

Lakevale Estates Collection Improvements Community Meeting Preliminary Engineering Report Results September 7, 2022

Department of Public Works and Environmental Services
Working for You!



A Fairfax County, VA, publication
September 7, 2022

Agenda

- ❖ Introductions and Logistics
- ❖ Long-term Project Scope and Purpose
- ❖ What have we been up to?
- ❖ What's happening now?
- ❖ What to expect in the Future?
- ❖ Q&A



Introductions



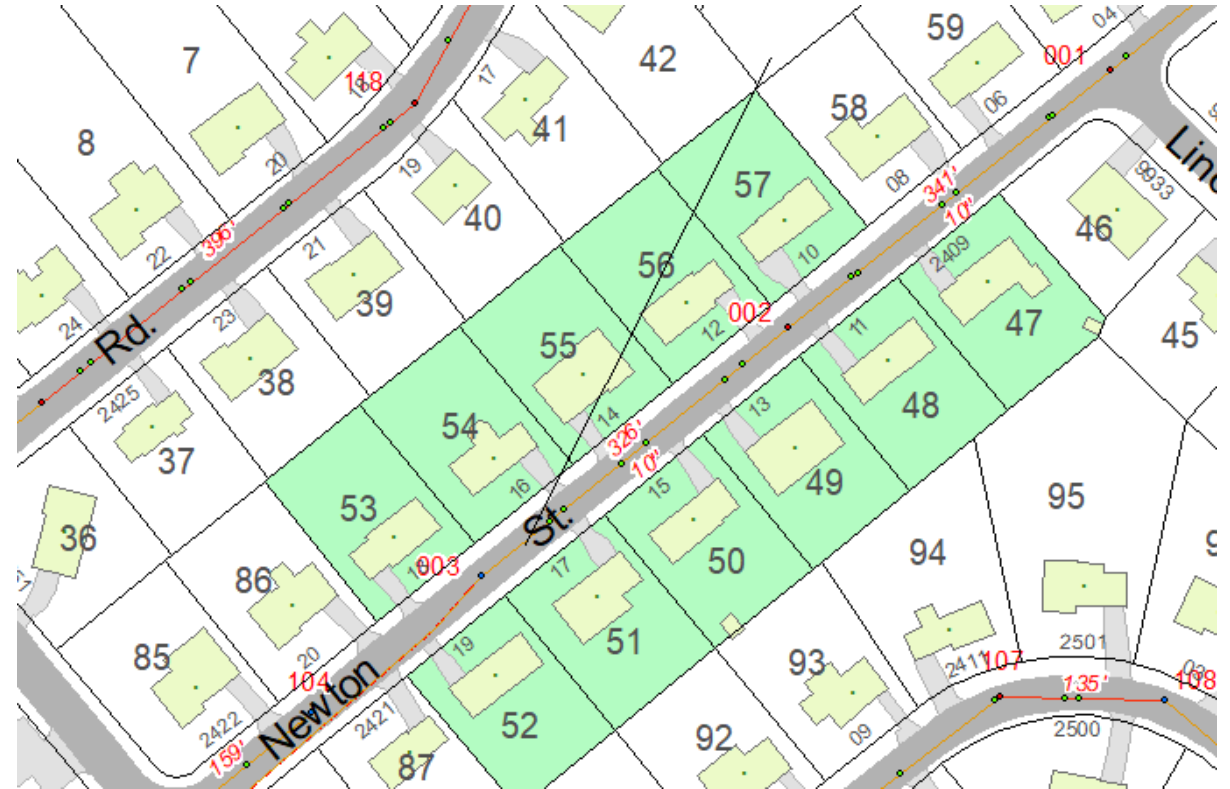
Introductions/ Logistics

- Introductions
 - Wastewater Design and Construction Division
 - Lizzy Merin, Engineer III
 - Project Manager for the long-term solution for Fairfax County
 - Jacobs Engineering Group (Consultant)
 - Water/Wastewater Engineering Firm
 - Ali Nemati, PE
- *To make sure we can answer all your questions, please type them in the chat throughout the presentation!*



Short-term and Mid-term Updates Performed by WCD

- Short-term: Installed Backflow Devices
 - Devices installed
 - Regular system maintenance is ongoing
- Mid-term: Temporary modifications to the Lakevale Pump Station
 - Updated pump operating strategy
 - Replaced pump impeller to reduce pump station capacity

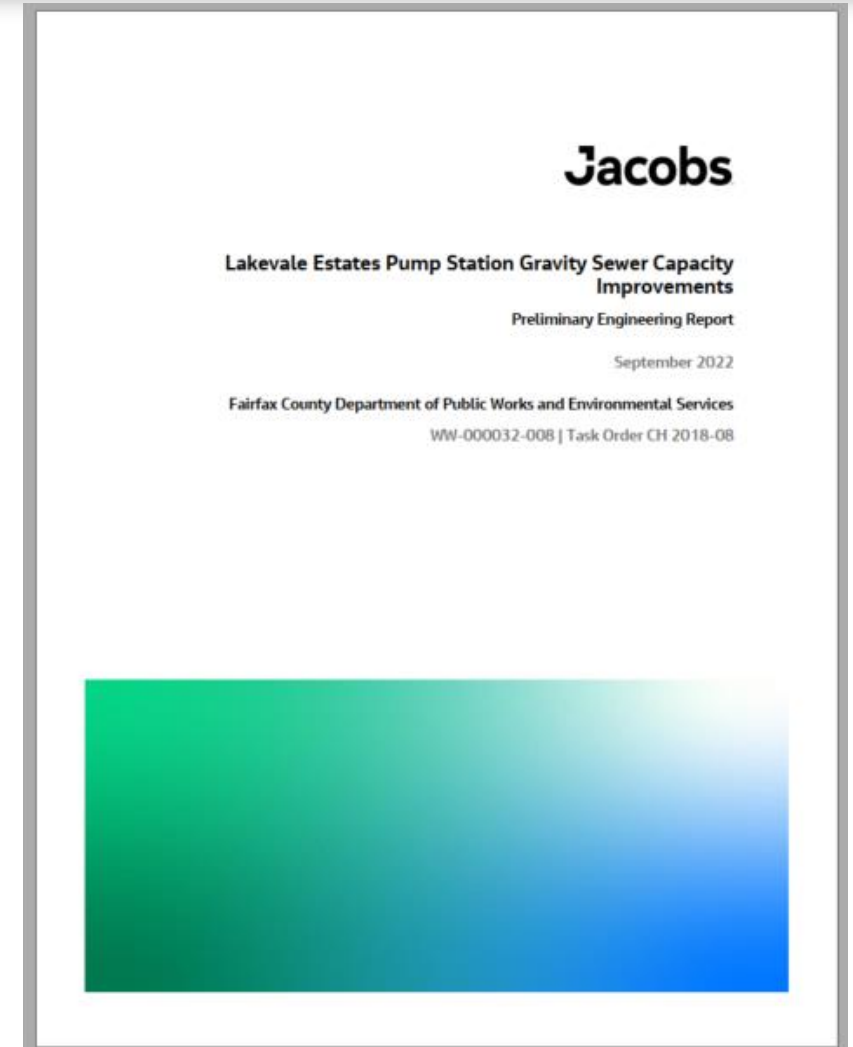


Long Term Project Scope and Purpose



Purpose of Meeting

- Inform the community about the upcoming project
- Present preliminary engineering report
- Solicit community engagement on the **long-term solution**
- Show the community the results of the preliminary engineering report



Existing Conditions

Table 2 - Lakevale Estates PS Force Main Parameters

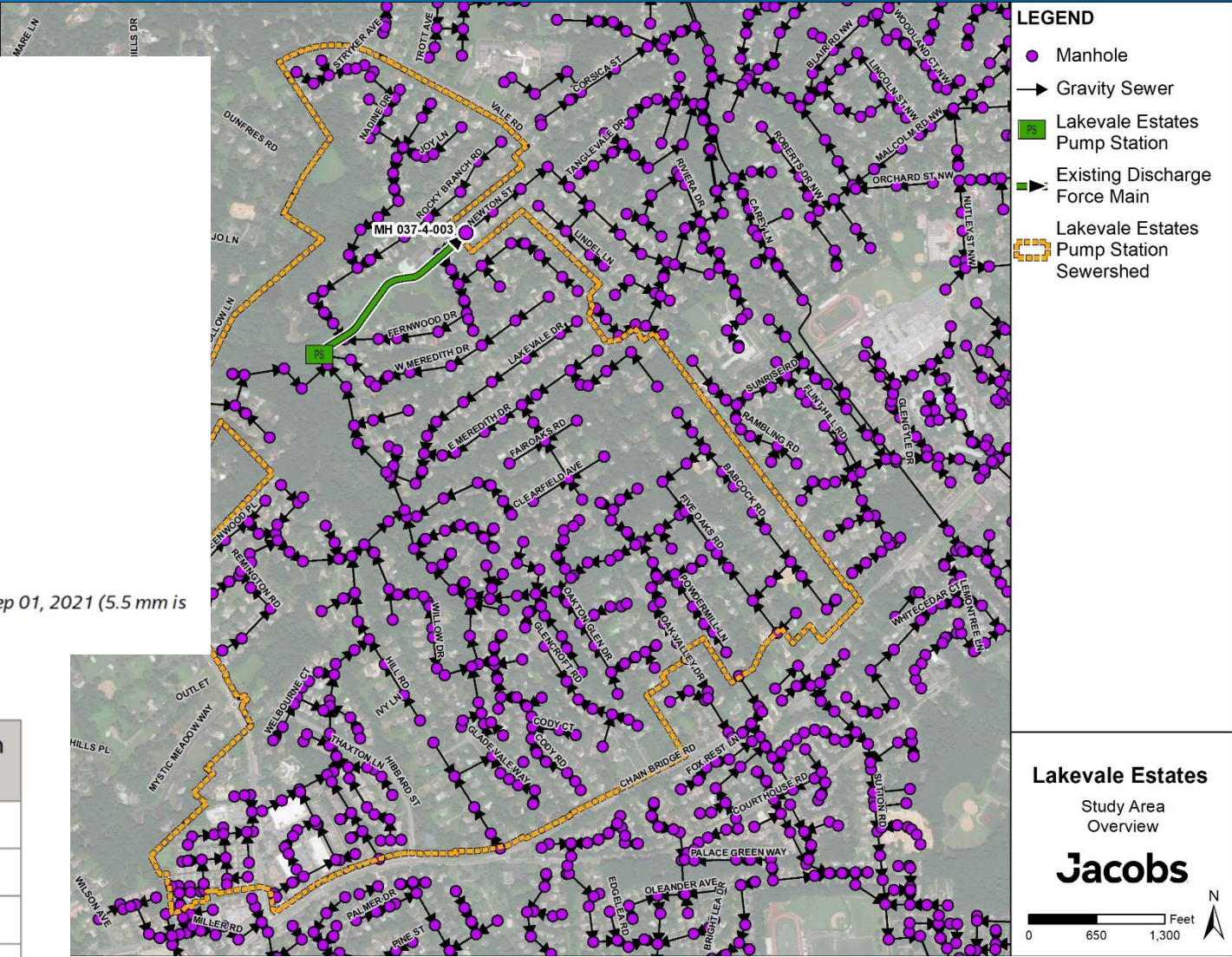
Description	Value
Material	Cast Iron Class 150 ^a
Year Built	1966
Absolute roughness coef. (e), ft	0.0015
Nominal Diameter, inch	8
Internal Diameter, inch	8.23
Cement Liner Thickness, inch	0.125 ^b
Liner Thickness, inch	0.217 ^c
Effective Internal Diameter, inch	7.55

- a. Original construction record drawings provided by Fairfax County, dated July 1966
- b. Assumed cement lined Cast Iron pipe
- c. Force Main was lined with a 5.5 mm liner per Fairfax County Wastewater Collection Division email dated Sep 01, 2021 (5.5 mm is 0.217 inches)

Table 3 - Lakevale Estates PS Force Main Length

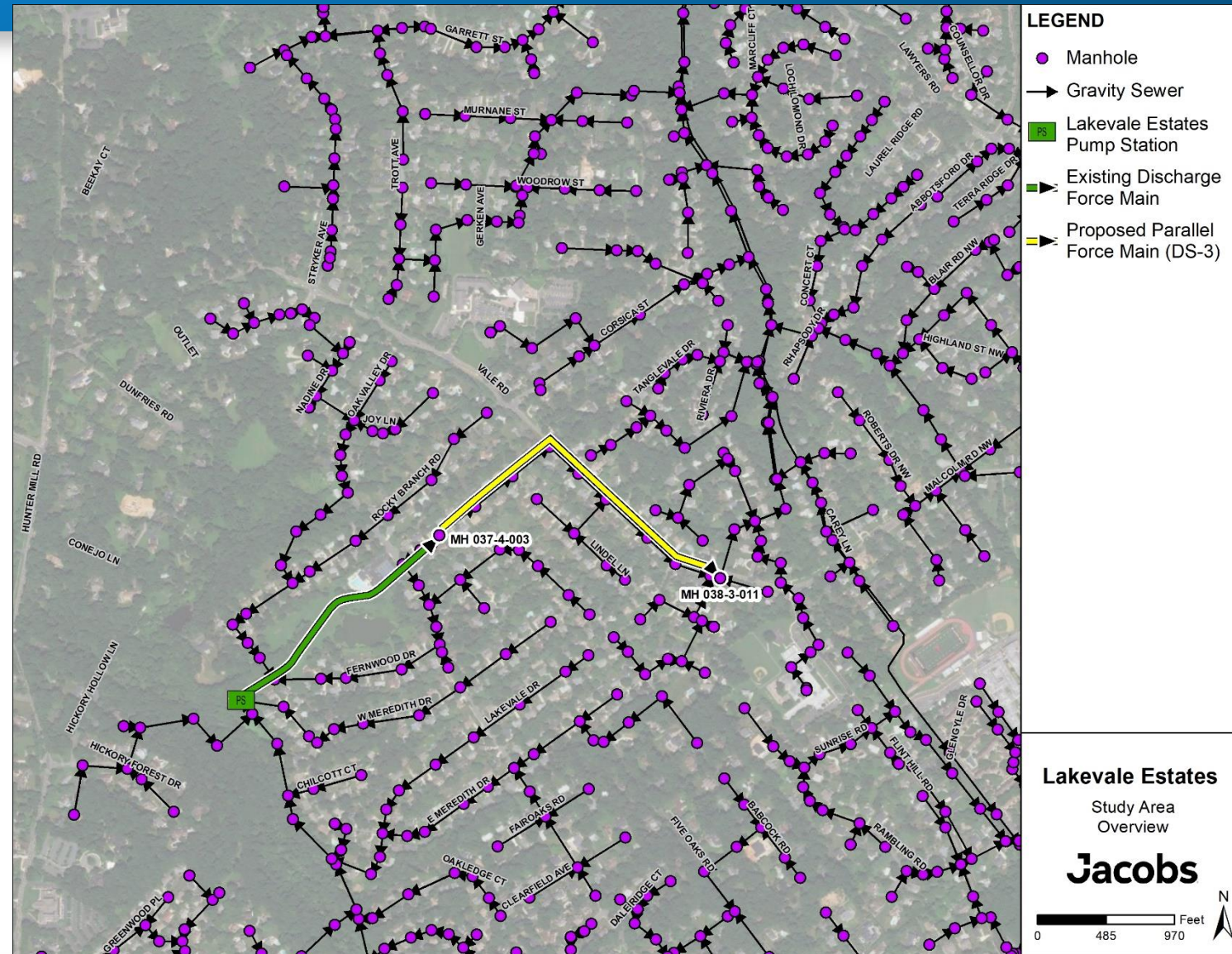
Existing Force Main Profile ^a	Slope	Actual Length (ft)
STA 0 to STA 6.5 (650 LF)	3.72%	674.15
STA 6.5 to STA 11 (450 LF)	9.56%	493.00
STA 11 to STA 18.5 (750 LF)	2.14%	766.07
Inside the PS	Vertical	11
Total Length (ft):		1,944.22

- a. Original construction record drawings provided by Fairfax County, dated July 1966.



Recommendation from Technical Memo- DS-3 Parallel Force Main

- Extend the Force Main from Newton Street to Vale Road, while gravity sewer operates in parallel
- Pump station able to discharge 593 gpm 2,600 additional feet from the current discharge location
- Construction Method: Trenchless Installation – Horizontal Directional Drilling



Questions you may have:



What have we been up to?

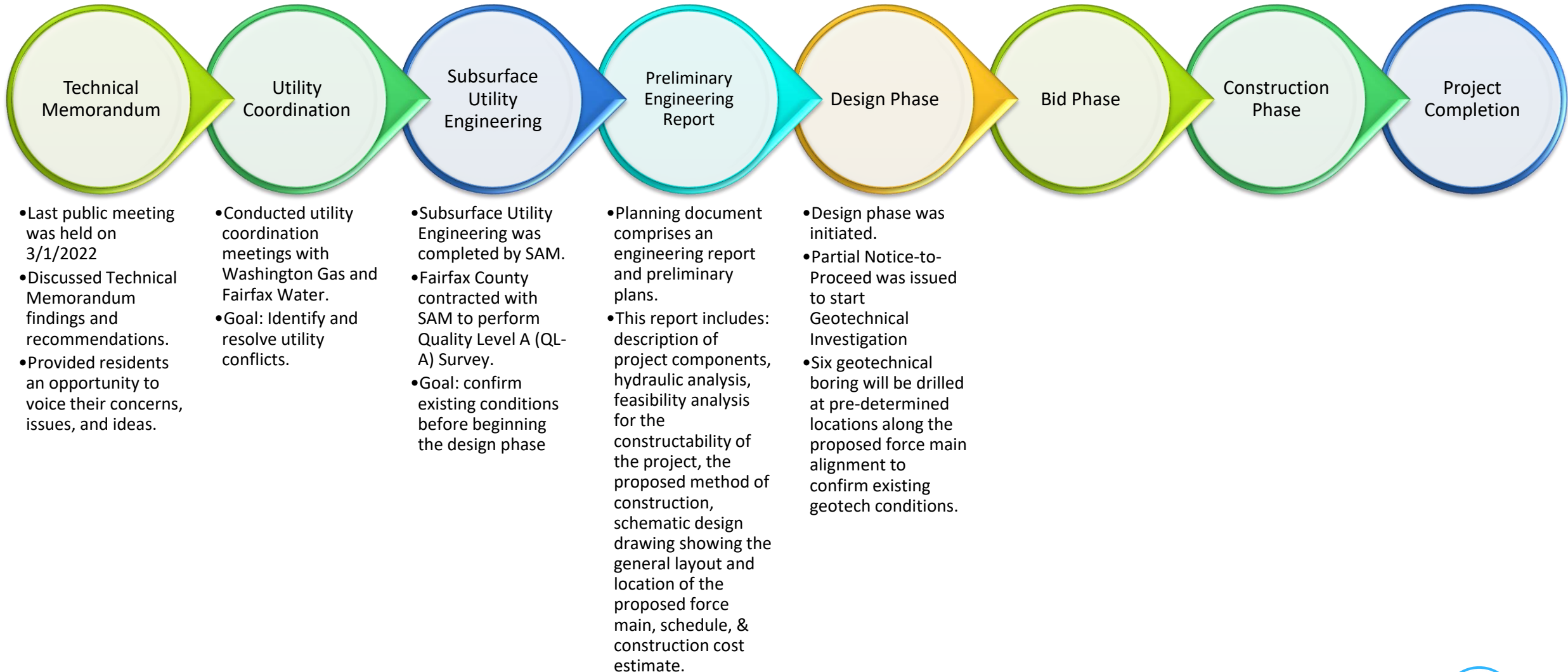
What's happening now?

What to expect in the future?

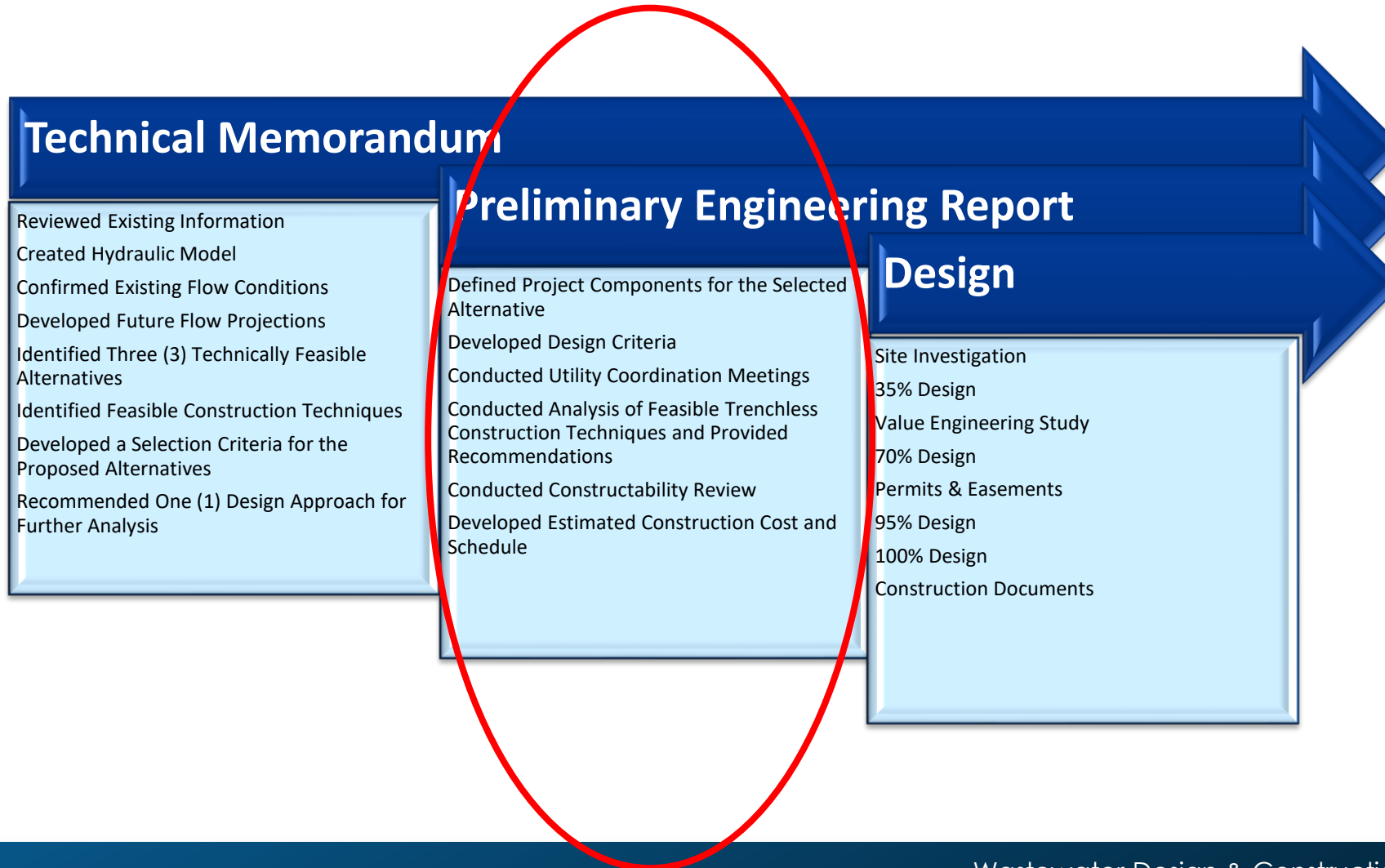
What have we been up to?



What have we been up to? -Project Status Update



Where are we in the Process? -Overview of the Study and Design Phase



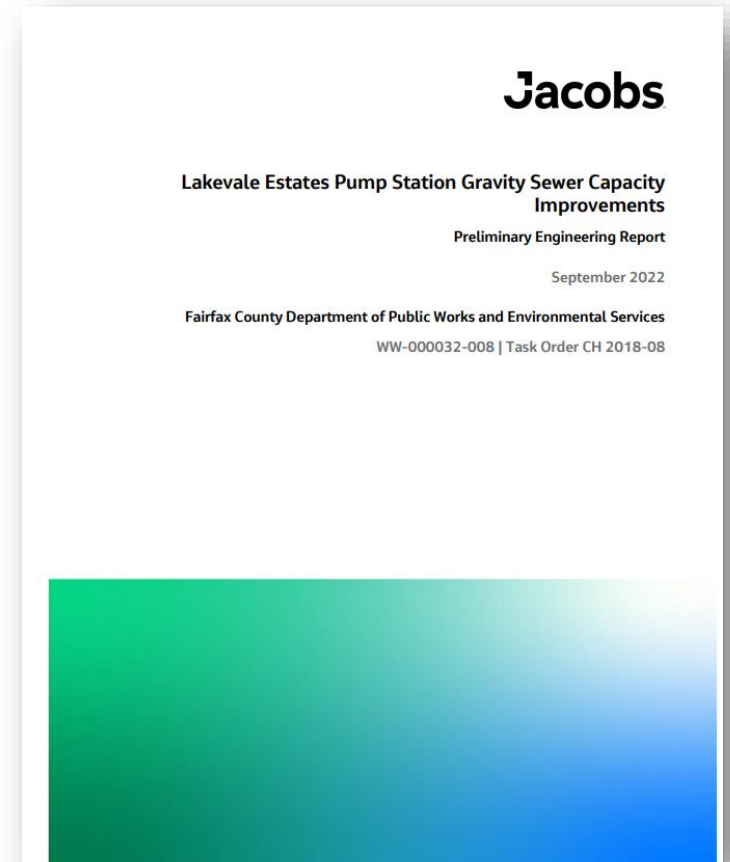
Preliminary Engineering Report



Preliminary Engineering Report

Preliminary Engineering Report includes the following items:

- Description of project components
- Design criteria and assumptions
- Summary of hydraulic analysis completed under the project Tech Memo
- Feasibility analysis for the constructability of the project
- The proposed method of construction
- A list of permits required for the proposed project
- A current detailed construction cost estimate
- An overall estimated project schedule
- Schematic drawings showing the general layout and location of the existing and proposed project components



Design Criteria

Force Main Alignment

- Pipe Size: 8-inch diameter
- Trenchless installation Methods
 - Horizontal Directional Drilling is the preferred option, depends on geotechnical report data

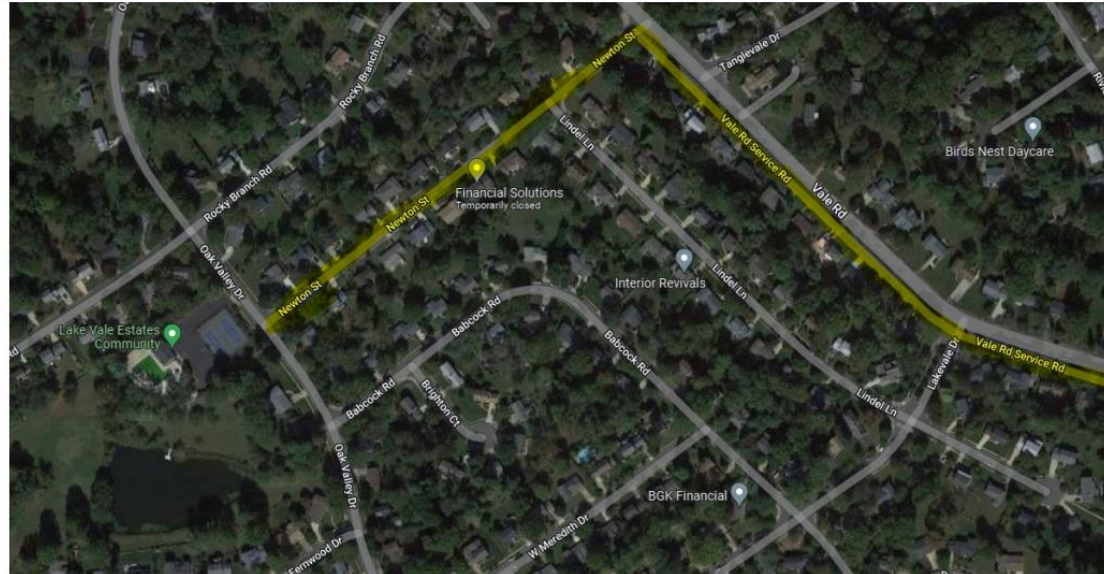


What's happening now?



What's happening now?

- Geotechnical investigation, soil conditions will dictate:
 - Force main Installation method
 - Force main depth of cover
- PER assumed favorable geotechnical conditions
- Community Notice of Geotechnical Drilling



Geotechnical drilling shall take place along Newton Street and Vale Service Road. Work shall take place in the VDOT right-of-way and Wastewater Sewer Easement. Do not park on these streets on workdays which shall be posted on the website and take place between September 12-30, 2022.



County of Fairfax, Virginia

To protect and enrich the quality of life for the people, neighborhoods, and diverse communities of Fairfax County

August 16, 2022

Reference:

Notification of Geotechnical Drilling
Project Name: Lakevale Estates Collection Improvements Project
Project Number: WW-000032-008

Dear Resident:

The above-referenced Fairfax County project is occurring in your neighborhood with geotechnical drilling expected to take place along Newton Street and Vale Service Rd (see map on the back). This letter is to inform you that in the following weeks, engineers and survey crews acting on behalf of Fairfax County intend to perform geotechnical drilling near your property to assist in the design process for improving the sanitary sewer serving your neighborhood.

Field crews will perform geotechnical drilling activities which will cause traffic detours for a limited time frame during the day between 8am and 5pm. The work consists of soil sampling utilizing drill rigs and staff who will be performing tests on the samples. Noise caused by hammering of the soil sampling devices and truck operations is expected and will not start before 9am in adherence with Fairfax County's

ps along segments of Newton St. and Vale Service Road e may also be occasional temporary blocked access to the ic for use; however, for safety reasons, residents are lated hazards that will be clearly marked. Temporary traffic idents are requested not to park their vehicles on een the hours of 8 AM and 5 PM during the workdays in e. Work crews will be in your area as soon as September 12- eptember 30, 2022. The work should take around 6 working ie check the website linked below closer to the date for

Design and Construction Division (WDCD) is working on a downstream of the Lakevale Estates Pump Station and does nical data is needed for us to create a design.

rtual meeting to present the Preliminary Engineering Report in is invitation and continue to check the website for updates.

[tal-projects/lakevale-estates-collection-improvements-project](#)



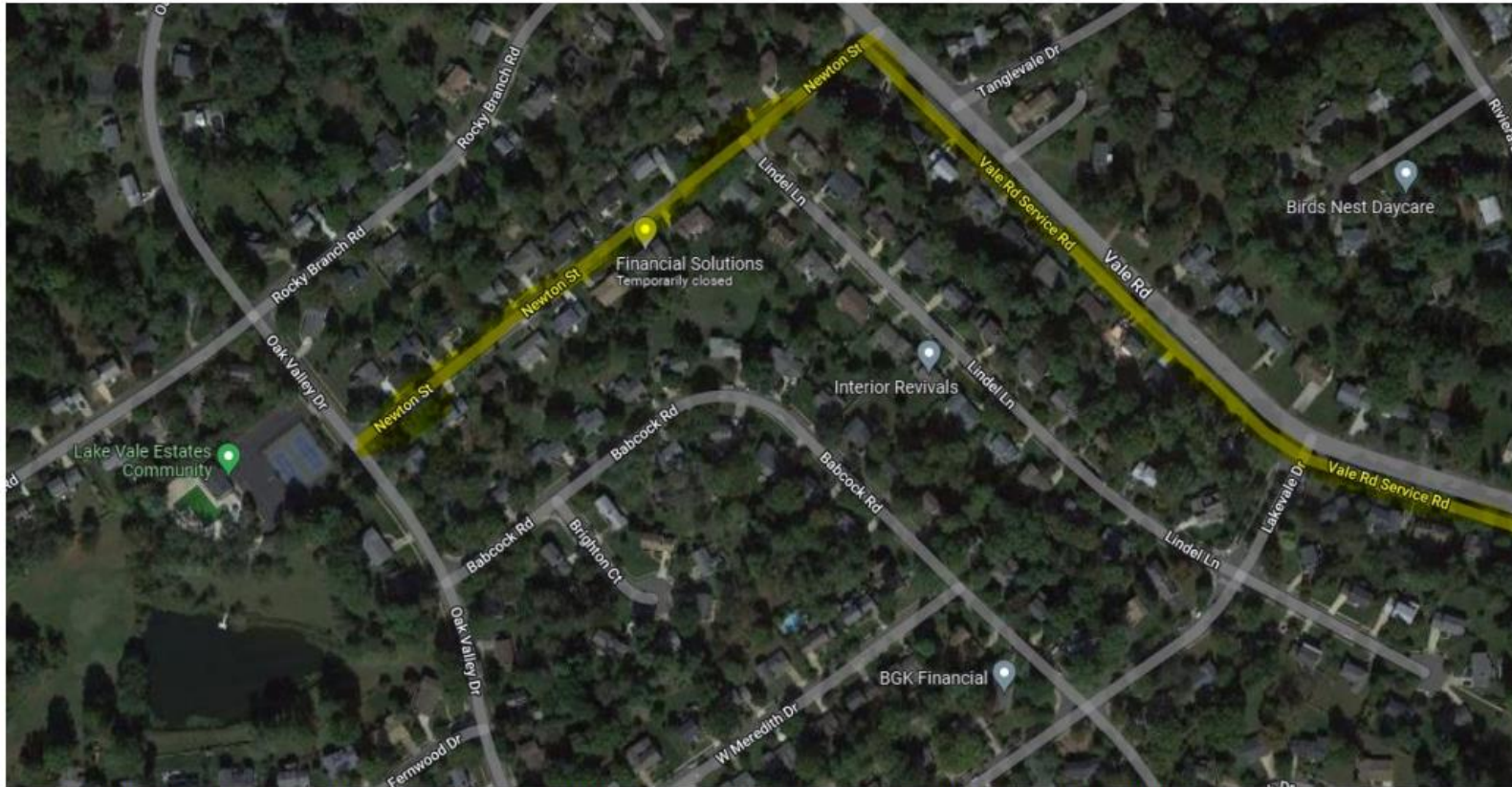
ment(s) of the project.



What is happening- Starting Week of September 12

Geotechnical investigation- between September 12-30

DO NOT PARK ON NEWTON STREET OR VALE SERVICE ROAD 8 a.m. -5 p.m. on workdays to be posted on website.



Geotechnical drilling shall take place along Newton Street and Vale Service Road. Work shall take place in the VDOT right-of-way and Wastewater Sewer Easement. Do not park on these streets on workdays which shall be posted on the website and take place between September 12-30, 2022.

What is happening- will continue throughout project

- Utility Coordination needed with Fairfax Water & Washington Gas
 - Proposed alignment is parallel to existing 8-inch water line in Newton Street
 - Proposed alignment parallel to both existing 24-inch and 10-inch gas main in Vale Service Road.
- Existing Force Main Condition
 - Existing 8-inch cast iron pressure class 150 force main lined in 2012 and in good working condition.



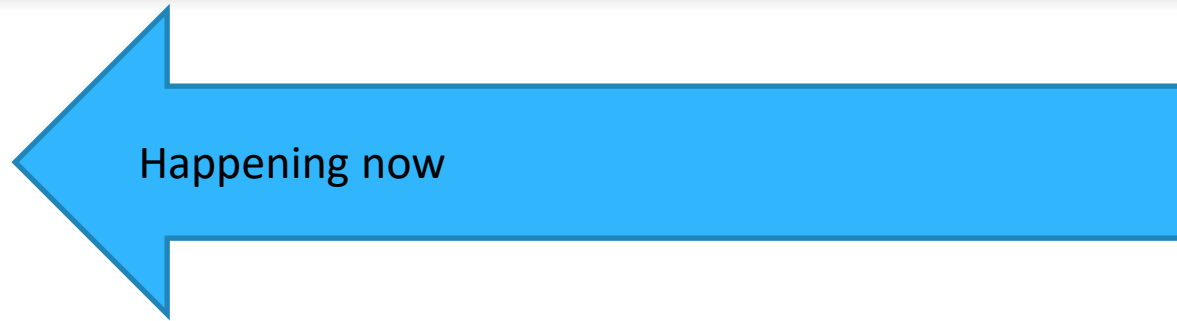
What to Expect?



What to expect?

1. Field survey:

- Topographic survey
- Geotechnical survey
- Underground utility locating



2. Constructability

- Horizontal Directional Drilling
- 4 drill paths on preliminary drawings
- Traffic control plan

3. Maintenance of Operations to include temporary bypass and pump and haul

Construction Method



What to expect?- Construction Method

What is Horizontal Directional Drilling?

- Preferred construction method- depends on results of geotechnical report

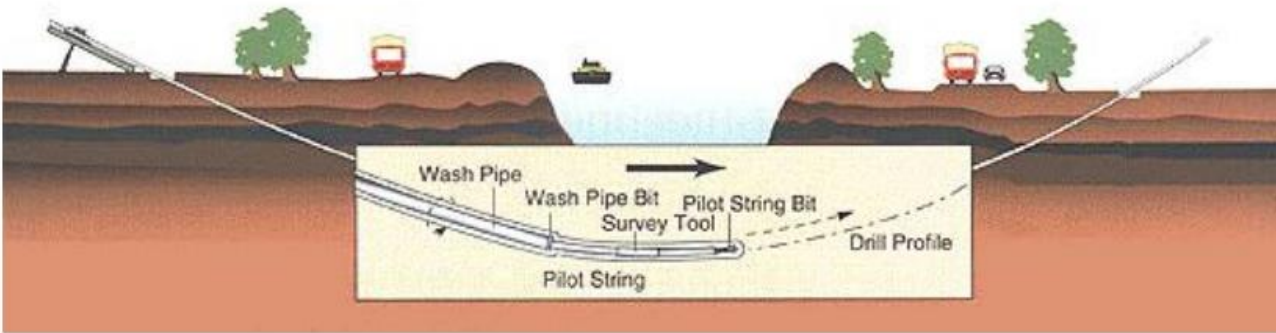


Figure 5. Example of HDD - Pilot Pass

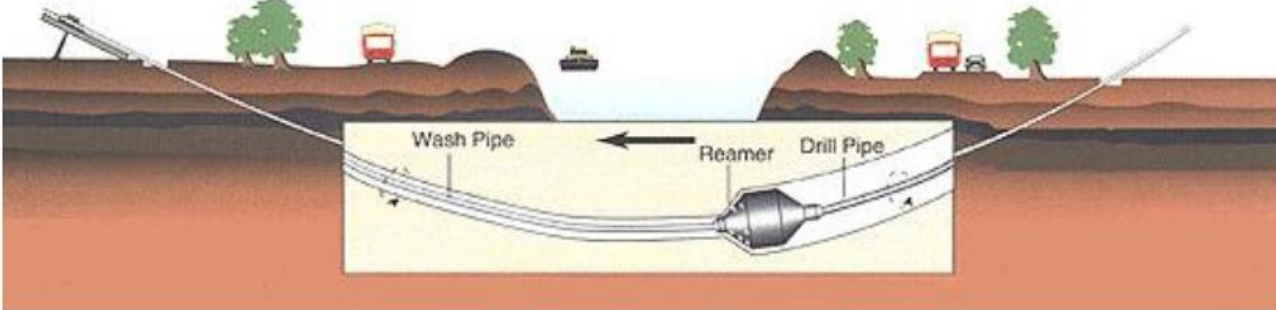


Figure 6. Example of HDD – Reaming Pass



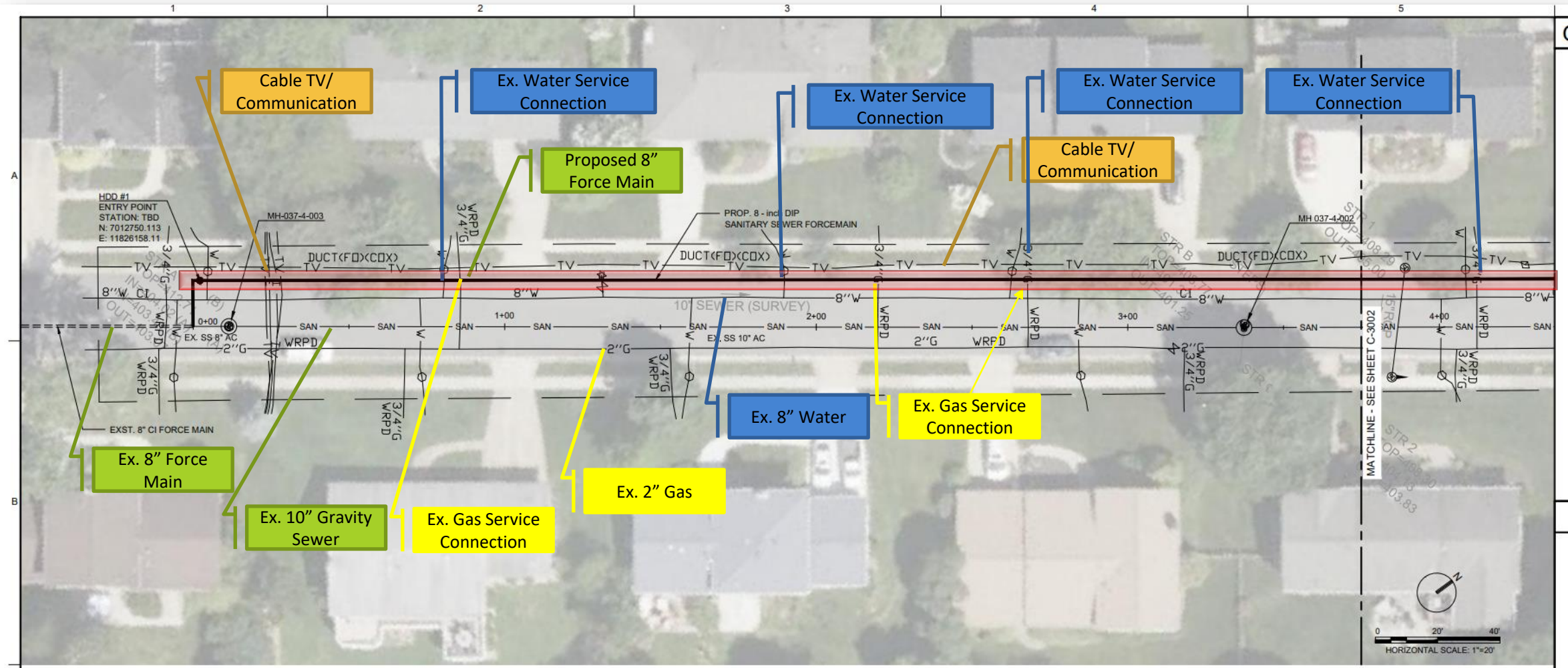
Figure 8. Example of HDD Within the Right-Of-Way

Preliminary Schematic Design Drawings



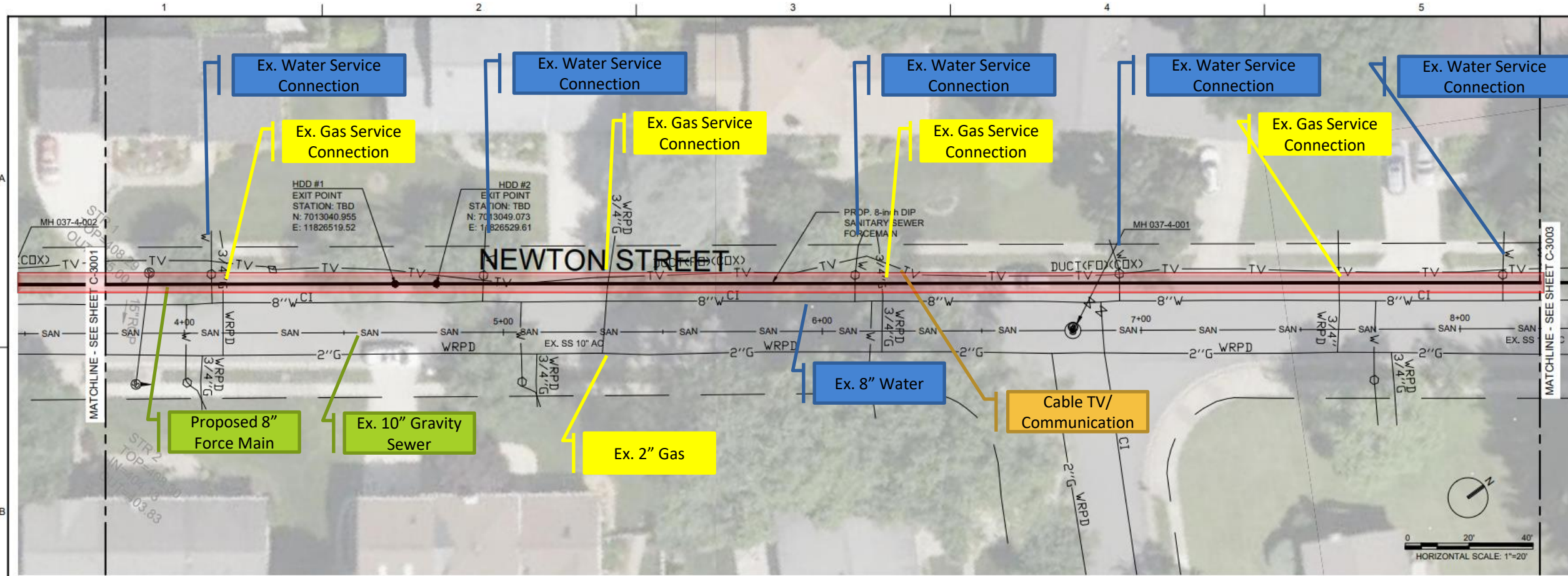
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Preliminary Design Drawings – Sheet 05-C-3001



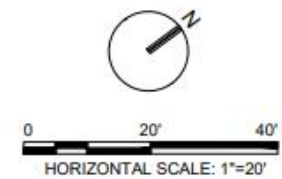
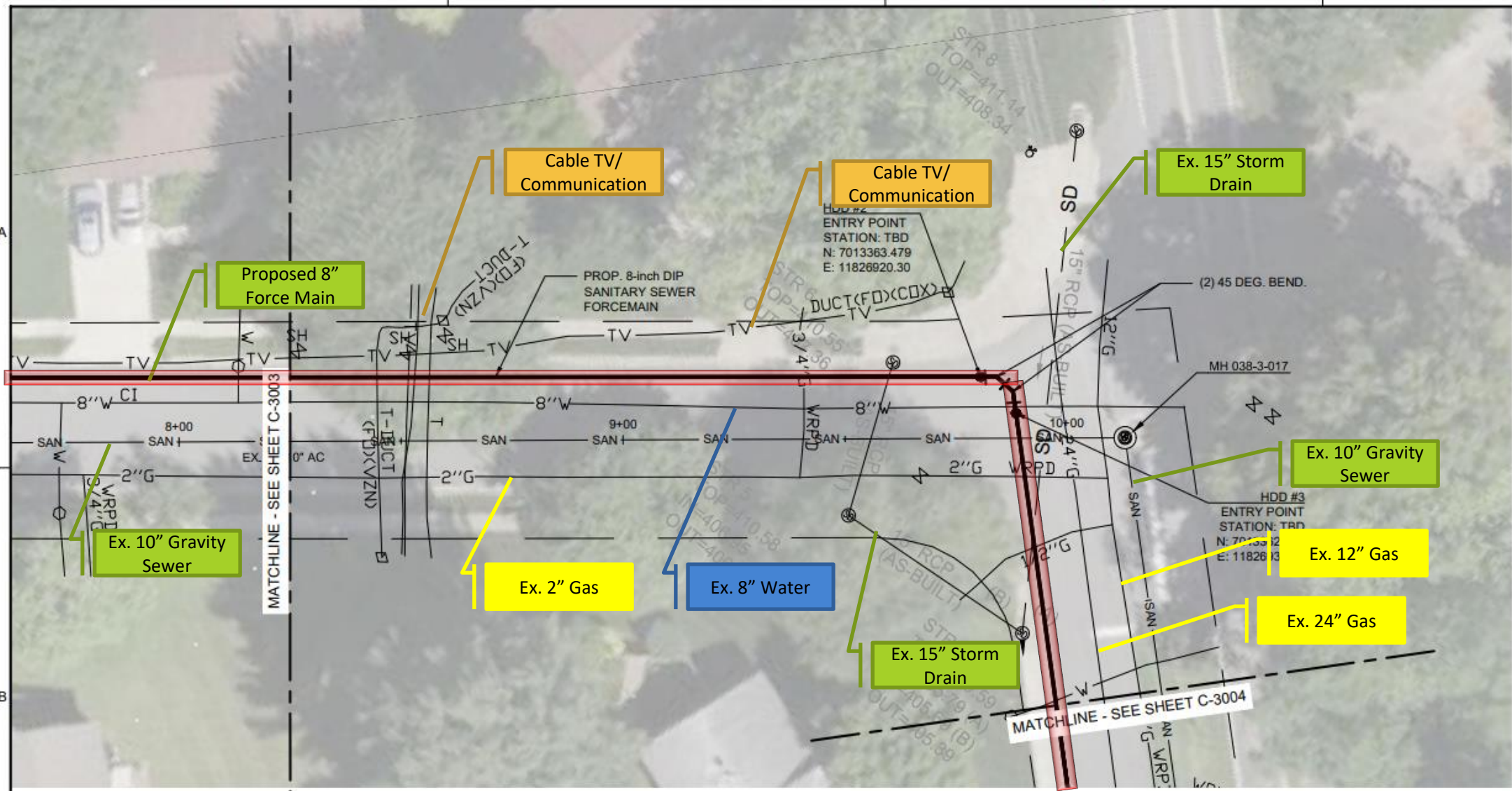
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Preliminary Design Drawings – Sheet 05-C-3002



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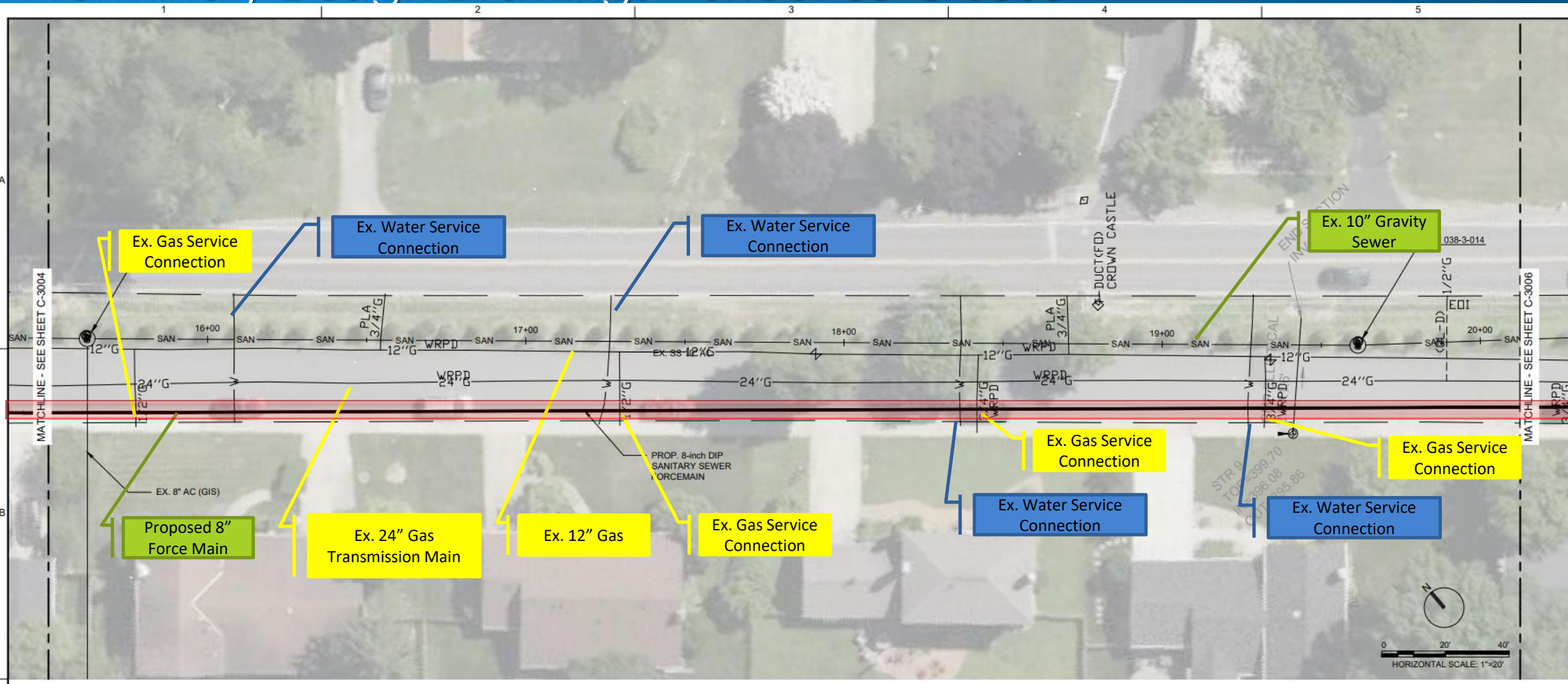
Preliminary Design Drawings – Sheet 05-C-3003





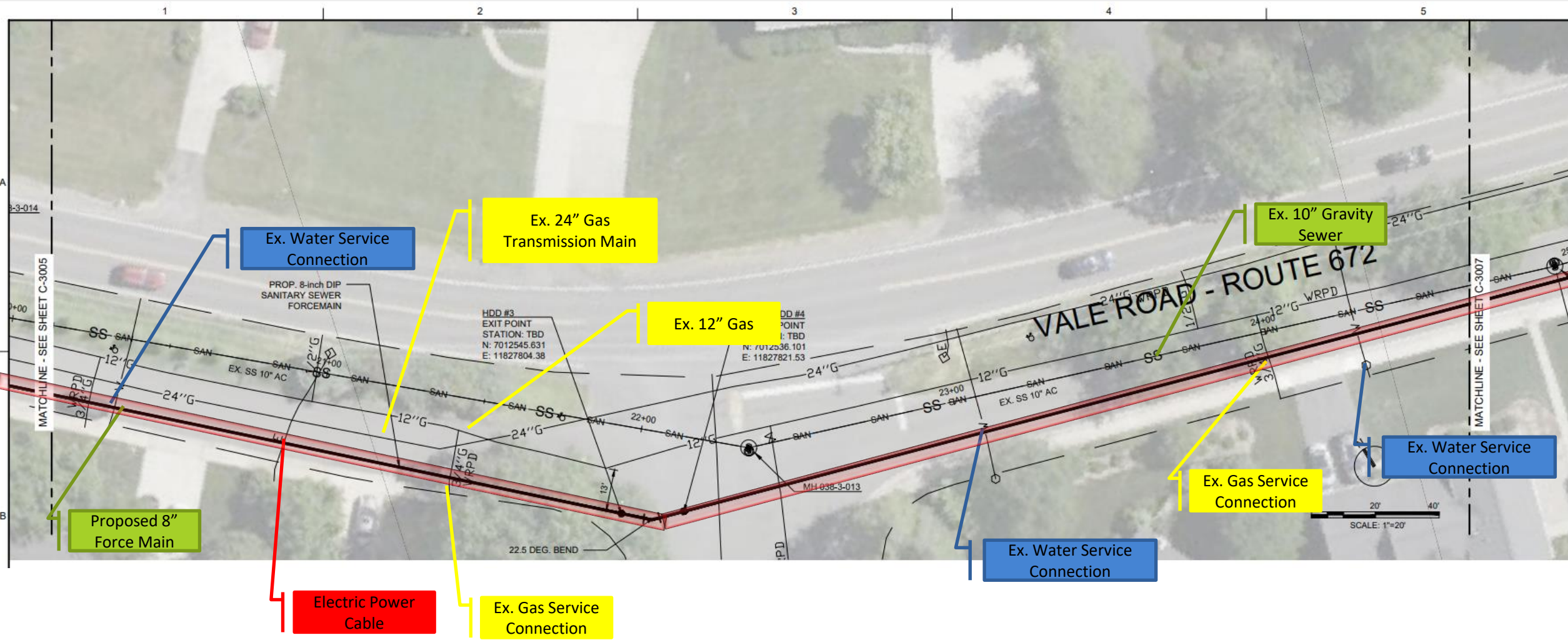
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Preliminary Design Drawings – Sheet 05-C-3005

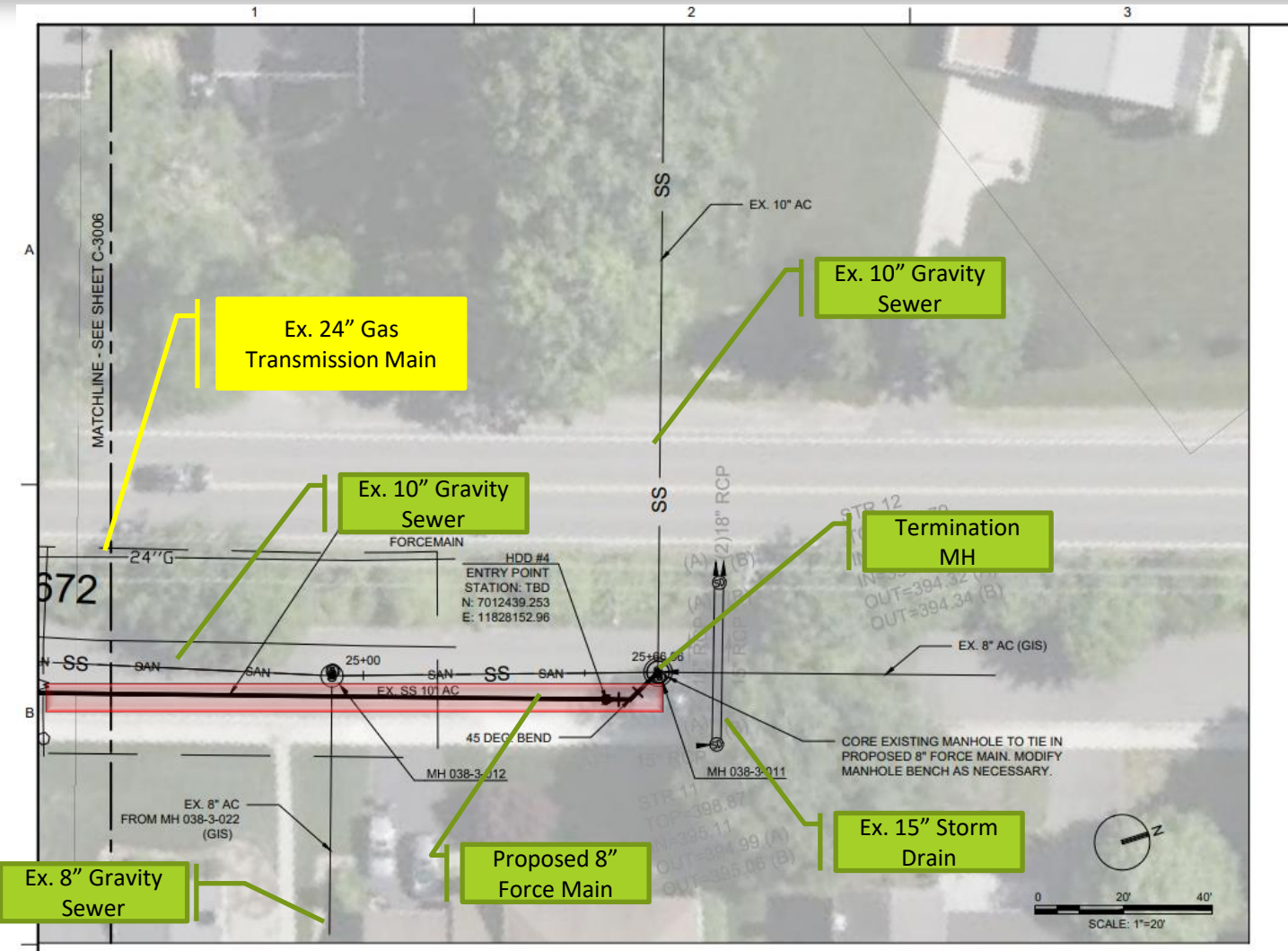


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Preliminary Design Drawings – Sheet 05-C-3006



Preliminary Design Drawings – Sheet 05-C-3007



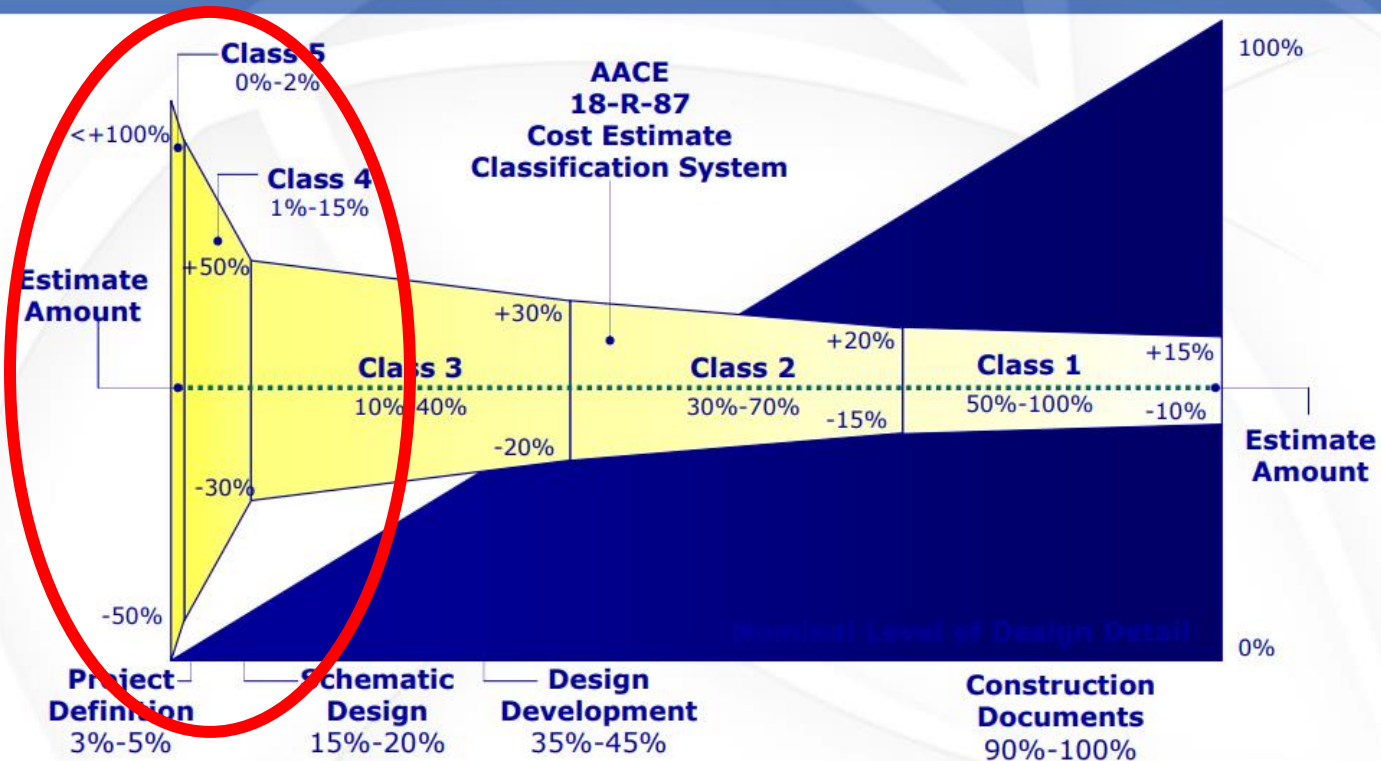
Cost Estimate



Cost Estimate

Cost estimate classification is provided with in accordance with Association for the Advancement of Cost Engineering (AACE)
The estimated costs are provided within a -10 to +50 percent accuracy range.

AACE – Classification System



Cost Estimate

Description	Low Range (-10%)	Estimated Amount	High Range (+50%)
Opinion of Probable Construction Cost – Class IV – Study Phase	\$3.4 M	\$3.8 M	\$5.7 M

This cost estimate reflects an opinion of cost based on the development of the design at the time of the estimate and current market conditions. The final project opinion of cost will probably vary based on design refinement and future changes in labor, material, and equipment costs.



Project Schedule



Project Schedule

Project Phase	Estimated Duration
Design	270 calendar days
Bidding	120 calendar days
Construction	365 calendar days*

** Dependent on market conditions*



Project Timeline

- ✓ Community meeting March 1, 2022, to present the Final Technical Memo.
- ✓ Utility locating completed August 30, 2022.
- ✓ Preliminary Engineering Report (PER) completed September 1, 2022.
- ✓ A public meeting will be held to present the PER to the community September 7, 2022.
- ☐ Geotechnical drilling to take place throughout September 2022.
- ☐ Begin 35% design Fall 2022.



Questions & Answers

Thank you for listening !



For additional information, please contact

Elizabeth Merin, Engineer III, Elizabeth.merin@fairfaxcounty.gov

Department of Public Works & Environmental Services
Wastewater Design & Construction Division
703-324-5111



- More information available at: www.fairfaxcounty.gov/publicworks
www.fairfaxcounty.gov/publicworks/capital-projects/lakevale-estates-collection-improvements-project
- We will post this presentation on the website