

Utility Services Committee

October 21, 2020



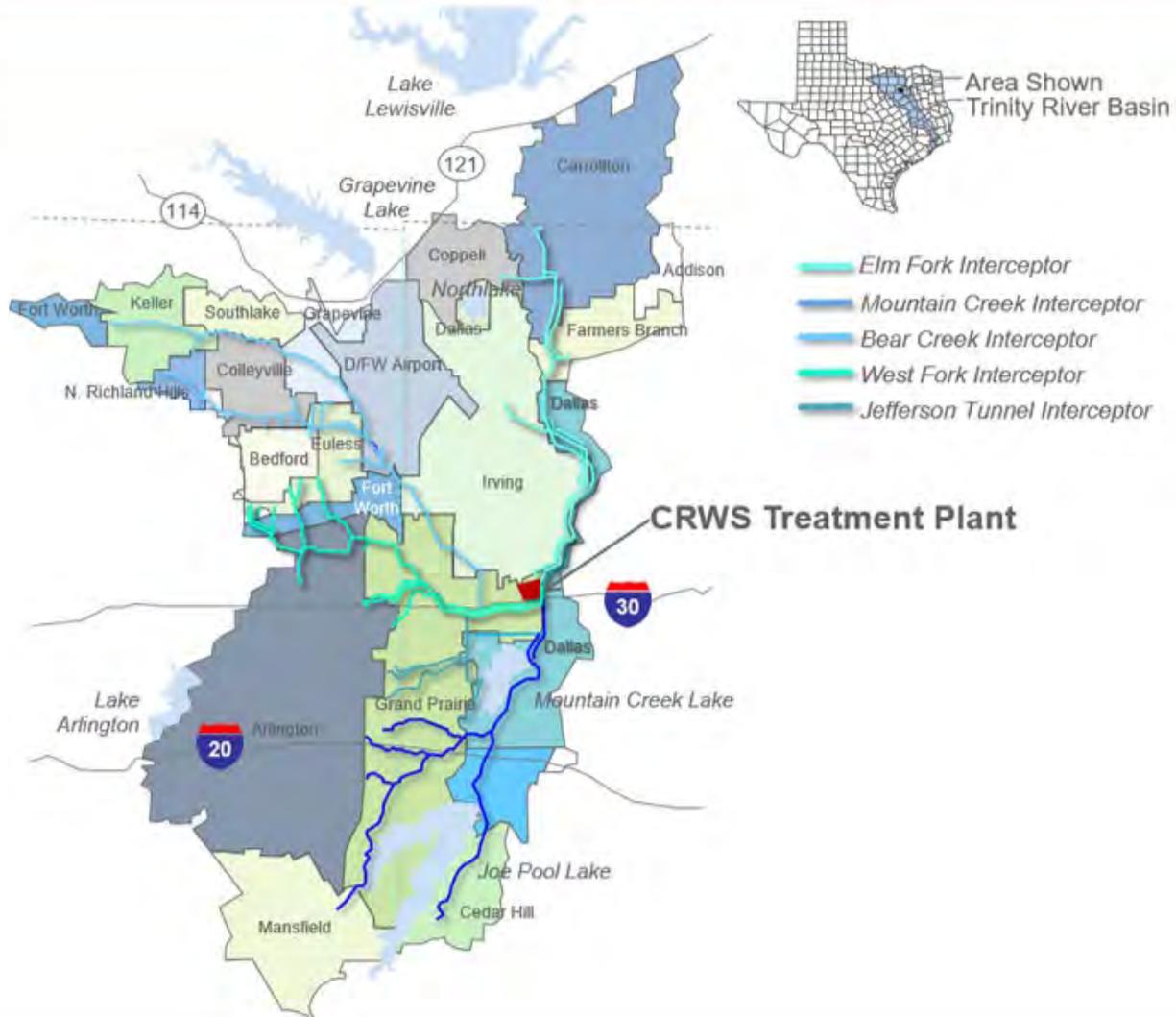
Trinity River Authority of Texas

Enriching the Trinity basin as a resource for Texans

Item A: CRWS — Effluent Filters Phase IIB Improvements — Contract Award, Engineering Services Agreement, and Materials Testing Services Agreement



Central Regional Wastewater System



Central Regional Wastewater System Treatment Plant



Filters

BACKGROUND

- The CRWS facility provides wastewater treatment for 21 Contracting Parties.
- Beginning in the 1970s, the Authority utilized sand filtration as a proven and effective means of filtering effluent. CRWS has 30 sand filters.
- In the 2000s, the Authority looked at alternatives to sand filtration. Cloth media filtration has the advantages of consistent, better quality effluent, twice the hydraulic capacity in the same footprint, and reducing backwash by about 90%.

Cloth Media Filters at CRWS

- Aqua-Aerobics Aqua Diamond Filter™
- Proven technology
- 12 filters currently installed
 - 2008 - 2 filters - Demonstration
 - 2011 - 4 filters - Phase I
 - 2016 - 4 filters - Phase II
 - 2019 - 2 filters - Phase IIIA
- High quality effluent
- Increased capacity per filter



Proposed “Scope of Work”

- Replace operator interface terminals on the 12 existing cloth filters
- Retrofit 4 existing sand filter basins with new cloth media filters (will bring retrofit total to 16)
- Cover the 4 new cloth filters with fabric canopy structures and bird netting
- Decommission the remaining 14 sand filters

Phase II B Filter Improvements



Bid Results – September 16, 2020

Bidders	Total Bid
Thalle Construction Company (-6.05%)	\$15,502,276
Crescent Constructors, Inc.	\$15,827,000
MWH Constructors	\$23,860,854

OPCC ≡ \$16.5 Million

Plummer Associates, Inc. Construction Phase Services

- Meetings/site visits/factory witness testing
- Review of payment applications, schedule, submittals, “Requests for Information,” “Contract Modification Requests,” “Change Orders,” etc.
- Documentation of field changes
- Pipe segmenting
- GIS data assistance
- Record drawings preparation
- Fee: \$562,223

Alliance Geotechnical Group, Inc. Construction Materials Testing Services

- Typical testing:
 - Backfill compaction
 - Material gradation
 - Concrete compression strength
 - Welding inspections

- Fee: \$60,000

RECOMMENDATIONS

- Award Construction Contract to Thalle Construction Company in the amount of \$15,502,276;
- Approve contract for professional engineering services related to Construction Phase Services for CRWS Effluent Filters Phase IIB Improvements to Plummer Associates, Inc., in the amount of \$562,223; and
- Approve contract for construction materials testing to Alliance Geotechnical Group, Inc., in the amount of \$60,000.

Item B: CRWS — Lift Station LS_7M Improvements — Engineering Services Agreement

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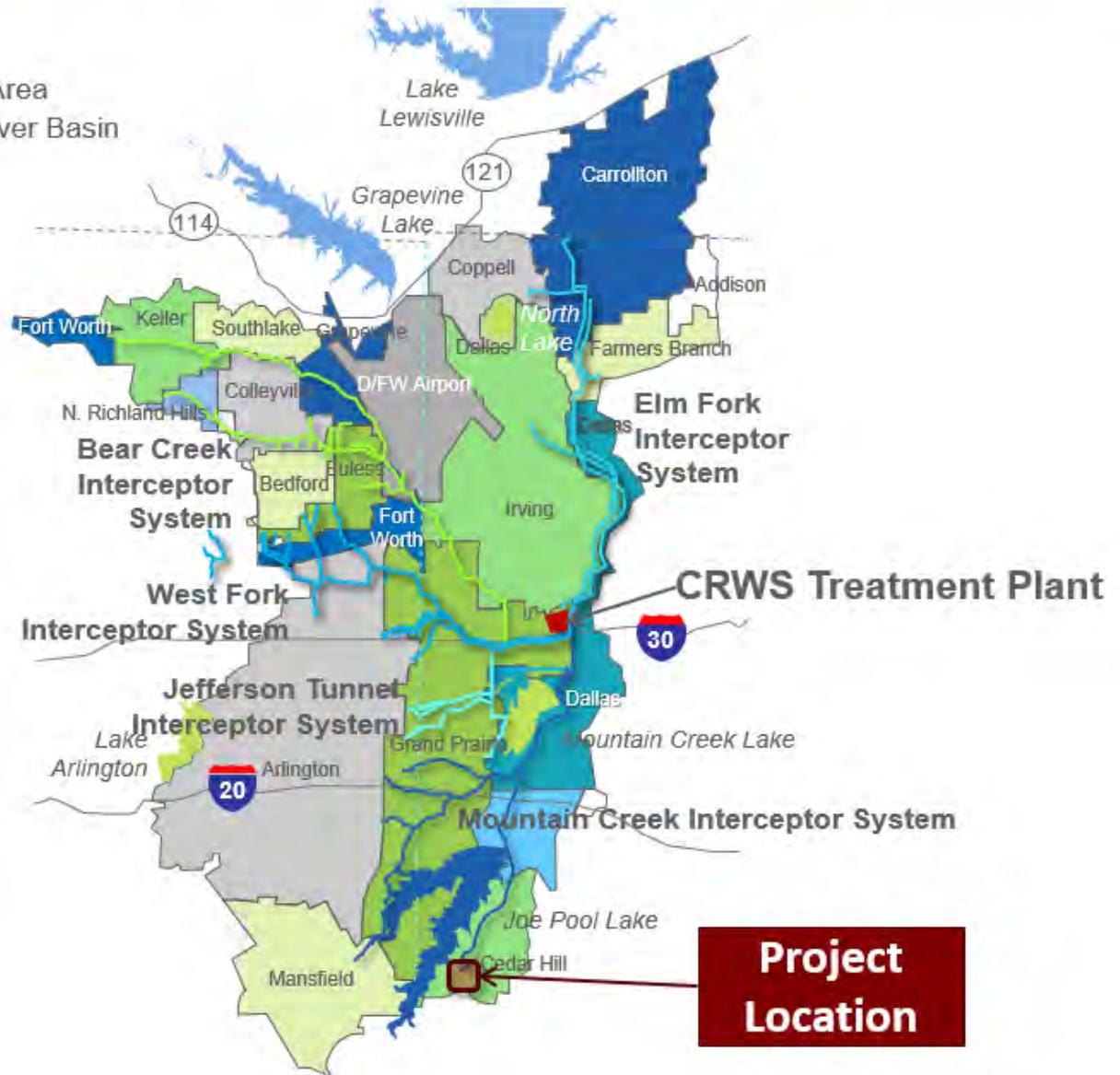


Central Regional Wastewater System



Service Area
Trinity River Basin

Contracting Parties	
Irving	1957
Grand Prairie	1957
Farmers Branch	1957
Dallas	1957
Carrollton	1967
Arlington	1973
Bedford	1973
Euless	1973
D/FW Airport	1973
Mansfield	1973
Grapevine	1974
Colleyville	1975
N. Richland Hills	1975
Hurst	1975
Coppell	1976
Fort Worth	1976
Keller	1984
Duncanville	1984
Cedar Hill	1985
Southlake	1988
Addison	1996



BACKGROUND

- CRWS consists of five major interceptor systems:
 - Bear Creek
 - Elm Fork
 - West Fork
 - Jefferson Tunnel
 - Mountain Creek
- The Authority owns and operates four wastewater lift stations throughout the CRWS service area.
 - Three are on the Mountain Creek Interceptor System
 - Lift Station LS_7M is in need of rehabilitation (or replacement) and expansion.

PROJECT LOCATION



FACILITY HISTORY

- 1987: Constructed to serve the cities of Cedar Hill and Grand Prairie
- 2007: Expanded to 10 million gallons per day capacity
 - Pumps replaced
 - Civil and electrical improvements
 - Condition of unlined concrete walls not addressed
- 2018: Triennial Evaluation reports severe corrosion on the walls of the wet well
- 2019: Phase VI update to the CRWS Inflow and Infiltration Assessment identifies projected 2050 flow demands. Additional capacity needed.

FACILITY CONDITION



PATH FORWARD

- Field Assessment is proposed:
 - Determine the structural integrity of the wet well
 - Determine the condition of the pumps
 - Quantify useful life expectancy
 - Hydraulic capacity for use in expansion
- Field Assessment data will be used in the development of design alternatives as part of Preliminary Engineering
- Kimley-Horn and Associates, Inc., selected to provide professional engineering services

PROPOSED "SCOPE OF WORK"

- Project start-up, management, and QA/QC
- Perform Field Assessment
- Provide Technical Memorandum and conduct workshop to discuss findings
- Special Services
- Fee: \$150,925

RECOMMENDATION

- Award contract to Kimley-Horn and Associates, Inc., for professional engineering services related to a field assessment for the Lift Station LS_7M Improvements project, in the amount of \$150,925.

Item C: CRWS — Meter Station Rehabilitation Group 2 — Engineering Services Agreement

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BACKGROUND

- CRWS provides collection and treatment services to 20 customer cities in the DFW Metroplex and DFW Airport. Comprised of five major interceptor systems:
 - Bear Creek
 - Elm Fork
 - West Fork
 - Jefferson Tunnel
 - Mountain Creek
- The Authority owns and operates 122 meter stations in the System to allocate costs to the customer cities and DFW Airport.

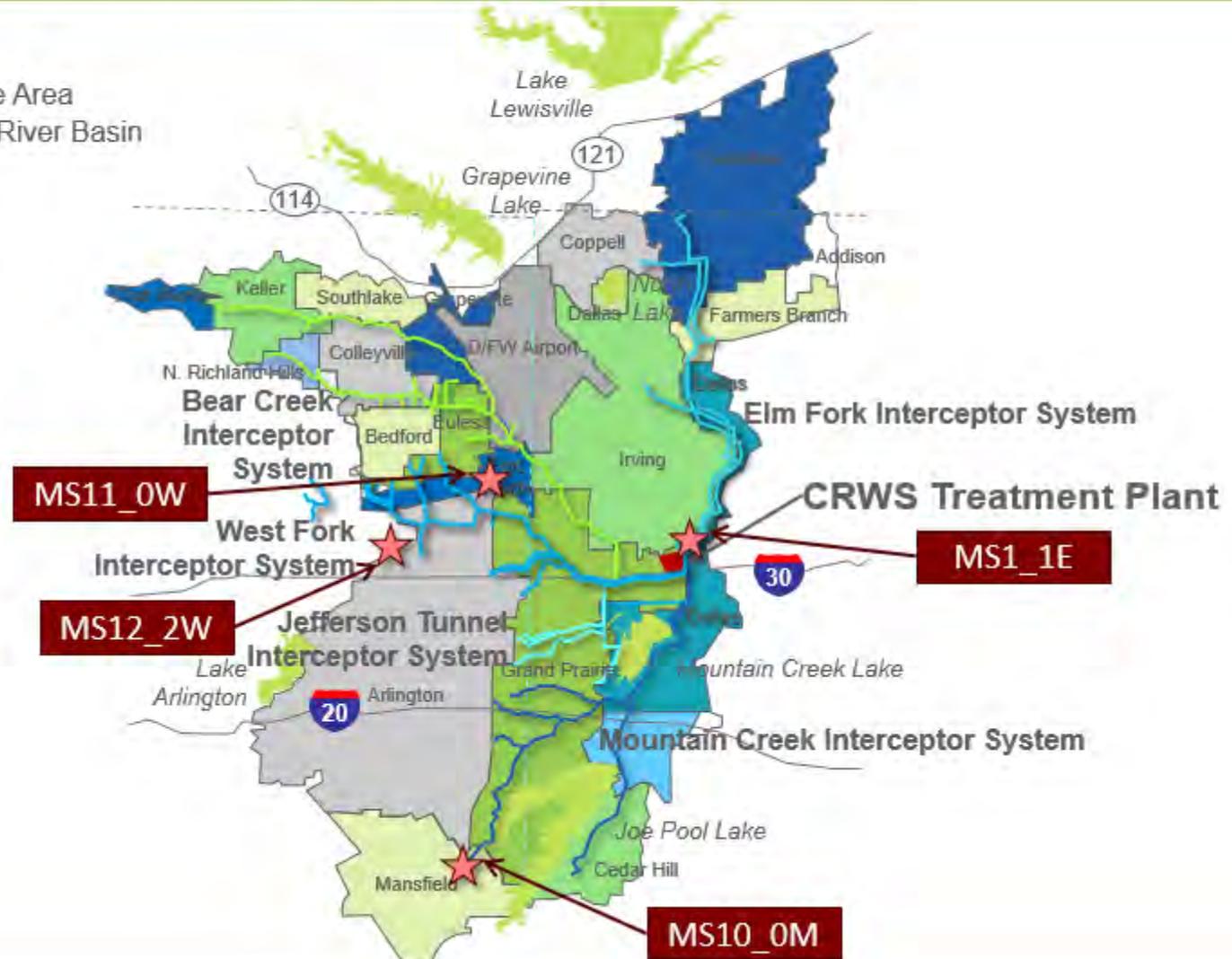
BACKGROUND

- 2016: CRWS Meter Station Evaluation conducted:
 - 15 meter stations were identified for rehabilitation or replacement
 - Those 15 meter stations were prioritized and grouped into multiple projects to facilitate timely design and construction
- April 2020: Group 1 (3 stations) presented to Board
- October 2020: Group 2 (4 stations) presented to Board
- 2023: Group 3 (3 stations) to be presented to Board

Meter Station Rehabilitation Group 2



Contracting Parties	
Irving	1957
Grand Prairie	1957
Farmers Branch	1957
Dallas	1957
Carrollton	1967
Arlington	1973
Bedford	1973
Eules	1973
D/FW Airport	1973
Mansfield	1973
Grapevine	1974
Colleyville	1975
N. Richland Hills	1975
Hurst	1975
Coppell	1976
Fort Worth	1976
Keller	1984
Duncanville	1984
Cedar Hill	1985
Southlake	1988
Addison	1996

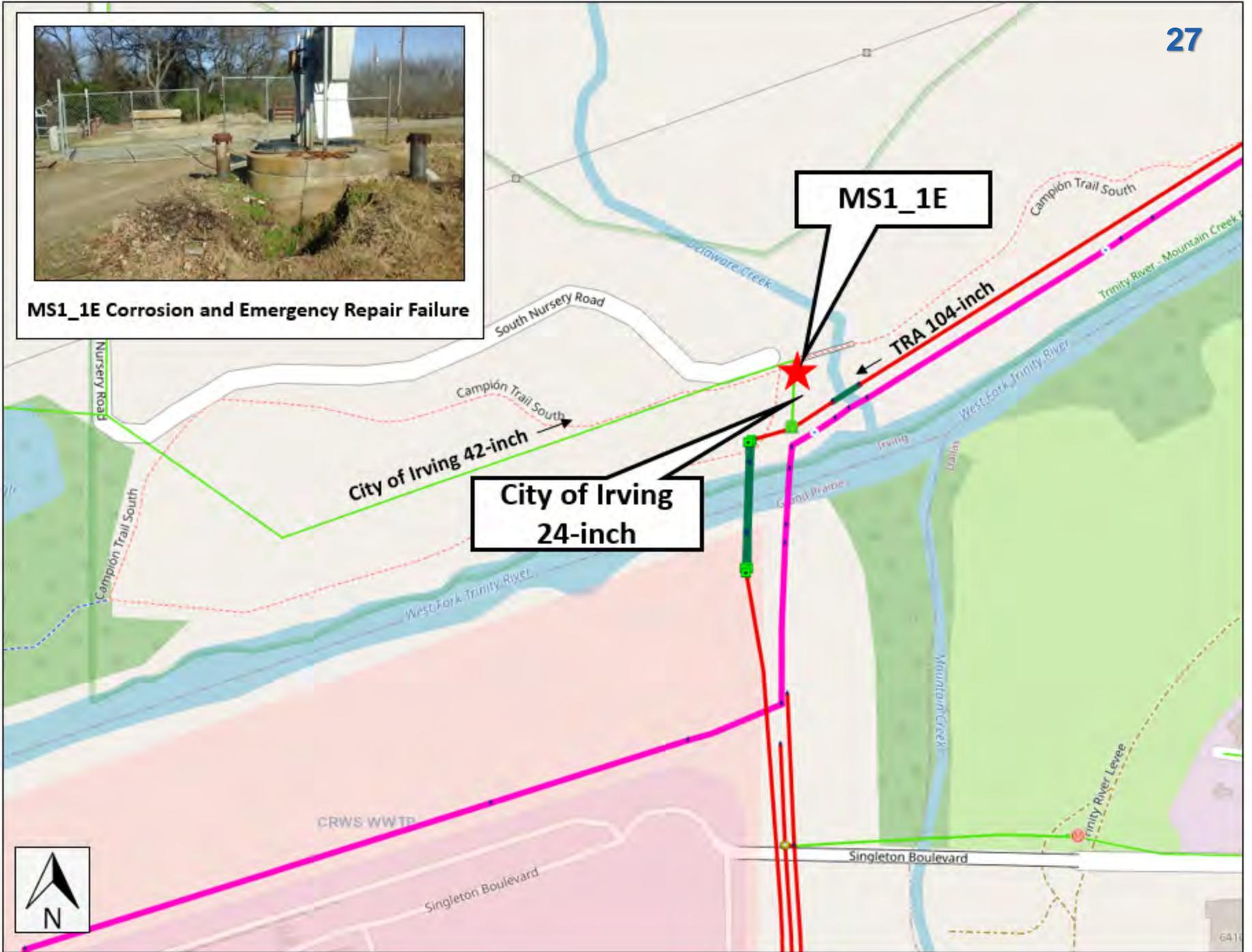


BACKGROUND

- Meter Station “MS1_1E”
 - Elm Fork Interceptor System
 - Measures flow for the City of Irving
 - Project Driver: Condition
 - 2019: corrosion caused a failure in a portion of 30-inch concrete pipe
 - owned by City of Irving
 - slip-lined with a 24-inch polyethylene pipe
 - Partial manhole rehabilitation
 - Project will include replacement of 160 linear feet (LF) of the repaired pipe (24-inch repair is now a flow restriction).
 - TRA will fund design of overall project.
 - Irving will fund construction of 160 LF repair via Interlocal Agreement between the Authority and the City of Irving.

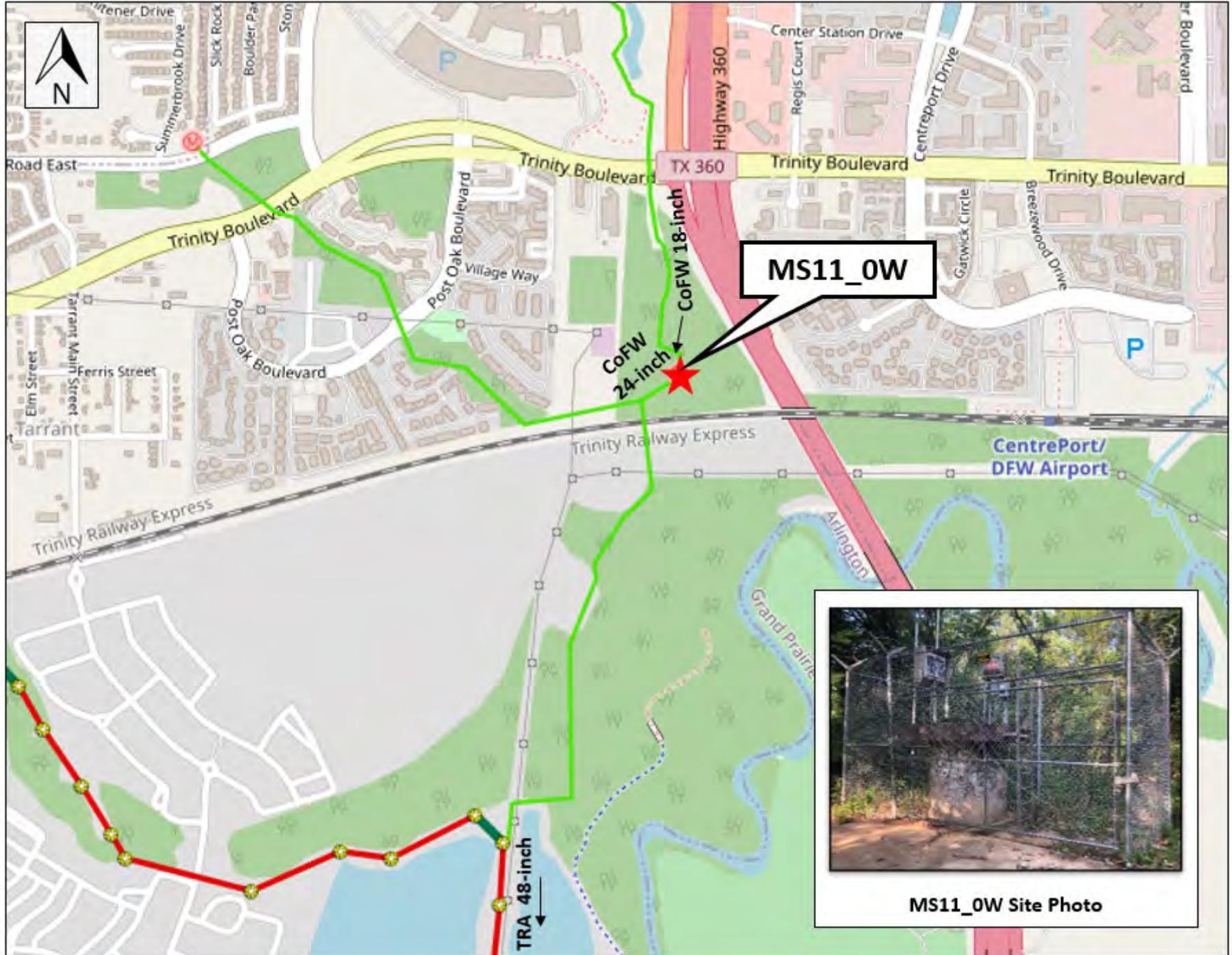


MS1_1E Corrosion and Emergency Repair Failure



BACKGROUND

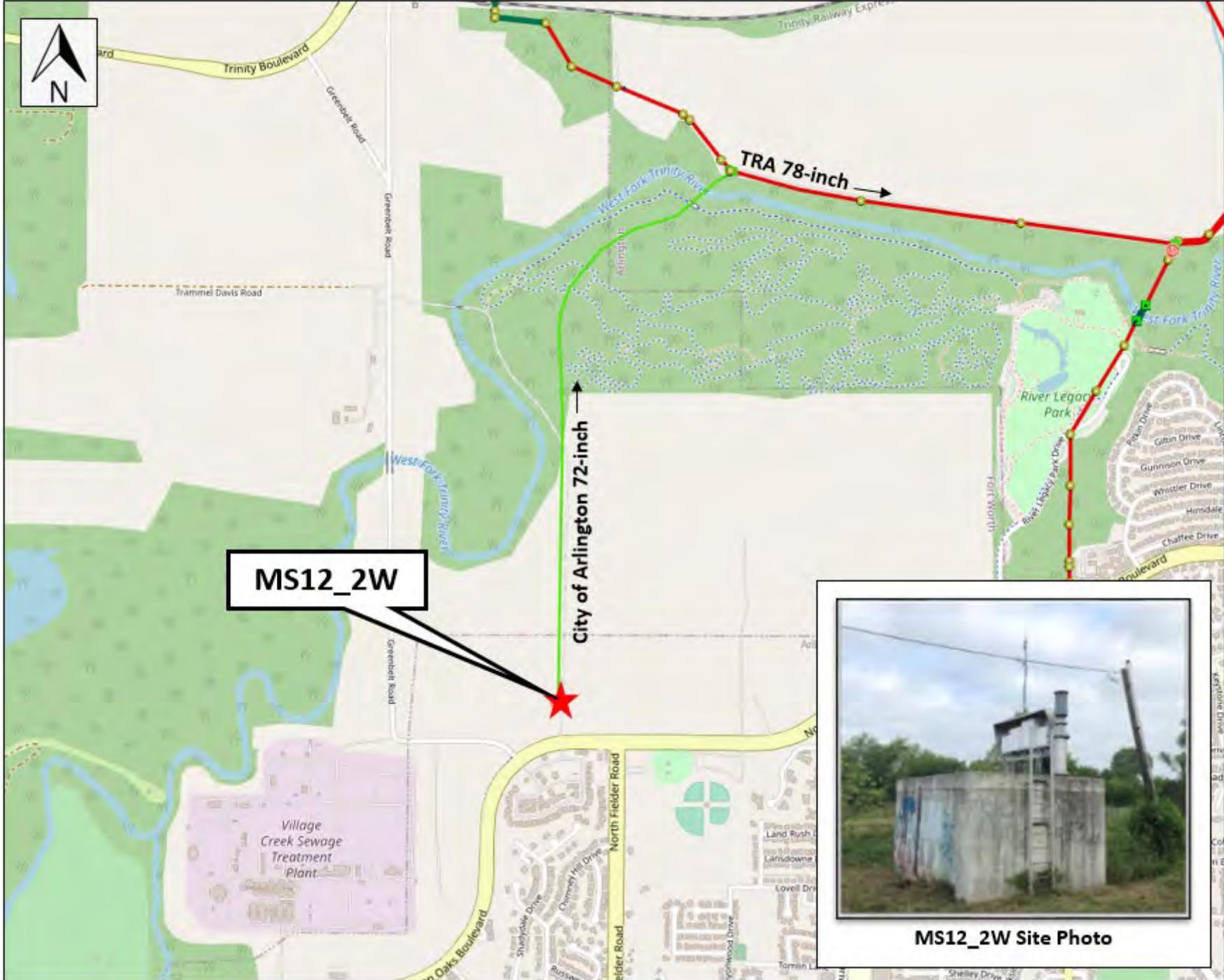
- Meter Station “MS11_0W”
 - West Fork Interceptor System
 - Measures flow for the City of Fort Worth
 - Project Driver: Capacity and safety



MS11_OW Site Photo

BACKGROUND

- Meter Station “MS12_2W”
 - West Fork Interceptor System
 - Measures flow for the City of Arlington
 - Project Driver: Outdated meter technology and maintenance



MS12_2W Site Photo

BACKGROUND

- Meter Station “MS10_0M”
 - Mountain Creek Interceptor System
 - Measures flow for the City of Mansfield
 - Project Driver: Outdated meter technology and maintenance



MS10_0M: Compound Meter

Proposed “Scope of Work” - AECOM

- Project Start-up, Management, and QA/QC
- Meter Station Condition Evaluation
- Evaluation of Replacement Meter Technology
- Topographic Survey, Geotechnical Investigation, Environmental Assessment, Cultural Resources Evaluation, Easement Legal Descriptions, and Exhibit Preparation

Proposed “Scope of Work” - AECOM

- Preliminary and Final Design
 - 60%, 90%, and 100% plans and contract documents
 - Expedited bid package for MS1_1E
 - Separate bid package for remaining 3 meter stations
- Construction Advertisement
- Special Services
- Fee: \$959,058

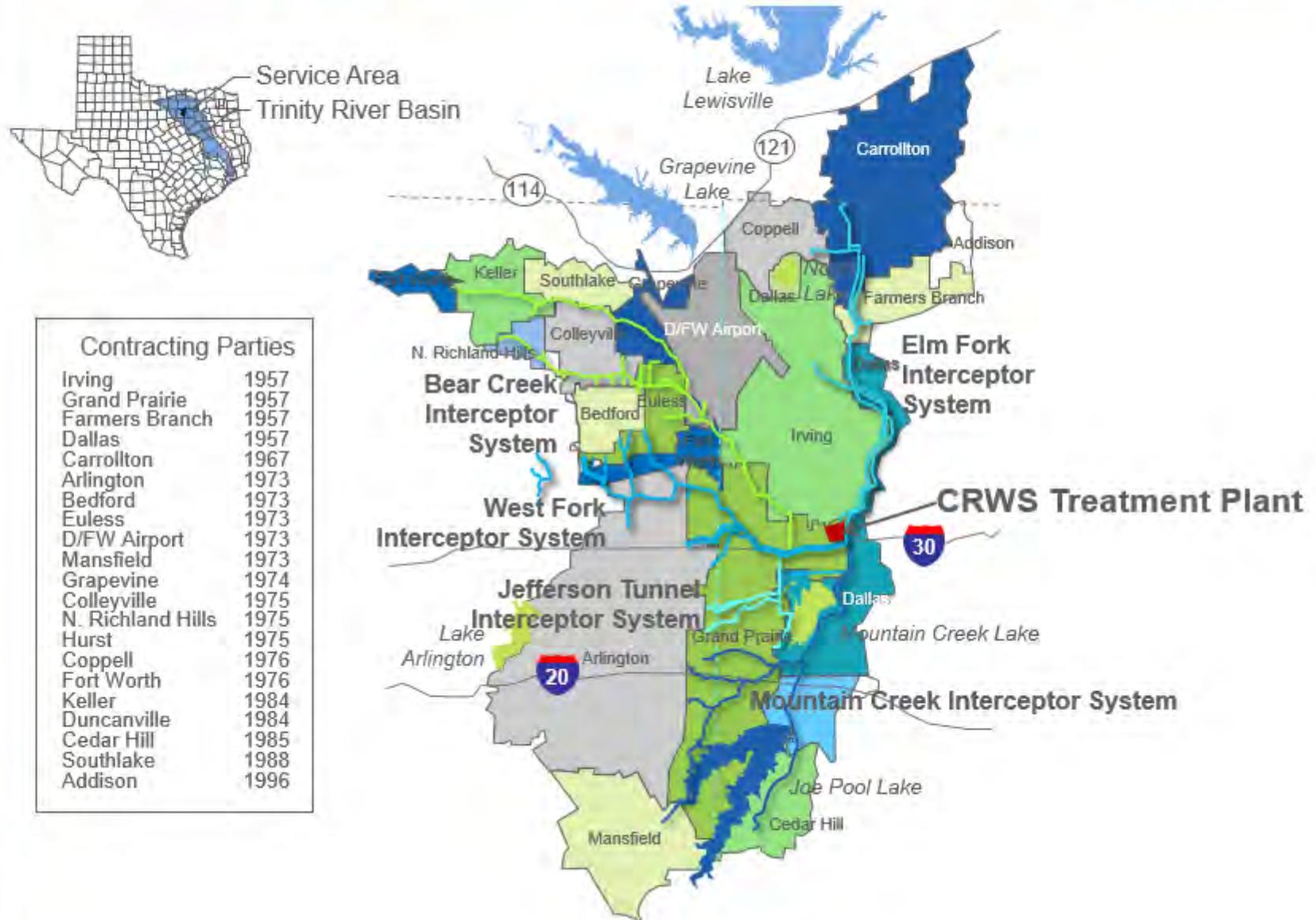
RECOMMENDATION

- Award contract to AECOM Technical Services, Inc., for professional services related to the preliminary and final design of Meter Station Rehabilitation Group 2, in the amount of \$959,058.

Item D: CRWS — Phase II Solids Management Improvements — Retainage Reduction



Central Regional Wastewater System



BACKGROUND

- The CRWS facility provides wastewater treatment for 21 Contracting Parties
- Improvements (\$261 million) are being delivered in various “phases”:
 - Phase I (Design-Bid-Build, Eagle Contracting, L.P.):
 - New primary sludge pumps
 - New screening station
 - New gravity thickener
 - Odor control facilities
 - STATUS: Complete

BACKGROUND

- Phase II (Design-Bid-Build, Eagle Contracting, L.P.):
 - Expansion of the primary sludge pumps
 - Installation of primary sludge screening equipment
 - Demolition of existing dissolved air flotation thickeners
 - Demolition of Filter Press No. 3
 - Two new belt presses
 - Refurbishment of three existing belt presses
 - STATUS: Substantially Complete
Reduction of Retainage recommended

BACKGROUND

- Phase III-A (Construction Management At-Risk, McCarthy-Black and Veatch):
 - Modifications to the existing pre-dewatering and thickening buildings
 - Site civil improvements
 - STATUS: Complete
- Phase III-B (Competitive Sealed Proposals, MWH Constructors):
 - Thermal Hydrolysis Process
 - STATUS: 70% complete

Retainage Reduction

- Original Contract Amount \$20,900,000
- Final Contract Amount \$22,881,594
- Original retainage withheld = \$ 2,288,159.40 (10%)
- Partial retainage released on 4/24/20 = \$ 1,143,866.53 (5%)
- Current retainage being held = \$ 1,143,866.53 (5%)
- Requested retainage to be released = \$ 855,093.23 (4%)
- Proposed retainage to continue holding = \$ 288,773.30 (1%)

RECOMMENDATION

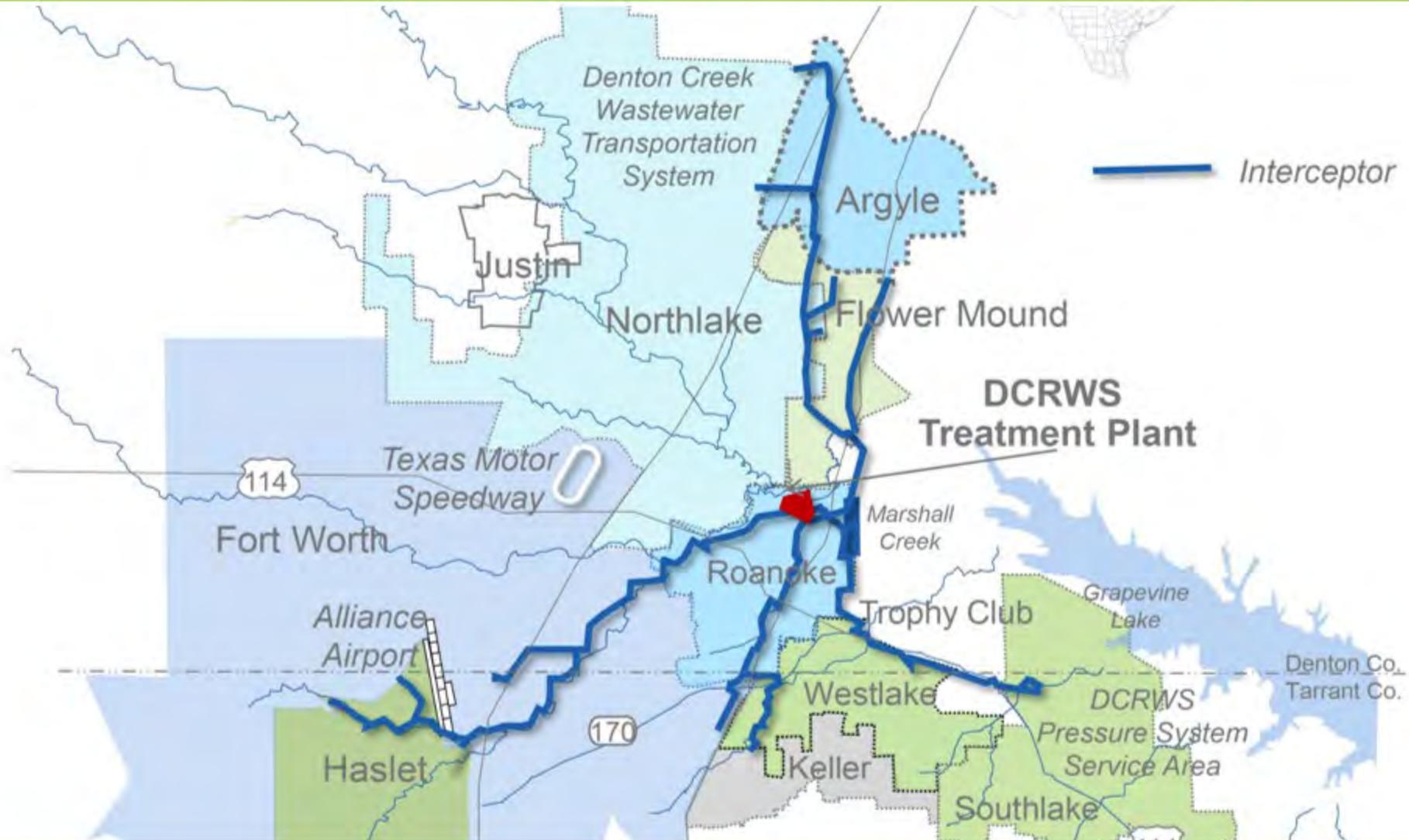
- Release retainage in the amount of \$855,093.23 on the Phase II Solids Management Improvements project at the Central Wastewater Treatment Plant, finding that satisfactory progress is being made by Eagle Contracting, L.P.

Item E: DCRWS — Influent Coarse Screen Improvements — Contract Award, Engineering Services Agreement, and Materials Testing Services Agreement

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Denton Creek Regional Wastewater System



Denton Creek Regional Wastewater System Treatment Plant



Influent
Screens

BACKGROUND

- DCRWS serves Fort Worth, Haslet, Keller, Roanoke, and Southlake; the towns of Argyle, Flower Mound, Northlake, and Westlake; and the Circle T Municipal Utility District Nos. 1 and 3
- Influent Screen Structure
 - Installed in 2010 as part of the 11.5 million gallon per day (MGD) expansion
 - Comprised of three channels:
 - Two contain fine screens
 - One designated as “future”

BACKGROUND

- 2014 DCRWS Master Plan recommended coarse screens upstream of existing fine screens due to:
 - Non-dispersibles
 - Interceptor improvements (enlarging diameter up to 84-inches), which could allow larger debris into the system and damage the fine screens
 - Future peak flow storage - having additional screening for flows to be stored is desired to minimize debris to be cleaned out of the basin

BACKGROUND

- 2019: Freese & Nichols, Inc., selected to design improvements
- Scope included:
 - Conveyors from the new coarse screens to the screenings container
 - New screenings container cover system to more easily meet Texas Commission on Environmental Quality requirements
 - Expanded driveway for more streamlined access to screenings container

Bid Results – September 17, 2020

Engineer's OPCC = \$2,014,000

Bidders	Total Bid
Felix Construction (-31%)	\$1,386,268
Red River Construction Co.	\$1,534,600
Crescent Constructors, Inc.	\$1,757,000
Schofield Civil Construction, LLC	\$1,768,565
Heritage Constructors, Inc.	\$1,959,474

Freese & Nichols, Inc.

Construction Phase Services

- Meetings/site visits/factory witness testing
- Review of payment applications, schedule, submittals, “Requests for Information,” “Contract Modification Requests,” etc.
- Documentation of field changes
- GIS data assistance
- Pipe segmenting
- Record Drawings
- Fee: \$389,976

Gorrondona and Associates, Inc. Construction Materials Testing Services

- Typical testing:
 - Backfill compaction
 - Material gradation
 - Concrete compression strength

- Fee: \$65,000

RECOMMENDATIONS

- Award construction contract to Felix Construction in the amount of \$1,386,268;
- Approve contract for professional engineering services related to Construction Phase Services for DCRWS Influent Coarse Screen Improvements to Freese and Nichols, Inc., in the amount of \$389,976; and
- Approve contract for construction materials testing to Gorrondona and Associates, Inc., in the amount of \$65,000.

Item F: DCRWS — Denton Creek Pressure System Force Main and Lift Station Improvements — Engineering Services Agreement

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Denton Creek Regional Wastewater System



BACKGROUND

- DCRWS consists of four major interceptor systems:
 - Henrietta Creek
 - Cade Branch
 - Denton Creek Wastewater Transportation System
 - Denton Creek Pressure System
- Denton Creek Pressure System (DCPS)
 - Kirkwood Lift Station (LS)
 - Force Main: 29,000 linear feet (LF) (20-inches to 30-inches)

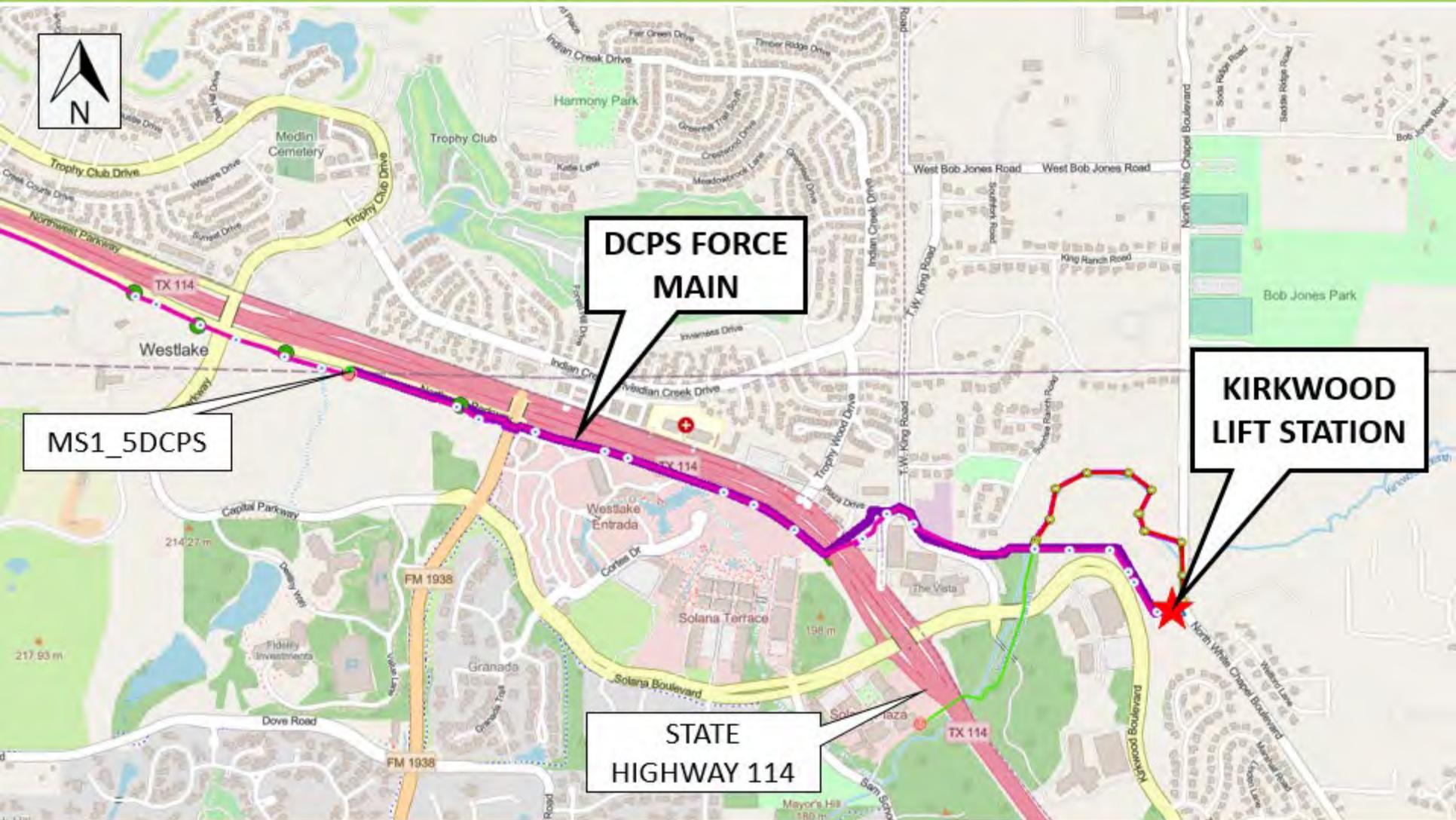
BACKGROUND

- Kirkwood LS:
 - Constructed in 1996
 - Located in Southlake
 - Receives flow from Roanoke, Southlake, and Westlake
 - Existing firm capacity of 8 million gallons per day (MGD)
- DCPS force main:
 - Constructed in 1996
 - Generally routed along the Highway 114 corridor through Southlake, Trophy Club, Westlake, and Roanoke
 - 29,000 LF of 20-inch to 30-inch pipeline
 - Conveys flow from Kirkwood LS to Denton Creek Wastewater Treatment Plant.

BACKGROUND

- 2013: Phase II update to the DCRWS Inflow and Infiltration Assessment was completed:
 - Identified increased projected flows in the DCPS service area
 - Increased projected flow demands required improvements to 11,000 LF of force main from the Kirkwood LS to the Authority's meter station MS1_5DCPS
 - Increased projected flow demands required a capacity expansion at the Kirkwood LS
- 2014: Rehabilitation of Kirkwood LS included electrical capacity improvements in preparation for the increased pumping demands
- Pump replacements to be included in DCPS force main relief project to provide more comprehensive design

PROJECT LOCATION



BACKGROUND

- In October 2019, the Board of Directors approved preliminary engineering services with Garver, LLC, for the DCPS Force Main and Lift Station Improvements
- Preliminary Design Report recommendations include:
 - Existing force main condition assessment
 - Single line replacement instead of parallel system
 - General alignment selection
 - Hydraulic modeling and design calculations
 - Replace 11,000 LF of 20-inch force main with 24-inch force main
 - Increase firm pumping capacity from 8 MGD to 12 MGD
 - Variable Frequency Drives for all new pumps
 - 30% design for lift station and force main

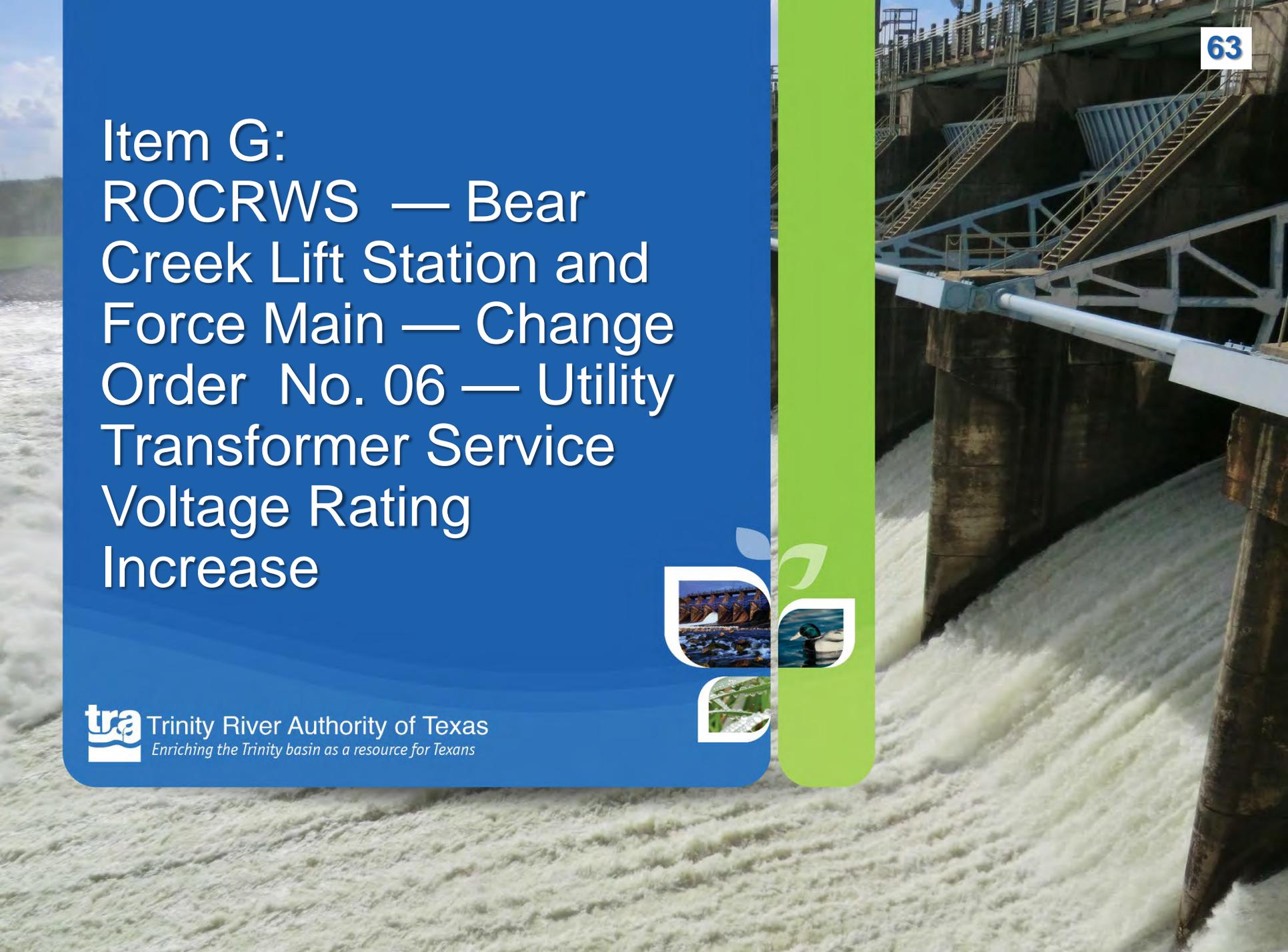
Proposed “Scope of Work”

- Final Design Engineering Services
 - Finalize pump selection
 - Plans and specifications for force main and LS improvements
 - Opinion of Probable Construction Cost (60%, 90%, 100%)
- Project Start-up, Management, and QA/QC
- Surveying, Geotechnical Investigation, Environmental Assessment
- Easement Document Development
- Permit Acquisition
- Construction Advertisement
- Special Services
- Fees: \$983,414

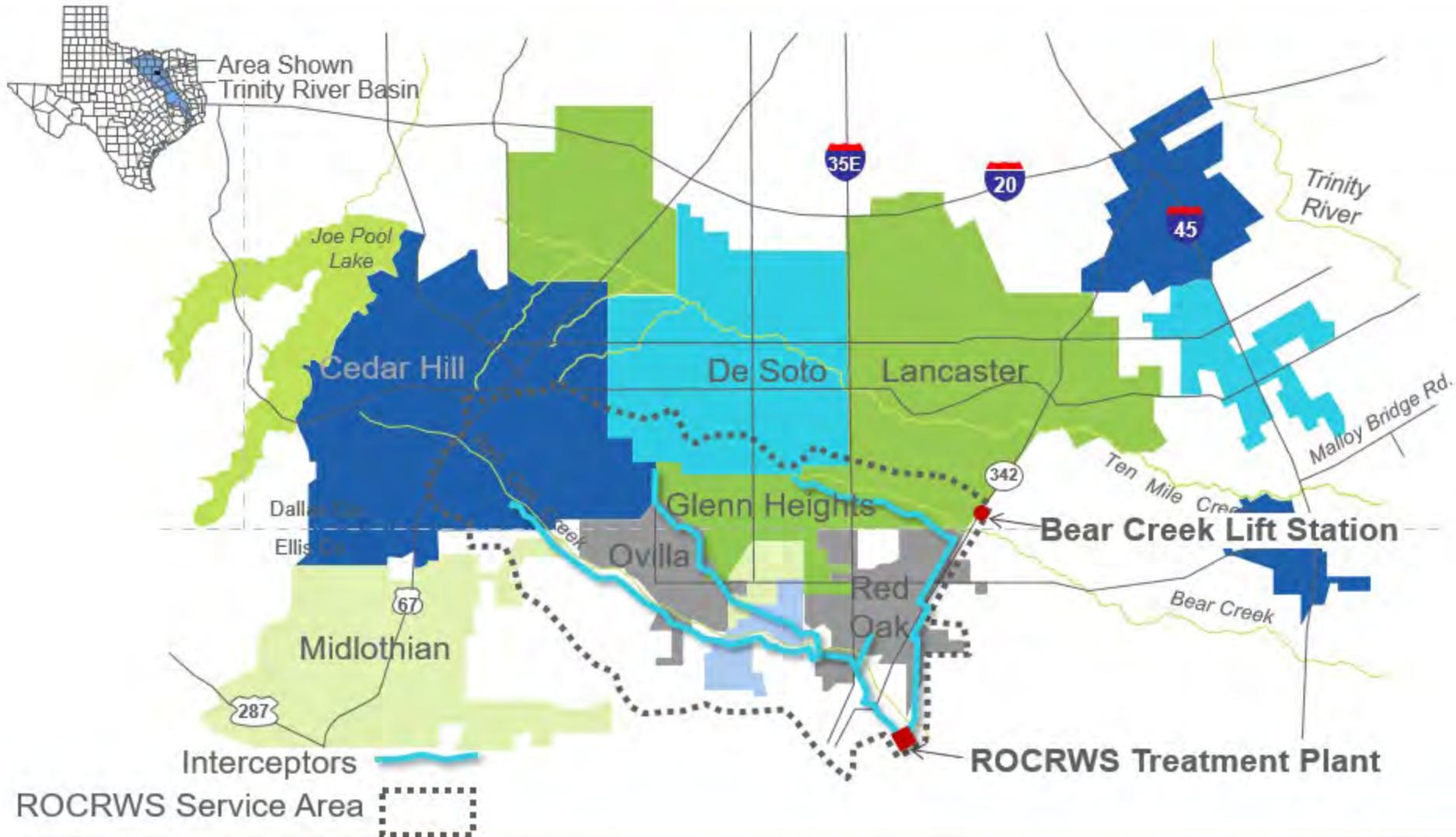
RECOMMENDATION

- Award contract to Garver, LLC, for professional engineering services related to final design for the Denton Creek Pressure System Force Main and Lift Station Improvements project, in the amount of \$983,414.

Item G: ROCRWS — Bear Creek Lift Station and Force Main — Change Order No. 06 — Utility Transformer Service Voltage Rating Increase



Red Oak Creek Regional Wastewater System 64



BACKGROUND

- ROCRWS is comprised of three major interceptors:
 - Bear Creek
 - Little Creek
 - Red Oak Creek
- Bear Creek Interceptor System (BCIS) serves Glenn Heights, Lancaster, and Red Oak
- BCIS flows are conveyed to Bear Creek Lift Station (BCLS)

BACKGROUND

- Bear Creek Lift Station
 - Constructed in 1991 (2.5 million gallons per day (MGD))
 - Rehabilitated in 2012 (3.6 MGD)
- 2019: Board approved expansion to 8.4 MGD and a new force main to meet projected 2060 demand

BACKGROUND

- During design, the initial ONCOR reviewer indicated to Freese and Nichols, Inc. (FNI), that the service feed from the utility meter to the lift station site was 15 kilovolts (kV). This was reflected in the contract documents.
- Following award of the construction contract to Red River Construction Co. the electrical subcontractor was informed by ONCOR that the service feed was 25 kV.
- This increase requires modification to the electrical rating for the transformer and switch gear.

Scope of “Change Order No. 06”

- Changed Work Includes:
 - 1) Increased Transformer Cost (15kV to 25 kV)
 - 2) Increased Wire Cost (#2 to #1/0)
 - 3) Increased Pad Mounted Switch Cost (15kV to 25kV)
 - 4) Increased Loadbreak Cost (15kV to 25kV)
 - 5) Increased Cost for Electrical testing (15kV to 25kV)
 - 6) Credit for not performing in-person witness testing
- Cost: \$59,405.41
- FNI has agreed to \$30,000 credit to TRA, resulting in net cost to TRA = \$29,405.41

RECOMMENDATION

- Execute Change Order No. 06 between the Authority and Red River Construction in the amount of \$59,405.41, increasing the contract value from \$11,505,474.57 to \$11,564,879.98 to account for the cost of the increased voltage rating of the primary distribution equipment.

Item H: Northern Region Projects — Bids for Supplies, Spare Parts and Services

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Bidders for Supplies, Spare Parts and Services

Bids Opened August 26 and September 27, 2020

<u>ITEM</u>	<u>PROJECTS</u>	<u>LOW BIDDERS</u>	<u>LOWEST BID PRICE</u>
Vacuum Induction Units	CRWS	Macaulay Controls Company	\$241,571.25
Open Channel Flow Control Meters	CSG	Hach Company	\$93,795.35
Rehabilitation of Sanitary Sewer Manholes	CSG	Ace Pipe Cleaning, Inc. T Gray Utility and Rehab Quadex Lining Systems, LLC	\$104,400.00 \$147,000.00 \$175,000.00
Fuels	CRWS, DCRWS, MCRWS, ROCRWS, TMCRW, TCWSP	Sun Coast Resources, Inc. Pinnacle Petroleum, Inc. U.S. Venture, Inc. Borders and Long Oil, Inc.	\$248,476.40 \$292,558.40 \$295,416.00 \$298,153.20

Item I: Authority Projects — Bids for Process Chemicals



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Chemicals for Projects

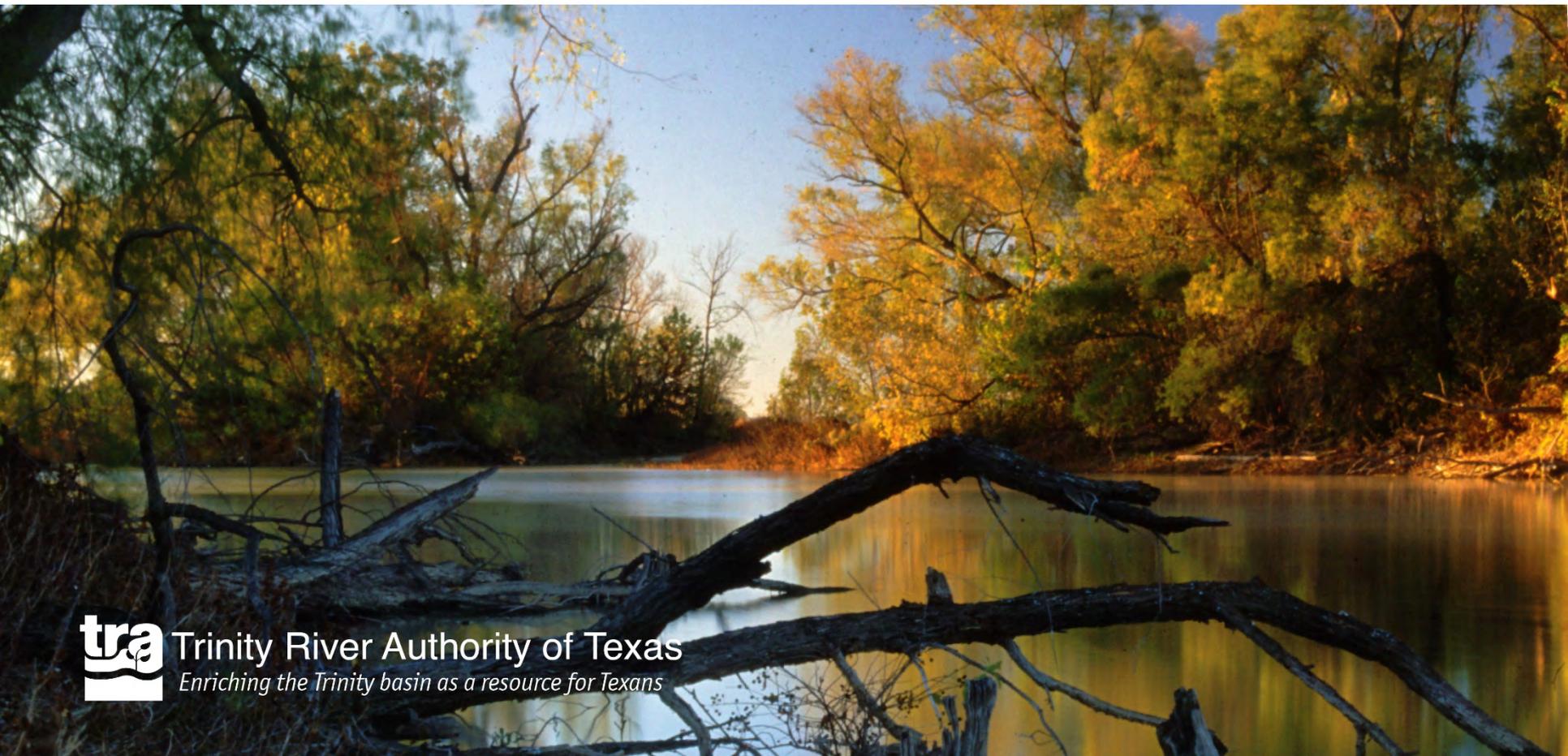
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TRINITY RIVER AUTHORITY

<u>COMMODITY</u>	<u>PROJECT(S)</u>	<u>PROPOSED QUANTITY</u>	<u>TOTAL PROPOSED PRICE</u>
Anhydrous Ammonia	TCWSP	133,382 lbs.	\$77,361.56
Copper Sulfate Solution	TCWSP, HRWSS	622,810 lbs.	\$247,422.93
Ferric Chloride	CRWS	2,550 Tons	\$1,592,475.00
Hydrofluosilic Acid	TCWSP, LRWSS, TCRWSS	370,404 lbs.	\$91,153.48
Hydrogen Peroxide 50%	CRWS	37,000 gal.	\$112,480.00
Lime	CRWS	17,404 Tons	\$2,871,660.00
Liquid Aluminum Sulfate	TCWSP, DCRWS, LRWSS	4,536,744 lbs.	\$548,304.28
Liquid Chlorine	CRWS, TCWSP, TMCWWS, HRWSS, LRWSS	5,823,906 lbs.	\$1,235,977.72
Liquid Oxygen	TCWSP	3,260,444 lbs.	\$147,698.11
Liquid Sodium Hypochlorite	CRWS, TCWSP, ROCRWS, MCRWS, TCRWSS	1,828,467 lbs.	\$122,468.45
Liquid Sulfur Dioxide	CRWS, TMCWWS	2,038,140 lbs.	\$555,542.01
Magnesium Hydroxide Solution	CRWS, DCRWS	3,734,057 wet lbs.	\$896,173.68
Polyaluminum Chloride	HRWSS	2,310,000 lbs.	\$385,770.00
Polymers	CRWS, TCWSP, TMCWWS, DCRWS, MCRWS, ROCRWS, LRWSS	1,847,173 lbs.	\$1,460,615.52
Purate® to Generate Chlorine Dioxide	CRWS	1,616,000 lbs.	\$1,341,280.00
Sodium Chlorite 31%	HRWSS, LRWSS	370,000 lbs.	\$306,360.00
Sodium Hydroxide 25% and 50% Solution	TCWSP, HRWSS, LRWSS	5,551,098 wet lbs.	\$544,164.52
Sulfuric Acid to Generate Chlorine Dioxide	CRWS	1,971,000 lbs.	\$433,620.00

Utility Services Committee

October 21, 2020



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