NORTH TEXAS MUNICIPAL WATER DISTRICT

Regional Service Through Unity… Meeting our Region's Needs Today and Tomorrow

WASTEWATER COMMITTEE MEETING

October 27, 2021 (Via Videoconference)

NORTH TEXAS MUNICIPAL WATER DISTRICT

AGENDA

ACTION ITEMS

A. Consider Approval of Wastewater Committee meeting minutes – August 25, 2021
B. Authorize execution of Construction Manager At-Risk Agreement on South Mesquite Creek Regional Wastewater Treatment Plant Peak Flow Management and Expansion Project – Administrative Memorandum No. 5771

DISCUSSION ITEMS

A. Discuss Rowlett Creek Regional Wastewater Treatment Plant Train A Primary Clarifier Improvements
B. Discuss Sloan Creek Lift Station and Force Main projects
C. Discuss Texas Commission on Environmental Quality Texas Pollutant Discharge Elimination System applications for domestic Wastewater permits for small wastewater treatment plants near areas served by NTMWD
D. Highlight of recent projects completed by Wastewater Operations
E. Opportunity for Committee members to provide feedback on Wastewater Committee meeting
F. Opportunity for Committee members to request potential future agenda items

AGENDA

Opening Remarks

A. Chairman/Executive Director/Committee Champion Status Report concerning legislation and regulatory matters, budgets, current projects and ongoing Wastewater System programs of the District

NORTH TEXAS MUNICIPAL WATER DISTRICT

AGENDA

Action Items

A. Consider Approval of Wastewater Committee Meeting Minutes – August 25, 2021

Recommend Approval of Wastewater Committee Meeting Minutes

AGENDA

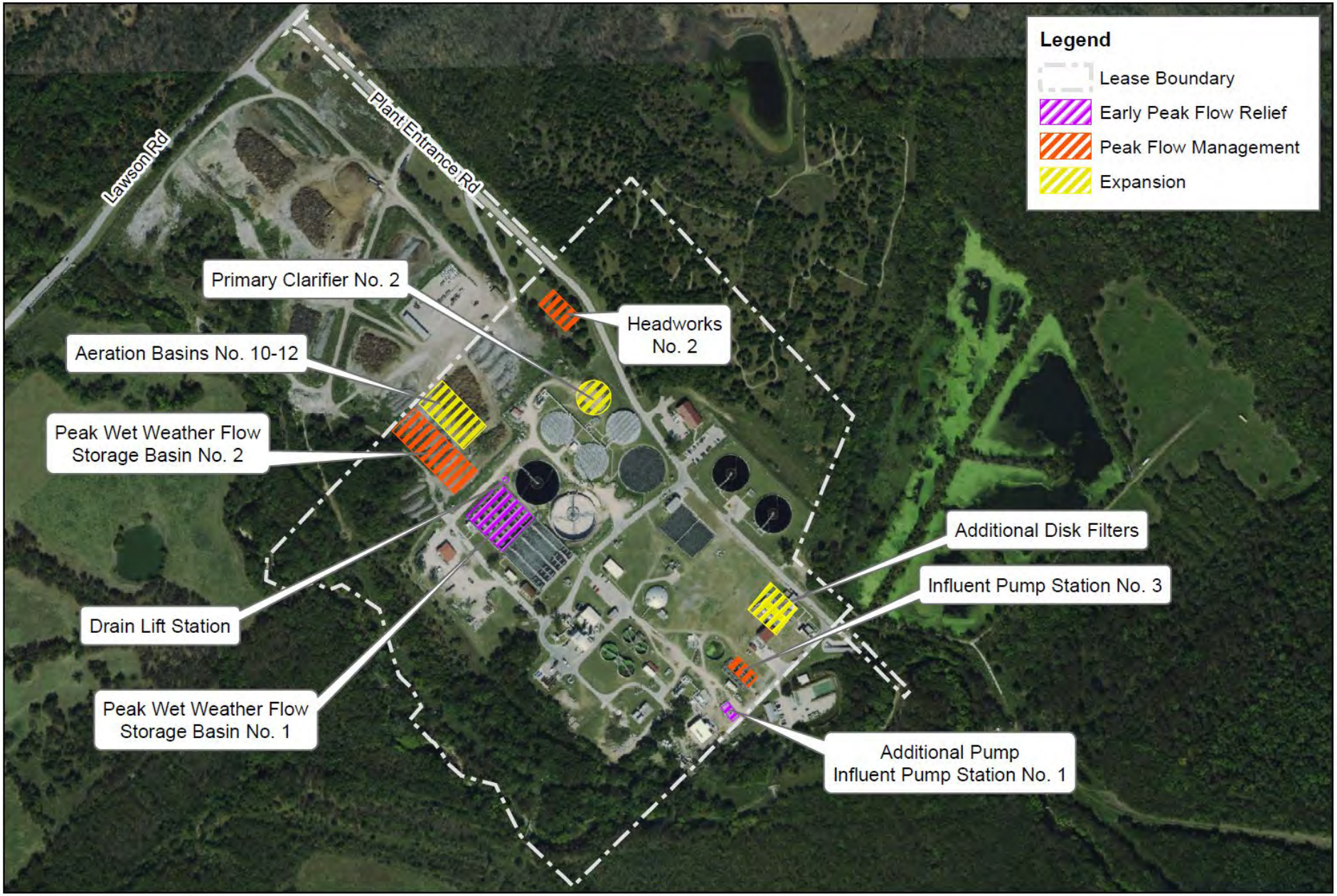
Action Items

B. Authorize execution of Construction Manager At-Risk Agreement on South Mesquite Creek Regional Wastewater Treatment Plant Peak Flow Management and Expansion Project – Administrative Memorandum No. 5771

- Consider recommendation on authorizing the execution of Construction Manager At-Risk Agreement with Archer Western Construction, LLC in the amount of $1,250,000 on Project No. 301-0525-18, South Mesquite Creek Regional Wastewater Treatment Plant Peak Flow Management and Expansion

What: Authorize execution of a Construction Manager At-Risk (CMAR) agreement with Archer Western Construction, LLC for the South Mesquite Creek Regional Wastewater Treatment Plant Peak Flow Management and Expansion, as well as funding for pre-construction and procurement services.

Why: The CMAR delivery method allows the final design of peak flow management and preliminary design of expansion to continue while taking advantage of the construction manager's ability to provide value engineering and constructability reviews, scheduling, estimating, phasing of construction, development of work packages, and procurement of work packages in a manner that matches NTMWD's funding and schedule. The improvements are consistent with Goal 1: Service; and Objective 1.4: Reliable and Resilient System Capacity, of the 2019-2024 NTMWD Strategic Plan.



South Mesquite Creek RWWTP Peak Flow Management and Expansion
Project No. 301-0525-20
Administrative Memorandum No. 5771

N

SOUTH MESQUITE CREEK RWWTP

Construction Manager At-Risk Authorization Background

- **August 2020, Board authorized CMAR Delivery Method**
- **Used a two-step process for the CMAR selection**
- **First step receive Statement of Qualifications (SOQ) from CMAR firms**
  - **Short-list firms based on SOQ evaluation**
  - **Invite short-listed firms to submit Proposals (includes price)**
- **Second step select most qualified CMAR firms – Best Value Proposer**

SOUTH MESQUITE CREEK RWWTP

CMAR Statement of Qualifications

- **April 13, 2021, received Statement of Qualifications from six firms**
  - **Archer Western Construction, LLC (Archer Western)**
  - **Austin Bridge & Road, LP**
  - **Garney Companies, Inc. (Garney)**
  - **Kiewit Water Facilities South Co.**
  - **Sundt Construction, Inc. (Sundt)**
  - **Ulliman Schutte Construction, LLC**

- **Archer Western, Garney and Sundt short-listed as the most qualified firms to submit proposals**

SOUTH MESQUITE CREEK RWWTP

CMAR Proposals

- August 26, 2021, proposals received from Archer Western and Sundt
- September 3, 2021, evaluated proposals and conducted interviews
- Archer Western selected as the best value proposer

CMAR Fees and Estimated Construction Cost

- Pre-construction services fee is $900,000
- Procurement services fee is $350,000
- CMAR Fees
  - General Conditions 8.5%
  - CMAR Services Fee 6.5%
  - Contingency 1.5%
- Planning level cost estimate for early peak flow relief, peak flow management, and expansion is $170,000,000

RECOMMENDATION

The Executive Director and NTMWD staff recommend the Board of Directors authorize a CMAR agreement as follows:

Contractor:	**Archer Western Construction, LLC**
Scope:	**Pre-construction and procurement services**
Project:	**No. 301-0525-18, South Mesquite Creek Regional Wastewater Treatment Plant Peak Flow Management and Expansion**
Amount:	**$1,250,000**

AGENDA

Discussion Items

A. Discuss Rowlett Creek Regional Wastewater Treatment Plant Train A Primary Clarifier Improvements

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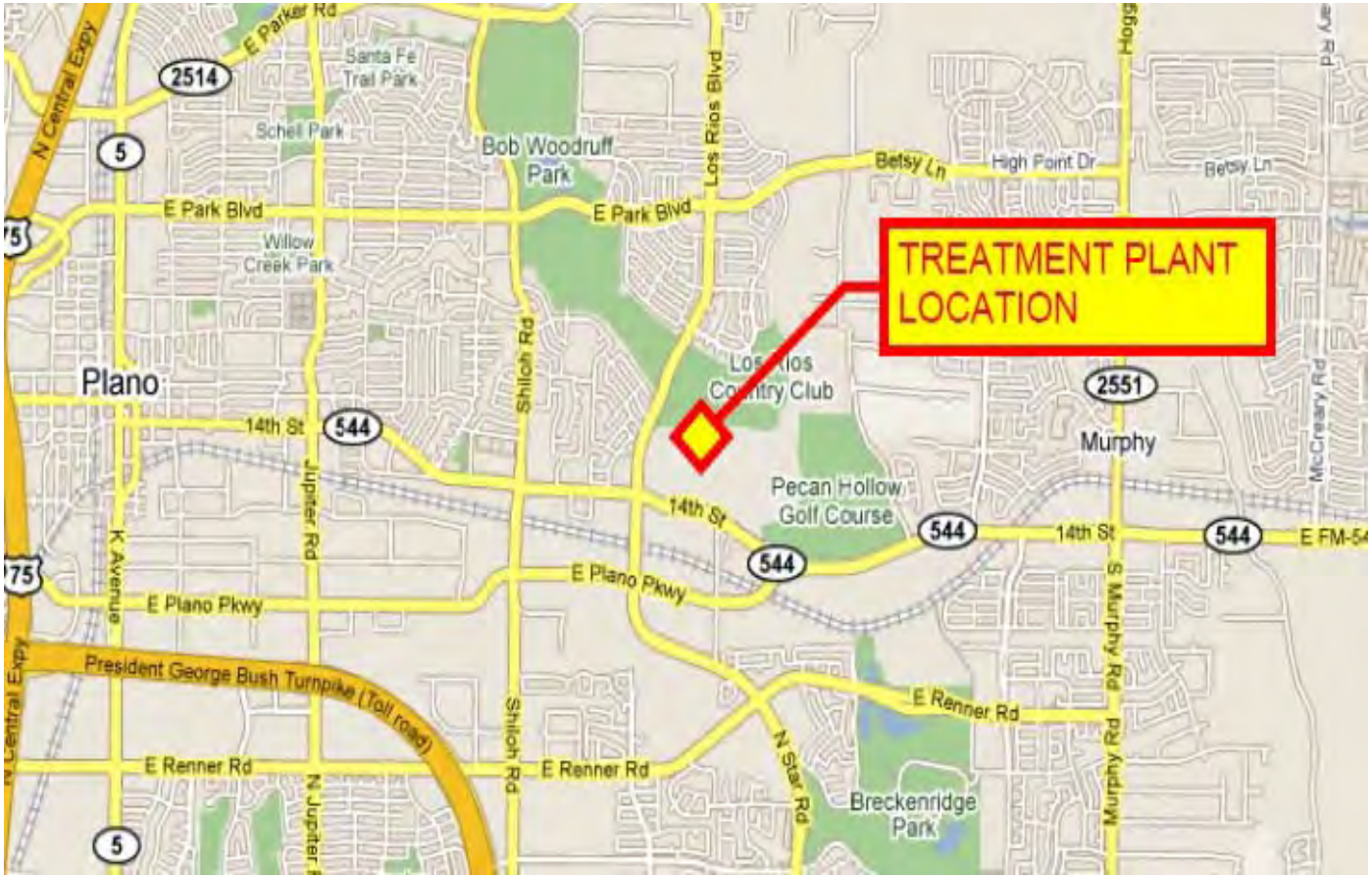
ROWLETT CREEK REGIONAL WASTEWATER TREATMENT PLANT



ROWLETT CREEK REGIONAL WASTEWATER TREATMENT PLANT

1975

2 MGD Treatment Capacity

NTMWD takes over operation of Rowlett Creek Wastewater Plant from City of Plano

Population = 17,872

Now

24 MGD Average / 60 MGD Peak Treatment Capacity

17.5 MGD Peak Flow Capacity is being added through Membrane Bioreactor (MBR) technology

Population Served =186,000

Future

120 MGD Peak Treatment Capacity over next 7 years

To better manage flows for:

- Storm events
- System reliability

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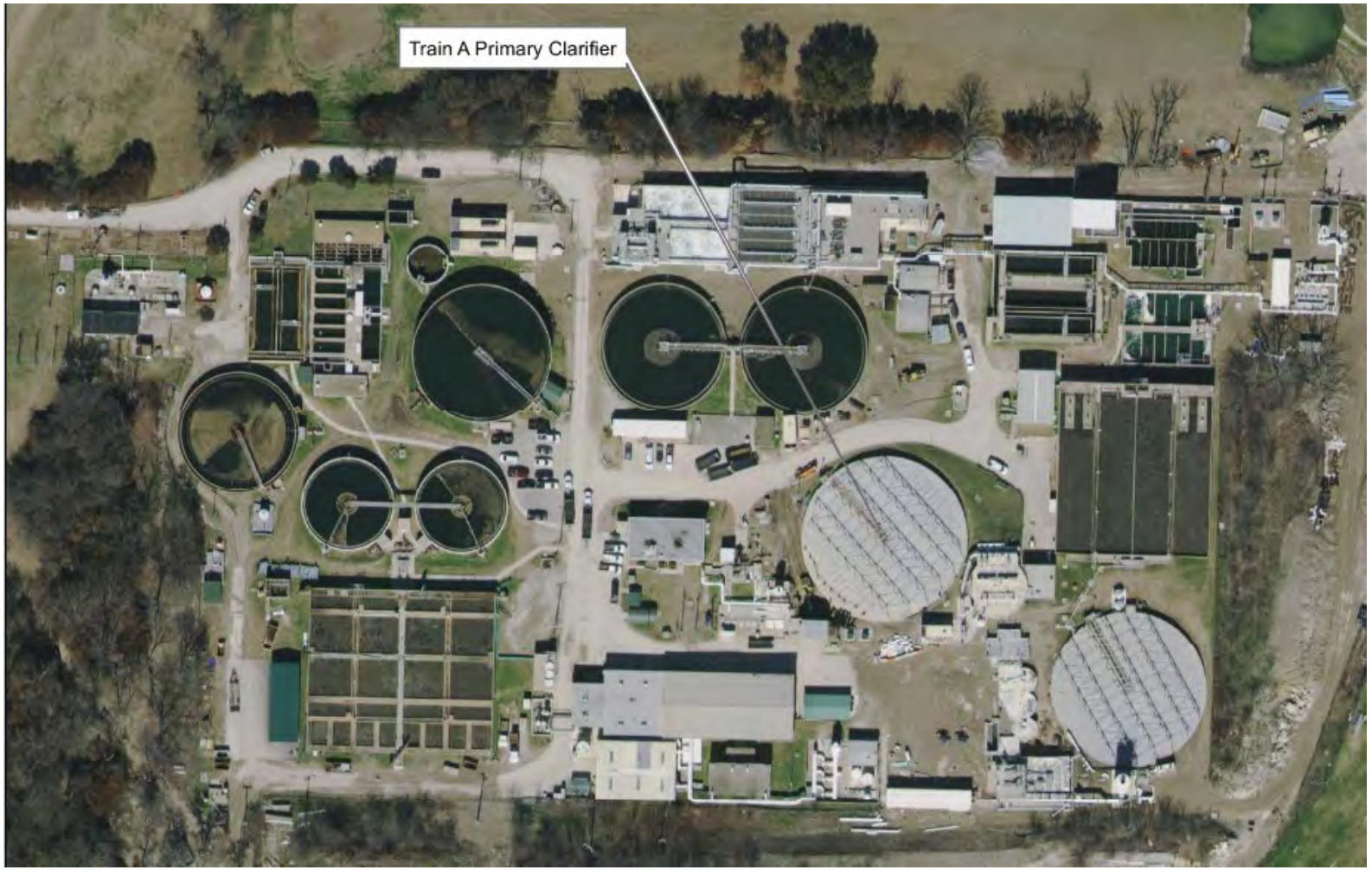

- **The Plant has two separate treatment trains; commonly referred to as Train A and Train B**
- **All influent flow goes through screening and grit removal prior to splitting into Trains A and B.**

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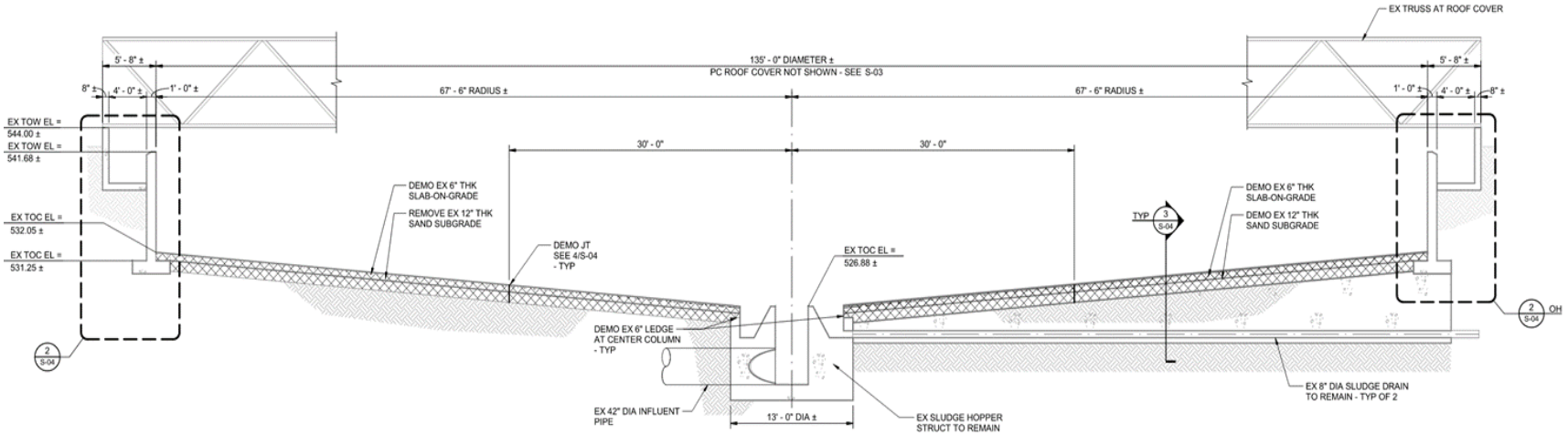
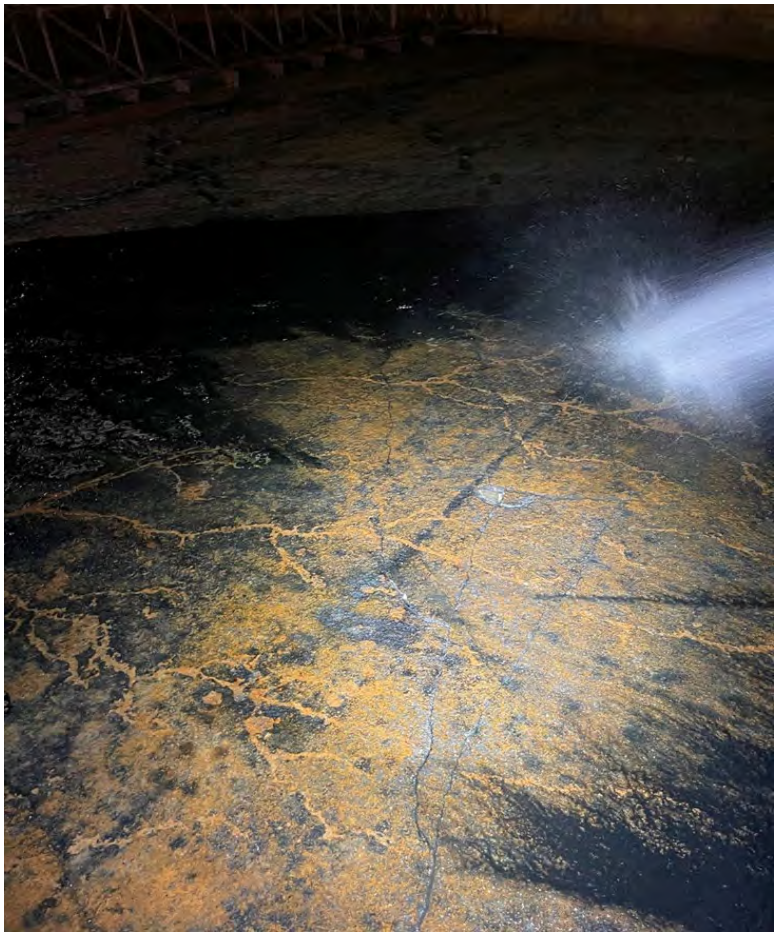
ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

- **Train A primary clarifier was constructed in the mid-1980s and is 135 feet in diameter**
- **Primary clarification is a physical process that slows the velocity of water to allow larger solids to separate from water and settle by gravity to the bottom of the tank (primary clarifier). A 42-inch diameter pipe sends flow to the clarifier, and an 8-inch pipe is used to draw solids out from the clarifier.**
- **This clarifier was out of service from January 11 to March 12, 2021 for a tie-in connection as part of a CIP project expanding the peak flow capacity of the plant by 17.5 MGD through MBR technology.**



ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

- **As the clarifier was returned to service on Friday March 12, 2021, we discovered that it was leaking.**
- **The clarifier was emptied and it was observed that the concrete floor near the center of clarifier had shifted and buckled.**
- **The influent pipe lays right under this section and there were concerns that the pipe could also be damaged.**



Visible Cracking

ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

Initial Assessment

- **The influent pipe was inspected via closed-circuit television (CCTV) and the sludge drain pipe was inspected via pole mounted camera and found to be in good condition.**
- **JQ Infrastructure firm performed initial structural evaluations.**

Visible Cracking

ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

Evaluations Approach

- **A survey was conducted of the clarifier walls to ensure no movement of the entire structure had occurred.**
- **The existing topping slab (grout) was demolished to enable visual observations of the primary clarifier structural floor slab.**
- **Performed a Ground Penetrating Radar (GPR) survey to determine the presence and extent of voids present under the slab after removal of the grout**

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ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

Ground Penetrating Radar Survey Results

- **Two areas with large voids were observed.**
- **The voids detected by the GPR survey were consistent with the observed visual distress and damage of the slab.**

ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

Recommended Repairs

- **The voids were likely created by excessive leaks through the slab and buoyant uplift**
- **Demo and replacement of the existing slab was the recommended approach for restoring the structural integrity of the floor slab**

ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

In addition to the damages to the concrete floor:

- **Primary Clarifier A launder has deteriorated and requires mortar repair and coating to extend the life of the launder.**

- **Primary Clarifier A structural steel (rake arm mechanism, scum beech, center well, exposed ductile piping) has deteriorated and requires rehabilitation.**

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ROWLETT CREEK RWWTP PRIMARY CLARIFIER REPAIRS

Schedule and Preliminary Opinion of Construction Costs

- **Bid Opening: October 27, 2021**
- **Anticipated Project Award: November 18, 2021, Board Meeting Agenda**
- **Extendable Commercial Paper Funding: $2.73M**
- **Engineer OPCC is $2.4M:**
  - **Concrete Floor Slab Replacement: $1.5M**
  - **Clarifier Launder Trough Rehab: $0.5M**
  - **Clarifier Mechanism Rehab: $0.4M**
- **Anticipated Final Completion: End of August 2022**

AGENDA

Discussion Items

B. Discuss Sloan Creek Lift Station and Force Main projects

ILA WITH CITY OF ALLEN AND FAIRVIEW: SLOAN CREEK PROJECT

Background

- **Additional capacity is needed to serve Town of Fairview and City of Allen growth**
- **Excess capacity does not exist within Upper East Fork Interceptor System (UEFIS) to meet future needs**
- **Allen and Fairview approached NTMWD with concept to cost share improvements for new lift station and force main (New Point of Entry into UEFIS)**
- **New Point of Entry avoids capital projects to convey flows through Cottonwood Creek Trunk Sewer, expand Cottonwood lift station and conveying flows to Wilson Creek RWWTP solely**
- **New Sloan Creek Lift Station and Force Main convey flows to Wilson Creek Lift Station allowing flows to Wilson Creek Regional Wastewater Treatment Plant or planned Sister Grove Water Resource Recovery Facility**

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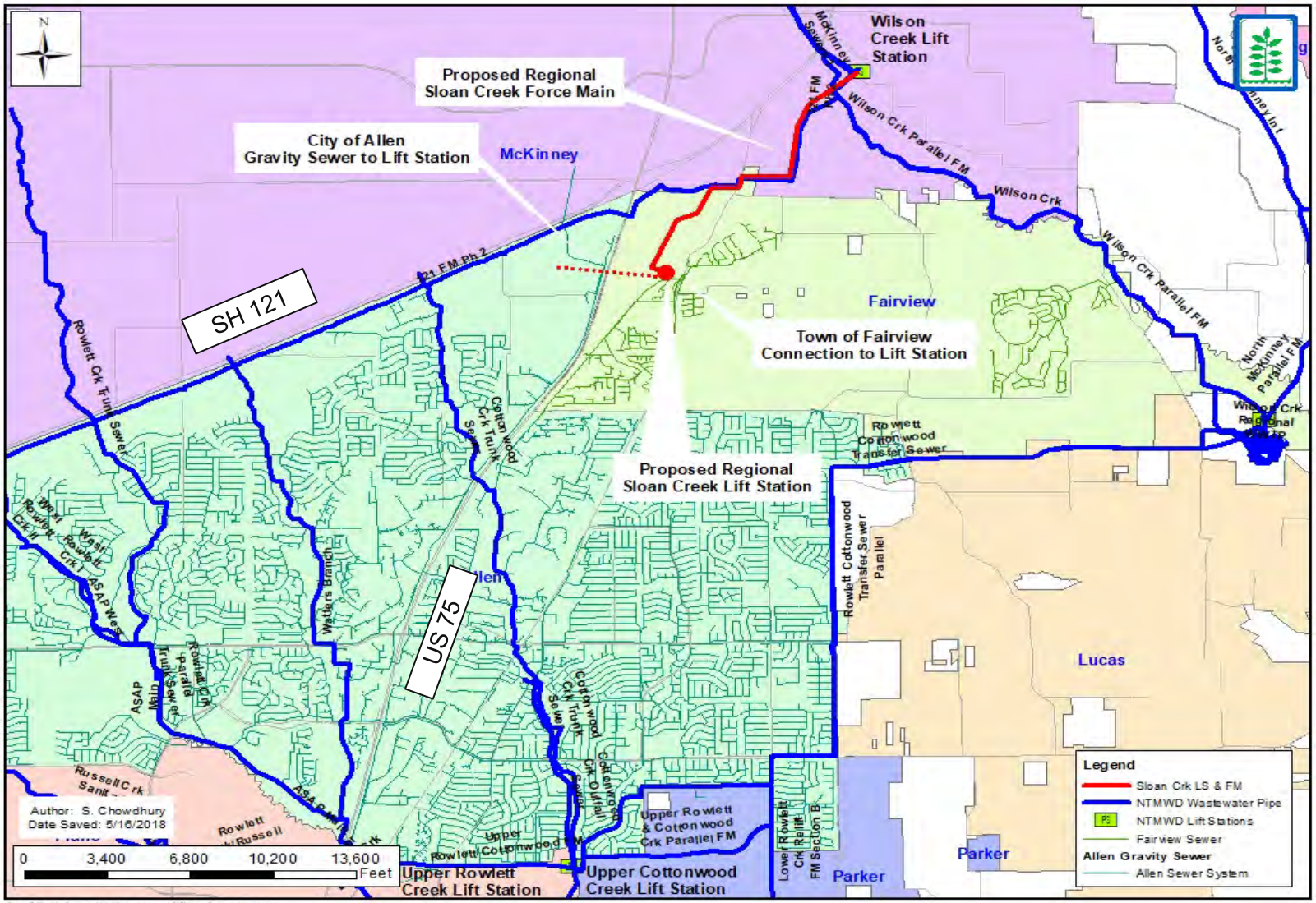
PROPOSED SLOAN CREEK LIFT STATION AND FORCE MAIN



SLOAN CREEK LIFT STATION AND FORCE MAIN PROJECT

Project Components

- **Fairview and Allen will jointly fund the cost for design and construction of the proposed lift station**
  - $9.4M opinion of probable construction cost
  - Currently advertising, bid opening scheduled for November 2, 2021
  - Recommend for Board consideration in December 2021
- **NTMWD will fund the cost for the force main design and construction, including the cost of ROW for the lift station and force main.**
  - $10.3M opinion of probable construction cost
  - Advertisement planned for November 2021, bid opening planned in December 2021
  - Recommend for Board consideration in January 2022
- **NTMWD will oversee the design and construction of the proposed lift station and force main**
- **NTMWD will own and operate the lift station and force main as part of the UEFIS once projects are complete**

AGENDA

Discussion Items

C. Discuss Texas Commission on Environmental Quality Texas Pollutant Discharge Elimination System applications for domestic Wastewater permits for small wastewater treatment plants near areas served by NTMWD

ACTIONS ON TPDES PERMIT APPLICATIONS

Background

- **NTMWD designation by TCEQ as the regional wastewater service provider of the East Fork Trinity River watershed**
- **TCEQ encourages Regionalization Policy**
- **NTMWD continually monitors TCEQ notices for wastewater permit applications in the NTMWD service area**
- **Applications are reviewed by NTMWD to determine if TCEQ Regionalization Policy requirements were met**
- **Application components evaluated by NTMWD:**
  - **Does a nearby wastewater system exist?**
  - **Does existing system have the capacity for proposed development?**
  - **Is joining the regional wastewater system feasible?**

ACTIONS ON TPDES PERMIT APPLICATIONS

Background

- **If regionalization is possible, NTMWD submits protest of application**
  - **The protest is usually submitted before negotiating regionalization agreement due to TCEQ timeline**

- **NTMWD will discuss details of the possibility for nearby City to provide service and facilitate discussions**

- **If nearby City is unable to provide service at current time, NTMWD will propose a regionalization agreement**
  - **Allows permittee to construct first phase of the WWTP**
  - **Require permittee to check with NTMWD before construction of any future phases of WWTP to determine if regionalization possible**
  - **Inform Board of Regionalization Agreement**

- **If NTMWD and nearby City cannot provide the permittee a feasible option for wastewater service, the TCEQ will issue the permit for the proposed WWTP**

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APPLICATION OF COLLIN COUNTY MUD NO. 7 NEAR CITY OF PARKER

HARRINGTON / TURNER ENTERPRISES, LP
RESTORE THE GRASSLANDS, LLC
WWTP DISCHARGE PERMIT

ATTACHMENT 11
NEARBY DOMESTIC PERMITTED WWTFS
(WITHIN 3-MILE RADIUS)

APRIL 2021

LEGEND

- APPLICANT'S PROPERTY BOUNDARY
- 3-MILE RADIUS
- POINT OF DISCHARGE
- WASTEWATER OUTFALLS

1 0.5 0 1
Miles

DATA SOURCE: TCEQ OUTFALLS - UPDATED 10/16/2020

COLLIN COUNTY

AERIAL PHOTOGRAPH DATE: NEARMAP 2021

THIS PRODUCT IS FOR INFORMATIONAL PURPOSES AND MAY NOT HAVE BEEN PREPARED FOR OR BE SUITABLE FOR LEGAL, ENGINEERING, OR SURVEYING PURPOSES. IT DOES NOT REPRESENT AN ON-THE-GROUND SURVEY AND REPRESENTS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES.

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ALLEN
LUCAS
PARKER
PLANO
MURPHY
WYLIE
RICHARDSON
SACHSE
AND
75
2514
190
78
11451-001
14935-001
10363-001
Rowlett RWWTP

PERMIT NUMBER	PERMITEE
10363-001	NORTH TEXAS MUNICIPAL WATER DISTRICT


Scott Hoelzle


Morgan Dadgostar

AGENDA

Discussion Items

D. Highlight of recent projects completed by Wastewater Operations

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RECENT PROJECTS COMPLETED BY WW OPERATIONS

Lower East Fork Lift Station Suction Valve No. 3 Replacement

- Located at the old Seagoville WWTP
- Serves Seagoville and Mesquite (Heartland)
- Three 250 hp pumps
- Two open slots available for additional pumps

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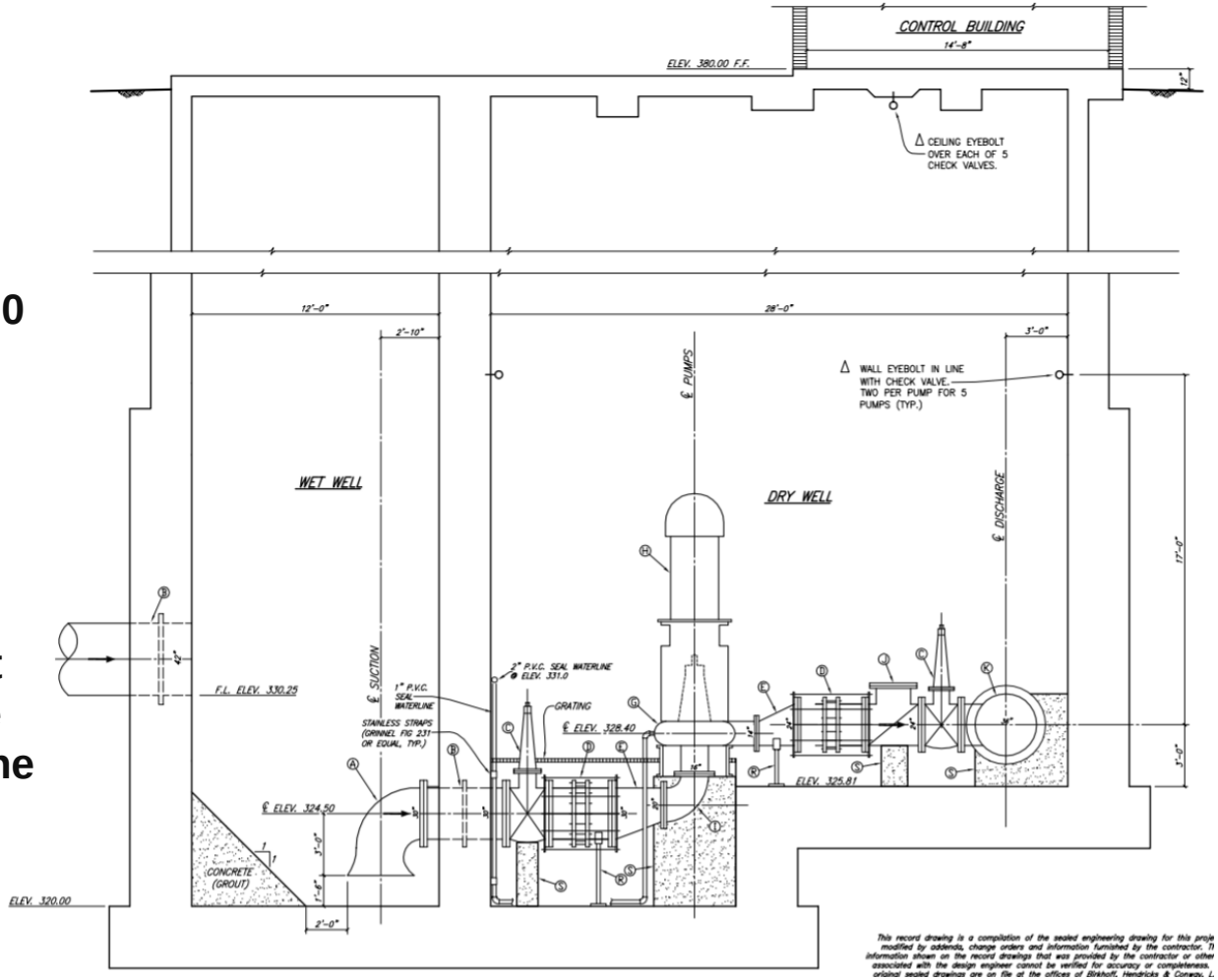
RECENT PROJECTS COMPLETED BY WASTEWATER OPERATIONS

Lower East Fork Lift Station Suction Valve No. 3 Replacement

- **Inoperable valve inhibited pump maintenance**
- **Total cost approximately $295,000**
- **Utilized savings from FY2020 and escrow funds to complete the valve replacement in FY2021**
- **Divers entered the wet well and sealed off the inlet pipe to perform the work**



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RECENT PROJECTS COMPLETED BY WW OPERATIONS

Lower East Fork Lift Station Suction Valve No. 3 Replacement

- **Gate valve replaced with a knife valve**
- **Prefer plug valves or knife valves for wastewater facilities**

RECENT PROJECTS COMPLETED BY WW OPERATIONS

Lower East Fork Lift Station Suction Valve No. 3 Replacement

- **Suction piping was modified on all three pumps to improve access into the pumps to clean out debris**

Before Modifications

After Modifications

WILSON CREEK RWWTP

Significant regional growth over last 37 years of operation

1984
8 MGD Treatment Capacity

1988
24 MGD Treatment Capacity

1996
32 MGD Treatment Capacity & Odor Control Facilities

2005
48 MGD Treatment Capacity with UV disinfection

2015
56 MGD Treatment Capacity with 32 MGD HRC Peak Flow Capacity

2021
64 MGD Treatment Capacity
160 MGD Peak Flow Capacity (Plants 1 and 2)

HRC Train 64 MGD additional Peak Flow Capacity

FY21 MAJOR MAINTENANCE

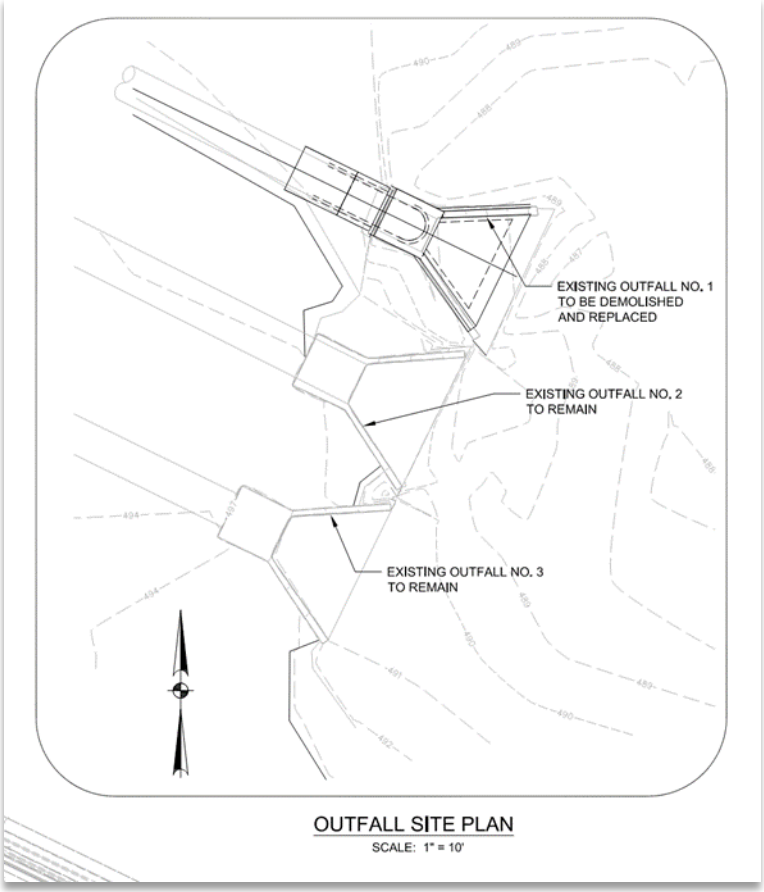
Wilson Creek RWWTP Outfall Repair

- **In 2018, during inspection of the CIP project (construction of a new outfall No. 3), it was determined that the original Outfall Structure No. 1 had settled, rotated toward the Lake and had separated from the riser pipe connection.**
- **As failure of this outfall structure could result in a permit violation, engineering and operations agreed for operations to move forward with this project through use of the operating budget to expedite repair.**

FY21 MAJOR MAINTENANCE

Outfall Structure No. 1 Replacement

- **Remove the existing Outfall Structure No. 1 and one pipe section connected to the outfall structure and replace with new.**
- **Constraint: Outfall Structure No. 1 could not be taken out of service for replacement until the new Outfall Structure No. 3 was placed in service.**



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Work completed September 2021
Total Cost: $526,194

SOUTH MESQUITE RWWTP

Significant regional growth over last 40+ years of operation – Serves Mesquite, Forney, Rockwall, Heath and Seagoville

1975

7 MGD Treatment Capacity

NTMWD takes over operation of Mesquite Wastewater Plant from City of Mesquite

Now

33 MGD Avg / 82.5 MGD Peak Treatment Capacity

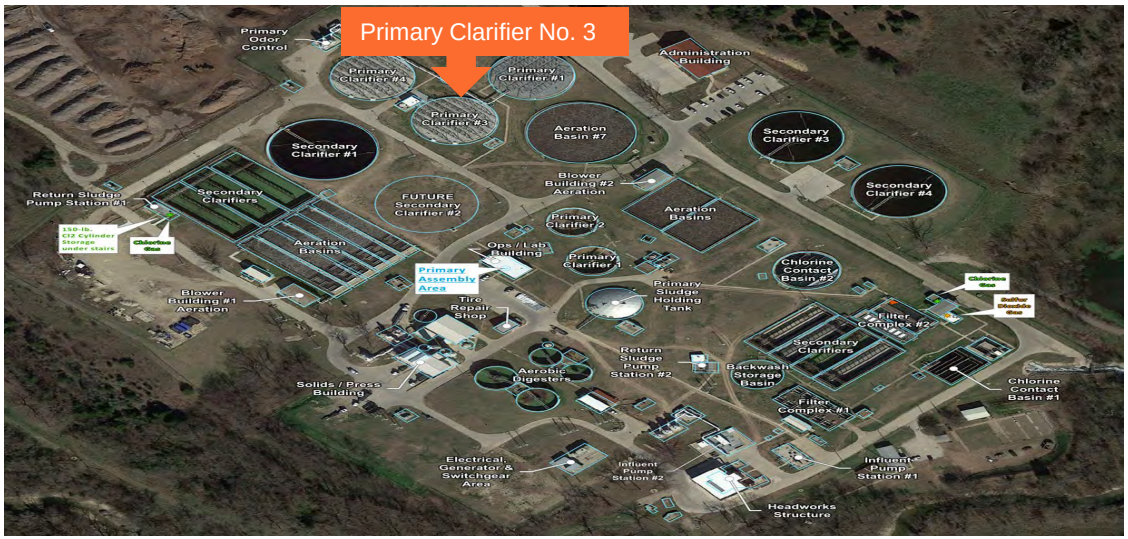
2020

Converted from Chlorine to UV disinfection, Grit Removal, addition of Secondary Clarifier

Future

49 MGD Average capacity

Increase peak flow capacity



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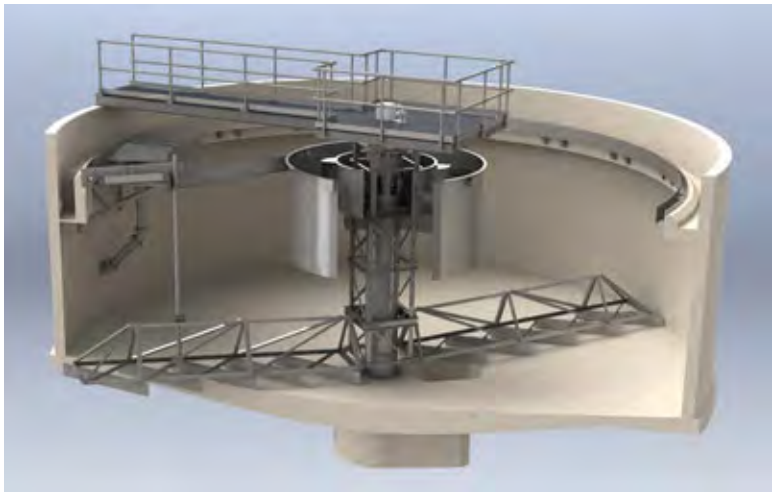
FY21 MAJOR MAINTENANCE

Primary Clarifier No. 3 Center Well Replacement



A stilling center well is used in a primary clarifier to reduce the velocity of the wastewater to allow solids to settle to the bottom of the tank.

The center wells in Primary Clarifiers 3 and 4 were corroded and deteriorated beyond repair. The center wells were added to the 5-year major maintenance program and scheduled for FY21 for PC4 and FY22 for PC3. However….

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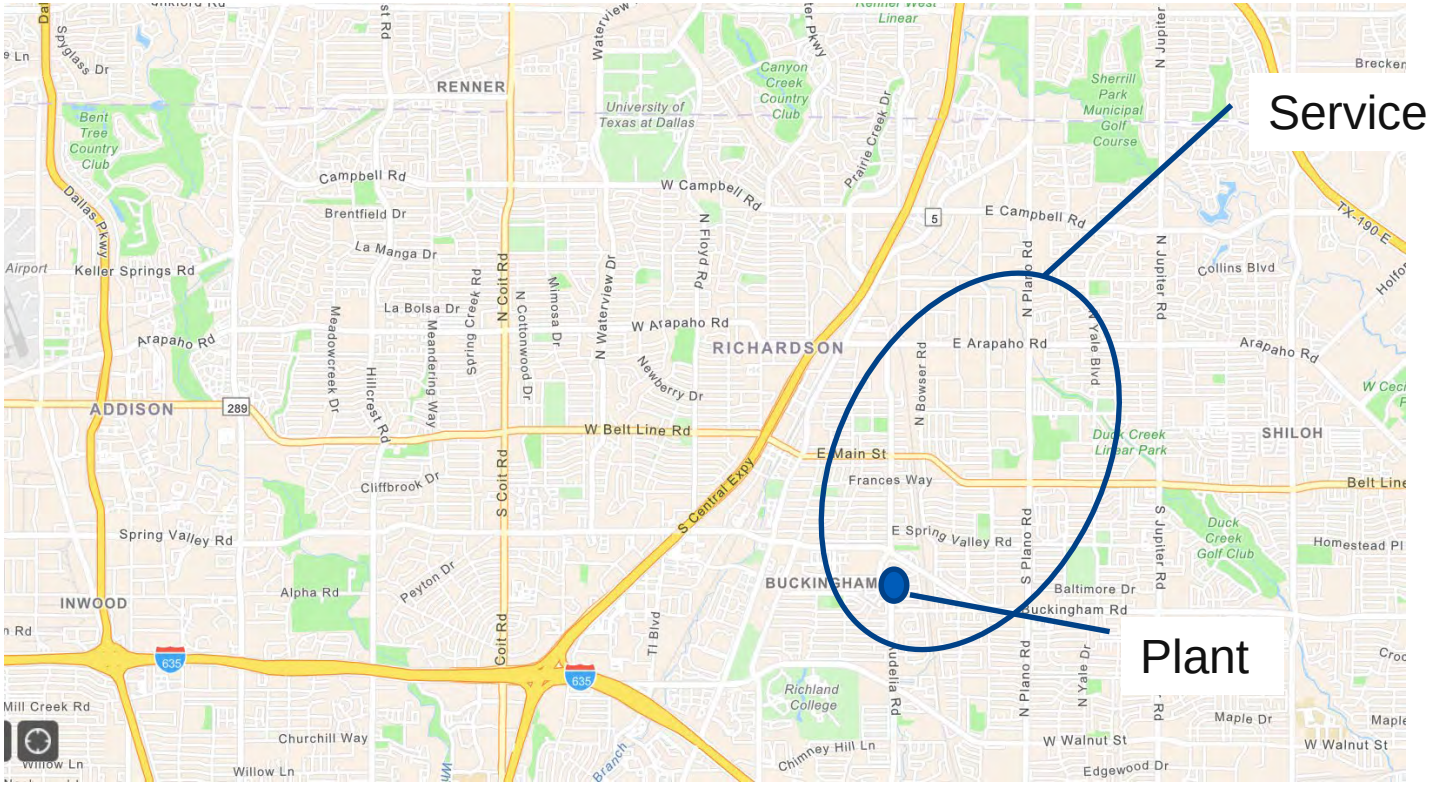
The stilling center well for PC3 collapsed while the new center well was being fabricated forcing NTMWD to replace PC3 first and schedule PC4 for FY22.

Work completed in August 2021 for a total cost of $276,662

FLOYD BRANCH RWWTP TREATMENT

Floyd Branch RWWTP serves a small area of southwest Richardson
4.75 MGD Permitted AADF
10 MGD Peak Flow Capacity



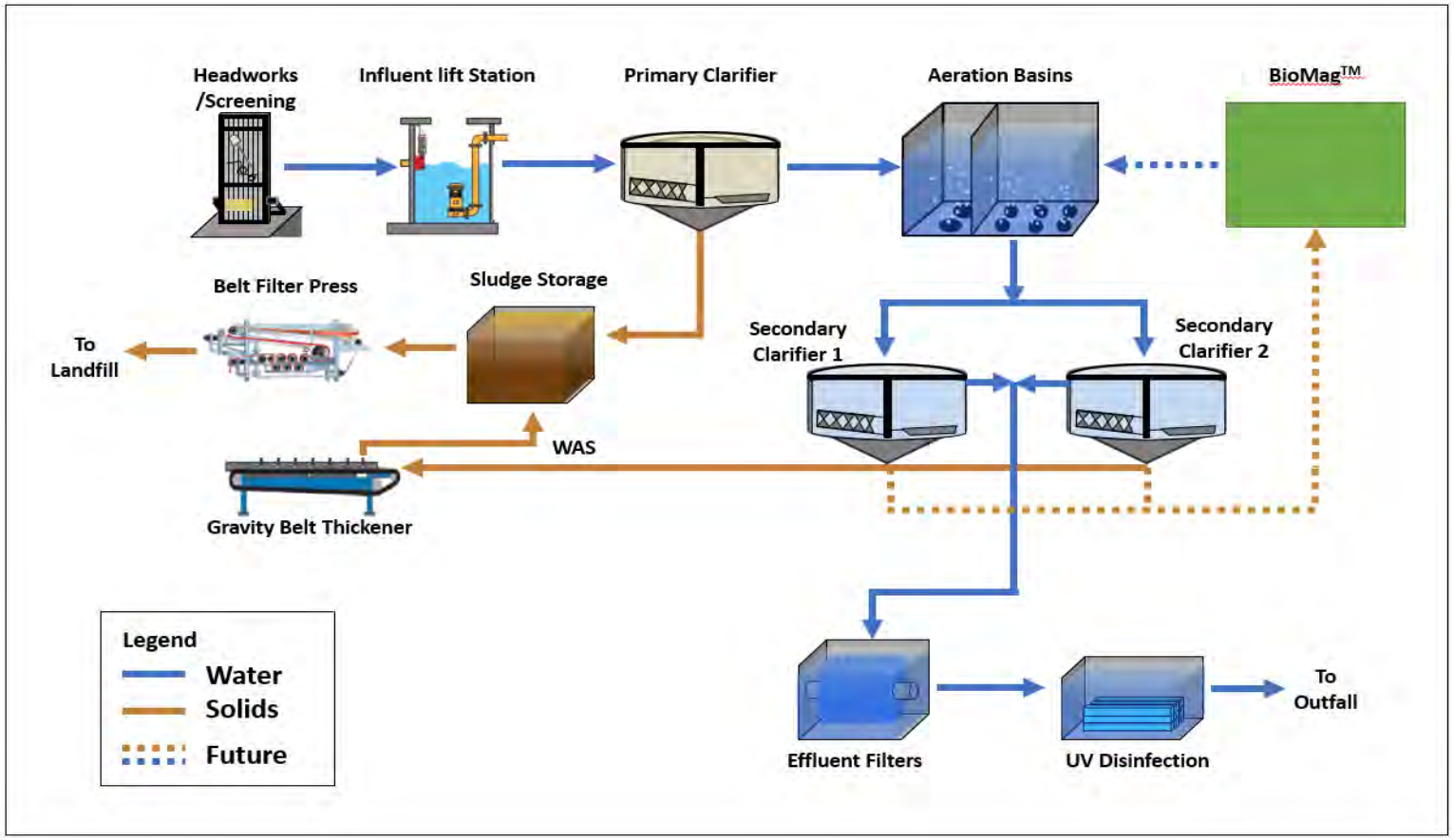
FY21 MAJOR MAINTENANCE

Solid Handling Improvements

- **The existing solids handling system consists of a sludge storage tank, a gravity belt thickener (waste activated sludge only), and a belt filter press for dewatering (primary sludge and waste activated sludge).**

- **Neither the gravity belt thickener nor the belt filter press have a redundant unit.**

Lack of redundancy for the Gravity Belt Thickener & for the Belt Filter Press



FY21 MAJOR MAINTENANCE

- **With the treatment plant serving built out areas, the solids loading has remained stable, and the existing solids management facilities have adequate rated capacity.**
- **Given space considerations in the dewatering building, one unit that could provide back up to both thickening and dewatering functions is needed.**
- **Screw press system was piloted and deemed successful to meet the needs of Floyd Branch RWWTP. A screw press was included in the 5-Year Plan and budgeted for FY21 and FY22.**

Challenges

- **The challenge with utilizing Operating Budget is the obligation to complete the project and pay invoices within the Operating FY.**
- **Lead time for purchasing a screw press could be as long as 6 to 9 months depending on the manufacturer.**
- **With COVID, it has been taking longer with every project to get materials fabricated and delivered.**
- **Our solution: Develop two packages -**
  - FY21: An equipment procurement document package for a screw press and conveyor, which would become NTMWD provided equipment
  - FY22: Construction document for the installation of Owner-Provided Equipment and procurement of ancillary elements for a complete and operational system

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NTMWD rovided Equipment received in September 2021.

Equipment Procurement Total FY21 $296,369

Installation contract anticipated to advertise November 2021, with system online Summer 2022. Total FY22 $142,128

Total Cost: $438,497

AGENDA

Discussion Items

E. Opportunity for Committee members to provide feedback on Wastewater Committee meeting

AGENDA

Discussion Items

F. Opportunity for Committee members to request potential future agenda items

Adjournment