Water Supply Update

Including a review of the Mary Rhodes Pipeline and Pumping System

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August 19, 2025

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Water Supply Projects Update

- **Nueces River Groundwater Wells Project**
- **Evangeline Groundwater Project**
- **South Texas Water Authority**
- **EV Ranch Groundwater Project**
- **CC Polymers Seawater Desalination Treatment Plant**
- **Reclaimed Water Infrastructure Project**

Nueces Groundwater Program

Eastern Well Field

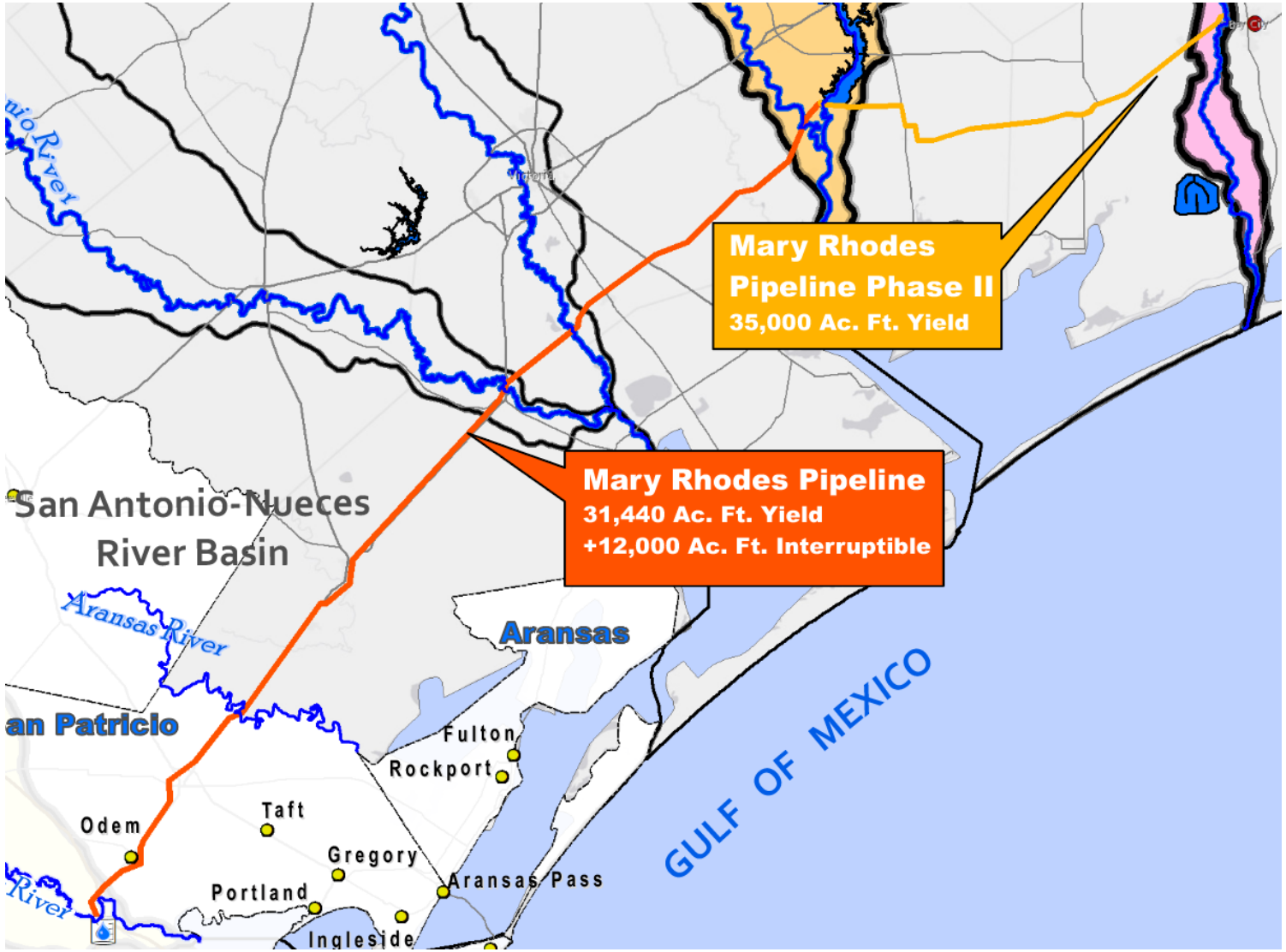
- 8 Wells Drilled
- 5 Wells Fully Operational
- 3 remaining wells to be operational by August 31
- Modeling and testing show the long-term safe yield to be 11 MGD
- TCEQ Bed and Banks Permit Approved

Western Well Field

- Council approved property purchase on June 10, 2025
- 1 well drilled with test pumping scheduled and water quality sampling to be completed by August 27
- Modeling and testing show the long-term safe yield to be 17 MGD

Mary Rhodes Pipeline

- **(MRP) I**
  - 101-mile-long pipeline running from Lake Texana near Edna, Texas to the O.N. Stevens Water Treatment Plant
  - Construction started in 1997, completed in 1998
- **(MRP) II**
  - 42-mile-long pipeline that ties into MRP Phase I at the West Delivery Pump Station
  - Construction started in 2014, completed in 2016



MRP I and II Water Sources

Lake Texana/LNRA

MRP I

Contract Take or Pay: 31,440 acre-ft

- Interruptible A (if available): 4,500 acre-ft
- Interruptible B (if available): 7,500 acre-ft

Colorado River

MRP II

Run of the River Water Rights: 35,000 acre-ft

Eastern Basin (LNRA and Colorado River) Water Availability vs. Water Taken

Source	Total Qty	2021	2022	2023	2024	As of July 31, 2025
Contract Water Amount (MRP I - Lake Texana/LNRA)	31,440 acre-ft.	28,563 (91%)	32,147 (102%)	30,423 (97%)	30,733 (98%)	14,555 (48%)
Interruptible A Diversions 4,500 (I.A)	4,500 acre-ft.	4,500 (100%)	4,500 (100%)	4,500 (100%)	4,500 (100%)	4,500 (100%)
Interruptible B Diversions 7,500 (I.B)	7,500 acre-ft.	7,500 (100%)	Not offered	Only 4,500 offered (100%)	Only 6,500 offered (100%)	0 Not offered
Water Rights Amount (MRP II - Colorado River)	35,000 acre-ft.	9,326 (27%)	10,900 (31%)	7,866 (22%)	9,813 (28%)	20,297 (58%)

Pipeline Components

- **Pipe:**
  - 99 miles of 64" diameter bar-wrapped pipe
  - Approximately 1 mile of 48" diameter bar-wrapped pipe
  - Approximately 1 mile of 72" diameter pre-stressed concrete cylinder pipe
  - 41 miles of 54" diameter bar-wrapped pipe
- **Key components:**
  - Colorado River Intake Pump Station
  - Colorado River Booster Pump Station
  - LNRA Intake Pump Station
  - Booster pump stations located at Bloomington and Woodsboro
  - Isolation valves, air relief valves (ARVs), blowoff valves:
    - 294 ARVs (270: 2-inch, 24: 12-inch)
    - 7 in-line valves
    - 28 blowoff valves
    - 27 water crossings (7 River/Barge, 20 Creek)
    - 300 pipeline crossings
    - 7 railroad crossings
  - 24" SDI connection
  - 36" San Patricio (Dressen) connection

Pump Stations

LNRA Intake Station

Bloomington Pump Station

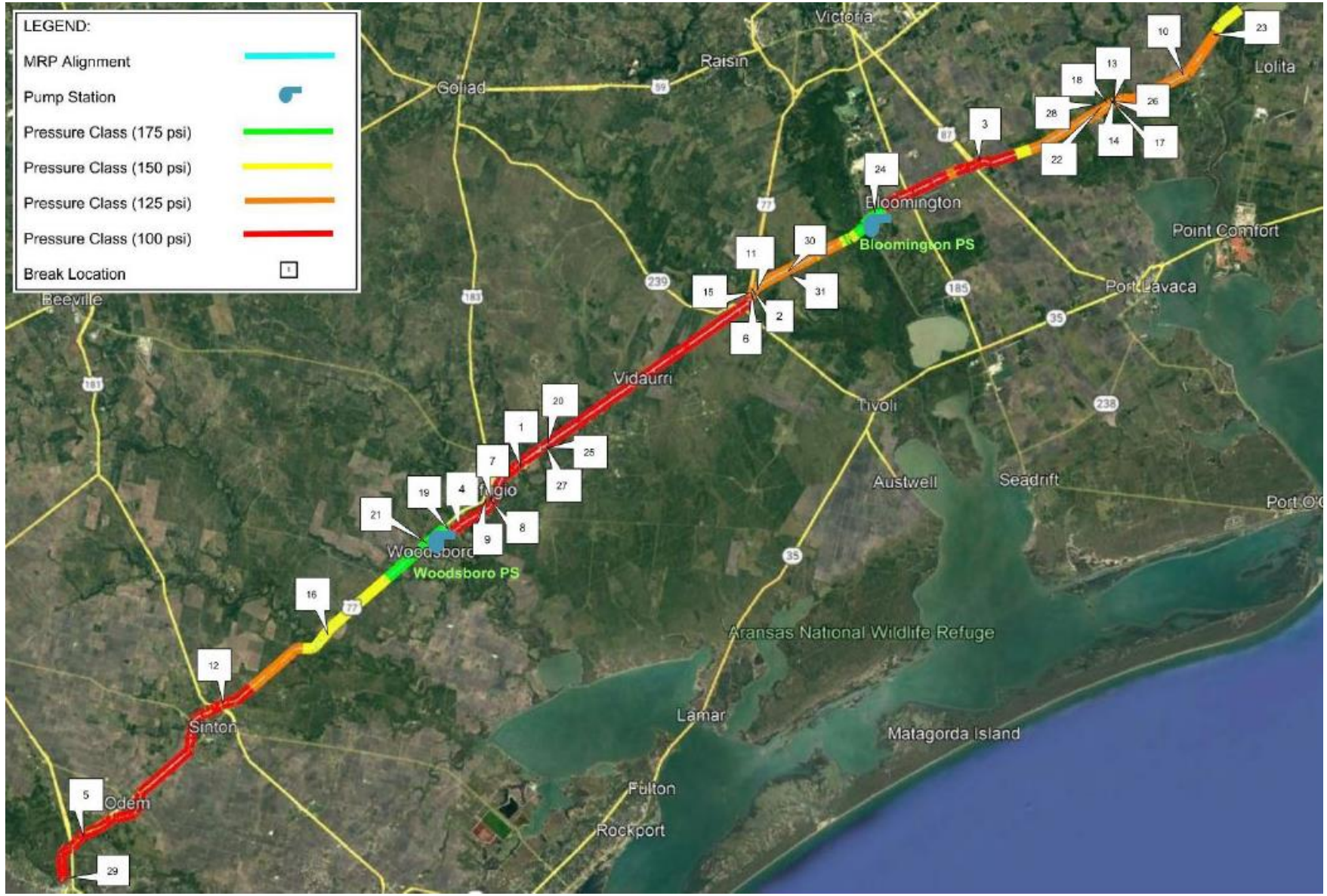
Woodsboro Pump Station

Colorado River Pump Station

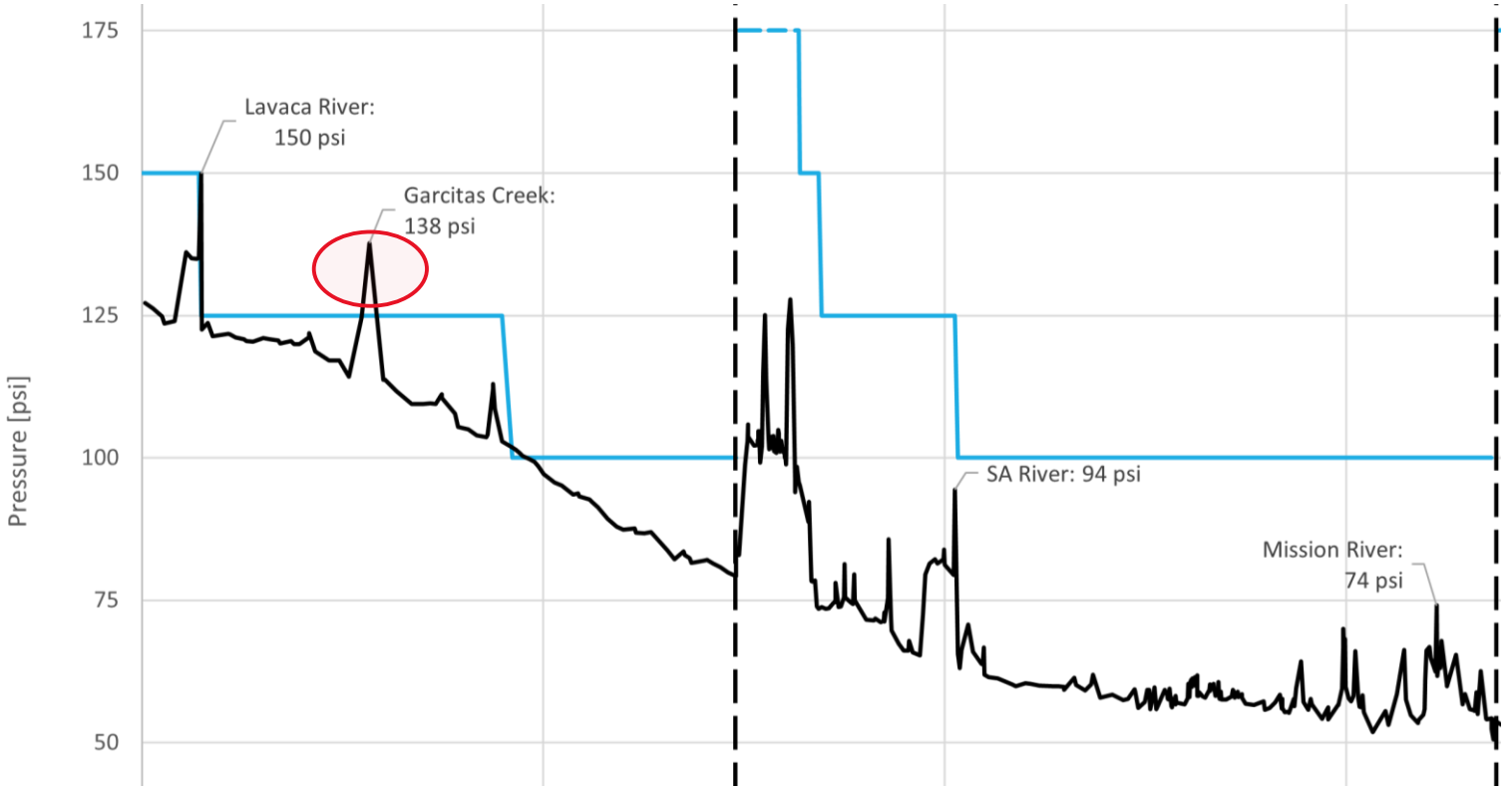
Pumping Schedules

Pumping Schedule	MGD
Schedule 1A	11.5 MGD to 24.4 MGD
Schedule 1B	25 MGD to 32.4 MGD
Schedule 2A	34 MGD to 40 MGD
Schedule 2B	40 MGD to 46 MGD
Schedule 3	55 MGD to 58 MGD
Schedule 4	72 MGD to 79 MGD

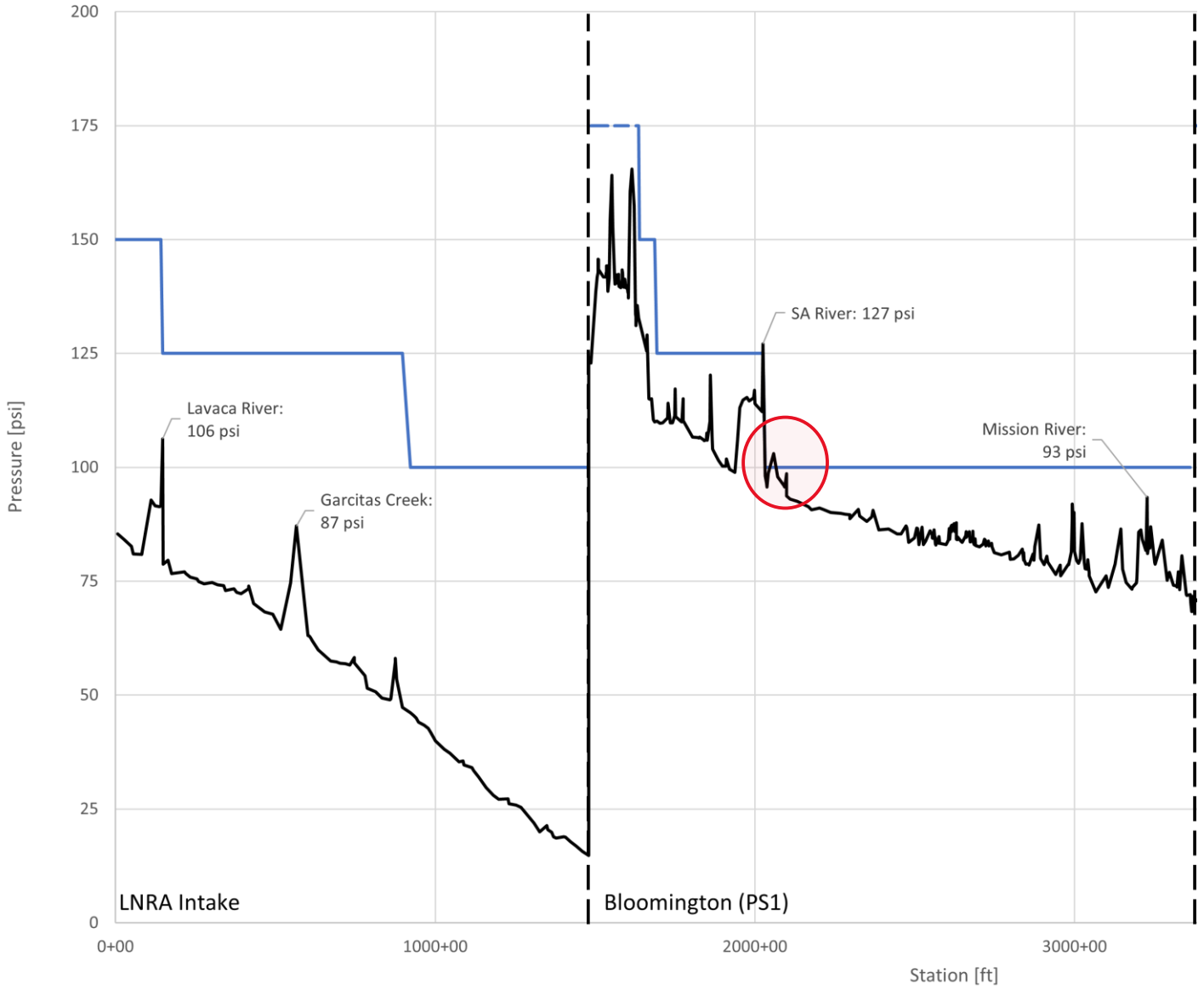
MRP Alignment Overview with Break Locations



Pressure Exceedance: 46 MGD (Sch. 2B) – LNRA to Bloomington



Pressure Exceedance: 55-58 MGD (Sch. 3) – LNRA to Bloomington

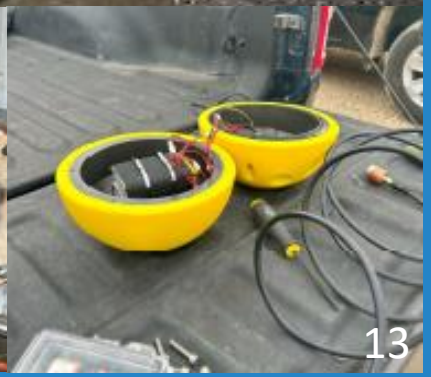


Condition Assessment Timeline

Task	Date Authorized (Completed)
Desktop Condition Assessment	August 2022
Detailed Condition Assessment •Project Status Memo •DRAFT Evaluation of Hydraulics Memo •Emergency Support for 72” MRP Failure •DRAFT Condition Assessment Report •Emergency Development of scope/fee for parallel pipe (not executed) •Amendment 1 – Hydraulic Analysis, Balancing Tank Analysis, Pump Station Analysis •Amendment 2 – Additional Support: Air Valve Construction Support •Investigation of sonar/pressure tool to locate pressure exceedance areas	July 2023 •(October 2023) •January 2024 •February 2024 •April 2024 •May 2024 •August 2024 (September 2024) •March 2025 (July 2025) •July 2025

Condition Assessment

- Internal condition assessment
  - Acoustic leak detection
  - Electromagnetic evaluation
  - Mortar and wire analysis
  - Visual
- Drone survey (aerial & water)
- Hydraulic analysis
- Soil corrosivity analysis
- External condition assessment
- Completed in May 2024



Condition Assessment

Findings and Observations

- MRP is performing satisfactorily at the current pumping rate (Schedule 4)
  - The overall integrity of the pipe is good
  - Acoustic ball inspections identified three small leaks which have been repaired

- Past failures are typically associated with Schedule 2 and 3 access points, air relief valves and joints

- Erosion areas reducing the cover over the pipeline have been identified at various water crossings

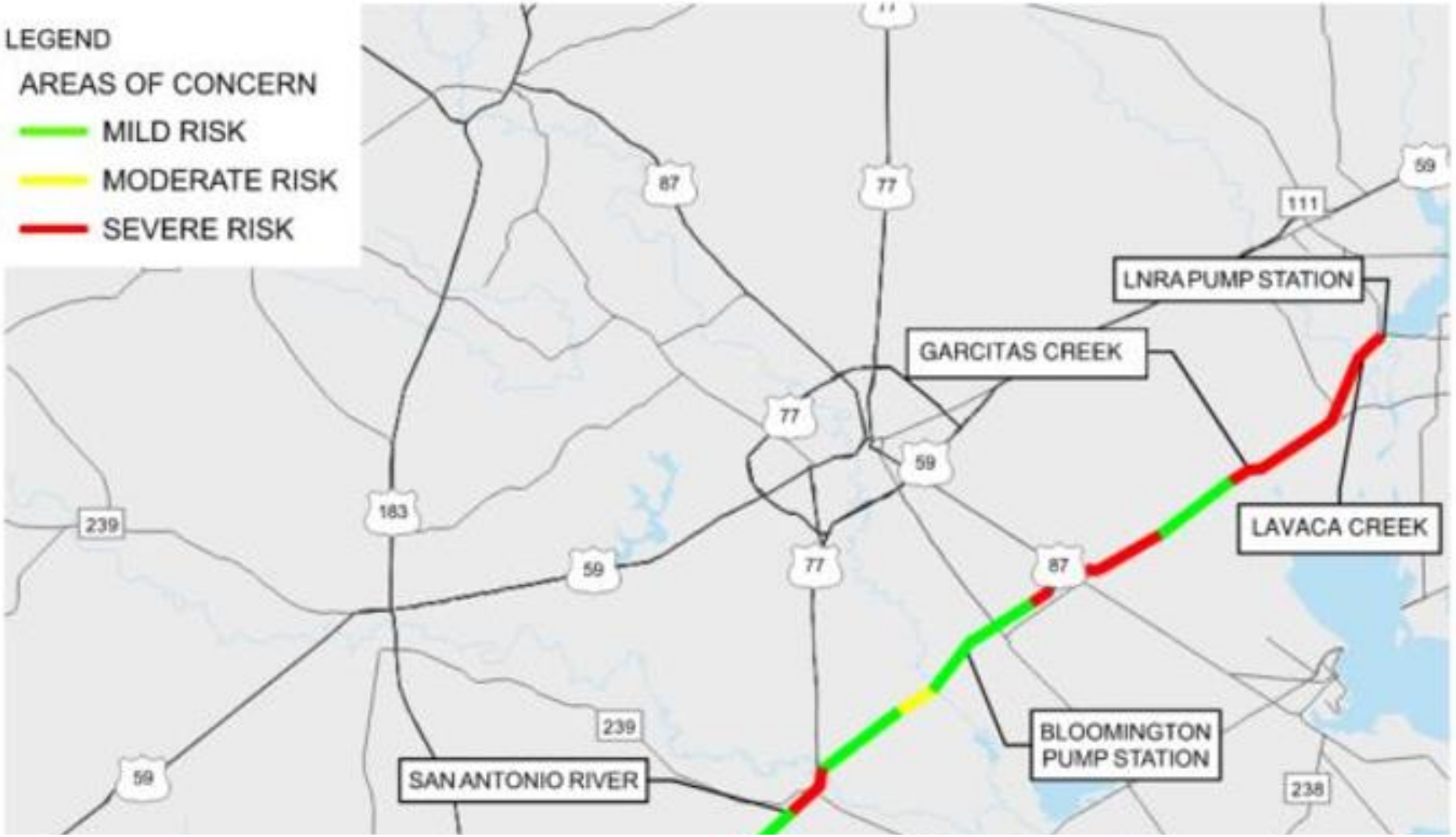
Condition Assessment

Findings and Observations (Continued)

- Varying soil corrosivity conditions exist throughout the length of the pipeline, and current cathodic upgrades should continue as planned
- Pump station upgrades are needed and should continue as planned
- Pipe pressure exceedance areas have been identified

CONDITION ASSESSMENT IDENTIFIED AREAS OF PRESSURE EXCEEDANCE

- Pressure Exceedance Areas increase risk of MRP failure
- Predicted in model based on observed flow
- Field verified by remote pressure monitors
- Suspected to be caused by debris, sediment or other obstructions



- **ALL PUMPING SCENARIOS ARE AFFECTED**

PRESSURE EXCEEDANCE = OBSTRUCTIONS IN MRP

May include a mix of sediment, biofilm, invertebrates, pipe damage, or construction materials

Trash that was left inside of pipe during the pipe installation. They were removed during the repair. *(spreader bar & Electrical extension cord)*

City of Corpus Christi MRP Phase 1

OPTIONS FOR DEALING WITH PRESSURE EXCEEDANCE

1. Do nothing; continue to operate with capacity limitations; fix MRP when failures occur

2. Run pressure and sonar tool to precisely locate debris, sediment, or obstructions; bypass worst areas (less parallel pipe)

3. Don't run tool and bypass larger areas (more parallel pipe)

Improvement Projects

➢ **Mary Rhodes System Improvement Project**

- AEP Upgrades Complete
- HVAC Complete
- Flow meter installation and meter vault – not complete, as a shutdown is required for installation
- Spare pump, motor, and variable frequency drive for both Bloomington and Woodsboro pump stations – equipment to arrive in September 2025, but installation and startup will be delayed as shutdown of the MRP is required for installation

➢ **Mary Rhodes Air Vacuum Valve Installation**

- Installation of seven combination air vacuum valves – complete

➢ **LNRA Lake Texana Upgrades**

- Spare pumping equipment ordered with arrival early 2026
- Reviewing the engineering required for the installation of permanent spare equipment

➢ **Cathodic Protection Upgrades**

- Contract approved by council in Spring of 2025

➢ **Mary Rhodes Phase II Bank Erosion**

- Project in design by USACE

➢ **Final HDR Condition Assessment Report**

Thank you!

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