the same would not have been enacted by the _____ *(governing body of your water supplier)* without the incorporation into this Plan of any such unconstitutional phrase, clause, sentence, paragraph, or section.

The _____ *(name of your water supplier)* reserves the right to review, change, amend, or alter any provision of this plan at any time. The _____ *(name of your water supplier)* shall review and update this Plan, as appropriate, at least every five years in consideration of new or updated information.

APPENDIX 7-D3

MODEL DROUGHT CONTINGENCY PLAN FOR IRRIGATION DISTRICTS

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Section I: Declaration of Policy, Purpose, and Intent

The Board of Directors of the (*name of irrigation district*) deems it to be in the interest of the District to adopt Rules and Regulations governing the equitable and efficient allocation of limited water supplies during times of shortage. These Rules and Regulations constitute the District's drought contingency plan required under Section 11.1272, Texas Water Code, *Vernon's Texas Codes Annotated*, and associated administrative rules of the Texas Commission on Environmental Quality (Title 30, Texas Administrative Code, Chapter 288).

Section II: User Involvement

Opportunity for users of water from the (*name of irrigation district*) was provided by means of (*describe methods used to inform water users about the preparation of the plan and opportunities for input; for example, scheduling and providing notice of a public meeting to accept user input on the plan*).

Section III: User Education

The (*name of irrigation district*) will periodically provide water users with information about the Plan, including information about the conditions under which water allocation is to be initiated or terminated and the district's policies and procedures for water allocation. This information will be provided by means of (*example: describe methods to be used to provide water users with information about the Plan; for example, by providing copies of the Plan and by posting water allocation rules and regulations on the district's public bulletin board*).

Section IV: Coordination with Regional Water Planning Groups

The service area of the _____ (*name of your water supplier*) is located within the _____ (*name of regional water planning area or areas*) and _____ (*name of your water supplier*) has provided a copy of this Plan to the _____ (*name of your regional water planning group or groups*).

Section V: Authorization

The _____ (*example: general manager*) is hereby authorized and directed to implement the applicable provision of the Plan upon determination by the Board that such implementation is necessary to ensure the equitable and efficient allocation of limited water supplies during times of shortage.

Section VI: Application

The provisions of the Plan shall apply to all persons utilizing water provided by the _____ (*name of irrigation district*). The term "person" as used in the Plan includes individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Initiation of Water Allocation

The _____ (*designated official*) shall monitor water supply conditions on a _____ (*example: weekly, monthly*) basis and shall make recommendations to the Board regarding irrigation water allocation. Upon approval of the Board, water allocation will become effective when _____ (*describe the criteria and the basis for the criteria*):

Below are examples of the types of triggering criteria that might be used; singly or in combination, in an irrigation district's drought contingency plan:

Example 1: *Water in storage in the _____ (name of reservoir) is equal to or less than _____ (acre-feet and/or percentage of storage capacity).*

Example 2: *Combined storage in the _____ (name or reservoirs) reservoir system is equal to or less than _____ (acre-feet and/or percentage of storage capacity).*

Example 3: *Flows as measured by the U.S. Geological Survey gage on the _____ (name of reservoir) near _____, Texas reaches _____ cubic feet per second (cfs).*

Example 4: *The storage balance in the district's irrigation water rights account reaches _____ acre-feet.*

Example 5: *The storage balance in the district's irrigation water rights account reaches an amount equivalent to _____ (number) irrigations for each flat rate acre in which all flat rate assessments are paid and current.*

Example 6: *The _____ (name of entity supplying water to the irrigation district) notifies the district that water deliveries will be limited to _____ acre-feet per year (i.e. a level below that required for unrestricted irrigation).*

Section VIII: Termination of Water Allocation

The district's water allocation policies will remain in effect until the conditions defined in Section VII of the Plan no longer exist and the Board deems that the need to allocate water no longer exists.

Section IX: Notice

Notice of the initiation of water allocation will be given by notice posted on the District's public bulletin board and by mail to each (example: landowner, holders of active irrigation accounts, etc.).

Section X: Water Allocation

(a) In identifying **specific, quantified targets** for water allocation to be achieved during periods of water shortages and drought, each irrigation user shall be allocated _____ irrigations or _____ acre-feet of water each flat rate acre on which all taxes, fees, and charges have been paid. The water allotment in each irrigation account will be expressed in acre-feet of water.

Include explanation of water allocation procedure. For example, in the Lower Rio Grande Valley, an "irrigation" is typically considered to be equivalent to eight (8) inches of water per irrigation acre; consisting of six (6) inches of water per acre applied plus two (2) inches of water lost in transporting the water from the river to the land. Thus, three irrigations would be equal to 24 inches of water per acre or an allocation of 2.0 acre-feet of water measured at the diversion from the river.

(b) As additional water supplies become available to the District in an amount reasonably sufficient for allocation to the District's irrigation users, the additional water made available to the District will be equally distributed, on a pro rata basis, to those irrigation users having _____.

Example 1: An account balance of less than _____ irrigations for each flat rate acre (i.e. _____ acre-feet).

Example 2: An account balance of less than _____ acre-feet of water for each flat rate acre.

Example 3: An account balance of less than _____ acre-feet of water.

(c) The amount of water charged against a user's water allocation will be _____ (*example: eight inches*) per irrigation, or one allocation unit, unless water deliveries to the land are metered. Metered water deliveries will be charges based on actual measured use. In order to maintain parity in charging use against a water allocation between non-metered and metered deliveries, a loss factor of _____ percent of the water delivered in a metered situation will be added to the measured use and will be charged against the user's water allocation. Any metered use, with the loss factor applied, that is less than eight (8) inches per acre shall be credited back to the allocation unit and will be available to the user. It shall be a violation of the Rules and Regulations for a water user to use water in excess of the amount of water contained in the user's irrigation account.

(d) Acreage in an irrigation account that has not been irrigated for any reason within the last two (2) consecutive years will be considered inactive and will not be allocated water. Any landowner whose land has not been irrigated within the last two (2) consecutive years, may, upon application to the District expressing intent to irrigate the land, receive future allocations. However, irrigation water allocated shall be applied only upon the acreage to which it was allocated, and such water allotment cannot be transferred until there have been two consecutive years of use.

Section XI: Transfers of Allotments

(a) A water allocation in an active irrigation account may be transferred within the boundaries of the District from one irrigation account to another. The transfer of water can only be made by the landowner's agent who is authorized in writing to act on behalf of the landowner in the transfer of all or part of the water allocation from the described land of the landowner covered by the irrigation account.

(b) A water allocation may not be transferred to land owned by a landowner outside the District boundaries.

or

A water allocation may be transferred to land outside the District's boundaries by paying the current water charge as if the water was actually delivered by the District to the land covered by an irrigation account. The amount of water allowed to be transferred shall be stated in terms of acre-feet and deducted from the landowner's current allocation balance in the irrigation account. Transfers of water outside the District shall not affect the allocation of water under Section X of these Rules and Regulations.

(c) Water from outside the District may not be transferred by a landowner for use within the District.

or

Water from outside the District may be transferred by a landowner for use within the District. The District will divert and deliver the water on the same basis as District water is delivered, except that a _____ percent conveyance loss will be charged against the amount of water transferred for use in the District as the water is delivered.

Section XII: Penalties

Any person who willfully opens, closes, changes or interferes with any headgate or uses water in violation of these Rules and Regulations, shall be considered in violation of Section 11.0083, Texas Water Code, *Vernon's Texas Codes Annotated*, which provides for punishment by fine of not less than $10.00 nor more than $200.00 or by confinement in the county jail for not more than thirty (30) days, or both, for each violation, and these penalties provided by the laws of the State and may by enforced by complaints filed in the appropriate court jurisdiction in _____ County, all in accordance with Section 11.083; and in addition, the District may pursue a civil remedy in the way of damages and/or injunction against the violation of any of the foregoing Rules and Regulations.

Section XIII: Severability and Amendment

It is hereby declared to be the intention of the Board of Directors of the _____ (*name of irrigation district*) that the sections, paragraphs, sentences, clauses, and phrases of this Plan shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Plan, since the same would not have been enacted by the Board without the incorporation into this Plan of any such unconstitutional phrase, clause, sentence, paragraph, or section.

The _____ *(name of irrigation district)* reserves the right to review, change, amend, or alter any provision of this plan at any time. The _____ *(name of irrigation district)* shall review and update this Plan, as appropriate, at least every five years in consideration of new or updated information.

Section XIV: Authority

The foregoing rules and regulations are adopted pursuant to and in accordance with Sections 11.039, 11.083, 11.1272; Section 49.004; and Section 58.127-130 of the Texas Water Code, *Vernon's Texas Codes Annotated.*

Section XV: Effective Date of Plan

The effective date of this Rule shall be five (5) days following the date of Publication hereof and ignorance of the Rules and Regulations is not a defense for a prosecution for enforcement of the violation of the Rules and Regulations.

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APPENDIX 7-D4

MODEL DROUGHT CONTINGENCY PLAN FOR INDUSTRIAL WATER USERS

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Section I: Declaration of Policy, Purpose, and Intent

This Drought Contingency Plan (the "Plan") sets forth guidelines for the implementation of temporary water conservation measures by *(name of water user)* during times of reduced supply or emergency conditions. *Optional: Pursuant to (contract section),* (*name of water user*) *has developed a Drought Contingency Plan to set forth temporary water conservation measures that are consistent with the (name of wholesale provider) drought contingency plan and (contract).*

Section II: Coordination with Regional Water Planning Groups

The (*name of water user)* facility subject to this Plan is located within the _____ (*name of regional water planning area or areas*) and _____ (*name of water user*) has provided a copy of this Plan to the _____ (*name of your regional water planning group or groups*).

Section III: Initiation of Drought Response Measures

The _____ (*designated official*) shall monitor water supply conditions on a _____ (*example: weekly, monthly*) basis. Temporary water conservation measures will be implemented when _____ (*describe the criteria and the basis for the criteria*). *Optional: Industrial entity may choose to develop multiple drought stages and establish different levels of triggering criteria and water-saving response measures, accordingly.*

Below are examples of the types of triggering criteria that might be used; singly or in combination, in a water user's drought contingency plan:

Example 1: *Water in storage in the _____ (name of reservoir) is equal to or less than _____ (acre-feet and/or percentage of storage capacity).*

Example 2: *Combined storage in the _____ (name or reservoirs) reservoir system is equal to or less than _____ (acre-feet and/or percentage of storage capacity).*

Example 3: *Flows as measured by the U.S. Geological Survey gage on the _____ (name of reservoir) near _____, Texas reaches _____ cubic feet per second (cfs).*

Example 4: *The storage balance in the water user's water rights account reaches _____ acre-feet.*

Example 5: *The _____ (name of wholesale provider) notifies (name of water user) that water deliveries will be limited to _____ acre-feet per year or million gallons per day (i.e. a level below that required for unrestricted operations).*

Temporary water conservation measures may include:

User-specific actions to reduce water usage may be included in the plan or may be maintained internally.

Section IV: Termination of Drought Response Measures

Temporary conservation measures will remain in effect until the conditions defined in Section VII of the Plan no longer exist and the Board deems that the need to allocate water no longer exists.

Section V: Effective Date of Plan

The effective date of this Plan is (*effective date)*.

Section VI: Revisions *(optional)*

Within one hundred eighty (180) calendar days of the adoption of any revision to the existing drought contingency plan of *(name of wholesale provider)*, *(name of water user)* will amend this Plan, as necessary, to reflect the revisions to *(name of wholesale provider)*'s drought contingency plan and will provide a copy of the amended Plan to *(name of wholesale provider)*. Any changes to this Plan shall become effective upon approval of *(name of wholesale provider)* and shall not require an update to the *(contract).*

APPENDIX 8-A

DETAILED DISCUSSION OF OTHER REGULATORY, ADMINISTRATIVE, AND LEGISLATIVE RECOMMENDATIONS

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Recommendation	Type
Quantitative Environmental Analysis	Regulatory and Administrative
Discussion:	
The Regional Water Planning Guidelines require that the evaluation of potentially feasible water management strategies include a quantitative analysis of environmental factors including effects on wildlife habitat, cultural resources, and effect of upstream development on bays, estuaries, and arms of the Gulf of Mexico (31 TAC §357.7.(a)(8)(A)). The TWDB has provided detailed guidance on specific study methods to be used in determining population, water demand, project costs, socioeconomic impacts, and yield from current and proposed supply sources, but it has not provided similar guidance in the area of environmental impacts. This lack of specificity is resulting in different methods being used in different regions. Additionally, it places the planning groups at risk of needing to conduct additional analysis after state agencies review the Initially Prepared Plans and add those results to the report after the public review period has closed.	
Recommendation:	
The Region H Water Planning Group recommends that the TWDB determines, in conjunction with the TCEQ and TPWD, which specific environmental studies and analysis are required for each category of management strategy (i.e., new water right, new reservoir, etc.). Furthermore, the guidance should be added to the Planning Guidelines, so that Regional Water Planning Groups can reflect the cost of those requirements in their budgets and scopes of work. Adding environmental guidelines will also make water plans consistent across the state.	

Recommendation	Type
Access to Current Water Availability Models	Regulatory and Administrative
Discussion:	
Water Availability Models (WAMs) are a core component of the regional water planning process and, furthermore, are required by TWDB's rules for plan development. TCEQ has recently undertaken extensive effort to update the models for multiple river and coastal basins. Due to the vital importance of these tools in statewide water planning, it is imperative that this initiative continue throughout the state and that up-to-date models are made readily accessible through the TCEQ WAM website.	
Recommendation:	
The Region H Water Planning Group recommends that TCEQ continue routine updates to Water Availability Models across the state based on a prioritized methodology based on observed climate conditions and the overall limitation on water resources in each basin.	

Recommendation	Type
Promoting OneWater Approaches in Regional Planning	Regulatory and Administrative
Discussion:	
A OneWater or comprehensive approach to water management has demonstrated potential for achieving the highest practicable value to return on investment for managing water, wastewater, recovered water, and stormwater resources. Recently, Austin's Water Forward program has done the most to push Texas toward a comprehensive approach to water management. However, obstacles still exist to the implementation of these sorts of programs. First, more can be done to promote these concepts of demand management and water supply development with water suppliers and utilities. Often, this requires utilities to work with regional partners in order to capture the complete water budget into a program. Second, several strategies such as the conjunctive use of water sources and "banked" supplies like aquifer storage and recovery are difficult to incorporate into Regional Water Plans due to their focus solely on drought-of-record supply. Efforts should be made to better reflect these opportunities to maximize water supply.	
Recommendation:	
Work with water utilities and planners to identify the limitations of current planning approaches regarding OneWater management and how these programs may best be reflected in regional plans. This will have the added benefit of promoting these options for comprehensive water management.	

Recommendation	Type
Clarifying Infeasible WMS Process	Regulatory and Administrative

Discussion:

In performing the Infeasible WMS analysis as part of the 2026 RWP development process, the RHWPG identified several opportunities to streamline the process while maintaining its utility.

It is noted that the process of evaluating potentially infeasible WMS requires substantial effort on behalf of the RWPGs. At the same time, in many cases the resultant modifications to the prior plan will be limited in scope and utility and will have limited expected impact on real-world access to TWDB funds; any project not moving forward would not seek funds. The greatest opportunities for the infeasible WMS analysis to provide meaningful improvements to an adopted plan are for large-scale near-term projects which are no longer moving forward, and which have been recommended to address substantial potential needs or serve a broad area.

The terminology of the infeasible WMS analysis has the potential to generate confusion among the general public and other stakeholders in the RWP process. In many cases, a strategy which could be deemed "infeasible" may be a practical and possibly necessary one, necessitating only an adjustment of implementation timing in the plan rather than full removal. The term "infeasible" carries negative connotations which may not be reflective of actual concepts.

The current schedule and guidelines for Regional Water Plan development require analyses and public comment related to the Infeasible WMS analysis to occur concurrently with those for establishing methodologies to identify and evaluate potentially feasible WMS. This creates potential for confusion, particularly on the part of the public, regarding both processes.

Recommendation:

The Region H Water Planning Group recommends adjusting guidance and implementation procedures for the analysis of potentially infeasible WMS required as part of the RWP cycle, including additional narrowing of scope, adjusted terminology, and adjusted process timing.

Recommendation	Type
Rule of Capture and Groundwater Conservation Districts	Legislative

Discussion:

Region H communities, particularly those within the rural areas of the region, are dependent on groundwater supplies. Groundwater is a very valuable resource to this region. Current groundwater law based on the Rule of Capture has facilitated orderly development of groundwater systems throughout the State of Texas, barred the intrusion of private interests, and it could continue to serve the water usage interests throughout the state. It appears that the Rule-of-Capture could continue per the status quo to serve the groundwater interests within the region.

Region H contains counties, specifically Austin, Leon and Madison, where some municipalities, water supply corporations, and property owners believe Groundwater Conservation Districts (GCD) are needed to retain long-term groundwater supplies within their respective counties. Region H also has several counties, including Brazoria and Montgomery, where groundwater supplies will reach their maximum sustainable yield due to projected in-county water usage. A GCD is a potential vehicle for these counties to manage and protect groundwater supplies from over-development within each respective county.

Recommendation:

The Region H Water Planning Group supports continued usage of the Rule of Capture as the basis of groundwater law throughout the State of Texas except as modified through creation of certified groundwater conservation districts, as necessary, by local subarea water interests. These districts provide a unique opportunity for balancing local management with regional planning through the joint planning exercises of Groundwater Management Areas.

Recommendation	Type
The Brazos River Alluvium	Legislative
Discussion:	
The Brazos River Alluvium Aquifer is an alluvial aquifer formation along portions of the lower Brazos River. The physical properties and productivity of the aquifer are highly spatially variable. The alluvial nature of the formation and observations during drought suggest the potential for groundwater-surface water interaction and impacts to surface water resources. However, the current state of the science regarding the formation precludes detailed quantification of potential impacts or alluvial supply reliability. This issue is of particular concern as the population surrounding the central and lower Brazos River Basin has rapidly expanded, increasing interest in the alluvium as a potential water supply source. Greater funding support for technical studies and development of long-term monitoring infrastructure for the aquifer would assist in addressing the substantial current uncertainties.	
Recommendation:	
The Region H Water Planning Group supports funding for research and long-term monitoring infrastructure to advance the state of the science on the Brazos River Alluvium and on groundwater-surface water interaction.	

Recommendation	Type
Agricultural and Irrigation Conservation Funding	Legislative
Discussion:	
The Region H water management plan includes a number of irrigation conservation based water management strategies. It is apparent that adoption of irrigation conservation practices may benefit the irrigation and agricultural industry in addition to local communities that may take advantage of water supply savings resulting from irrigation conservation. Additionally, the RHWPG supports further research and development of water-efficient and drought-resistant crops and species.	
Recommendation:	
The Region H Water Planning Group supports funding of research and development studies associated with the efficient usage of irrigation technologies and practices.	

Recommendation	Type
Water Conservation	Legislative
Discussion:	
The Region H Water Planning Group (RHWPG) strongly supports water conservation at all levels. The RHWPG has incorporated water conservation in the regional water plan as a management strategy. However, realizing advanced conservation savings in municipal county-other areas may be difficult, as these practices require some management, funding, and oversight. While the RHWPG does not advocate a one-size-fits-all conservation program for the State of Texas, they recommend that the Legislature address water conservation and provide some guidance and ability for county and local governments to implement these programs. The 78th Legislature appointed a Water Conservation Task Force to study water conservation policies and best management practices, and to report their results to the 79th Legislature in 2005. The 80th Legislature passed Senate Bill 3 creating a Water Conservation Advisory Council consisting of 23 members to provide a resource with expertise in water conservation. In 2018, TWDB funded the development of a water conservation planning tool specifically constructed for Texas water utilities. These efforts provide significant assistance to water suppliers that lack the resources to plan and implement water conservation approaches independently.	
Recommendation:	
The Region H Water Planning Group supports water conservation and recommends that the Legislature continue to address and improve water conservation activities in the state, including continued funding of research into advanced conservation technologies.	

Recommendation	Type
Conservation for Interbasin Transfers	Legislative
Discussion:	
Current RWP rules and guidance state that the RWPGs are to determine the "highest practicable level of water conservation and efficiency achievable" for water users with recommended strategies or served by a strategy that requires an interbasin transfer (IBT). This is a legal/regulatory determination, with the Texas Commission on Environmental Quality (TCEQ) bearing responsibility for assessing whether a water right applicant has sought the highest practicable level of conservation. Placing this burden on the RWPGs may put an applicant at risk if the applicant proposes different conservation measures. Additionally, the current planning requirements could be interpreted to require the RWPG to recommend conservation strategies for these entities based upon a standard which may not yet be defined for a given case and is outside of the proper purview of the RWP process, limiting the RWPG's ability to recommend what it sees as realistic or financially viable conservation from a regional perspective.	
Recommendation:	
The Region H Water Planning Group recommends that RWP requirements related to the "highest practicable level of water conservation and efficiency achievable" be removed, and where necessary instead reference "considerations necessary for permit requirements" in relation to conservation.	

Recommendation	Type
Water Loss Reduction Support	Legislative
Discussion:	
Water loss, attributable in large part to conveyance system leakage, consumes a substantial portion of the water supply in many regions. TWDB data for year 2022 indicates that real losses for Region H exceed 16 percent. It should additionally be noted that for Region H and other rapidly growing areas, the recent development of many water systems with newer transmission and distribution infrastructure lowers the overall regional loss percentage, partially masking the much higher losses from some older systems. This inefficiency adds cost and lowers supply availability and contributes to the need for future water management strategies. Mitigation of losses through leak detection and repair offers an opportunity to address substantial projected needs and could reduce or delay the need for the costly development of new water sources.	
Recommendation:	
The Region H Water Planning Group wishes to recognize the Legislature's efforts in emphasizing the importance of loss reduction in the RWP process and also recommends expanded funding support for water loss mitigation programs.	

Recommendation	Type
Mid-Decade Population Review	Legislative
Discussion:	
Projections for the RWP process typically undergo major redevelopment approximately once per decade in the planning cycle immediately following the US Census; values for interim cycles are primarily derived from redistribution of this projected population based upon more recent information. Region H, as well as a number of other areas within the state, have experienced rapid growth in recent years. Additionally, a number of Planning Regions, particularly those with predominantly rural population, have expressed concerns regarding uncertainty surrounding 2020 Census data accuracy. It is also noted that the development of population projections for the Regional Water Planning process is a substantial undertaking for the Texas Water Development Board and the Regional Water Planning Groups. Therefore, legislative support and funding for a more detailed review of population projections for the 2031 Regional Water Plans would be beneficial.	
Recommendation:	
The Region H Water Planning Group recommends additional funding be provided to TWDB for the 2031 RWP cycle, which occurs between Census cycles, to support the process of reevaluating and redistributing population projections.	

Recommendation	Type
Interbasin Transfers	Legislative
Discussion:	
Senate Bill One states that water rights developed as a result of an interbasin transfer become junior to other water rights granted before the interbasin transfer permit. Senate Bill One made obtaining a permit for interbasin transfer significantly more problematic than it was under prior law and thus, it discouraged the use of interbasin transfers for water supply. This is undesirable for several reasons. First, current supplies greatly exceed projected demands in some basins, and the supplies already developed in those basins can only be used via interbasin transfers. Second, interbasin transfers have been used extensively in Texas and are an important part of the State's current water supply. For example, three of the Region H Major Water Providers (City of Houston, Trinity River Authority, and San Jacinto River Authority) maintain current permits for interbasin transfers collectively of over 1,000,000 acre-feet per year. A substantial portion of future water demands within the San Jacinto basin (Harris County in particular) of Region H must rely on interbasin transfers. Third, emerging regional water supply plans for major metropolitan areas in Texas (Dallas-Fort Worth and San Antonio) rely on interbasin transfers as a key component of their plans. It is difficult to envision developing a water supply for these areas without significant new interbasin transfers. Furthermore, the inability to meet demands through transfer of existing supplies may result in the need for the development of additional, in-basin projects that may have additional cost and environmental impact.	
Recommendation:	
The Region H Water Planning Group recommends that the Legislature remove the unnecessary and counterproductive barriers to interbasin transfers that exist in current law.	

Recommendation	Type
Flood Liability of Water Supply Reservoirs	Legislative

Discussion:

Flood control reservoirs are generally drawn down at the beginning of the annual wet season so that when large rain events occur, the runoff may be captured and later released more slowly into the receiving stream. These reservoirs therefore reduce downstream flood levels and prevent inundation in low areas. In contrast, water supply reservoirs are operated to capture and retain as much stream flow as allowable under their permits in order to have supply available during periods of high demand. This practice results in less available storage volume to capture runoff during major storms. When a major storm event occurs upstream or above a water supply reservoir, the reservoir operator must sometimes release flood flows during and after the event to prevent flooding upstream of the reservoir or to prevent damage to the dam and other facilities associated with the reservoir. Although this flood flow can contribute to downstream flooding, most reservoirs actually reduce the amount of flooding which could have occurred had the reservoir not been constructed.

In recent years, plaintiffs with property in the downstream floodplains have brought multiple lawsuits against major water supply reservoir operators. Some recent court decisions have held the operators liable for damages to the downstream properties. If this trend is allowed to continue, it will increase insurance rates for these entities and will force operational changes to occur that may result in less available water supply for periods of need. The net effect to water users will be an increase in the cost of surface water throughout the state.

Recommendation:

The Region H Water Planning Group recommends that the State consider legislation clarifying the liability exposure of reservoir operators for passing storm flows through water supply reservoirs.

Recommendation	Type
Texas Bays and Estuaries Program Funding	Legislative
Discussion:	
The Texas 80th Legislature established the current process of assessing the environmental quality of riverine and estuarine systems and applying the "best available science" in prescribing actions to preserve these systems. These recommendations have, in turn, been incorporated into the Regional Water Planning process and serve as a critical standard for the evaluation of future water management strategies. However, the current levels of funding within the State of Texas Bay & Estuary program are insufficient to continue the needed monitoring, study, and development of management strategies for the bay.	
Recommendation:	
The Region H Water Planning Group recommends establishment of additional and dedicated funding to pursue necessary future efforts of the State's bay and estuary programs.	

Recommendation	Type
State Revolving Fund Programs (Drinking Water State Revolving Fund and Clean Water State Revolving Fund)	Infrastructure Finance

Discussion:

These programs provide loans at subsidized interest rates for the construction of water treatment and distribution systems and for source water protection (DWSRF) and for wastewater collection and treatment systems (CWSRF). As the loans are paid off, the TWDB uses the funds to make new loans (thus the name Revolving Fund). State funds for the program receive a federal match through the Environmental Protection Agency. These loans are intended for projects to bring existing systems into compliance with rules and regulations, and are available to political subdivisions, water supply corporations, and privately-owned water systems. Applications are collected at the beginning of each year, given a priority ranking, and funded to the extent possible. Projects not funded in a given year may carry forward into the next year's ranking.

These programs are important in that they assist sub-standard water systems in attaining the minimum water quality mandated by Federal and State regulations, but they are not intended to fund system expansions due to projected growth. However, these programs may apply to individual systems in the Region experiencing water quality declines, or to those systems affected by the changed standard for Arsenic. The SRF Fund may also provide assistance to water providers with aging treatment systems and transmission lines.

Recommendation:

The Region H Water Planning Group recommends increasing the funding of the State Revolving Funds Program in future decades and expanding the program to include coverage for system capacity increases to meet projected growth for communities.

Recommendation	Type
Agricultural Water Conservation Loan Program	Infrastructure Finance

Discussion:

This program provides loans to soil and water conservation districts, underground water conservation districts and districts authorized to supply water for irrigation. These districts may further lend the funds to private individuals for equipment and materials, labor, preparation, and installation costs to improve water-use efficiency related to irrigation of their private lands. There is also a grant program for equipment purchases by eligible districts for the measurement and evaluation of irrigation systems and agricultural water conservation practices, and for efficient irrigation and conservation demonstration projects, among others. However, these grants are not available to individual irrigators. Similar Federal loan and grant programs are available but require a 25% to 50% local match.

In the Region H Water Plan, irrigation conservation is a recommended strategy in eight counties (Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, and Waller). In some cases, the conservation of water through these agricultural programs provides additional water for use by municipalities that also use groundwater supplies. As it is unlikely that municipalities will seek out and fund irrigation conservation projects, the task of encouraging conservation will fall to the wholesale water providers and those government entities with jurisdiction in those counties. Even with Agricultural Water Conservation Loan Program assistance, irrigators will be slow to invest in water-conserving equipment until water rates increase, making it economically advantageous to do so. The difficulty increases in areas where groundwater is the primary supply source for irrigation.

Additionally, irrigators in Region H also find it difficult to access funding programs as these typically require ownership of the irrigated property. Much of the production within the region is performed by farmers who lease land from others, making them ineligible for these programs.

Eligible districts will need to act as conservation brokers, identifying those irrigators with the potential to reduce water demand through equipment improvements, and matching them with available loans. To assist with the immediate adoption of these improved conservation practices, a one-time grant or subsidy program for water-efficient equipment purchases may help by reducing the loans amounts required by each irrigator. If the requirements of an existing Federal loan or grant program could be met, the State could provide all or part of the local matching share. Since the methods used by irrigators vary across the state, such a program would need to be flexible, with local oversight provided by those districts currently eligible for the Agricultural Water Conservation Loan Program. Consistency with the applicable Regional Water Plan may be included as a prerequisite for this program, as it is for other State grants and loans.

Recommendation:

Provide a mechanism to leverage federal grant programs for agriculture by providing the local matching share. Increase funding of associated loan programs and consider adding a one-time grant or subsidy component to stimulate early adoption of conservation practices by individual irrigators. Provide opportunities for joint cooperation between growers and landowners to facilitate the use of funding programs for property under long-term lease agreements.

Recommendation	Type
Texas Community Development Program	Infrastructure Finance
Discussion:	
The federal Community Development Block Grant program provides grants and loans to low-income communities for certain projects, including water and wastewater infrastructure. It is administered in Texas under the Office of Rural Community Affairs as the Texas Community Development Program. The Small Town Environment Program (STEP) under the TCDP provides water and sewer system grants to cities and counties not eligible for funding under the Colonias or Economically Disadvantaged Areas Programs (EDAP). Within Region H, there are no Colonias or EDAP-eligible communities, but STEP grants may be obtained.	
Recommendation:	
The Region H Water Planning Group recommends continued state and federal support of the Texas Community Development Program and increasing the allocation of funds for the Small Town Environment Program.	

Recommendation	Type
Water and Waste Disposal Loans and Grants from the USDA Rural Utilities Service	Infrastructure Finance

Discussion:

This Federal program provides loans and grants in rural areas and communities of up to 10,000 people for water, wastewater, storm water, and municipal solid waste projects. The program is intended for communities that cannot obtain commercial loans at reasonable rates. Loans are made at or below market rates, depending upon the eligibility of the recipient. Grants can cover up to 75% of project costs when required to reduce user costs to a reasonable level. A separate program of Emergency Community Water Assistance Grants (up to $500,000 per project) is also available to communities experiencing rapid declines in water quality or quantity.

This program is similar to the state loan and revolving fund programs. It offers another option to small communities and rural areas unable to finance required infrastructure without assistance. However, this is a nationwide program, and the competition for available funds is correspondingly greater. Colonias and border areas are specifically identified as target areas for the grant portion of this program, and it is therefore in the State's interest to support its continued funding.

Recommendation:

The Region H Water Planning Group recommends continued support and increased funding of Water and Waste Disposal Loans and Grants from USDA Rural Utilities Service at the federal level.

Recommendation	Type
Innovative Water Technologies	Infrastructure Finance
Discussion:	
The Texas Water Development Board's Innovative Water Technologies Program has provided technical assistance for development of seawater desalination, brackish groundwater, rainwater harvesting, water reuse, and aquifer storage and recovery programs. This has included several statewide feasibility studies and participation in site-specific demonstration programs. These and similar projects will be an essential resource in progressing the status of innovative water supply projects that will form a critical component of the overall water budget as Texas continues to grow.	
Recommendation:	
Provide technical assistance grants for the advancement of desalination water supplies and implementation of new desalination technologies available to wholesale and retail water suppliers. Provide resources for identification and feasibility assessment of opportunities for aquifer storage and recovery projects. Continue to fund appropriate demonstration facilities to develop a customer base and pursue federal funding for desalination programs.	

Recommendation	Type
Regionalization	Infrastructure Finance

Discussion:

As communities assess the growing costs of water infrastructure, economies of scale can be realized by combining the needs of water user groups into larger, more efficient water supply, treatment and distribution facilities. Regional facilities offer interconnections between existing systems, which can increase overall reliability. The individual system connections to these systems can be phased over time to meet regional demands with less impact on individual systems than each individually trying to expand. In areas where groundwater limits are being reached, regional groups can identify areas where surface water supply is most needed, and allow other areas to remain on groundwater systems. Sharing costs across a wide customer base keeps rates comparable between service areas.

A range of cooperative options exists, including the formation of regional authorities, inter-local agreements, public-private partnerships, local government corporations, and public contracting with a private regional supplier. The optimal arrangement between political subdivisions depends upon the specific project and the goals of the parties. Partnerships with private investors through public-private partnerships and direct contracting with privately-owned facilities offer an advantage of using private financing to meet part of the initial planning and construction costs. The regulations governing these partnerships must protect the public represented by the partnership, but if too restrictive, may prevent the partnership from realizing potential cost savings through the use of private-sector procurement and construction practices.

Consideration should be given to reducing procurement restrictions for Local Government Corporations to encourage the pooling of resources for funding regional projects. Also, existing assistance programs should remain available when political subdivisions enter into public/public or public/private partnerships.

Recommendation:

Region H supports the forming of regional partnerships and encourages the State to allow them the greatest possible latitude for financing in their governing regulations. Additionally, funding opportunities should be made available to these public/private partnerships and to private nonprofit water supply corporations.

APPENDIX 9-A

IMPLEMENTATION REPORT

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Table 11-A1 – Summary of Sponsor Action

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	Additional Supply from GCWA	2020	WMS Seller: Gulf Coast Water Authority; WMS Supply Recipient: Fort Bend County WCID 2	Recommended WMS Supply Without WMS Project						
H	Additional Supply from GCWA	2020	WMS Seller: Gulf Coast Water Authority; WMS Supply Recipient: Galveston County FWSD 6	Recommended WMS Supply Without WMS Project						
H	Additional Supply from GCWA	2020	WMS Seller: Gulf Coast Water Authority; WMS Supply Recipient: Galveston County WCID 12	Recommended WMS Supply Without WMS Project						
H	Additional Supply from GCWA	2020	WMS Seller: Gulf Coast Water Authority; WMS Supply Recipient: La Marque	Recommended WMS Supply Without WMS Project						
H	Additional Supply from GCWA	2020	WMS Seller: Gulf Coast Water Authority; WMS Supply Recipient: Manufacturing, Fort Bend	Recommended WMS Supply Without WMS Project						
H	Additional Supply from GCWA	2020	WMS Seller: Gulf Coast Water Authority; WMS Supply Recipient: Pecan Grove MUD 1	Recommended WMS Supply Without WMS Project						
H	Additional Supply from GCWA	2020	WMS Seller: Gulf Coast Water Authority; WMS Supply Recipient: Sugar Land	Recommended WMS Supply Without WMS Project						
H	Allens Creek Reservoir	2040	Project Sponsor(s): Houston; Brazos River Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	BAWA East SWTP Expansion	2030	Project Sponsor(s): Baytown; Baytown Area Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Brackish Groundwater Supplies	2020	WMS Supply Recipient: Panorama Village	Recommended WMS Supply Without WMS Project	Yes	Project/WMS started				Unknown
H	Brazos Saltwater Barrier	2040	Project Sponsor(s): Dow Inc	Recommended WMS Project	Yes	Project/WMS not started	Project to be constructed as needed.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Private
H	BWA Brackish Groundwater Development	2030	Project Sponsor(s): Brazosport Water Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	BWA Conventional Treatment Expansion	2030	Project Sponsor(s): Brazosport Water Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	BWA Transmission Expansion	2030	Project Sponsor(s): Brazosport Water Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	CHCRWA Transmission and Internal Distribution	2030	Project Sponsor(s): Central Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	City of Houston Area 2 Groundwater Infrastructure	2030	Project Sponsor(s): Houston	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Unknown

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	City of Houston GRP Transmission	2030	Project Sponsor(s): Houston	Recommended WMS Project	Yes	Project/WMS started				
H	City of Houston Reuse Infrastructure	2040	Project Sponsor(s): Houston	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	City of Houston West Water Purification Plant - Phase 1	2040	Project Sponsor(s): Houston	Recommended WMS Project	No	Project/WMS no longer being pursued				
H	City of Houston West Water Purification Plant - Phase 2	2060	Project Sponsor(s): Houston	Recommended WMS Project	No	Project/WMS no longer being pursued				
H	COH Northeast Water Purification Plant Expansion - Phase 3	2040	Project Sponsor(s): Houston	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	State
H	COH Northeast Water Purification Plant Expansion - Phases 1 and 2	2030	Project Sponsor(s): Central Harris County Regional Water Authority; Houston; North Fort Bend Water Authority; North Harris County Regional Water Authority; West Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	COH, NHCRWA, and CHCRWA Shared Transmission	2030	Project Sponsor(s): Central Harris County Regional Water Authority; Houston; North Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS completed				
H	Conservation - Flo Community WSC	2040	WUG Reducing Demand: Flo Community WSC	Recommended Demand Reduction Strategy Without WMS Project						
H	CWA Transmission Expansion	2040	Project Sponsor(s): Houston	Recommended WMS Project						
H	Dow Reservoir and Pump Station Expansion	2030	Project Sponsor(s): Brazosport Water Authority; Dow Inc	Recommended WMS Project	Yes	Project/WMS started				
H	Drought Management	2020	WUG Reducing Demand: West End WSC	Recommended Demand Reduction Strategy Without WMS Project	Yes	Project/WMS started				
H	East Texas Transfer	2050	Project Sponsor(s): Houston; Lower Neches Valley Authority; Sabine River Authority	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Fort Bend MUD 25 GRP Infrastructure	2030	Project Sponsor(s): Fort Bend County MUD 25	Recommended WMS Project	Yes	Project/WMS started				
H	Fort Bend WCID 2 GRP Infrastructure - Phase 1	2030	Project Sponsor(s): Fort Bend County WCID 2	Recommended WMS Project	Yes	Project/WMS started				

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	Fort Bend WCID 2 GRP Infrastructure - Phase 2	2040	Project Sponsor(s): Fort Bend County WCID 2	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Freeport Seawater Desalination	2040	Project Sponsor(s): Dow Inc	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Galveston County Industrial Reuse Infrastructure	2030	Project Sponsor(s): Gulf Coast Water Authority	Recommended WMS Project						
H	GCWA Backup Well Development	2040	Project Sponsor(s): Gulf Coast Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	GCWA Industrial Raw Water Line	2020	Project Sponsor(s): Gulf Coast Water Authority	Recommended WMS Project	Yes	Project/WMS completed				
H	GCWA Shannon Pump Station Expansion	2030	Project Sponsor(s): Gulf Coast Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	GCWA Western Galveston County Treatment Expansion	2030	Project Sponsor(s): Gulf Coast Water Authority	Recommended WMS Project						
H	Groveton Well Development	2020	Project Sponsor(s): Groveton	Recommended WMS Project	Yes	Project/WMS completed				
H	Irrigation Conservation, Austin County	2020	Project Sponsor(s): Irrigation (Austin)	Recommended WMS Project						
H	Irrigation Conservation, Brazoria County	2020	Project Sponsor(s): Irrigation (Brazoria)	Recommended WMS Project						
H	Irrigation Conservation, Chambers County	2020	Project Sponsor(s): Irrigation (Chambers)	Recommended WMS Project						
H	Irrigation Conservation, Fort Bend County	2020	Project Sponsor(s): Irrigation (Fort Bend)	Recommended WMS Project						
H	Irrigation Conservation, Galveston County	2020	Project Sponsor(s): Irrigation (Galveston)	Recommended WMS Project						
H	Irrigation Conservation, Harris County	2020	Project Sponsor(s): Irrigation (Harris)	Recommended WMS Project						
H	Irrigation Conservation, Liberty County	2020	Project Sponsor(s): Irrigation (Liberty)	Recommended WMS Project						
H	Irrigation Conservation, Waller County	2020	Project Sponsor(s): Irrigation (Waller)	Recommended WMS Project						
H	Lake Livingston to SJRA Transfer	2050	Project Sponsor(s): San Jacinto River Authority	Recommended WMS Project						
H	LNVA Devers Pump Station Relocation	2030	Project Sponsor(s): Lower Neches Valley Authority	Recommended WMS Project	Yes	Project/WMS started				

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	LNVA Neches-Trinity Basin Interconnect	2040	Project Sponsor(s): Lower Neches Valley Authority	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Manvel Supply Expansion - Groundwater Development	2020	Project Sponsor(s): Manvel	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Manvel Supply Expansion - Mustang Bayou Right and Storage	2030	Project Sponsor(s): Manvel	Recommended WMS Project	No	Project/WMS no longer being pursued				
H	Manvel Supply Expansion - Treatment and Transmission Expansion	2030	Project Sponsor(s): Manvel	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Missouri City GRP Infrastructure	2030	Project Sponsor(s): Missouri City	Recommended WMS Project	Yes	Project/WMS started				
H	Montgomery County MUDs 8 and 9 GRP Infrastructure	2020	Project Sponsor(s): Montgomery County MUD 8; Montgomery County MUD 9	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Alvin	2020	Project Sponsor(s): Alvin	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Anahuac	2020	Project Sponsor(s): Anahuac	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Angleton	2020	Project Sponsor(s): Angleton	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Austin County WSC	2020	Project Sponsor(s): Austin County WSC	Recommended WMS Project						
H	Municipal Conservation, Bacliff MUD	2020	Project Sponsor(s): Bacliff MUD	Recommended WMS Project						
H	Municipal Conservation, Baker Road MUD	2020	Project Sponsor(s): Baker Road MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Baybrook MUD 1	2020	Project Sponsor(s): Baybrook MUD 1	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Baytown	2020	Project Sponsor(s): Baytown	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Bayview MUD	2020	Project Sponsor(s): Bayview MUD	Recommended WMS Project						
H	Municipal Conservation, Bellaire	2020	Project Sponsor(s): Bellaire	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Bellville	2020	Project Sponsor(s): Bellville	Recommended WMS Project						
H	Municipal Conservation, Blue Bell Manor Utility	2020	Project Sponsor(s): Blue Bell Manor Utility	Recommended WMS Project						

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H	Municipal Conservation, Blue Ridge West MUD	2020	Project Sponsor(s): Blue Ridge West MUD	Recommended WMS Project						
H	Municipal Conservation, Brazoria	2020	Project Sponsor(s): Brazoria	Recommended WMS Project						
H	Municipal Conservation, Brazoria County MUD 2	2020	Project Sponsor(s): Brazoria County MUD 2	Recommended WMS Project						
H	Municipal Conservation, Brazoria County MUD 21	2020	Project Sponsor(s): Brazoria County MUD 21	Recommended WMS Project						
H	Municipal Conservation, Brazoria County MUD 25	2020	Project Sponsor(s): Brazoria County MUD 25	Recommended WMS Project						
H	Municipal Conservation, Brazoria County MUD 29	2020	Project Sponsor(s): Brazoria County MUD 29	Recommended WMS Project						
H	Municipal Conservation, Brazoria County MUD 3	2020	Project Sponsor(s): Brazoria County MUD 3	Recommended WMS Project						
H	Municipal Conservation, Brazoria County MUD 31	2020	Project Sponsor(s): Brazoria County MUD 31	Recommended WMS Project						
H	Municipal Conservation, Brazoria County MUD 6	2020	Project Sponsor(s): Brazoria County MUD 6	Recommended WMS Project						
H	Municipal Conservation, Brookshire MWD	2020	Project Sponsor(s): Brookshire MWD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Buffalo	2020	Project Sponsor(s): Buffalo	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Bunker Hill Village	2020	Project Sponsor(s): Bunker Hill Village	Recommended WMS Project						
H	Municipal Conservation, Cape Royale UD	2020	Project Sponsor(s): Cape Royale UD	Recommended WMS Project						
H	Municipal Conservation, Centerville	2020	Project Sponsor(s): Centerville	Recommended WMS Project						
H	Municipal Conservation, Central Harris County Regional Water Authority	2020	Project Sponsor(s): Central Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Chambers County MUD 1	2020	Project Sponsor(s): Chambers County MUD 1	Recommended WMS Project						
H	Municipal Conservation, Chateau Woods MUD	2020	Project Sponsor(s): Chateau Woods MUD	Recommended WMS Project						
H	Municipal Conservation, Chimney Hill MUD	2020	Project Sponsor(s): Chimney Hill MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Clear Brook City MUD	2020	Project Sponsor(s): Clear Brook City MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Clear Lake City Water Authority	2020	Project Sponsor(s): Clear Lake City Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Cleveland	2020	Project Sponsor(s): Cleveland	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, Clute	2020	Project Sponsor(s): Clute	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Concord-Robbins WSC	2020	Project Sponsor(s): Concord-Robbins WSC	Recommended WMS Project						
H	Municipal Conservation, Conroe	2020	Project Sponsor(s): Conroe	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Corinthian Point MUD 2	2020	Project Sponsor(s): Corinthian Point MUD 2	Recommended WMS Project						
H	Municipal Conservation, Country Terrace Water	2020	Project Sponsor(s): Country Terrace Water	Recommended WMS Project						
H	Municipal Conservation, County-Other, Austin	2020	Project Sponsor(s): Municipal county-other (Austin)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Brazoria	2020	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Chambers	2020	Project Sponsor(s): Municipal county-other (Chambers)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Fort Bend	2020	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Galveston	2020	Project Sponsor(s): Municipal county-other (Galveston)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Harris	2020	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Leon	2020	Project Sponsor(s): Municipal county-other (Leon)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Liberty	2020	Project Sponsor(s): Municipal county-other (Liberty)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Madison	2020	Project Sponsor(s): Municipal county-other (Madison)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Montgomery	2020	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Polk	2020	Project Sponsor(s): Municipal county-other (Polk)	Recommended WMS Project						
H	Municipal Conservation, County-Other, San Jacinto	2020	Project Sponsor(s): Municipal county-other (San Jacinto)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Walker	2020	Project Sponsor(s): Municipal county-other (Walker)	Recommended WMS Project						
H	Municipal Conservation, County-Other, Waller	2020	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project						
H	Municipal Conservation, Crosby MUD	2020	Project Sponsor(s): Crosby MUD	Recommended WMS Project						
H	Municipal Conservation, Cut and Shoot	2020	Project Sponsor(s): Cut and Shoot	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, Daisetta	2020	Project Sponsor(s): Daisetta	Recommended WMS Project						
H	Municipal Conservation, Danbury	2020	Project Sponsor(s): Danbury	Recommended WMS Project						
H	Municipal Conservation, Dayton	2020	Project Sponsor(s): Dayton	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Deer Park	2020	Project Sponsor(s): Deer Park	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Devers	2020	Project Sponsor(s): Devers	Recommended WMS Project						
H	Municipal Conservation, Dobbin Plantersville WSC	2020	Project Sponsor(s): Dobbin Plantersville WSC	Recommended WMS Project						
H	Municipal Conservation, Dodge Oakhurst WSC	2020	Project Sponsor(s): Dodge Oakhurst WSC	Recommended WMS Project						
H	Municipal Conservation, Domestic Water	2020	Project Sponsor(s): Domestic Water	Recommended WMS Project						
H	Municipal Conservation, Douglas Utility	2020	Project Sponsor(s): Douglas Utility	Recommended WMS Project						
H	Municipal Conservation, East Plantation UD	2020	Project Sponsor(s): East Plantation UD	Recommended WMS Project						
H	Municipal Conservation, El Dorado UD	2020	Project Sponsor(s): El Dorado UD	Recommended WMS Project						
H	Municipal Conservation, Far Hills UD	2020	Project Sponsor(s): Far Hills UD	Recommended WMS Project						
H	Municipal Conservation, First Colony MUD 9	2020	Project Sponsor(s): First Colony MUD 9	Recommended WMS Project						
H	Municipal Conservation, Flo Community WSC	2020	Project Sponsor(s): Flo Community WSC	Recommended WMS Project						
H	Municipal Conservation, Forest Hills MUD	2020	Project Sponsor(s): Forest Hills MUD	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County FWSD 2	2020	Project Sponsor(s): Fort Bend County FWSD 2	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 115	2020	Project Sponsor(s): Fort Bend County MUD 115	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 116	2020	Project Sponsor(s): Fort Bend County MUD 116	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 121	2020	Project Sponsor(s): Fort Bend County MUD 121	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 128	2020	Project Sponsor(s): Fort Bend County MUD 128	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 129	2020	Project Sponsor(s): Fort Bend County MUD 129	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 140	2020	Project Sponsor(s): Fort Bend County MUD 140	Recommended WMS Project						

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H	Municipal Conservation, Fort Bend County MUD 149	2020	Project Sponsor(s): Fort Bend County MUD 149	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 152	2020	Project Sponsor(s): Fort Bend County MUD 152	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 155	2020	Project Sponsor(s): Fort Bend County MUD 155	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 158	2020	Project Sponsor(s): Fort Bend County MUD 158	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 162	2020	Project Sponsor(s): Fort Bend County MUD 162	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 187	2020	Project Sponsor(s): Fort Bend County MUD 187	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 23	2020	Project Sponsor(s): Fort Bend County MUD 23	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 24	2020	Project Sponsor(s): Fort Bend County MUD 24	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 25	2020	Project Sponsor(s): Fort Bend County MUD 25	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 26	2020	Project Sponsor(s): Fort Bend County MUD 26	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 42	2020	Project Sponsor(s): Fort Bend County MUD 42	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 46	2020	Project Sponsor(s): Fort Bend County MUD 46	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 47	2020	Project Sponsor(s): Fort Bend County MUD 47	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 48	2020	Project Sponsor(s): Fort Bend County MUD 48	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 49	2020	Project Sponsor(s): Fort Bend County MUD 49	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County MUD 5	2020	Project Sponsor(s): Fort Bend County MUD 5	Recommended WMS Project						
H	Municipal Conservation, Fort Bend County MUD 81	2020	Project Sponsor(s): Fort Bend County MUD 81	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County WCID 2	2020	Project Sponsor(s): Fort Bend County WCID 2	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fort Bend County WCID 3	2020	Project Sponsor(s): Fort Bend County WCID 3	Recommended WMS Project						
H	Municipal Conservation, Freeport	2020	Project Sponsor(s): Freeport	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Friendswood	2020	Project Sponsor(s): Friendswood	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Fulshear	2020	Project Sponsor(s): Fulshear	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, G & W WSC	2020	Project Sponsor(s): G and W WSC	Recommended WMS Project						
H	Municipal Conservation, Galena Park	2020	Project Sponsor(s): Galena Park	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Galveston	2020	Project Sponsor(s): Galveston	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Galveston County FWSD 6	2020	Project Sponsor(s): Galveston County FWSD 6	Recommended WMS Project						
H	Municipal Conservation, Galveston County MUD 12	2020	Project Sponsor(s): Galveston County MUD 12	Recommended WMS Project						
H	Municipal Conservation, Galveston County WCID 1	2020	Project Sponsor(s): Galveston County WCID 1	Recommended WMS Project						
H	Municipal Conservation, Galveston County WCID 12	2020	Project Sponsor(s): Galveston County WCID 12	Recommended WMS Project						
H	Municipal Conservation, Galveston County WCID 8	2020	Project Sponsor(s): Galveston County WCID 8	Recommended WMS Project						
H	Municipal Conservation, Glendale WSC	2020	Project Sponsor(s): Glendale WSC	Recommended WMS Project						
H	Municipal Conservation, Green Trails MUD	2020	Project Sponsor(s): Green Trails MUD	Recommended WMS Project						
H	Municipal Conservation, Greenwood UD	2020	Project Sponsor(s): Greenwood UD	Recommended WMS Project						
H	Municipal Conservation, Groveton	2020	Project Sponsor(s): Groveton	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Gulf Utility	2020	Project Sponsor(s): Gulf Utility	Recommended WMS Project						
H	Municipal Conservation, Hardin WSC	2020	Project Sponsor(s): Hardin WSC	Recommended WMS Project						
H	Municipal Conservation, Harris County FWSD 1-A	2020	Project Sponsor(s): Harris County FWSD 1-A	Recommended WMS Project						
H	Municipal Conservation, Harris County FWSD 27	2020	Project Sponsor(s): Harris County FWSD 27	Recommended WMS Project						
H	Municipal Conservation, Harris County FWSD 58	2020	Project Sponsor(s): Harris County FWSD 58	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 106	2020	Project Sponsor(s): Harris County MUD 106	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 11	2020	Project Sponsor(s): Harris County MUD 11	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 119	2020	Project Sponsor(s): Harris County MUD 119	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 122	2020	Project Sponsor(s): Harris County MUD 122	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 132	2020	Project Sponsor(s): Harris County MUD 132	Recommended WMS Project						

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H	Municipal Conservation, Harris County MUD 148	2020	Project Sponsor(s): Harris County MUD 148	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 151	2020	Project Sponsor(s): Harris County MUD 151	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 152	2020	Project Sponsor(s): Harris County MUD 152	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 153	2020	Project Sponsor(s): Harris County MUD 153	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 154	2020	Project Sponsor(s): Harris County MUD 154	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 158	2020	Project Sponsor(s): Harris County MUD 158	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 180	2020	Project Sponsor(s): Harris County MUD 180	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 189	2020	Project Sponsor(s): Harris County MUD 189	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 216	2020	Project Sponsor(s): Harris County MUD 216	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 221	2020	Project Sponsor(s): Harris County MUD 221	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 23	2020	Project Sponsor(s): Harris County MUD 23	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 278	2020	Project Sponsor(s): Harris County MUD 278	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 290	2020	Project Sponsor(s): Harris County MUD 290	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 321	2020	Project Sponsor(s): Harris County MUD 321	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 342	2020	Project Sponsor(s): Harris County MUD 342	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 344	2020	Project Sponsor(s): Harris County MUD 344	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 345	2020	Project Sponsor(s): Harris County MUD 345	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 36	2020	Project Sponsor(s): Harris County MUD 36	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 361	2020	Project Sponsor(s): Harris County MUD 361	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 372	2020	Project Sponsor(s): Harris County MUD 372	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 400	2020	Project Sponsor(s): Harris County MUD 400	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 412	2020	Project Sponsor(s): Harris County MUD 412	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, Harris County MUD 420	2020	Project Sponsor(s): Harris County MUD 420	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 46	2020	Project Sponsor(s): Harris County MUD 46	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 49	2020	Project Sponsor(s): Harris County MUD 49	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 5	2020	Project Sponsor(s): Harris County MUD 5	Recommended WMS Project						
H	Municipal Conservation, Harris County MUD 50	2020	Project Sponsor(s): Harris County MUD 50	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 55	2020	Project Sponsor(s): Harris County MUD 55	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 58	2020	Project Sponsor(s): Harris County MUD 58	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 6	2020	Project Sponsor(s): Harris County MUD 6	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 8	2020	Project Sponsor(s): Harris County MUD 8	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County MUD 96	2020	Project Sponsor(s): Harris County MUD 96	Recommended WMS Project						
H	Municipal Conservation, Harris County UD 15	2020	Project Sponsor(s): Harris County UD 15	Recommended WMS Project						
H	Municipal Conservation, Harris County WCID 1	2020	Project Sponsor(s): Harris County WCID 1	Recommended WMS Project						
H	Municipal Conservation, Harris County WCID 133	2020	Project Sponsor(s): Harris County WCID 133	Recommended WMS Project						
H	Municipal Conservation, Harris County WCID 156	2020	Project Sponsor(s): Harris County WCID 156	Recommended WMS Project						
H	Municipal Conservation, Harris County WCID 50	2020	Project Sponsor(s): Harris County WCID 50	Recommended WMS Project						
H	Municipal Conservation, Harris County WCID 70	2020	Project Sponsor(s): Harris County WCID 70	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County WCID 74	2020	Project Sponsor(s): Harris County WCID 74	Recommended WMS Project						
H	Municipal Conservation, Harris County WCID 89	2020	Project Sponsor(s): Harris County WCID 89	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Harris County WCID 96	2020	Project Sponsor(s): Harris County WCID 96	Recommended WMS Project						
H	Municipal Conservation, Harris County WCID-Fondren Road	2020	Project Sponsor(s): Harris County WCID-Fondren Road	Recommended WMS Project						
H	Municipal Conservation, Harris-Montgomery Counties MUD 386	2020	Project Sponsor(s): Harris-Montgomery Counties MUD 386	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, Hempstead	2020	Project Sponsor(s): Hempstead	Recommended WMS Project						
H	Municipal Conservation, Hillcrest Village	2020	Project Sponsor(s): Hillcrest Village	Recommended WMS Project						
H	Municipal Conservation, Hilltop Lakes WSC	2020	Project Sponsor(s): Hilltop Lakes WSC	Recommended WMS Project						
H	Municipal Conservation, Hilshire Village	2020	Project Sponsor(s): Hilshire Village	Recommended WMS Project						
H	Municipal Conservation, Hitchcock	2020	Project Sponsor(s): Hitchcock	Recommended WMS Project						
H	Municipal Conservation, HMW SUD	2020	Project Sponsor(s): HMW SUD	Recommended WMS Project						
H	Municipal Conservation, Houston	2020	Project Sponsor(s): Houston	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Humble	2020	Project Sponsor(s): Humble	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Huntsville	2020	Project Sponsor(s): Huntsville	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Jacinto City	2020	Project Sponsor(s): Jacinto City	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Jamaica Beach	2020	Project Sponsor(s): Jamaica Beach	Recommended WMS Project						
H	Municipal Conservation, Jersey Village	2020	Project Sponsor(s): Jersey Village	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Jewett	2020	Project Sponsor(s): Jewett	Recommended WMS Project						
H	Municipal Conservation, Johnston Water Utility	2020	Project Sponsor(s): Johnston Water Utility	Recommended WMS Project						
H	Municipal Conservation, Katy	2020	Project Sponsor(s): Katy	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Kendleton	2020	Project Sponsor(s): Kendleton	Recommended WMS Project						
H	Municipal Conservation, Kings Manor MUD	2020	Project Sponsor(s): Kings Manor MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Kirkmont MUD	2020	Project Sponsor(s): Kirkmont MUD	Recommended WMS Project						
H	Municipal Conservation, La Marque	2020	Project Sponsor(s): La Marque	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, La Porte	2020	Project Sponsor(s): La Porte	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Lake Bonanza WSC	2020	Project Sponsor(s): Lake Bonanza WSC	Recommended WMS Project						
H	Municipal Conservation, Lake Conroe Hills MUD	2020	Project Sponsor(s): Lake Conroe Hills MUD	Recommended WMS Project						

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H	Municipal Conservation, Lake Jackson	2020	Project Sponsor(s): Lake Jackson	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Lake Livingston WSC	2020	Project Sponsor(s): Lake Livingston WSC	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Lake MUD	2020	Project Sponsor(s): Lake MUD	Recommended WMS Project						
H	Municipal Conservation, Lazy River Improvement District	2020	Project Sponsor(s): Lazy River Improvement District	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, League City	2020	Project Sponsor(s): League City	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Leggett WSC	2020	Project Sponsor(s): Leggett WSC	Recommended WMS Project						
H	Municipal Conservation, Liberty	2020	Project Sponsor(s): Liberty	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Liberty County FWSD 1 Hull	2020	Project Sponsor(s): Liberty County FWSD 1 Hull	Recommended WMS Project						
H	Municipal Conservation, Livingston	2020	Project Sponsor(s): Livingston	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Longhorn Town UD	2020	Project Sponsor(s): Longhorn Town UD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Luce Bayou PUD	2020	Project Sponsor(s): Luce Bayou PUD	Recommended WMS Project						
H	Municipal Conservation, Madison County WSC	2020	Project Sponsor(s): Madison County WSC	Recommended WMS Project						
H	Municipal Conservation, Madisonville	2020	Project Sponsor(s): Madisonville	Recommended WMS Project						
H	Municipal Conservation, Magnolia	2020	Project Sponsor(s): Magnolia	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Manvel	2020	Project Sponsor(s): Manvel	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Mason Creek UD	2020	Project Sponsor(s): Mason Creek UD	Recommended WMS Project						
H	Municipal Conservation, Meadowcreek MUD	2020	Project Sponsor(s): Meadowcreek MUD	Recommended WMS Project						
H	Municipal Conservation, Meadows Place	2020	Project Sponsor(s): Meadows Place	Recommended WMS Project						
H	Municipal Conservation, Memorial Point UD	2020	Project Sponsor(s): Memorial Point UD	Recommended WMS Project						
H	Municipal Conservation, Memorial Villages Water Authority	2020	Project Sponsor(s): Memorial Villages Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Mercy WSC	2020	Project Sponsor(s): Mercy WSC	Recommended WMS Project						

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H	Municipal Conservation, Missouri City	2020	Project Sponsor(s): Missouri City	Recommended WMS Project						
H	Municipal Conservation, Mont Belvieu	2020	Project Sponsor(s): Mont Belvieu	Recommended WMS Project						
H	Municipal Conservation, Montgomery	2020	Project Sponsor(s): Montgomery	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 112	2020	Project Sponsor(s): Montgomery County MUD 112	Recommended WMS Project						
H	Municipal Conservation, Montgomery County MUD 115	2020	Project Sponsor(s): Montgomery County MUD 115	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 119	2020	Project Sponsor(s): Montgomery County MUD 119	Recommended WMS Project						
H	Municipal Conservation, Montgomery County MUD 15	2020	Project Sponsor(s): Montgomery County MUD 15	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 18	2020	Project Sponsor(s): Montgomery County MUD 18	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 19	2020	Project Sponsor(s): Montgomery County MUD 19	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 56	2020	Project Sponsor(s): Montgomery County MUD 56	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 8	2020	Project Sponsor(s): Montgomery County MUD 8	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 83	2020	Project Sponsor(s): Montgomery County MUD 83	Recommended WMS Project						
H	Municipal Conservation, Montgomery County MUD 84	2020	Project Sponsor(s): Montgomery County MUD 84	Recommended WMS Project						
H	Municipal Conservation, Montgomery County MUD 88	2030	Project Sponsor(s): Montgomery County MUD 88	Recommended WMS Project						
H	Municipal Conservation, Montgomery County MUD 89	2020	Project Sponsor(s): Montgomery County MUD 89	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 9	2020	Project Sponsor(s): Montgomery County MUD 9	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, Montgomery County MUD 95	2020	Project Sponsor(s): Montgomery County MUD 95	Recommended WMS Project						
H	Municipal Conservation, Montgomery County MUD 98	2020	Project Sponsor(s): Montgomery County MUD 98	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County MUD 99	2020	Project Sponsor(s): Montgomery County MUD 99	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Montgomery County UD 2	2020	Project Sponsor(s): Montgomery County UD 2	Recommended WMS Project						
H	Municipal Conservation, Montgomery County UD 3	2020	Project Sponsor(s): Montgomery County UD 3	Recommended WMS Project						
H	Municipal Conservation, Montgomery County UD 4	2020	Project Sponsor(s): Montgomery County UD 4	Recommended WMS Project						
H	Municipal Conservation, Montgomery County WCID 1	2020	Project Sponsor(s): Montgomery County WCID 1	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Morgans Point	2020	Project Sponsor(s): Morgans Point	Recommended WMS Project						
H	Municipal Conservation, Mount Houston Road MUD	2020	Project Sponsor(s): Mount Houston Road MUD	Recommended WMS Project						
H	Municipal Conservation, Msec Enterprises	2020	Project Sponsor(s): MSEC Enterprises	Recommended WMS Project						
H	Municipal Conservation, Nassau Bay	2020	Project Sponsor(s): Nassau Bay	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Needville	2020	Project Sponsor(s): Needville	Recommended WMS Project						
H	Municipal Conservation, New Caney MUD	2020	Project Sponsor(s): New Caney MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, New Waverly	2020	Project Sponsor(s): New Waverly	Recommended WMS Project						
H	Municipal Conservation, Newport MUD	2020	Project Sponsor(s): Newport MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Normangee	2020	Project Sponsor(s): Normangee	Recommended WMS Project						
H	Municipal Conservation, North Belt UD	2020	Project Sponsor(s): North Belt UD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, North Channel Water Authority	2020	Project Sponsor(s): North Channel Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, North Forest MUD	2020	Project Sponsor(s): North Forest MUD	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, North Fort Bend Water Authority	2020	Project Sponsor(s): North Fort Bend Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, North Green MUD	2020	Project Sponsor(s): North Green MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, North Harris County Regional Water Authority	2020	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, North Zulch MUD	2020	Project Sponsor(s): North Zulch MUD	Recommended WMS Project						
H	Municipal Conservation, Northwest Harris County MUD 16	2020	Project Sponsor(s): Northwest Harris County MUD 16	Recommended WMS Project						
H	Municipal Conservation, Oak Hollow Utility	2020	Project Sponsor(s): Oak Hollow Utility	Recommended WMS Project						
H	Municipal Conservation, Oak Ridge North	2020	Project Sponsor(s): Oak Ridge North	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Onalaska WSC	2020	Project Sponsor(s): Onalaska WSC	Recommended WMS Project						
H	Municipal Conservation, One Five O WSC	2020	Project Sponsor(s): One Five O WSC	Recommended WMS Project						
H	Municipal Conservation, Oyster Creek	2020	Project Sponsor(s): Oyster Creek	Recommended WMS Project						
H	Municipal Conservation, P B & S C WSC	2020	Project Sponsor(s): P B and S C WSC	Recommended WMS Project						
H	Municipal Conservation, Palmer Plantation MUD 1	2020	Project Sponsor(s): Palmer Plantation MUD 1	Recommended WMS Project						
H	Municipal Conservation, Palmer Plantation MUD 2	2020	Project Sponsor(s): Palmer Plantation MUD 2	Recommended WMS Project						
H	Municipal Conservation, Panorama Village	2020	Project Sponsor(s): Panorama Village	Recommended WMS Project						
H	Municipal Conservation, Parkway MUD	2020	Project Sponsor(s): Parkway MUD	Recommended WMS Project						
H	Municipal Conservation, Pasadena	2020	Project Sponsor(s): Pasadena	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Pattison WSC	2020	Project Sponsor(s): Pattison WSC	Recommended WMS Project						
H	Municipal Conservation, Pearland	2020	Project Sponsor(s): Pearland	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Pecan Grove MUD 1	2020	Project Sponsor(s): Pecan Grove MUD 1	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Pennington WSC	2020	Project Sponsor(s): Pennington WSC	Recommended WMS Project						

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H	Municipal Conservation, Phelps SUD	2020	Project Sponsor(s): Phelps SUD	Recommended WMS Project						
H	Municipal Conservation, Pine Village PUD	2020	Project Sponsor(s): Pine Village PUD	Recommended WMS Project						
H	Municipal Conservation, Pinewood Community	2020	Project Sponsor(s): Pinewood Community	Recommended WMS Project						
H	Municipal Conservation, Plantation MUD	2020	Project Sponsor(s): Plantation MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Point Aquarius MUD	2020	Project Sponsor(s): Point Aquarius MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Prairie View	2020	Project Sponsor(s): Prairie View	Recommended WMS Project						
H	Municipal Conservation, Providence WSC	2020	Project Sponsor(s): Providence WSC	Recommended WMS Project						
H	Municipal Conservation, Quadvest	2020	Project Sponsor(s): Quadvest	Recommended WMS Project						
H	Municipal Conservation, Quail Valley UD	2020	Project Sponsor(s): Quail Valley UD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Ranch Utilities	2020	Project Sponsor(s): Ranch Utilities	Recommended WMS Project						
H	Municipal Conservation, Rayford Road MUD	2020	Project Sponsor(s): Rayford Road MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Richmond	2020	Project Sponsor(s): Richmond	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Richwood	2020	Project Sponsor(s): Richwood	Recommended WMS Project						
H	Municipal Conservation, River Plantation MUD	2020	Project Sponsor(s): River Plantation MUD	Recommended WMS Project						
H	Municipal Conservation, Rolling Fork PUD	2020	Project Sponsor(s): Rolling Fork PUD	Recommended WMS Project						
H	Municipal Conservation, Roman Forest Consolidated MUD	2020	Project Sponsor(s): Roman Forest Consolidated MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Rosenberg	2020	Project Sponsor(s): Rosenberg	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Royal Valley Utilities	2020	Project Sponsor(s): Royal Valley Utilities	Recommended WMS Project						
H	Municipal Conservation, Sagemeadow UD	2020	Project Sponsor(s): Sagemeadow UD	Recommended WMS Project						
H	Municipal Conservation, San Jacinto SUD	2020	Project Sponsor(s): San Jacinto SUD	Recommended WMS Project						
H	Municipal Conservation, Seabrook	2020	Project Sponsor(s): Seabrook	Recommended WMS Project	Yes	Project/WMS started				

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H	Municipal Conservation, Sealy	2020	Project Sponsor(s): Sealy	Recommended WMS Project						
H	Municipal Conservation, Sedona Lakes MUD 1	2020	Project Sponsor(s): Sedona Lakes MUD 1	Recommended WMS Project						
H	Municipal Conservation, Sequoia Improvement District	2020	Project Sponsor(s): Sequoia Improvement District	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Shenandoah	2020	Project Sponsor(s): Shenandoah	Recommended WMS Project						
H	Municipal Conservation, Shepherd	2020	Project Sponsor(s): Shepherd	Recommended WMS Project						
H	Municipal Conservation, Shoreacres	2020	Project Sponsor(s): Shoreacres	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Sienna Plantation	2020	Project Sponsor(s): Sienna Plantation	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Soda WSC	2020	Project Sponsor(s): Soda WSC	Recommended WMS Project						
H	Municipal Conservation, South Cleveland WSC	2020	Project Sponsor(s): South Cleveland WSC	Recommended WMS Project						
H	Municipal Conservation, South Houston	2020	Project Sponsor(s): South Houston	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Southeast WSC	2020	Project Sponsor(s): Southeast WSC	Recommended WMS Project						
H	Municipal Conservation, Southern Montgomery County MUD	2020	Project Sponsor(s): Southern Montgomery County MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Southern Water	2020	Project Sponsor(s): Southern Water	Recommended WMS Project						
H	Municipal Conservation, Southside Place	2020	Project Sponsor(s): Southside Place	Recommended WMS Project						
H	Municipal Conservation, Southwest Harris County MUD 1	2020	Project Sponsor(s): Southwest Harris County MUD 1	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Splendora	2020	Project Sponsor(s): Splendora	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Spring Creek UD	2020	Project Sponsor(s): Spring Creek UD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Spring Meadows MUD	2020	Project Sponsor(s): Spring Meadows MUD	Recommended WMS Project						
H	Municipal Conservation, Spring Valley	2020	Project Sponsor(s): Spring Valley	Recommended WMS Project						
H	Municipal Conservation, Stanley Lake MUD	2020	Project Sponsor(s): Stanley Lake MUD	Recommended WMS Project						

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H	Municipal Conservation, Suburban Utility	2020	Project Sponsor(s): Suburban Utility	Recommended WMS Project						
H	Municipal Conservation, Sugar Land	2020	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Sunbelt FWSD	2020	Project Sponsor(s): Sunbelt FWSD	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Surfside Beach	2020	Project Sponsor(s): Surfside Beach	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Sweeny	2020	Project Sponsor(s): Sweeny	Recommended WMS Project						
H	Municipal Conservation, T & W Water Service	2020	Project Sponsor(s): T and W Water Service	Recommended WMS Project						
H	Municipal Conservation, Tarkington SUD	2020	Project Sponsor(s): Tarkington SUD	Recommended WMS Project						
H	Municipal Conservation, TDCJ Jester Units	2020	Project Sponsor(s): TDCJ Jester Units	Recommended WMS Project						
H	Municipal Conservation, TDCJ Ramsey Area	2020	Project Sponsor(s): TDCJ Ramsey Area	Recommended WMS Project						
H	Municipal Conservation, Tempe WSC 1	2020	Project Sponsor(s): Tempe WSC 1	Recommended WMS Project						
H	Municipal Conservation, Texas City	2020	Project Sponsor(s): Texas City	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, The Commons Water Supply	2020	Project Sponsor(s): The Commons Water Supply	Recommended WMS Project						
H	Municipal Conservation, The Woodlands	2020	Project Sponsor(s): The Woodlands	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Thunderbird UD	2020	Project Sponsor(s): Thunderbird UD	Recommended WMS Project						
H	Municipal Conservation, Tomball	2020	Project Sponsor(s): Tomball	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Trail of the Lakes MUD	2020	Project Sponsor(s): Trail of the Lakes MUD	Recommended WMS Project						
H	Municipal Conservation, Trinity	2020	Project Sponsor(s): Trinity	Recommended WMS Project						
H	Municipal Conservation, Trinity Bay Conservation District	2020	Project Sponsor(s): Trinity Bay Conservation District	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Trinity Rural WSC	2020	Project Sponsor(s): Trinity Rural WSC	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Valley Ranch MUD 1	2020	Project Sponsor(s): Valley Ranch MUD 1	Recommended WMS Project						
H	Municipal Conservation, Varner Creek UD	2020	Project Sponsor(s): Varner Creek UD	Recommended WMS Project						

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H	Municipal Conservation, Walker County Rural SUD	2020	Project Sponsor(s): Walker County Rural SUD	Recommended WMS Project						
H	Municipal Conservation, Waller	2020	Project Sponsor(s): Waller	Recommended WMS Project						
H	Municipal Conservation, Wallis	2020	Project Sponsor(s): Wallis	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Waterwood MUD 1	2020	Project Sponsor(s): Waterwood MUD 1	Recommended WMS Project						
H	Municipal Conservation, Webster	2020	Project Sponsor(s): Webster	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, West Columbia	2020	Project Sponsor(s): West Columbia	Recommended WMS Project						
H	Municipal Conservation, West End WSC	2020	Project Sponsor(s): West End WSC	Recommended WMS Project						
H	Municipal Conservation, West Harris County MUD 6	2020	Project Sponsor(s): West Harris County MUD 6	Recommended WMS Project						
H	Municipal Conservation, West Harris County Regional Water Authority	2020	Project Sponsor(s): West Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, West University Place	2020	Project Sponsor(s): West University Place	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Westwood North WSC	2020	Project Sponsor(s): Westwood North WSC	Recommended WMS Project						
H	Municipal Conservation, Westwood Shores MUD	2020	Project Sponsor(s): Westwood Shores MUD	Recommended WMS Project						
H	Municipal Conservation, White Oak Utilities	2020	Project Sponsor(s): White Oak Utilities	Recommended WMS Project						
H	Municipal Conservation, White Oak WSC	2020	Project Sponsor(s): White Oak WSC	Recommended WMS Project						
H	Municipal Conservation, Willis	2020	Project Sponsor(s): Willis	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Wood Branch Village	2020	Project Sponsor(s): Wood Branch Village	Recommended WMS Project	Yes	Project/WMS started				
H	Municipal Conservation, Woodcreek MUD	2020	Project Sponsor(s): Woodcreek MUD	Recommended WMS Project						
H	Municipal Conservation, Woodcreek Water of Liberty	2020	Project Sponsor(s): Woodcreek Water Of Liberty	Recommended WMS Project						
H	Municipal Irrigation Reuse Development, Brazoria County	2030	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						
H	Municipal Irrigation Reuse Development, CHCRWA	2030	Project Sponsor(s): Central Harris County Regional Water Authority	Recommended WMS Project						

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H	Municipal Irrigation Reuse Development, Fort Bend County	2030	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	Municipal Irrigation Reuse Development, Harris County	2030	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	Municipal Irrigation Reuse Development, Montgomery County	2030	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project						
H	Municipal Irrigation Reuse Development, NFBWA	2030	Project Sponsor(s): North Fort Bend Water Authority	Recommended WMS Project						
H	Municipal Irrigation Reuse Development, NHCRWA	2030	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project						
H	Municipal Irrigation Reuse Development, WHCRWA	2030	Project Sponsor(s): West Harris County Regional Water Authority	Recommended WMS Project						
H	New/Expanded Contract With LNVA - Reallocation	2020	WMS Seller: Lower Neches Valley Authority; WMS Supply Recipient: County-Other, Galveston	Recommended WMS Supply Without WMS Project						
H	NFBWA Member District Reuse Infrastructure	2020	Project Sponsor(s): North Fort Bend Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	NFBWA Phase 2 Distribution Segments	2030	Project Sponsor(s): North Fort Bend Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	NHCRWA Distribution Expansion - 2025 Phase	2030	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	NHCRWA Distribution Expansion - 2035 Phase	2040	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	NHCRWA Distribution Expansion - 2045 Phase	2050	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	NHCRWA Member District Reuse Infrastructure	2020	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	NHCRWA Transmission Lines	2030	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	NRG Cedar Bayou Desalination	2030	Project Sponsor(s): NRG	Recommended WMS Project	No	Project/WMS no longer being pursued				
H	Other BRA System Operation Supplies	2020	WMS Seller: Dow Inc; WMS Supply Recipient: Manufacturing, Brazoria	Recommended WMS Supply Without WMS Project	Yes	Project/WMS completed				
H	Other BRA System Operation Supplies	2020	WMS Supply Recipient: Irrigation, Waller	Recommended WMS Supply Without WMS Project	Yes	Project/WMS completed				
H	Other BRA System Operation Supplies	2020	WMS Supply Recipient: Manufacturing, Brazoria	Recommended WMS Supply Without WMS Project	Yes	Project/WMS completed				

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	Pearland Reuse Infrastructure	2020	Project Sponsor(s): Pearland	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Pearland Surface Water Treatment Plant Development	2030	Project Sponsor(s): Pearland	Recommended WMS Project	Yes	Project/WMS started				
H	Porter SUD GRP Infrastructure - Phase 1	2020	Project Sponsor(s): Porter SUD	Recommended WMS Project	Yes	Project/WMS no longer being pursued	Project sponsor has suspended implementation. Surface water development will proceed if and when necessitated by groundwater reduction requirements.	Economic feasibility/financing		
H	Porter SUD GRP Infrastructure - Phase 2	2030	Project Sponsor(s): Porter SUD	Recommended WMS Project	Yes	Project/WMS no longer being pursued	Project sponsor has suspended implementation. Surface water development will proceed if and when necessitated by groundwater reduction requirements.	Economic feasibility/financing		
H	Richmond GRP Infrastructure	2030	Project Sponsor(s): Richmond	Recommended WMS Project	Yes	Project/WMS started				
H	Richmond Reuse Infrastructure	2020	Project Sponsor(s): Richmond	Recommended WMS Project	Yes	Project/WMS started				
H	River Plantation and East Plantation Joint GRP	2030	WMS Supply Recipient: River Plantation MUD	Recommended WMS Supply Without WMS Project						
H	Rosenberg GRP Infrastructure	2030	Project Sponsor(s): Rosenberg	Recommended WMS Project	Yes	Project/WMS started				
H	SEWPP Additional Module	2030	Project Sponsor(s): Gulf Coast Water Authority	Recommended WMS Project						
H	SJRA Aquifer Storage and Recovery	2070	Project Sponsor(s): San Jacinto River Authority	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	SJRA Catahoula Aquifer Supplies	2040	Project Sponsor(s): San Jacinto River Authority	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	SJRA Groundwater Reduction Plan - 2025 Phase	2030	Project Sponsor(s): San Jacinto River Authority	Recommended WMS Project						
H	SJRA Groundwater Reduction Plan - 2035 Phase	2040	Project Sponsor(s): San Jacinto River Authority	Recommended WMS Project						
H	SJRA Groundwater Reduction Plan - 2045 Phase	2050	Project Sponsor(s): San Jacinto River Authority	Recommended WMS Project						

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H	SJRA Groundwater Reduction Plan - 2055 Phase	2060	Project Sponsor(s): San Jacinto River Authority	Recommended WMS Project						
H	SJRA Reuse Supplies for Manufacturing	2020	WMS Seller: San Jacinto River Authority; WMS Supply Recipient: Manufacturing, Harris	Recommended WMS Supply Without WMS Project						
H	SJRA Reuse Supplies for Manufacturing - Regional Return Flows	2020	WMS Seller: San Jacinto River Authority; WMS Supply Recipient: Manufacturing, Harris	Recommended WMS Supply Without WMS Project	Yes	Project/WMS started				
H	Southeast Transmission Line Improvements	2030	Project Sponsor(s): Clear Lake City Water Authority; Friendswood; Gulf Coast Water Authority; Harris County MUD 55; Houston; Webster; Baybrook MUD 1; Pasadena	Recommended WMS Project	Yes	Project/WMS started				
H	Sugar Land Advanced Loss Reduction	2030	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS started				
H	Sugar Land AMI	2030	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS started				
H	Sugar Land Groundwater Plant Conversion	2030	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Sugar Land IWRP Reuse Infrastructure - Phase 1	2030	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS started				
H	Sugar Land IWRP Reuse Infrastructure - Phase 2	2040	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Sugar Land Surface Water Expansion - Phase 1	2030	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS started				
H	Sugar Land Surface Water Expansion - Phase 2	2040	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	Surfside Beach Supply Infrastructure	2020	Project Sponsor(s): Surfside Beach	Recommended WMS Project	Yes	Project/WMS started				State
H	Water Loss Reduction, Anahuac	2020	Project Sponsor(s): Anahuac	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Angleton	2020	Project Sponsor(s): Angleton	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Austin County WSC	2020	Project Sponsor(s): Austin County WSC	Recommended WMS Project						
H	Water Loss Reduction, Baybrook MUD 1	2020	Project Sponsor(s): Baybrook MUD 1	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Baytown	2020	Project Sponsor(s): Baytown	Recommended WMS Project	Yes	Project/WMS started				

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H	Water Loss Reduction, Bolivar Peninsula SUD	2020	Project Sponsor(s): Bolivar Peninsula SUD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Brazoria County MUD 2	2020	Project Sponsor(s): Brazoria County MUD 2	Recommended WMS Project						
H	Water Loss Reduction, Brookshire MWD	2020	Project Sponsor(s): Brookshire MWD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Buffalo	2020	Project Sponsor(s): Buffalo	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Cape Royale UD	2020	Project Sponsor(s): Cape Royale UD	Recommended WMS Project						
H	Water Loss Reduction, Clear Lake City Water Authority	2020	Project Sponsor(s): Clear Lake City Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Cleveland	2020	Project Sponsor(s): Cleveland	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, County-Other, Austin	2020	Project Sponsor(s): Municipal county-other (Austin)	Recommended WMS Project						
H	Water Loss Reduction, County-Other, Leon	2020	Project Sponsor(s): Municipal county-other (Leon)	Recommended WMS Project						
H	Water Loss Reduction, County-Other, Liberty	2020	Project Sponsor(s): Municipal county-other (Liberty)	Recommended WMS Project						
H	Water Loss Reduction, County-Other, Madison	2020	Project Sponsor(s): Municipal county-other (Madison)	Recommended WMS Project						
H	Water Loss Reduction, County-Other, Polk	2020	Project Sponsor(s): Municipal county-other (Polk)	Recommended WMS Project						
H	Water Loss Reduction, County-Other, San Jacinto	2020	Project Sponsor(s): Municipal county-other (San Jacinto)	Recommended WMS Project						
H	Water Loss Reduction, County-Other, Waller	2020	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project						
H	Water Loss Reduction, Crosby MUD	2020	Project Sponsor(s): Crosby MUD	Recommended WMS Project						
H	Water Loss Reduction, Deer Park	2020	Project Sponsor(s): Deer Park	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, El Dorado UD	2020	Project Sponsor(s): El Dorado UD	Recommended WMS Project						
H	Water Loss Reduction, Flo Community WSC	2020	Project Sponsor(s): Flo Community WSC	Recommended WMS Project						
H	Water Loss Reduction, Forest Hills MUD	2020	Project Sponsor(s): Forest Hills MUD	Recommended WMS Project						
H	Water Loss Reduction, Fort Bend County FWSD 1	2020	Project Sponsor(s): Fort Bend County FWSD 1	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Fort Bend County MUD 115	2020	Project Sponsor(s): Fort Bend County MUD 115	Recommended WMS Project						

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H	Water Loss Reduction, Fort Bend County MUD 81	2020	Project Sponsor(s): Fort Bend County MUD 81	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Fort Bend County WCID 2	2020	Project Sponsor(s): Fort Bend County WCID 2	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Friendswood	2020	Project Sponsor(s): Friendswood	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, G & W WSC	2020	Project Sponsor(s): G and W WSC	Recommended WMS Project						
H	Water Loss Reduction, Galveston	2020	Project Sponsor(s): Galveston	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Galveston County WCID 1	2020	Project Sponsor(s): Galveston County WCID 1	Recommended WMS Project						
H	Water Loss Reduction, Galveston County WCID 8	2020	Project Sponsor(s): Galveston County WCID 8	Recommended WMS Project						
H	Water Loss Reduction, Greenwood UD	2020	Project Sponsor(s): Greenwood UD	Recommended WMS Project						
H	Water Loss Reduction, Groveton	2020	Project Sponsor(s): Groveton	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Harris County FWSD 1-A	2020	Project Sponsor(s): Harris County FWSD 1-A	Recommended WMS Project						
H	Water Loss Reduction, Harris County FWSD 58	2020	Project Sponsor(s): Harris County FWSD 58	Recommended WMS Project						
H	Water Loss Reduction, Harris County MUD 106	2020	Project Sponsor(s): Harris County MUD 106	Recommended WMS Project						
H	Water Loss Reduction, Harris County MUD 11	2020	Project Sponsor(s): Harris County MUD 11	Recommended WMS Project						
H	Water Loss Reduction, Harris County MUD 180	2020	Project Sponsor(s): Harris County MUD 180	Recommended WMS Project						
H	Water Loss Reduction, Harris County MUD 216	2020	Project Sponsor(s): Harris County MUD 216	Recommended WMS Project						
H	Water Loss Reduction, Harris County MUD 412	2020	Project Sponsor(s): Harris County MUD 412	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Harris County MUD 5	2020	Project Sponsor(s): Harris County MUD 5	Recommended WMS Project						
H	Water Loss Reduction, Harris County MUD 50	2020	Project Sponsor(s): Harris County MUD 50	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Harris County MUD 55	2020	Project Sponsor(s): Harris County MUD 55	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Harris County UD 14	2020	Project Sponsor(s): Harris County UD 14	Recommended WMS Project						
H	Water Loss Reduction, Harris County WCID 1	2020	Project Sponsor(s): Harris County WCID 1	Recommended WMS Project						
H	Water Loss Reduction, Harris County WCID 70	2020	Project Sponsor(s): Harris County WCID 70	Recommended WMS Project	Yes	Project/WMS started				

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H	Water Loss Reduction, Harris County WCID 89	2020	Project Sponsor(s): Harris County WCID 89	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Harris County WCID-Fondren Road	2020	Project Sponsor(s): Harris County WCID-Fondren Road	Recommended WMS Project						
H	Water Loss Reduction, Hillcrest Village	2020	Project Sponsor(s): Hillcrest Village	Recommended WMS Project						
H	Water Loss Reduction, Houston	2020	Project Sponsor(s): Houston	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Huntsville	2020	Project Sponsor(s): Huntsville	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Jacinto City	2020	Project Sponsor(s): Jacinto City	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Jersey Village	2020	Project Sponsor(s): Jersey Village	Recommended WMS Project						
H	Water Loss Reduction, Kendleton	2020	Project Sponsor(s): Kendleton	Recommended WMS Project						
H	Water Loss Reduction, La Marque	2020	Project Sponsor(s): La Marque	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, La Porte	2020	Project Sponsor(s): La Porte	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Lake Conroe Hills MUD	2020	Project Sponsor(s): Lake Conroe Hills MUD	Recommended WMS Project						
H	Water Loss Reduction, Lake Livingston WSC	2020	Project Sponsor(s): Lake Livingston WSC	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Lake MUD	2020	Project Sponsor(s): Lake MUD	Recommended WMS Project						
H	Water Loss Reduction, League City	2020	Project Sponsor(s): League City	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Leggett WSC	2020	Project Sponsor(s): Leggett WSC	Recommended WMS Project						
H	Water Loss Reduction, Liberty	2020	Project Sponsor(s): Liberty	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Livingston	2020	Project Sponsor(s): Livingston	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Longhorn Town UD	2020	Project Sponsor(s): Longhorn Town UD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Luce Bayou PUD	2020	Project Sponsor(s): Luce Bayou PUD	Recommended WMS Project						
H	Water Loss Reduction, Madison County WSC	2020	Project Sponsor(s): Madison County WSC	Recommended WMS Project						
H	Water Loss Reduction, Madisonville	2020	Project Sponsor(s): Madisonville	Recommended WMS Project						

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H	Water Loss Reduction, Manvel	2020	Project Sponsor(s): Manvel	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Memorial Point UD	2020	Project Sponsor(s): Memorial Point UD	Recommended WMS Project						
H	Water Loss Reduction, Mercy WSC	2020	Project Sponsor(s): Mercy WSC	Recommended WMS Project						
H	Water Loss Reduction, Missouri City	2020	Project Sponsor(s): Missouri City	Recommended WMS Project						
H	Water Loss Reduction, Montgomery	2020	Project Sponsor(s): Montgomery	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Montgomery County MUD 84	2020	Project Sponsor(s): Montgomery County MUD 84	Recommended WMS Project						
H	Water Loss Reduction, Montgomery County MUD 88	2020	Project Sponsor(s): Montgomery County MUD 88	Recommended WMS Project						
H	Water Loss Reduction, Montgomery County MUD 99	2020	Project Sponsor(s): Montgomery County MUD 99	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Montgomery County UD 3	2020	Project Sponsor(s): Montgomery County UD 3	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Nassau Bay	2020	Project Sponsor(s): Nassau Bay	Recommended WMS Project						
H	Water Loss Reduction, New Waverly	2020	Project Sponsor(s): New Waverly	Recommended WMS Project						
H	Water Loss Reduction, Newport MUD	2020	Project Sponsor(s): Newport MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, North Belt UD	2020	Project Sponsor(s): North Belt UD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, North Channel Water Authority	2020	Project Sponsor(s): North Channel Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, North Forest MUD	2020	Project Sponsor(s): North Forest MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, North Zulch MUD	2020	Project Sponsor(s): North Zulch MUD	Recommended WMS Project						
H	Water Loss Reduction, Onalaska WSC	2020	Project Sponsor(s): Onalaska WSC	Recommended WMS Project						
H	Water Loss Reduction, One Five O WSC	2020	Project Sponsor(s): One Five O WSC	Recommended WMS Project						
H	Water Loss Reduction, Pearland	2020	Project Sponsor(s): Pearland	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Pine Village PUD	2020	Project Sponsor(s): Pine Village PUD	Recommended WMS Project						

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H	Water Loss Reduction, Pinehurst Decker Prairie WSC	2020	Project Sponsor(s): Pinehurst Decker Prairie WSC	Recommended WMS Project						
H	Water Loss Reduction, Richwood	2020	Project Sponsor(s): Richwood	Recommended WMS Project						
H	Water Loss Reduction, Sedona Lakes MUD 1	2020	Project Sponsor(s): Sedona Lakes MUD 1	Recommended WMS Project						
H	Water Loss Reduction, Sequoia Improvement District	2020	Project Sponsor(s): Sequoia Improvement District	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, South Houston	2020	Project Sponsor(s): South Houston	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Southeast WSC	2020	Project Sponsor(s): Southeast WSC	Recommended WMS Project						
H	Water Loss Reduction, Southern Montgomery County MUD	2020	Project Sponsor(s): Southern Montgomery County MUD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Splendora	2020	Project Sponsor(s): Splendora	Recommended WMS Project						
H	Water Loss Reduction, Suburban Utility	2020	Project Sponsor(s): Suburban Utility	Recommended WMS Project						
H	Water Loss Reduction, Sugar Land	2020	Project Sponsor(s): Sugar Land	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Sunbelt FWSD	2020	Project Sponsor(s): Sunbelt FWSD	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Texas City	2020	Project Sponsor(s): Texas City	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Tomball	2020	Project Sponsor(s): Tomball	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Trinity Rural WSC	2020	Project Sponsor(s): Trinity Rural WSC	Recommended WMS Project	Yes	Project/WMS started				
H	Water Loss Reduction, Varner Creek UD	2020	Project Sponsor(s): Varner Creek UD	Recommended WMS Project						
H	Water Loss Reduction, Walker County Rural SUD	2020	Project Sponsor(s): Walker County Rural SUD	Recommended WMS Project						
H	Water Loss Reduction, Waller	2020	Project Sponsor(s): Waller	Recommended WMS Project						
H	Water Loss Reduction, Wallis	2020	Project Sponsor(s): Wallis	Recommended WMS Project	Yes	Project/WMS started				
H	Westwood Shores Reuse Infrastructure	2020	Project Sponsor(s): Westwood Shores MUD	Recommended WMS Project	Yes	Project/WMS started				State
H	WHCRWA 2025 Distribution Expansion	2030	Project Sponsor(s): West Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				State

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H	WHCRWA 2035 Distribution Expansion	2040	Project Sponsor(s): West Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	WHCRWA/NFBWA Transmission Line	2030	Project Sponsor(s): North Fort Bend Water Authority; West Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				State
H	WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 1	2020	Project Sponsor(s): Dobbin Plantersville WSC	Recommended WMS Project	Yes	Project/WMS started				
H	WUG Infrastructure Expansion (Brackish Groundwater) - Dobbin-Plantersville WSC - Phase 2	2050	Project Sponsor(s): Dobbin Plantersville WSC	Recommended WMS Project	No	Project/WMS not started	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	Other	Project is identified as 2030 or later and would be initiated at a future date closer to the estimated online date.	
H	WUG Infrastructure Expansion (Groundwater) - Baker Road MUD	2030	Project Sponsor(s): Baker Road MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Blue Bell Manor Utility	2030	Project Sponsor(s): Blue Bell Manor Utility	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Blue Ridge West MUD	2030	Project Sponsor(s): Blue Ridge West MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Corinthian Point MUD 2	2030	Project Sponsor(s): Corinthian Point MUD 2	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Austin County (B) - Phase 1	2030	Project Sponsor(s): Municipal county-other (Austin)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Austin County (B) - Phase 2	2050	Project Sponsor(s): Municipal county-other (Austin)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Austin County (B) - Phase 3	2070	Project Sponsor(s): Municipal county-other (Austin)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Austin County (BC) - Phase 1	2040	Project Sponsor(s): Municipal county-other (Austin)	Recommended WMS Project						

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H	WUG Infrastructure Expansion (Groundwater) - County-Other, Austin County (BC) - Phase 2	2060	Project Sponsor(s): Municipal county-other (Austin)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (Richmond GRP Participants)	2030	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (Sugar Land GRP) - Phase 1	2030	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend (Sugar Land GRP) - Phase 2	2040	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend County (BC) - Phase 1	2040	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend County (BC) - Phase 2	2060	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Fort Bend County (SJB)	2030	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Harris County (SJ) - Phase 1	2030	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Harris County (SJ) - Phase 2	2040	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Montgomery (SJRA GRP Participants)	2020	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Waller County (B) - Phase 1	2020	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project		Project/WMS started				

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H	WUG Infrastructure Expansion (Groundwater) - County-Other, Waller County (B) - Phase 2	2040	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Waller County (B) - Phase 3	2060	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Waller County (SJ) - Phase 1	2020	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Waller County (SJ) - Phase 2	2040	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - County-Other, Waller County (SJ) - Phase 3	2060	Project Sponsor(s): Municipal county-other (Waller)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Cut and Shoot	2030	Project Sponsor(s): Cut and Shoot	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Domestic Water	2030	Project Sponsor(s): Domestic Water	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Douglas Utility	2030	Project Sponsor(s): Douglas Utility	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Far Hills UD	2030	Project Sponsor(s): Far Hills UD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - First Colony MUD 9	2030	Project Sponsor(s): First Colony MUD 9	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 1	2030	Project Sponsor(s): Fort Bend County FWSD 1	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County FWSD 2	2030	Project Sponsor(s): Fort Bend County FWSD 2	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 116 - Phase 1	2030	Project Sponsor(s): Fort Bend County MUD 116	Recommended WMS Project						

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 116 - Phase 2	2050	Project Sponsor(s): Fort Bend County MUD 116	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 162	2030	Project Sponsor(s): Fort Bend County MUD 162	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 23	2030	Project Sponsor(s): Fort Bend County MUD 23	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 24	2030	Project Sponsor(s): Fort Bend County MUD 24	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 26	2030	Project Sponsor(s): Fort Bend County MUD 26	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 42	2030	Project Sponsor(s): Fort Bend County MUD 42	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County MUD 5	2030	Project Sponsor(s): Fort Bend County MUD 5	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Fort Bend County WCID 3	2030	Project Sponsor(s): Fort Bend County WCID 3	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - G & W WSC (SJ)	2060	Project Sponsor(s): G and W WSC	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Green Trails MUD	2030	Project Sponsor(s): Green Trails MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Harris County FWSD 58	2030	Project Sponsor(s): Harris County FWSD 58	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Harris County MUD 153	2030	Project Sponsor(s): Harris County MUD 153	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Harris County MUD 180	2030	Project Sponsor(s): Harris County MUD 180	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Harris County MUD 216	2030	Project Sponsor(s): Harris County MUD 216	Recommended WMS Project						

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H	WUG Infrastructure Expansion (Groundwater) - Harris County MUD 345	2030	Project Sponsor(s): Harris County MUD 345	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Harris County MUD 400	2030	Project Sponsor(s): Harris County MUD 400	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Harris County MUD 58	2030	Project Sponsor(s): Harris County MUD 58	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Harris County WCID 70	2030	Project Sponsor(s): Harris County WCID 70	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Hempstead (B)	2070	Project Sponsor(s): Hempstead	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - HMW SUD, Harris County	2030	Project Sponsor(s): HMW SUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Irrigation, Fort Bend (Richmond GRP Participants)	2030	Project Sponsor(s): Irrigation (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty County (N)	2020	Project Sponsor(s): Irrigation (Liberty)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - Irrigation, Liberty County (SJ)	2020	Project Sponsor(s): Irrigation (Liberty)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 1	2030	Project Sponsor(s): Johnston Water Utility	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Johnston Water Utility - Phase 2	2060	Project Sponsor(s): Johnston Water Utility	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Katy	2030	Project Sponsor(s): Katy	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Lake Conroe Hills MUD	2030	Project Sponsor(s): Lake Conroe Hills MUD	Recommended WMS Project						

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H	WUG Infrastructure Expansion (Groundwater) - Lazy River Improvement District	2030	Project Sponsor(s): Lazy River Improvement District	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty County (N)	2020	Project Sponsor(s): Livestock (Liberty)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty County (NT)	2020	Project Sponsor(s): Livestock (Liberty)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty County (SJ)	2020	Project Sponsor(s): Livestock (Liberty)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty County (T)	2020	Project Sponsor(s): Livestock (Liberty)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - Livestock, Liberty County (TSJ)	2020	Project Sponsor(s): Livestock (Liberty)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Longhorn Town UD	2030	Project Sponsor(s): Longhorn Town UD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Luce Bayou PUD	2030	Project Sponsor(s): Luce Bayou PUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 1	2040	Project Sponsor(s): Magnolia	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Magnolia - Phase 2	2070	Project Sponsor(s): Magnolia	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Manufacturing, Chambers County (T)	2020	Project Sponsor(s): Manufacturing (Chambers)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion (Groundwater) - Manufacturing, Leon County (T)	2030	Project Sponsor(s): Manufacturing (Leon)	Recommended WMS Project						

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H	WUG Infrastructure Expansion (Groundwater) - Mason Creek UD	2030	Project Sponsor(s): Mason Creek UD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Meadowcreek MUD	2030	Project Sponsor(s): Meadowcreek MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Meadows Place	2030	Project Sponsor(s): Meadows Place	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Austin County (B)	2030	Project Sponsor(s): Mining (Austin)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Austin County (BC)	2030	Project Sponsor(s): Mining (Austin)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Austin County (C)	2030	Project Sponsor(s): Mining (Austin)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Leon County (B)	2030	Project Sponsor(s): Mining (Leon)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Leon County (T)	2030	Project Sponsor(s): Mining (Leon)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Liberty County (N)	2030	Project Sponsor(s): Mining (Liberty)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Liberty County (NT)	2030	Project Sponsor(s): Mining (Liberty)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Liberty County (SJ)	2030	Project Sponsor(s): Mining (Liberty)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Liberty County (T)	2030	Project Sponsor(s): Mining (Liberty)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Liberty County (TSJ)	2030	Project Sponsor(s): Mining (Liberty)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mining, Madison County (B)	2030	Project Sponsor(s): Mining (Madison)	Recommended WMS Project						

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H	WUG Infrastructure Expansion (Groundwater) - Mining, Madison County (T)	2030	Project Sponsor(s): Mining (Madison)	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 1	2040	Project Sponsor(s): Mont Belvieu	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Mont Belvieu - Phase 2	2060	Project Sponsor(s): Mont Belvieu	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Montgomery	2030	Project Sponsor(s): Montgomery	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 15	2050	Project Sponsor(s): Montgomery County MUD 15	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 84	2030	Project Sponsor(s): Montgomery County MUD 84	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Montgomery County MUD 95	2030	Project Sponsor(s): Montgomery County MUD 95	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Montgomery County UD 4	2070	Project Sponsor(s): Montgomery County UD 4	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - New Caney MUD	2040	Project Sponsor(s): New Caney MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Northwest Harris County MUD 16	2030	Project Sponsor(s): Northwest Harris County MUD 16	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Palmer Plantation MUD 1	2030	Project Sponsor(s): Palmer Plantation MUD 1	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Palmer Plantation MUD 2	2030	Project Sponsor(s): Palmer Plantation MUD 2	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Pinehurst Decker Prairie WSC	2030	Project Sponsor(s): Pinehurst Decker Prairie WSC	Recommended WMS Project						

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H	WUG Infrastructure Expansion (Groundwater) - Pinewood Community	2030	Project Sponsor(s): Pinewood Community	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Plantation MUD	2030	Project Sponsor(s): Plantation MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Point Aquarius MUD	2040	Project Sponsor(s): Point Aquarius MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Quadvest (Rosenberg GRP Participant)	2030	Project Sponsor(s): Quadvest	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Quadvest, Fort Bend County - Phase 1	2030	Project Sponsor(s): Quadvest	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Quadvest, Fort Bend County - Phase 2	2050	Project Sponsor(s): Quadvest	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Quadvest, Harris County	2030	Project Sponsor(s): Quadvest	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Quail Valley UD	2040	Project Sponsor(s): Quail Valley UD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Ranch Utilities	2030	Project Sponsor(s): Ranch Utilities	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Roman Forest Consolidated MUD	2040	Project Sponsor(s): Roman Forest Consolidated MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (NFBWA GRP Participant)	2030	Project Sponsor(s): Royal Valley Utilities	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Royal Valley Utilities (Sugar Land GRP Participant)	2030	Project Sponsor(s): Royal Valley Utilities	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Sequoia Improvement District	2030	Project Sponsor(s): Sequoia Improvement District	Recommended WMS Project						

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H	WUG Infrastructure Expansion (Groundwater) - Southern Water	2030	Project Sponsor(s): Southern Water	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Splendora	2030	Project Sponsor(s): Splendora	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Stanley Lake MUD	2050	Project Sponsor(s): Stanley Lake MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Suburban Utility	2030	Project Sponsor(s): Suburban Utility	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - TDCJ Jester Units (B)	2030	Project Sponsor(s): TDCJ Jester Units	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - TDCJ Jester Units (SJB)	2030	Project Sponsor(s): TDCJ Jester Units	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - The Commons Water Supply	2030	Project Sponsor(s): The Commons Water Supply	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Thunderbird UD	2030	Project Sponsor(s): Thunderbird UD	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - West Harris County MUD 6	2030	Project Sponsor(s): West Harris County MUD 6	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Willis	2030	Project Sponsor(s): Willis	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Wood Branch Village	2050	Project Sponsor(s): Wood Branch Village	Recommended WMS Project						
H	WUG Infrastructure Expansion (Groundwater) - Woodcreek Water of Liberty	2030	Project Sponsor(s): Woodcreek Water Of Liberty	Recommended WMS Project						
H	WUG Infrastructure Expansion - Angleton	2030	Project Sponsor(s): Angleton	Recommended WMS Project						
H	WUG Infrastructure Expansion - Bacliff MUD	2030	Project Sponsor(s): Bacliff MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Bayview MUD	2030	Project Sponsor(s): Bayview MUD	Recommended WMS Project						

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H	WUG Infrastructure Expansion - Blue Ridge West MUD	2030	Project Sponsor(s): Blue Ridge West MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Brazoria County MUD 25	2030	Project Sponsor(s): Brazoria County MUD 25	Recommended WMS Project						
H	WUG Infrastructure Expansion - Brazoria County MUD 29	2030	Project Sponsor(s): Brazoria County MUD 29	Recommended WMS Project						
H	WUG Infrastructure Expansion - CHCRWA Districts	2030	Project Sponsor(s): Central Harris County Regional Water Authority	Recommended WMS Project						
H	WUG Infrastructure Expansion - Conroe - Phase 1	2030	Project Sponsor(s): Conroe	Recommended WMS Project						
H	WUG Infrastructure Expansion - Conroe - Phase 2	2050	Project Sponsor(s): Conroe	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other (BWA Customers), Brazoria (B)	2070	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other (BWA Customers), Brazoria (B-C)	2030	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other (BWA Customers), Brazoria (SJB)	2030	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion - County-Other (GCWA Customers), Brazoria County (SJB) - Phase 1	2030	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other (GCWA Customers), Brazoria County (SJB) - Phase 2	2050	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Brazoria (BRA Customers)	2060	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Brazoria (SJ-B)	2020	Project Sponsor(s): Municipal county-other (Brazoria)	Recommended WMS Project						

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H	WUG Infrastructure Expansion - County-Other, Fort Bend (B)	2020	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion - County-Other, Fort Bend (SJ)	2020	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 1	2030	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Fort Bend County (Richmond GRP Participants) - Phase 2	2050	Project Sponsor(s): Municipal county-other (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Galveston (SJ-B)	2020	Project Sponsor(s): Municipal county-other (Galveston)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion - County-Other, Harris (COH GRP Participants)	2040	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Harris County (SJ) - Phase 1	2030	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Harris County (SJ) - Phase 2	2060	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Harris County (SJB)	2020	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion - County-Other, Harris County (TSJ) - Phase 1	2020	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion - County-Other, Harris County (TSJ) - Phase 2	2050	Project Sponsor(s): Municipal county-other (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 1	2040	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 2	2050	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project						

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H	WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 3	2060	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Montgomery (SJ) - Phase 4	2070	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project						
H	WUG Infrastructure Expansion - County-Other, Montgomery (SJRA GRP Participants)	2030	Project Sponsor(s): Municipal county-other (Montgomery)	Recommended WMS Project						
H	WUG Infrastructure Expansion - El Dorado UD	2040	Project Sponsor(s): El Dorado UD	Recommended WMS Project						
H	WUG Infrastructure Expansion - First Colony MUD 9	2030	Project Sponsor(s): First Colony MUD 9	Recommended WMS Project						
H	WUG Infrastructure Expansion - Forest Hills MUD	2040	Project Sponsor(s): Forest Hills MUD	Recommended WMS Project		Project/WMS started				
H	WUG Infrastructure Expansion - Fort Bend County MUD 115	2030	Project Sponsor(s): Fort Bend County MUD 115	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 121	2030	Project Sponsor(s): Fort Bend County MUD 121	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 128	2030	Project Sponsor(s): Fort Bend County MUD 128	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 129	2030	Project Sponsor(s): Fort Bend County MUD 129	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 140	2030	Project Sponsor(s): Fort Bend County MUD 140	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 149	2030	Project Sponsor(s): Fort Bend County MUD 149	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 152	2030	Project Sponsor(s): Fort Bend County MUD 152	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 155	2030	Project Sponsor(s): Fort Bend County MUD 155	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 158	2030	Project Sponsor(s): Fort Bend County MUD 158	Recommended WMS Project						

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H	WUG Infrastructure Expansion - Fort Bend County MUD 187	2030	Project Sponsor(s): Fort Bend County MUD 187	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 23	2030	Project Sponsor(s): Fort Bend County MUD 23	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 24	2030	Project Sponsor(s): Fort Bend County MUD 24	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 26	2030	Project Sponsor(s): Fort Bend County MUD 26	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 42	2030	Project Sponsor(s): Fort Bend County MUD 42	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 46	2040	Project Sponsor(s): Fort Bend County MUD 46	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 47	2040	Project Sponsor(s): Fort Bend County MUD 47	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 48	2030	Project Sponsor(s): Fort Bend County MUD 48	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fort Bend County MUD 49	2020	Project Sponsor(s): Fort Bend County MUD 49	Recommended WMS Project						
H	WUG Infrastructure Expansion - Fulshear	2030	Project Sponsor(s): Fulshear	Recommended WMS Project						
H	WUG Infrastructure Expansion - Galveston	2030	Project Sponsor(s): Galveston	Recommended WMS Project						
H	WUG Infrastructure Expansion - Galveston County FWSD 6	2030	Project Sponsor(s): Galveston County FWSD 6	Recommended WMS Project						
H	WUG Infrastructure Expansion - Galveston County MUD 12	2030	Project Sponsor(s): Galveston County MUD 12	Recommended WMS Project						
H	WUG Infrastructure Expansion - Galveston County WCID 1	2030	Project Sponsor(s): Galveston County WCID 1	Recommended WMS Project						
H	WUG Infrastructure Expansion - Galveston County WCID 12	2030	Project Sponsor(s): Galveston County WCID 12	Recommended WMS Project						

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	WUG Infrastructure Expansion - Galveston County WCID 8	2030	Project Sponsor(s): Galveston County WCID 8	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 106	2040	Project Sponsor(s): Harris County MUD 106	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 11	2040	Project Sponsor(s): Harris County MUD 11	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 119	2040	Project Sponsor(s): Harris County MUD 119	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 122	2020	Project Sponsor(s): Harris County MUD 122	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 132	2040	Project Sponsor(s): Harris County MUD 132	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 151	2040	Project Sponsor(s): Harris County MUD 151	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 152	2040	Project Sponsor(s): Harris County MUD 152	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 154	2040	Project Sponsor(s): Harris County MUD 154	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 189	2040	Project Sponsor(s): Harris County MUD 189	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 221	2040	Project Sponsor(s): Harris County MUD 221	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 278	2040	Project Sponsor(s): Harris County MUD 278	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 290	2040	Project Sponsor(s): Harris County MUD 290	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 36	2040	Project Sponsor(s): Harris County MUD 36	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County MUD 46	2040	Project Sponsor(s): Harris County MUD 46	Recommended WMS Project						

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H	WUG Infrastructure Expansion - Harris County MUD 6	2030	Project Sponsor(s): Harris County MUD 6	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County UD 14	2040	Project Sponsor(s): Harris County UD 14	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County UD 15	2040	Project Sponsor(s): Harris County UD 15	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County WCID 133	2040	Project Sponsor(s): Harris County WCID 133	Recommended WMS Project						
H	WUG Infrastructure Expansion - Harris County WCID 74	2040	Project Sponsor(s): Harris County WCID 74	Recommended WMS Project						
H	WUG Infrastructure Expansion - Hitchcock	2030	Project Sponsor(s): Hitchcock	Recommended WMS Project						
H	WUG Infrastructure Expansion - HMW SUD	2030	Project Sponsor(s): HMW SUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - La Marque	2030	Project Sponsor(s): La Marque	Recommended WMS Project						
H	WUG Infrastructure Expansion - Lake Bonanza WSC	2030	Project Sponsor(s): Lake Bonanza WSC	Recommended WMS Project						
H	WUG Infrastructure Expansion - Lake Jackson	2030	Project Sponsor(s): Lake Jackson	Recommended WMS Project						
H	WUG Infrastructure Expansion - League City	2030	Project Sponsor(s): League City	Recommended WMS Project	Yes	Project/WMS started				
H	WUG Infrastructure Expansion - Magnolia	2030	Project Sponsor(s): Magnolia	Recommended WMS Project						
H	WUG Infrastructure Expansion - Manufacturing, Brazoria County (BC)	2020	Project Sponsor(s): Manufacturing (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Manufacturing, Brazoria County (SJB)	2030	Project Sponsor(s): Manufacturing (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Manufacturing, Fort Bend County (B)	2020	Project Sponsor(s): Manufacturing (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Manufacturing, Fort Bend County (SJ)	2020	Project Sponsor(s): Manufacturing (Fort Bend)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Manufacturing, Galveston County	2020	Project Sponsor(s): Manufacturing (Galveston)	Recommended WMS Project						

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	WUG Infrastructure Expansion - Manufacturing, Montgomery County	2020	Project Sponsor(s): Manufacturing (Montgomery)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Meadowcreek MUD	2030	Project Sponsor(s): Meadowcreek MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Memorial Villages Water Authority - Phase 1	2020	Project Sponsor(s): Memorial Villages Water Authority	Recommended WMS Project						
H	WUG Infrastructure Expansion - Memorial Villages Water Authority - Phase 2	2050	Project Sponsor(s): Memorial Villages Water Authority	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Brazoria County (B)	2030	Project Sponsor(s): Mining (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Brazoria County (BC)	2030	Project Sponsor(s): Mining (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Brazoria County (SJB)	2030	Project Sponsor(s): Mining (Brazoria)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Galveston County (NT)	2020	Project Sponsor(s): Mining (Galveston)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Galveston County (SJB)	2020	Project Sponsor(s): Mining (Galveston)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Harris County (SJ)	2020	Project Sponsor(s): Mining (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Harris County (SJB)	2020	Project Sponsor(s): Mining (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Mining, Harris County (TSJ)	2020	Project Sponsor(s): Mining (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery	2040	Project Sponsor(s): Montgomery	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 112	2030	Project Sponsor(s): Montgomery County MUD 112	Recommended WMS Project						

Reg	WMS or WMS Project Name	Database Online Decade	Related Sponsor Entity and/or Benefitting WUGs	Implementation Survey Record Type	Has Sponsor taken affirmative vote or actions? (TWC 16.053(h)(10))	What is the status of the WMS project or WMS recommended in the 2022 SWP?	If the project has not been started or no longer is being pursued, please explain why.	Impediments to project development	Information about project impediments	What funding type(s) are being used for the project?
H	WUG Infrastructure Expansion - Montgomery County MUD 115	2030	Project Sponsor(s): Montgomery County MUD 115	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 119	2030	Project Sponsor(s): Montgomery County MUD 119	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 15	2030	Project Sponsor(s): Montgomery County MUD 15	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 18	2050	Project Sponsor(s): Montgomery County MUD 18	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 19	2030	Project Sponsor(s): Montgomery County MUD 19	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 56	2030	Project Sponsor(s): Montgomery County MUD 56	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 88	2030	Project Sponsor(s): Montgomery County MUD 88	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 89	2030	Project Sponsor(s): Montgomery County MUD 89	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County MUD 99	2030	Project Sponsor(s): Montgomery County MUD 99	Recommended WMS Project						
H	WUG Infrastructure Expansion - Montgomery County WCID 1	2030	Project Sponsor(s): Montgomery County WCID 1	Recommended WMS Project	Yes	Project/WMS started				
H	WUG Infrastructure Expansion - Mount Houston Road MUD	2040	Project Sponsor(s): Mount Houston Road MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Msec Enterprises	2030	Project Sponsor(s): MSEC Enterprises	Recommended WMS Project						
H	WUG Infrastructure Expansion - NFBWA Districts	2030	Project Sponsor(s): North Fort Bend Water Authority	Recommended WMS Project						
H	WUG Infrastructure Expansion - NHCRWA Districts 2025	2030	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project						
H	WUG Infrastructure Expansion - NHCRWA Districts 2035	2040	Project Sponsor(s): North Harris County Regional Water Authority	Recommended WMS Project						

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H	WUG Infrastructure Expansion - North Belt UD	2040	Project Sponsor(s): North Belt UD	Recommended WMS Project						
H	WUG Infrastructure Expansion - North Forest MUD	2040	Project Sponsor(s): North Forest MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - North Green MUD	2040	Project Sponsor(s): North Green MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Oak Ridge North	2030	Project Sponsor(s): Oak Ridge North	Recommended WMS Project						
H	WUG Infrastructure Expansion - Palmer Plantation MUD 1	2030	Project Sponsor(s): Palmer Plantation MUD 1	Recommended WMS Project						
H	WUG Infrastructure Expansion - Palmer Plantation MUD 2	2030	Project Sponsor(s): Palmer Plantation MUD 2	Recommended WMS Project						
H	WUG Infrastructure Expansion - Panorama Village	2040	Project Sponsor(s): Panorama Village	Recommended WMS Project						
H	WUG Infrastructure Expansion - Pine Village PUD	2040	Project Sponsor(s): Pine Village PUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Porter SUD	2050	Project Sponsor(s): Porter SUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Quadvest, Montgomery County - Phase 1	2030	Project Sponsor(s): Quadvest	Recommended WMS Project						
H	WUG Infrastructure Expansion - Quadvest, Montgomery County - Phase 2	2060	Project Sponsor(s): Quadvest	Recommended WMS Project						
H	WUG Infrastructure Expansion - Quail Valley UD	2030	Project Sponsor(s): Quail Valley UD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Rayford Road MUD	2030	Project Sponsor(s): Rayford Road MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Richwood	2030	Project Sponsor(s): Richwood	Recommended WMS Project	Yes	Project/WMS started				
H	WUG Infrastructure Expansion - River Plantation MUD	2050	Project Sponsor(s): River Plantation MUD	Recommended WMS Project						

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H	WUG Infrastructure Expansion - Rolling Fork PUD	2030	Project Sponsor(s): Rolling Fork PUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - San Leon MUD	2030	Project Sponsor(s): San Leon MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Shenandoah	2020	Project Sponsor(s): Shenandoah	Recommended WMS Project						
H	WUG Infrastructure Expansion - Sienna Plantation	2030	Project Sponsor(s): Sienna Plantation	Recommended WMS Project						
H	WUG Infrastructure Expansion - Spring Creek UD	2030	Project Sponsor(s): Spring Creek UD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Stanley Lake MUD	2060	Project Sponsor(s): Stanley Lake MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Steam-Electric Power, Chambers County (TSJ)	2020	Project Sponsor(s): NRG; Steam-electric power (Chambers)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Steam-Electric Power, Harris County (SJ)	2020	Project Sponsor(s): NRG; Steam-electric power (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Steam-Electric Power, Harris County (SJB)	2020	Project Sponsor(s): NRG; Steam-electric power (Harris)	Recommended WMS Project						
H	WUG Infrastructure Expansion - Sunbelt FWSD	2040	Project Sponsor(s): Sunbelt FWSD	Recommended WMS Project						
H	WUG Infrastructure Expansion - T & W Water Service - Phase 1	2030	Project Sponsor(s): T and W Water Service	Recommended WMS Project						
H	WUG Infrastructure Expansion - T & W Water Service - Phase 2	2060	Project Sponsor(s): T and W Water Service	Recommended WMS Project						
H	WUG Infrastructure Expansion - Texas City	2030	Project Sponsor(s): Texas City	Recommended WMS Project						
H	WUG Infrastructure Expansion - The Woodlands - Phase 1	2020	Project Sponsor(s): The Woodlands	Recommended WMS Project	Yes	Project/WMS completed				
H	WUG Infrastructure Expansion - The Woodlands - Phase 2	2040	Project Sponsor(s): The Woodlands	Recommended WMS Project						
H	WUG Infrastructure Expansion - The Woodlands, Harris County	2040	Project Sponsor(s): The Woodlands	Recommended WMS Project						

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H	WUG Infrastructure Expansion - Thunderbird UD	2030	Project Sponsor(s): Thunderbird UD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Tomball	2030	Project Sponsor(s): Tomball	Recommended WMS Project						
H	WUG Infrastructure Expansion - Trail of the Lakes MUD	2040	Project Sponsor(s): Trail of the Lakes MUD	Recommended WMS Project						
H	WUG Infrastructure Expansion - Trinity Bay Conservation District - Phase 1	2020	Project Sponsor(s): Trinity Bay Conservation District	Recommended WMS Project						
H	WUG Infrastructure Expansion - Trinity Bay Conservation District - Phase 2	2040	Project Sponsor(s): Trinity Bay Conservation District	Recommended WMS Project						
H	WUG Infrastructure Expansion - Trinity Bay Conservation District - Phase 3	2060	Project Sponsor(s): Trinity Bay Conservation District	Recommended WMS Project						
H	WUG Infrastructure Expansion - Westwood North WSC	2030	Project Sponsor(s): Westwood North WSC	Recommended WMS Project						
H	WUG Infrastructure Expansion - WHCRWA Districts	2030	Project Sponsor(s): West Harris County Regional Water Authority	Recommended WMS Project	Yes	Project/WMS started				
H	WUG Infrastructure Expansion - Woodcreek MUD	2040	Project Sponsor(s): Woodcreek MUD	Recommended WMS Project						

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APPENDIX 10-A

PUBLIC HEARING MATERIALS

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APPENDIX 10-B

WRITTEN COMMENTS

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APPENDIX 10-C

RESPONSES TO WRITTEN COMMENTS

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