CHARLES TOWN UTILITY BOARD
AGENDA

WEDNESDAY, JUNE 22, 2022

Regular Meeting | **661 South George Street, Charles Town, WV 25414** | **4:00 PM**

CALL TO ORDER

1. **APPROVAL OF MINUTES**
   a. Approval of June 3, 2022 Special Meeting Minutes
   UB Minutes 6.03.22.pdf
   b. Approval of June 8, 2022 Regular Meeting Minutes
   UB Minutes 6.08.22.pdf

2. **PUBLIC COMMENT**
   This portion of the agenda is designed for members of the general public to share thoughts on items of interest in the community. By law, Board members may ask clarifying questions or discuss procedural matters but are not permitted to discuss the policy merits of any issue unless it is scheduled for discussion.

   The public is invited to attend this meeting in person or via webcast (www.ctubwv.com- Board Meetings - Meeting Agendas and Minutes 2022) or by accessing the following zoom link:

   https://us06web.zoom.us/j/82455470773?pwd=ZzBNNVNsaGZ2MFlkeVVJaGo4UFdyZz09

   Meeting ID: 824 5547 0773
   Passcode: 511878
   +1 301 715 8592 US

3. **UNFINISHED BUSINESS**
   a. Distressed Utility Updates - Possible Executive Session Under: WV State Code Section §6-9A-4(b)(9) - To consider matters involving or affecting the purchase, sale or lease of property, advance construction planning, the investment of public funds or other matters involving commercial competition, which if made public, might adversely affect the financial or other interest of the state or any political subdivision and involving contract matters.
   i. WV PSC Case No. 21-0260-S-DU Shenandoah Junction Public Sewer
   ii. WV PSC Case No. 21-0818-S-DU Cave Road Utilities, LLC
   iii. WV Public Service Commission Filings by CTUB
   b. Miller Station Development Request

c. Dewberry
i. Draft Water Facility Plan
Final CTUB Report - Rev A.pdf
ii. Draft Water CIF
CIF Water - Tech Memo.pdf
d. CTUB Water and Sewer Availability Draft Letter
CTUB Availability Letter-Rev.pdf

4. **NEW BUSINESS**
a. Lakeland Place Alternate Mainline Extension Agreement
AMEA - Fairfax Crossing-Redline.pdf

5. **MANAGER REPORTS**
a. Utility Manager Report
Renewal Project funding and Schedule.pdf
b. Chairman Report

6. **APPROVAL OF BILLS**
a. June 22, 2022
Board Report 6.22.22.pdf

7. **ADJOURNMENT**

8. **INFORMATION ONLY**
a. Next Meeting - July 13, 2022 at 4:00 PM

June 3, 2022

The Charles Town Utility Board held a special meeting on June 3, 2022 at 10:00 A.M. Members of the Board present were Bob Trainor, Duke Pierson, Tommy Stocks, Jacquelyn Milliron and Jeff Whitten. Also present were Kristen Stolipher, April Shultz, Hoy Shingleton, County Commission Liaison, Caleb Hudson, and Ashley Stottlemyer. The Board received no public comments.

The Chairman next opened the floor for discussion on Utility Acquisition and Pending Litigation - Possible Executive Session Under: WV State Code Section §6-9A-4(b)(9) - To consider matters involving or affecting the purchase, sale or lease of property, advance construction planning, the investment of public funds or other matters involving commercial competition, which if made public, might adversely affect the financial or other interest of the state or any political subdivision and involving contract matters. Motion by Jeff, second by Tommy, the Board unanimously approved convening into Executive Session at 10:01 A.M. Caleb Hudson, County Commission Liaison, was invited to the discussion. The Board declared executive session over at 11:35 A.M. No action taken by the Board.

With no objections, the Board adjourned the meeting at 11:36 A.M. The June 8th regular meeting will be held beginning at 4:00 P.M.

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Chairman Secretary

June 8, 2022

The Charles Town Utility Board held a regular meeting on June 8, 2022 at 4:00 P.M. Members of the Board present were Bob Trainor, Duke Pierson, Tommy Stocks, Jacquelyn Milliron and Jeff Whitten. Also present were Kristen Stolipher, April Shultz, Hoy Shingleton and Ashley Stottlemyer. The Chairman called for changes or corrections to the May 25, 2022 regular meeting minutes. Jacquelyn suggested changes and with no objections, the Board unanimously approved the minutes as amended. The Board received public comment from Elizabeth Ricketts.

Next, motion by Duke, second by Jacquelyn, the Board unanimously approved convening into Executive Session at 4:06 P.M. to discuss Distressed Utility Updates for Shenandoah Junction Public Sewer (Case No. 21-0260-S-DU) and Cave Road Utilities, LLC (Case No. 21-0818-S-DU) - Possible Executive Session Under: WV State Code Section §6-9A-4(b)(9) - To consider matters involving or affecting the purchase, sale or lease of property, advance construction planning, the investment of public funds or other matters involving commercial competition, which if made public, might adversely affect the financial or other interest of the state or any political subdivision and involving contract matters. The Board declared executive session over at 4:51 P.M. No action was taken by the Board.

The Chairman next opened the floor for discussion on the GDF – Draft Water Facility Plan Update (Water Treatment Plant). Kristen mentioned GDF presented the 10-year water capital improvement plan as well as growth-related items for the Water Treatment Plant at the last meeting. The Board reviewed and provided questions and comments. Chris Eckenrode presented cost breakdowns for various elements, schedules, chemicals and addressed other Board questions. Motion by Jeff, second by Duke, the Board unanimously approved the Water Facility Plan drafted by GDF.

The Board next discussed the Miller Station Development Request. Kristen provided the request for sewer service from the developer for the Miller Station property, which is adjacent from Patrick Henry Estates. Prior to the property under contact, the plan was to connect to a pump station on the property, but that pump station has been decommissioned by CTUB since that time. The property is too low to connect to the existing gravity line. The developer, Andrew Shuckra, requested a Board discussion on this matter as this expense was not budgeted since it was unknown to the seller and buyer of the property. The Board had several questions and recommended tabling this item until the next meeting before making a decision. Motion by Jacquelyn, second by Jeff, the Board unanimously approved tabling the discussion on the Miller Station development request.

The Chairman next opened the floor for discussion on the RK&K Sewer Model Update – King's Crossing, Hillside, Greenfield. Kristen received several development requests on the southeast side of Rt. 340. She expressed the need to expand the existing sewer model to address development in this area and define those points of connection to the treatment plant. The Board had several questions relating to the payment of such a study, perhaps using CIF money. John Cole of RK&K commented the study is developer driven, but CTUB should have an understanding of what infrastructure needs to be improved to continue to allow growth in that area. The Board discussed the possibility of requesting the developer to pay for the engineering upfront and reimburse through CIF's when they are ready to build. Kristen mentioned that for tracking purposes, this is helpful to be tasked within the sewer model. The Board suggesting reworking the developer policy to include more discussion on the payment of such studies. Kristen will earmark this task order as a request from the developer. Motion made by Duke, second by Jeff, the Board unanimously approved paying for this study which was requested by the developer and explore options of the developer paying the upfront costs and reimbursed through CIF's for future requests.

Next, the Board discussed the Dewberry draft Water Facility Plan. Richard Kincheloe from Dewberry, presented the future demand projections and the water system capital improvements planning. Dewberry explored the existing system conditions through visual inspections and explored the demand projections and suggested improvements with cost estimates. The Board provided questions on the report. Motion by Jacquelyn, second by Jeff, the Board unanimously approved tabling this item until next meeting to allow the Board time to review and provide questions.

The next item discussed was the Dewberry – Draft Water CIF. Marty Kazmierczak from Dewberry, presented his calculations on the water CIF's by using the hybrid methodology and various key input parameters to calculate a CIF of $4,564.00 per EDU. The benchmarking data showed this proposed fee amount falling in the middle of what other utilities are charging in the surrounding area. The Board provided questions on the report. Motion by Duke, second by Tommy, the Board unanimously approved tabling this item next meeting to allow the Board time to review and provide questions.

The Board next discussed the CTUB Water and Sewer Availability Letter. Kristen provided a draft letter in the packet for the Board to review. Jacquelyn made edits to Kristen's draft letter and will send out to the Board to review for the next meeting. The Board provided discussions. Motion by Duke, second by Jeff, the Board unanimously approved tabling the approval of the water and sewer availability letter until next meeting.

The Chairman next opened the floor for discussion on the CTUB Financial Policy Discussion and Draft Resolution. Per Board discussion at the last board meeting, Kristen drafted a financial policy and resolution for working capital, operating cash on hand and project reimbursement through bond issues. The policy is flexible enough to consider each project/financial scenario through an analysis by staff to be approved by the Board. The policy also mentions a benchmark debt service coverage ratio of 130%. The Board discussed the draft policy and provided comments. Motion by Duke, second by Jeff, the Board approved making bold the "NOW THEREFORE, BE IT RESOLVED" and filling in the value for the number of days in the third paragraph from the bottom in the provided draft resolution 3-1. Jacquelyn opposed the motion. Motion by Duke, second by Tommy, the Board approved the resolution 3-1 with those changes. Jacquelyn opposed the motion.

Next, the Utility Vehicle Purchase was discussed by the Board. Kristen requested to purchase a utility vehicle for the sewer department to remain efficient with operations. She recommended the Board provide a cap and staff can work on getting quotes. There is also a need for a new maintenance department vehicle in the near future, Kristen expressed. Motion made by Duke, second by Jeff, with discussion from the Board, the Board unanimously approved staff to purchase a vehicle not to exceed $50,000.00.

The Utility Manager Report was next addressed. Kristen briefed the Board on this month's sewer and water efforts including moving forward with hydrant flushing, bid opening for the R&R project on June 10, and a follow-up on the Novaform demonstration. The Chairman mentioned an update from Kristen to City Council on the distressed utility situation and summarized the items tabled at this meeting to be brought back to the Board at the next meeting. The Board provided discussions.

The Board next discussed the Approval of Bills. Motion by Tommy, second by Duke, the Board unanimously approved the payment of bills. With no objections, the Board adjourned the meeting at 7:16 P.M. The June 22nd regular meeting will be held beginning at 4:00 P.M.

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Chairman Secretary

FUTURE DEMAND PROJECTIONS AND WATER SYSTEMS CAPITAL IMPROVEMENTS PLANNING

Charles Town Utility Board
Charles Town, West Virginia

MAY 2022

Dewberry

PREPARED FOR

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Charles Town Utility Board
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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1
   1.1 Introduction 1
   1.2 Scope of Work 1
   1.3 Water Model Development 1
   1.4 System Analysis 1
2. WATER MODEL DEVELOPMENT 2
   2.1 Water Model Overview and Update 2
   2.2 Demand Projection and Distribution 2
3. DISTRIBUTION SYSTEM ANALYSIS 7
   3.1 Pumping Station and Tank Operation 7
      3.1.1 Main Pressure Zone 8
      3.1.2 Northern High Pressure Zone 9
      3.1.3 Huntfield Pressure Zone 11
   3.2 Fire Flow Analysis 12
   3.3 System Pressure Evaluation 16
   3.4 Condition Assessment 21
      3.4.1 6th Avenue Standpipe/Elevated Tank 21
      3.4.2 Avis Standpipe 23
      3.4.3 Huntfield Standpipe 24
      3.4.4 Keyes Ferry Elevated Storage Tank 24
      3.4.5 Locust Hill 25
      3.4.6 Northern High Zone Standpipe 25
      3.4.7 Route 9 Elevated Storage Tank 26
      3.4.8 Augustine Avenue Pumping Station 26
      3.4.9 Burns Street Pumping Station 27
      3.4.10 Water Treatment Plant 27
4. RECOMMENDED IMPROVEMENTS 28

1. EXECUTIVE SUMMARY

1.1 Introduction

The City of Charles Town, West Virginia, has been seeing a steady increase in residential and commercial customers since the early 2000s. Charles Town Utility Board (CTUB) currently serves about 6,387 customers in the area; approximately 5,765 (90%) of these customers are residential and 10% are commercial (based on the number of customers), with Hollywood Casino at Charles Town Races and Jefferson Medical Center as their two largest customers. The water model was updated as part of the Basis of Design Report submitted in September of 2019. The updates for this report include adding future demands for 13 developments identified by CTUB.

This report includes an inventory of major water distribution system components (tanks, pumps, valves, etc.), current and recommended operating philosophy, water model results, figures, and recommendations to improve the water distribution and fire flow suppression systems.

1.2 Scope of Work

The Phase 1 Scope of Work agreed upon between CTUB and Dewberry includes the following key elements, which have each been addressed in this report:

- Development of future demand projections for the year 2040
- Simulation of future demand conditions under steady-state and extended period conditions
- Identification of hydraulic limitations and upgrades to address them
- Identification of a phased capital improvements plan and cost opinions including inspection and preventative maintenance projects
- Preparation of a water systems capital improvements plan report

The future demand projections and model updates are provided in **Section 2** of this report. An evaluation of the distribution system is provided in **Section 3**. Recommended improvements to the CTUB system are presented in **Section 4** of this report.

1.3 Water Model Development

The water model consists of three pressure zones, the Main pressure zone (MPZ), the Huntfield pressure zone (HPZ), and the Northern High pressure zone (NHPZ). CTUB owns and operates a water treatment plant (WTP), with a treatment capacity of 2.8 mgd, located south of Town along Charles Town Road. The plant pumps into the MPZ and supplies all the water for the system. There are two additional pumping stations in the system the Augustine Avenue pumping station (AAPS) and the Burns Street pumping station (BSPS). The AAPS is a 0.65 mgd station located along Augustine Avenue and supplies the HPZ. The BSPS is a 1.1 mgd station located at the southern end of Burns Street and supplies the NHPZ. **Figure 2-1** shows a map of the distribution system with the locations of the WTP, pumping stations, tanks, and pressure zone boundaries. **Figure 2-2** shows a schematic of the system, displaying the relative operating levels of each pressure zone.

Future Demands projections for the 13 development areas are provided by CTUB and are shown in **Table 2-2**. The existing and future average and maximum day demands are shown in **Table 2-3**.

1.4 System Analysis

The system is evaluated based on tank operation, pumping station capacity, minimum and maximum system pressure, and available fire flow. The evaluation identifies projects required to meet the capacity of the distribution system as the system grows.

2. WATER MODEL DEVELOPMENT

2.1 Water Model Overview and Update

The Model that was provided to Dewberry contained the location of major assets (pumps, tanks, valves, and pipelines). As part of the 2019 Basis of Design Report, Dewberry added control rules for valves, pumps, tank levels, etc. to best represent the current CTUB's system and operation. For this report, new piping and nodes are added to represent the expansion of the distribution system to serve the 13 redevelopment areas.

The water model consists of three pressure zones, the Main pressure zone (MPZ), the Huntfield pressure zone (HPZ), and the Northern High pressure zone (NHPZ). CTUB owns and operates a water treatment plant (WTP), with a treatment capacity of 2.8 mgd, located south of Town along Charles Town Road. The plant pumps into the MPZ and supplies all the water for the system. There are two additional pumping stations in the system the Augustine Avenue pumping station (AAPS) and the Burns Street pumping station (BSPS). The AAPS is a 0.65 mgd station located along Augustine Avenue and supplies the HPZ. The BSPS is a 1.1 mgd station located at the southern end of Burns Street and supplies the NHPZ. **Figure 2-1** shows a map of the distribution system with the locations of the WTP, pumping stations, tanks, and pressure zone boundaries. **Figure 2-2** shows a schematic of the system, displaying the relative operating levels of each pressure zone.

2.2 Demand Projection and Distribution

The last update to the model was completed in September of 2019 (by Dewberry). This model update adds future developments located in the Main System pressure zone (MPZ), Huntfield Pressure Zone (HPZ), and the Northern High Pressure Zone (NHPZ) to the demand. **Figure 2-3** shows the locations of the future developments.

Growth in the system is variable and dependent upon numerous factors outside the control of the City, notably the state of the economy and the regional housing market, three growth scenarios are utilized for analysis:

1. Aggressive Growth – Full Buildout – all developments grow to full density per developer projections.
2. Conservative Growth – Assumes 50% of the developer projected density occurs.
3. Average Growth – This scenario is the average of the Aggressive and Conservative growth scenarios.

The Conservative projections are elected by the City for evaluation in this study. Refer to the *'Water Treatment System Facility Plan Update', April 2022* for more information on the growth scenarios and methodology behind each.

Table 2-1 shows the projected demands for each development as provided by CTUB. **Table 2-2** shows the existing and future Average Day Demand (ADD) and Maximum Day Demand (MDD) separated by pressure zone. The model is used to evaluate the system performance, including the development demands, and determine any capacity-related projects required to support the future development.

Per City guidance, the Average Day to Maximum Day peaking factor of 1.41, developed in the *'Water Treatment System Facility Plan Update'* is utilized in this evaluation.

TABLE 2-1: PROJECTED DEMAND FOR FUTURE DEVELOPMENT					
DEVELOPMENT ID	DEVELOPMENT	AGGRESSIVE GROWTH		CONSERVATIVE GROWTH	
		ADD (GPM)	MDD (GPM)	ADD (GPM)	MDD (GPM)
1	American Heritage (Huntwell)	33.33	47.00	16.67	23.5
9	Charles Town Infill	10.42	14.69	5.21	7.34
12	Fritts Property	33.33	47.00	16.67	23.50
14	Huntfield	39.58	55.81	19.79	27.91
15	Jefferson Heights North	14.58	20.56	7.29	10.28
16	Tate Manor	8.33	11.75	4.17	5.88
19	Langlet	20.83	29.38	10.42	14.69
22	Magnolia Springs	31.25	44.06	15.63	22.03
23	Norborne Glebe	33.33	47.00	16.67	23.50
24	Old Town Ranson – Infill	10.42	14.69	5.21	7.34
27	Prospect Place	17.71	24.97	8.85	12.48
30	Stolipher	20.83	29.38	10.42	14.69
31	Washington Landing	28.54	40.24	14.27	20.12
32	Winchester Cold Storage	57.29	80.78	28.65	40.39
33	Windmill Crossing	0.42	0.59	0.21	0.29
Total (gpm)		**360.21**	**507.90**	**180.1**	**253.94**
Total (mgd)		**0.52**	**0.73**	**0.26**	**0.37**

TABLE 2-2: EXISTING AND FUTURE DEMAND SUMMARY								
PRESSURE ZONE	EXISTING		2040					
	ADD	MDD	ADD			MDD		
	ZONE DEMAND (GPM)	ZONE DEMAND (GPM)	ZONE DEMAND (GPM)	NEW DEMAND (GPM)	SUB-TOTAL (GPM)	ZONE DEMAND (GPM)	NEW DEMAND (GPM)	SUB-TOTAL (GPM)
Main System	756.25	1,067.63	773.15	104.58	***877.73***	1,090.15	147.45	**1,237.60**
Huntfield	283.28	399.93	347.46	58.85	***406.31***	489.91	82.99	**572.90**
Northern High	149.35	210.84	152.21	16.67	***168.87***	214.61	23.5	**238.11**
Total (gpm)	**1,188.88**	**1,678.4**	**1272.81**	**180.10**	**1452.91**	**1,794.67**	**253.94**	**2,048.61**
Total (mgd)	***1.7 mgd***	***2.4 mgd***	***1.83 mgd***	***0.26 mgd***	***2.09 mgd***	***2.58 mgd***	***0.37 mgd***	***2.95 mgd***

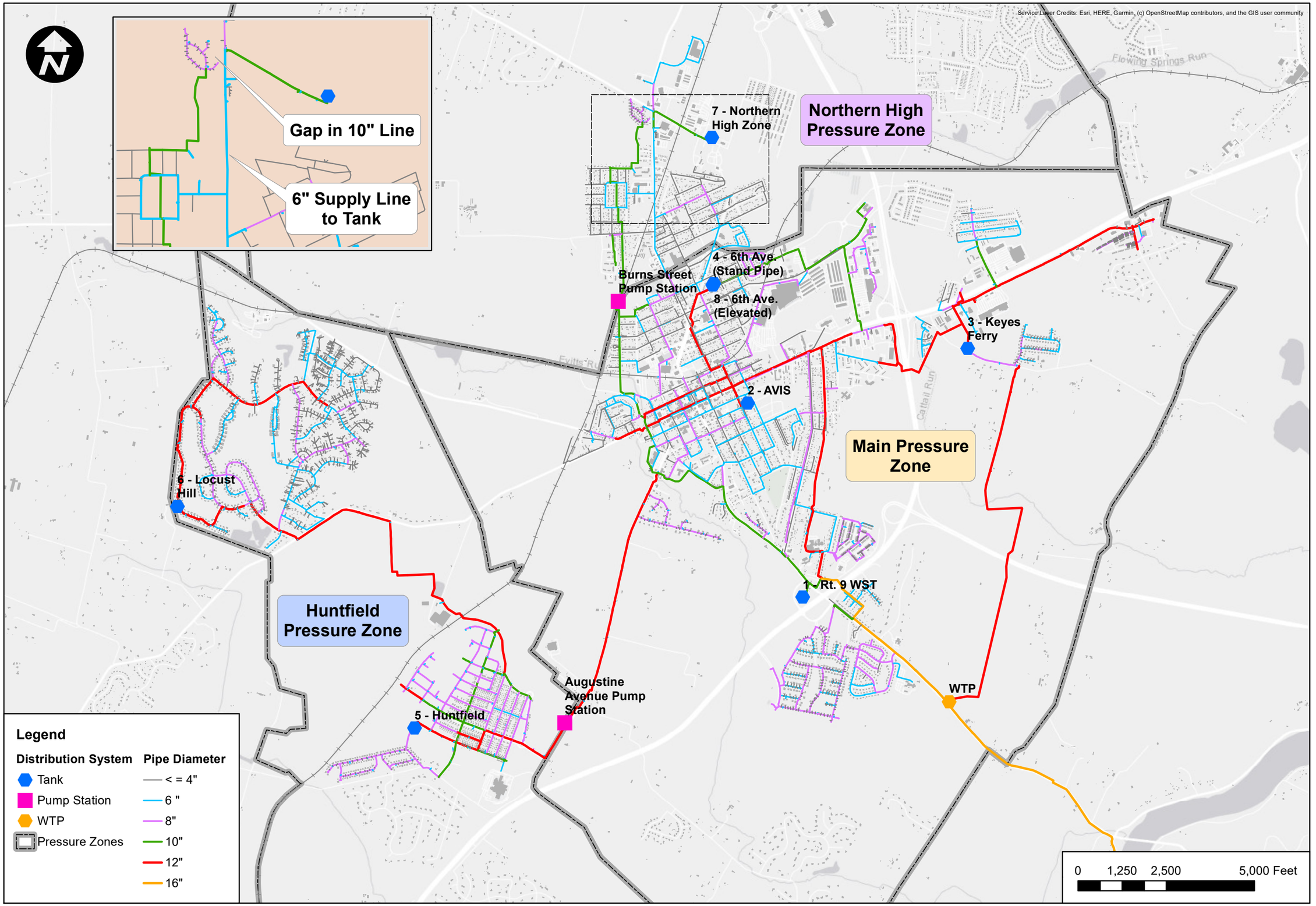

FIGURE NO. 2.1

TITLE EXISTING SYSTEM

SCALE 1 inch = 2,500 feet

PROJECT WATER MASTER PLAN
CHARLES TOWN UTILITY BOARD

DATE MAY 2022

PROJ. NO. 5107007

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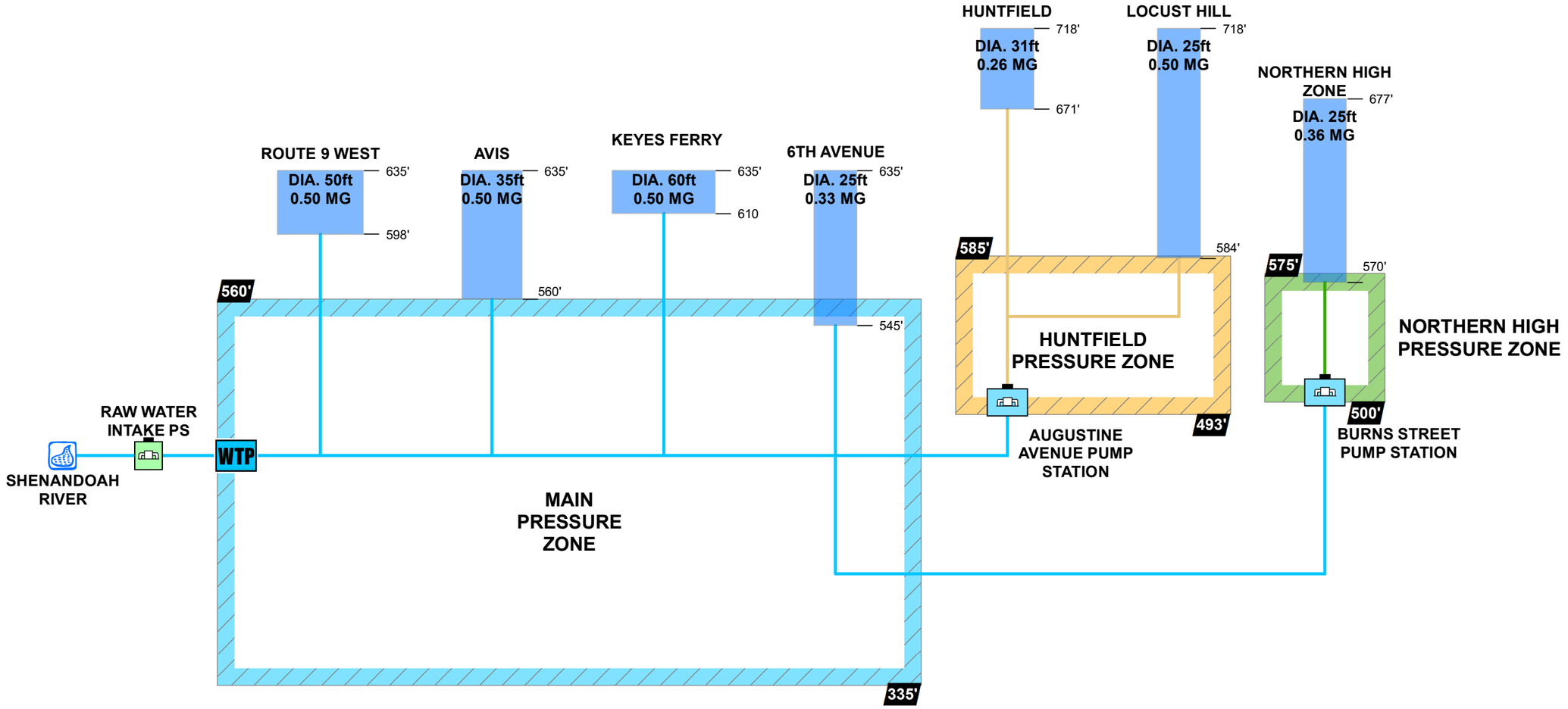
Fig 2-1 - Existing System.mxd



Legend

Facilities

- Intake Pump Station
- Pump Station
- Water Treatment Plant
- River

Pressure Zone

- Hunfield Pressure Zone
- Main Pressure Zone
- Northern High Pressure Zone
- Ground Elevation

Pressure Zone Piping

- Huntfield Zone
- Main Zone
- Northern High Zone

FIGURE NO. 2.2

TITLE EXISTING SYSTEM SCHEMATIC

PROJECT WATER MASTER PLAN
CHARLES TOWN UTILITY BOARD

SCALE

DATE MAY 2022

PROJ. NO. 5107007

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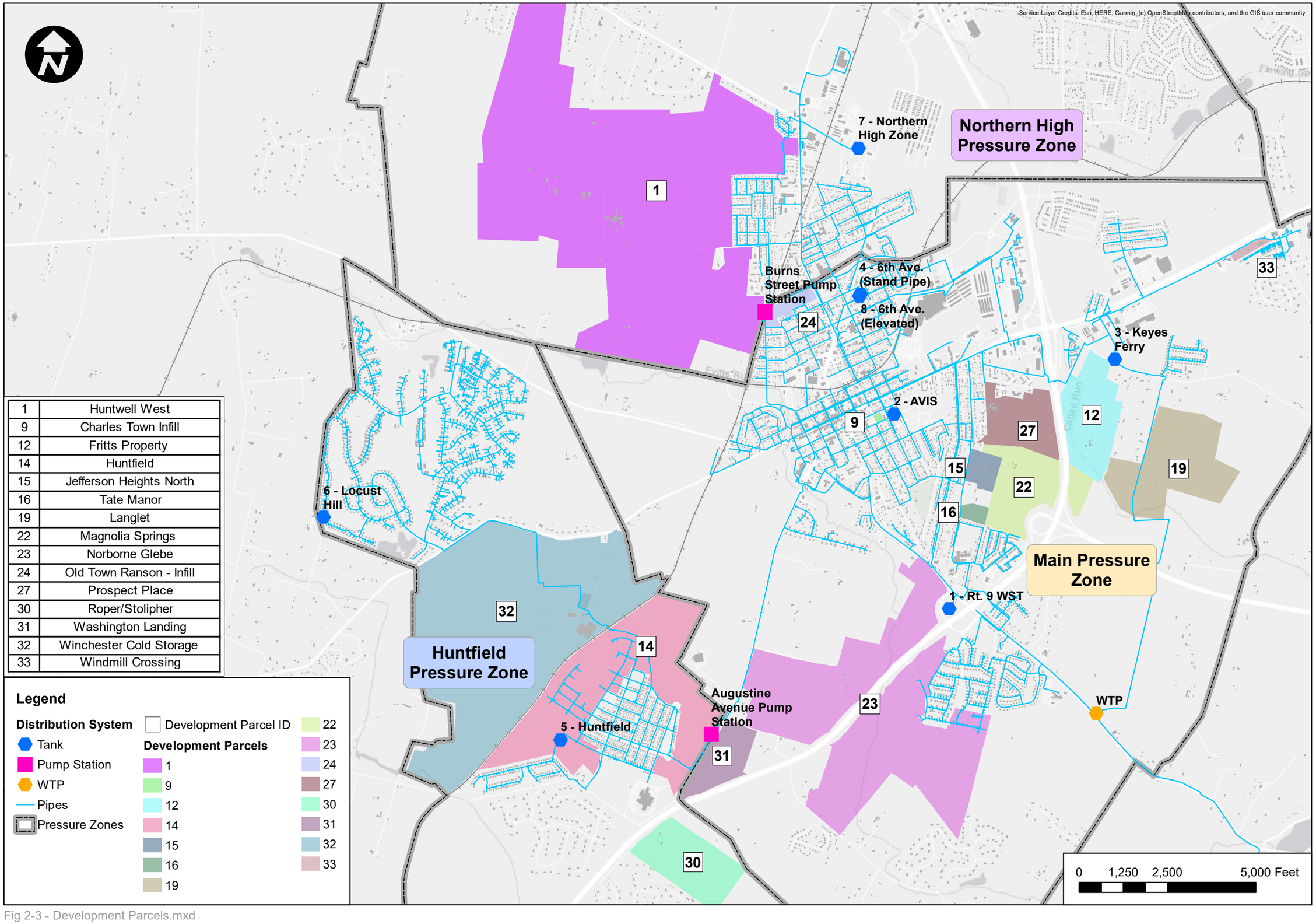
Fig 2-2 - Schematic.mxd



1	Huntwell West
9	Charles Town Infill
12	Fritts Property
14	Huntfield
15	Jefferson Heights North
16	Tate Manor
19	Langlet
22	Magnolia Springs
23	Norborne Glebe
24	Old Town Ranson - Infill
27	Prospect Place
30	Roper/Stolipher
31	Washington Landing
32	Winchester Cold Storage
33	Windmill Crossing

Legend

Distribution System
- Tank
- Pump Station
- WTP
- Pipes
- Pressure Zones

Development Parcel ID

Development Parcels
- 1
- 9
- 12
- 14
- 15
- 16
- 19
- 22
- 23
- 24
- 27
- 30
- 31
- 32
- 33

FIGURE NO. 2.3

TITLE PROPOSED DEVLOPMENT PARCELS

SCALE 1 inch = 2,500 feet

PROJECT WATER MASTER PLAN
CHARLES TOWN UTILITY BOARD

DATE MAY 2022

PROJ. NO. 5107007

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3. DISTRIBUTION SYSTEM ANALYSIS

Municipalities operating utility systems are governed by Title 64 Series 77 of the West Virginia Bureau of Public Health (WVBPH) Public Water System Design Standards (hereafter BPH Regulations). Portions of the regulations are quoted in the paragraphs below serving as the basis of evaluation.

According to the BPH Regulations, pressures in these pipelines (and all such pipelines in the distribution system) need to be maintained at 30 psi minimum under static conditions and 20 psi under all dynamic flow conditions (including fire flow). An excerpt from the regulations appears below:

9.4.a. Pressures. -- The maximum variation between high and low levels in standpipes or elevated storage structures providing pressure to a distribution system shall not exceed thirty (30) feet (thirteen (13) pounds per square inch). The minimum pressure in the distribution system shall be thirty (30) pounds per square inch under static conditions and twenty (20) pounds per square inch under all flow conditions. The normal working pressures of the distribution mains shall be designed based upon the pipe manufacturer's recommendations and the applicable AWWA standards for the type of pipe. Pressure-regulating/pressure reducing valves shall be used to protect the distribution mains from excessive pressures. When static pressures in the distribution mains exceed one hundred thirty-five (135) pounds per square inch, the utility shall have the option of installing pressure reducing valves on service lines or requiring (or recommending) the customer install and maintain a pressure reducing valve on the customer's service line.

In practice, a pressure range of between 40 and 100 psi is typically preferred. The existing system is analyzed using the calibrated model ensuring compliance with the following conditions:

- Greater than 20 psi minimum pressure under maximum day demands coupled with fire-flow conditions
- Greater than 30 psi minimum pressure under normal operating conditions with maximum day demands
- Less than 135 psi maximum pressure under normal operating conditions with average day demands

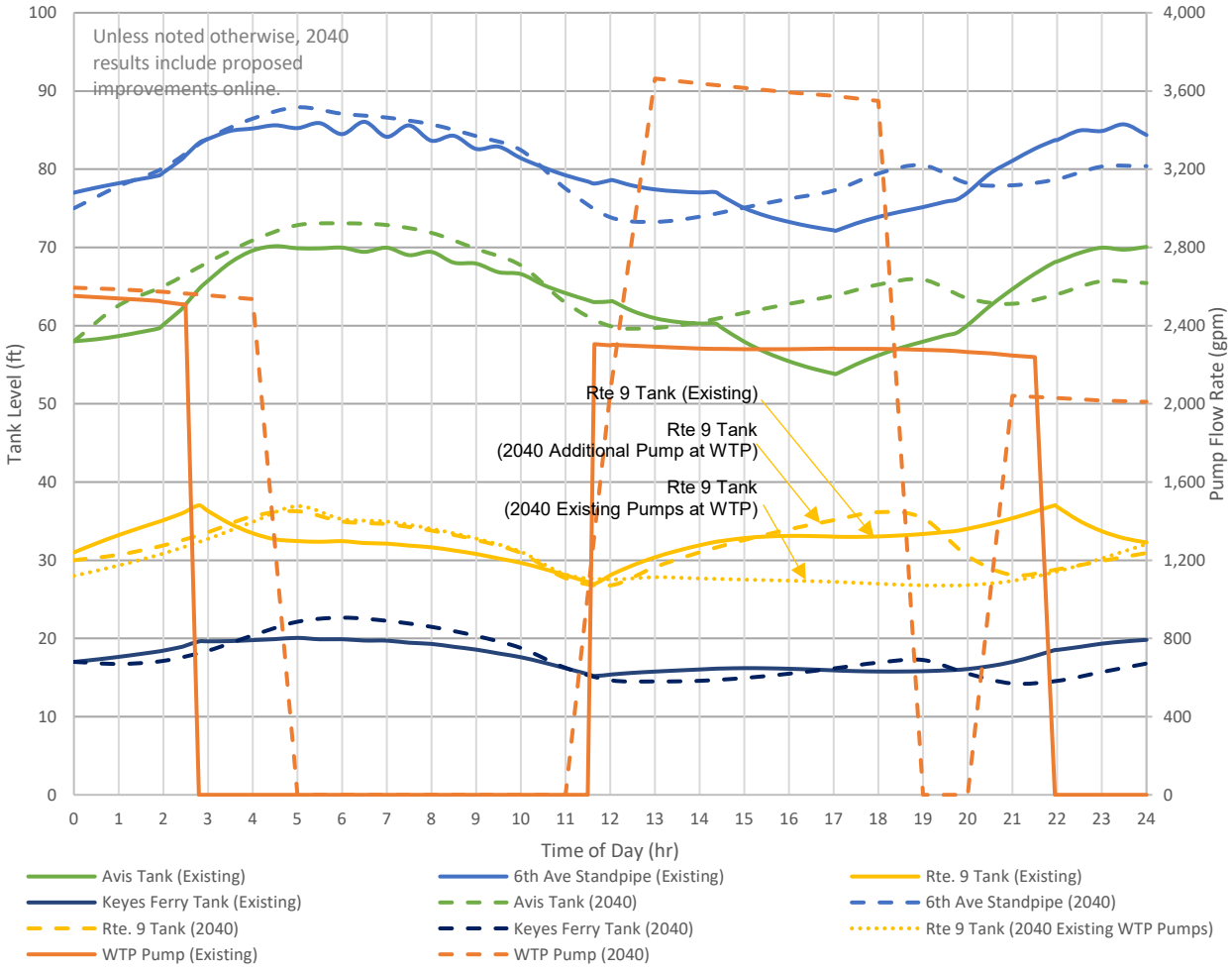
3.1 Pumping Station and Tank Operation

The pump stations and tanks are evaluated by comparing the stations' delivery capacity against the future MDD required as the system demand grows over time. Capacity of the station is driven by the ability to refill the tanks after a MDD, maintenance of system pressure within the acceptable range, and where the pumps are operating on their pump curves. All of the above items are driven by head-loss in the system and head-loss is driven by the amount of flow in the pipes. Subsequently, the best way to evaluate pump capacity and determine operating points is to develop a system curve. The system curve is a representation of headloss across a range of flows. A system curve is developed under two conditions, a) discharge side tanks at their high levels and the suction side tanks at their low points, and b) discharge side tanks at their low points and suction side tanks at their high points, respectively called the maximum system curve and the minimum system curve. Minimum and maximum system curves are developed for each pumping station in the system under existing and 2040 demands. On each system curve, the station's particular pump curve is plotted. Where the pump curve intercepts the minimum and maximum head system curve shows the minimum and maximum flow the pump can produce and the minimum and maximum total dynamic head at which the pump operates. System curves for the WTP, AAPS, and BSPS are provided in **Figure 3-2**, **Figure 3-4,** and **Figure 3-6**, respectively. Each Figure shows the existing curve (with no system improvements), and the future curve (with proposed improvements in place).

3.1.1 Main Pressure Zone

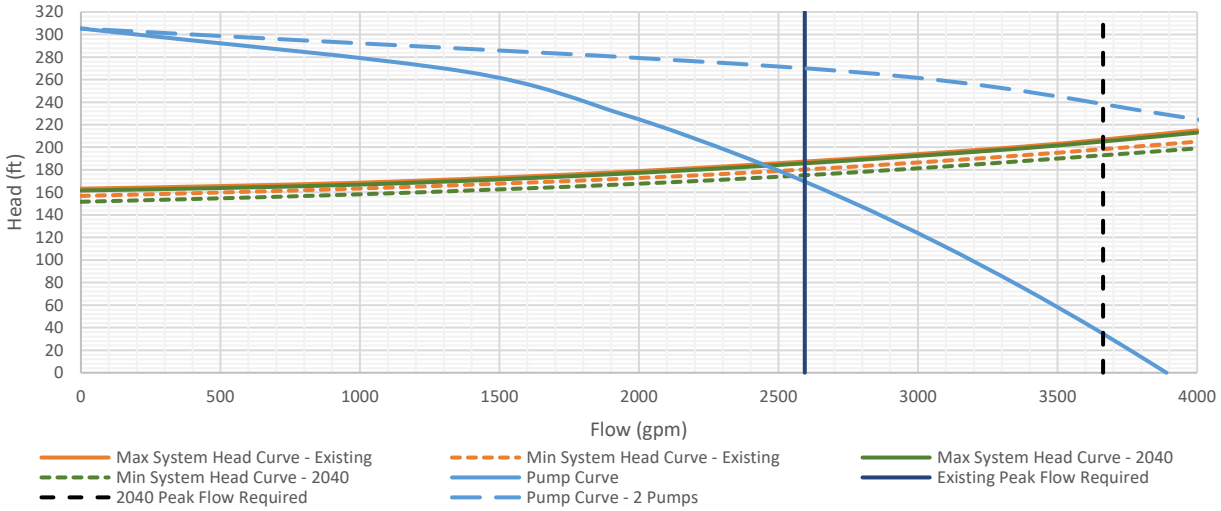
The Main Pressure zone contains four tanks, Route 9 West Tank, Avis Tank, Keyes Ferry Tank, and 6th Street Ave Tank, with the Route 9 tank controlling the WTP pumps. As shown in **Figure 3-1** (see notations for the yellow line), under existing demand conditions, the tank fills at 10:00 PM with a flow rate of approximately 2,300 gpm. Under 2040 demand conditions, the existing WTP pumps produce approximately 2,000 gpm and cannot fill the Route 9 tank.

FIGURE 3-1: Main Pressure Zone Tank Levels and Pumping Station Flow



The WTP system curve, **Figure 3-2,** is considered flat, with a change of approximately 30-ft of head across the operating range of the existing pump curve. The pumps at the WTP are variable speed with a design point of 1,945 gpm @ 229' at full speed. The WTP finished water pumps will require an upgrade to have the capacity to fill the MPZ tanks (Refer to the *'Water Treatment System Facility Plan Update', April 2022*, for more information regarding upgrades to the plant). **Dewberry recommends evaluating the existing and future WTP hydraulic grade and flow requirements to ensure the plant has the capacity to deliver existing and future demands while maintaining the ability to fill the Main PZ tanks.**

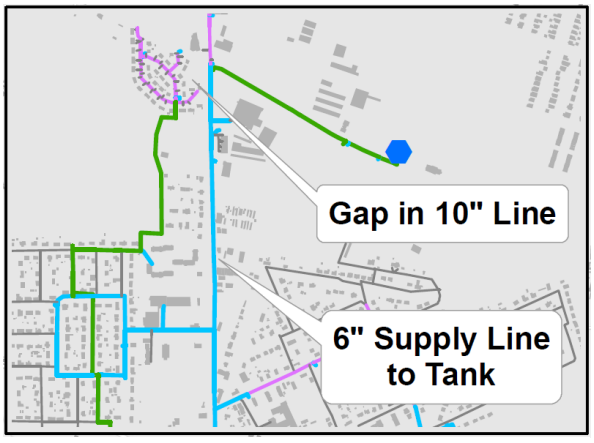
FIGURE 3-2: Water Treatment Plant System Curve and Pump Curve



3.1.2 Northern High Pressure Zone

The Northern High Zone Tank controls the Burns Street Pumping Station. **Figure 3-3** (see notations for the blue line) shows that the existing BSPS, under 2040 conditions (with all improvements online) runs at a high rate of 1,200 gpm, which exceeds the actual capacity of 750 gpm. This is caused by the reduction in headloss from the closure of the 10" pipe gap (see inset and project PR-NZ-04) as well as the closure of other loops in the zone. This reduction in headloss flattens the system curve, see **Figure 3-4**, causing the pump to run at a higher rate. Replacing the pumps with lower head pumps will allow the pumps to operate at an efficient rate, while still filling the Northern High Zone tank.

The existing BSPS system curve is steep, with a design point of 750 gpm @ 145' for the pump curve. When the station is operating, the discharge grade is approximately 760' (83' above the overflow of the tank). The high discharge grade is due to a hydraulic restriction between Robelei Drive and 16th Street. While there is a 10" waterline from the PS up to Robelei Drive and a 10" line along 16th Street from North Mildred Street to the tank, there is no connection between the two 10" sections. The tank is fed by a 10" line up to Ambrose Drive and 2300 LF of 6" along North Mildred Drive up to 16th Street where it ties into the 10" connecting to the tanks. See Inset to the right (also shown in **Figure 2-1**), showing the 6"-10" waterlines in the system. The proposed projects in the NHPZ fill the gap in the 10" lines, as well as complete several 8" loops in the system. The projects will increase capacity to the tank, increase fire flow capacity for the zone overall, and provide capacity for the future demand in the zone. The 2040 system curve, **Figure 3-4**, for the station shows the impact of the proposed projects on headloss in the system. The flatter curve indicates a large reduction in headloss resulting in several benefits for the station and zone including:



Inset – Gap in 10" Line

- Lower energy costs for the station,
- Decrease in maximum system pressures,
- Reduced breaks and leaks due to the lower pressures.

The reduction in headloss requires the replacement of the existing pumps with two pumps rated for approximately 700 gpm @ 70' TDH. A preliminary engineering report (PER) is recommended to further evaluate the station and required upgrades. The PER should evaluate the pump upgrades project PR-NZ-06 and the pipe project PR-NZ-04. These projects should be completed together, the pipeline project will reduce the system head-loss and cause the existing pumps to exceed design capacity.

FIGURE 3-3: Northern High Pressure Zone Tank Levels and Pumping Station Flow

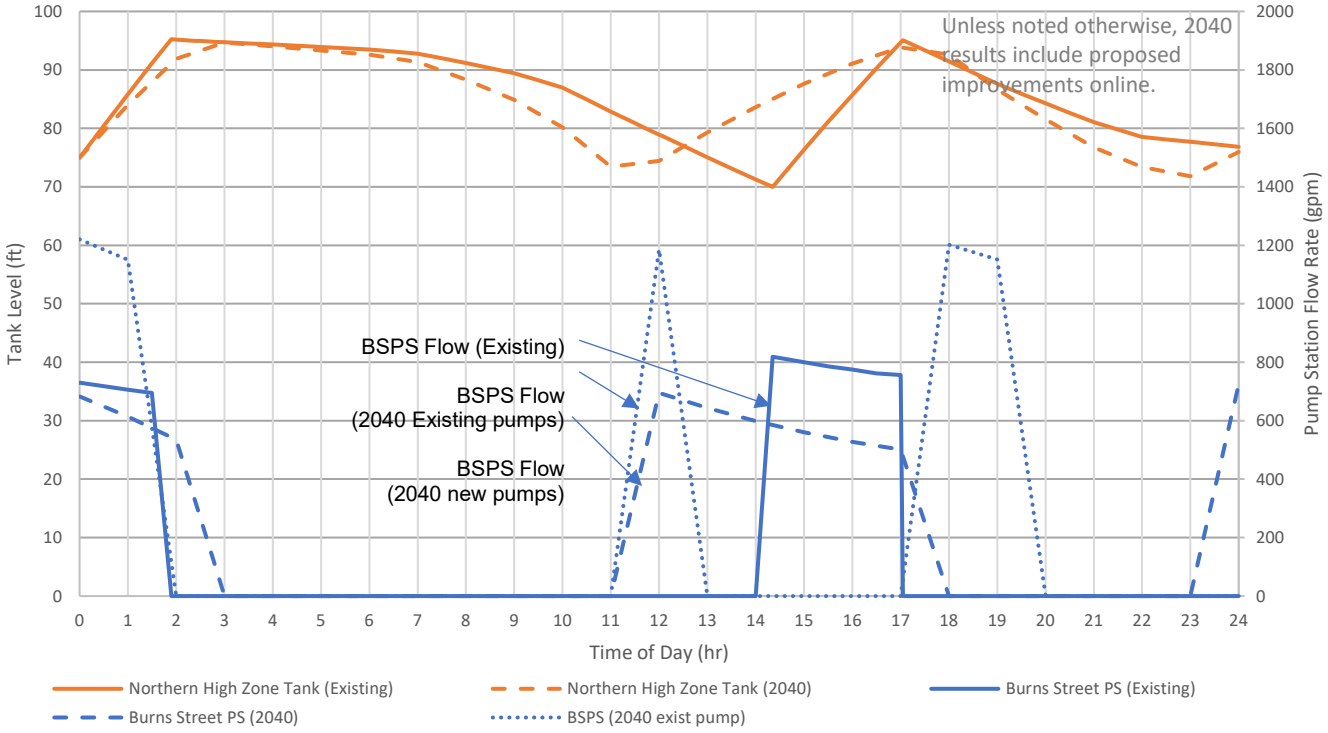
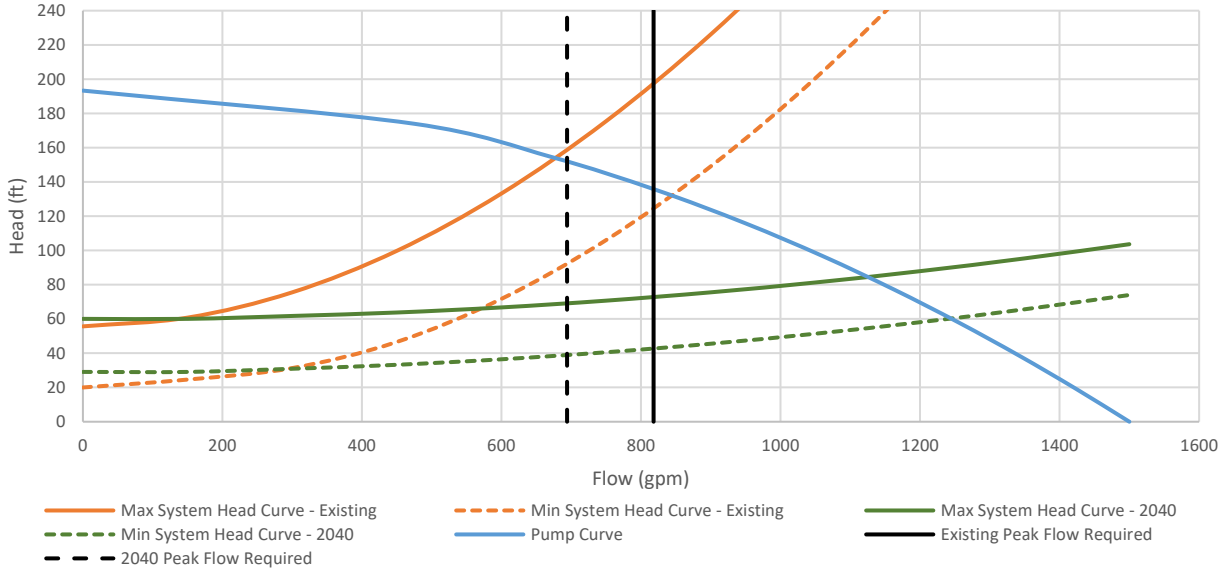


FIGURE 3-4: Burns Street Pumping Station System Curve and Pump Curve



3.1.3 Huntfield Pressure Zone

Two tanks are in the Huntfield Pressure Zone Huntfield and Locust Hill, with the Huntfield Tank controlling the Augustine Avenue Pumping Station. The existing pumps are rated for 450 gpm @ 156' TDH. The maximum day demand is increasing from 266.62 gpm to 502.04 gpm. **Figure 3-5** (see notations for the green and grey lines) shows that, with the increase in demand, the existing AAPS pump does not have the capacity to fill the tanks in the evening for the 2040 demand condition. Adding an additional pump to the station will allow the station to produce a higher flow in the afternoon to fill the tank by 7:00 PM. **Figure 3-6** shows the system curve for AAPS. The existing and year 2040 curves are both generally flat. The proposed improvements in the HPZ lower the future curve by approximately 10' and increase flows by roughly 50 gpm.

FIGURE 3-5: Huntfield Pressure Zone Tank Levels and Pumping Station Flow

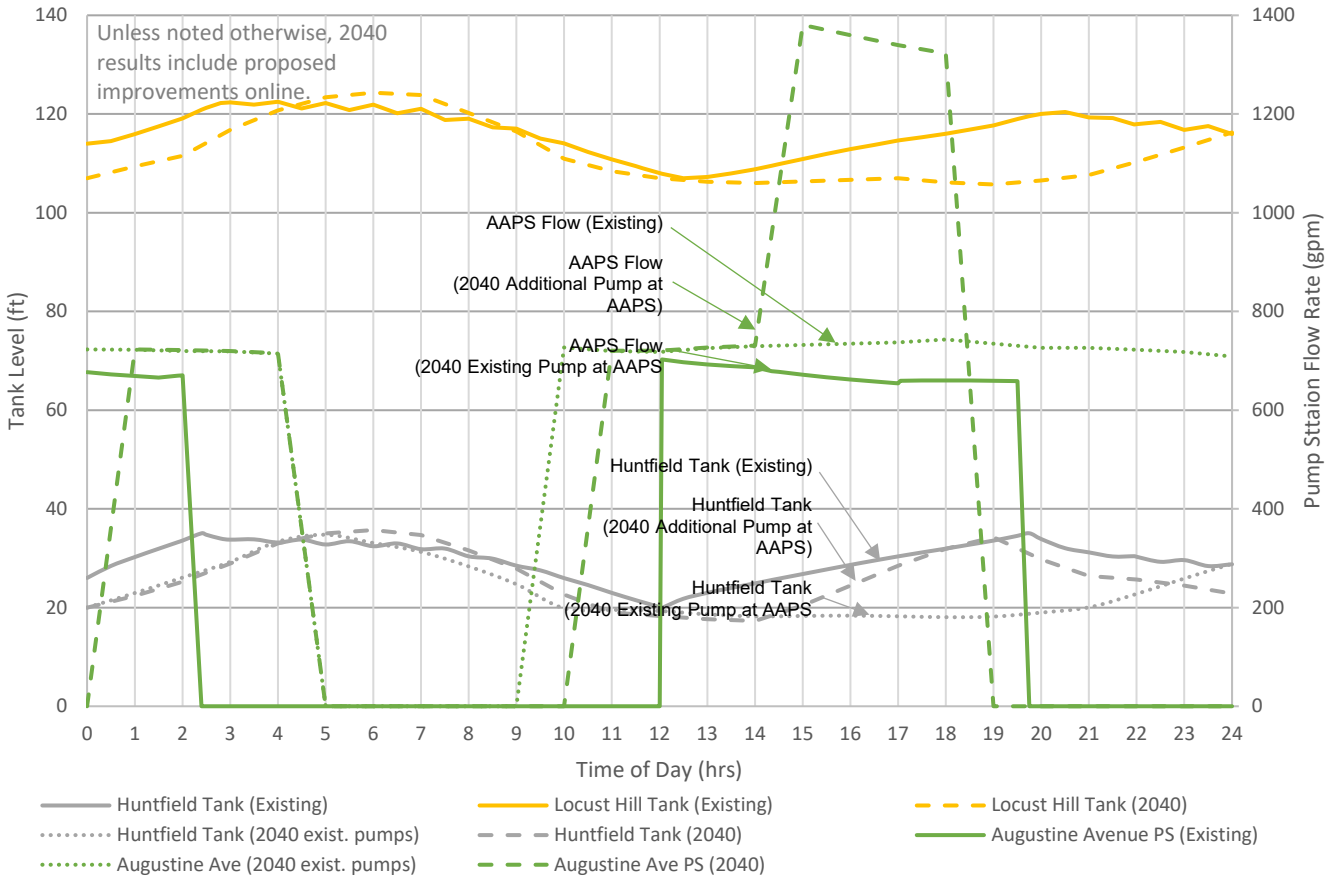
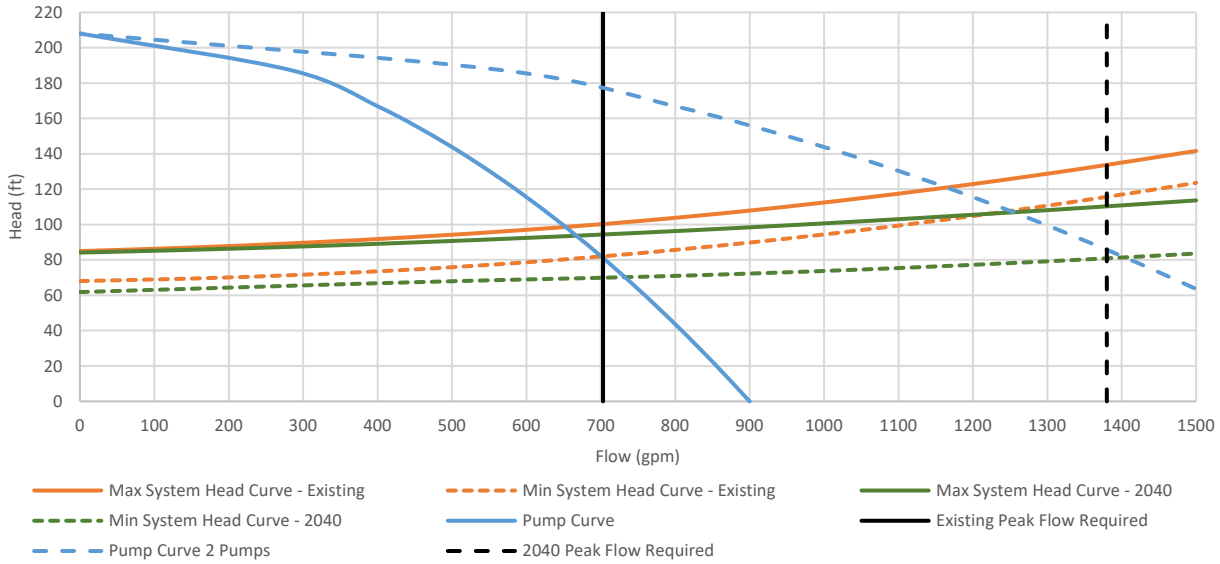


FIGURE 3-6: Augustine Avenue Pumping Station System Curve and Pump Curve



3.2 Fire Flow Analysis

Dewberry developed the fire flow analysis to determine the system's response to a fire flow event of 500 gpm. **Table 3-1** shows the Fire Flow constraints used to analyze the system

TABLE 3-1: FIRE FLOW CONSTRAINTS	
DESCRIPTION	**CONSTRAINT**
Fire Flow Needed	500 gpm
Fire Flow (Upper Limit)	1,000 gpm
Apply Fire Flows By	Adding to Baseline Demand
Pressure (Residual Lower Limit)	20 psi
Pressure (Zone Lower Limit)	20 psi

Initial tank levels are set at the corresponding pump start level to conservatively analyze system pressure. Based on the fire flow analysis report generated in WaterCAD, Dewberry determined which nodes are not compliant with state and local regulations for required fire flows and residual pressures during maximum day demands. **Figure 3-7** shows a map of the distribution system with the hydrant color-coded based on available fire flow. Hydrants failing to meet the needed fire flow of 500 gpm are shown in red. A large number of hydrants do meet the required flow. This is caused by the racetrack demands and the hydraulic restrictions surrounding the track. The inset on **Figure 3-7** shows the track and identifies the restrictions caused by the 2" pipe feeding the track from the north and west. **Figure 3-8** shows the existing system fire flow, with no demand for the racetrack. Under this scenario only the areas around the track see low fire flows. Project **PR-MZ-01** removes the restriction by replacing the 2" lines with 8" lines, this improves fire flow to the racetrack and the rest of the MPZ. **Figure 3-9** shows the available fire flow with 2040 demands and all proposed improvements online. Under the 2040 conditions with improvements online, the system meets or exceeds the required fire flow for all hydrants in the system.

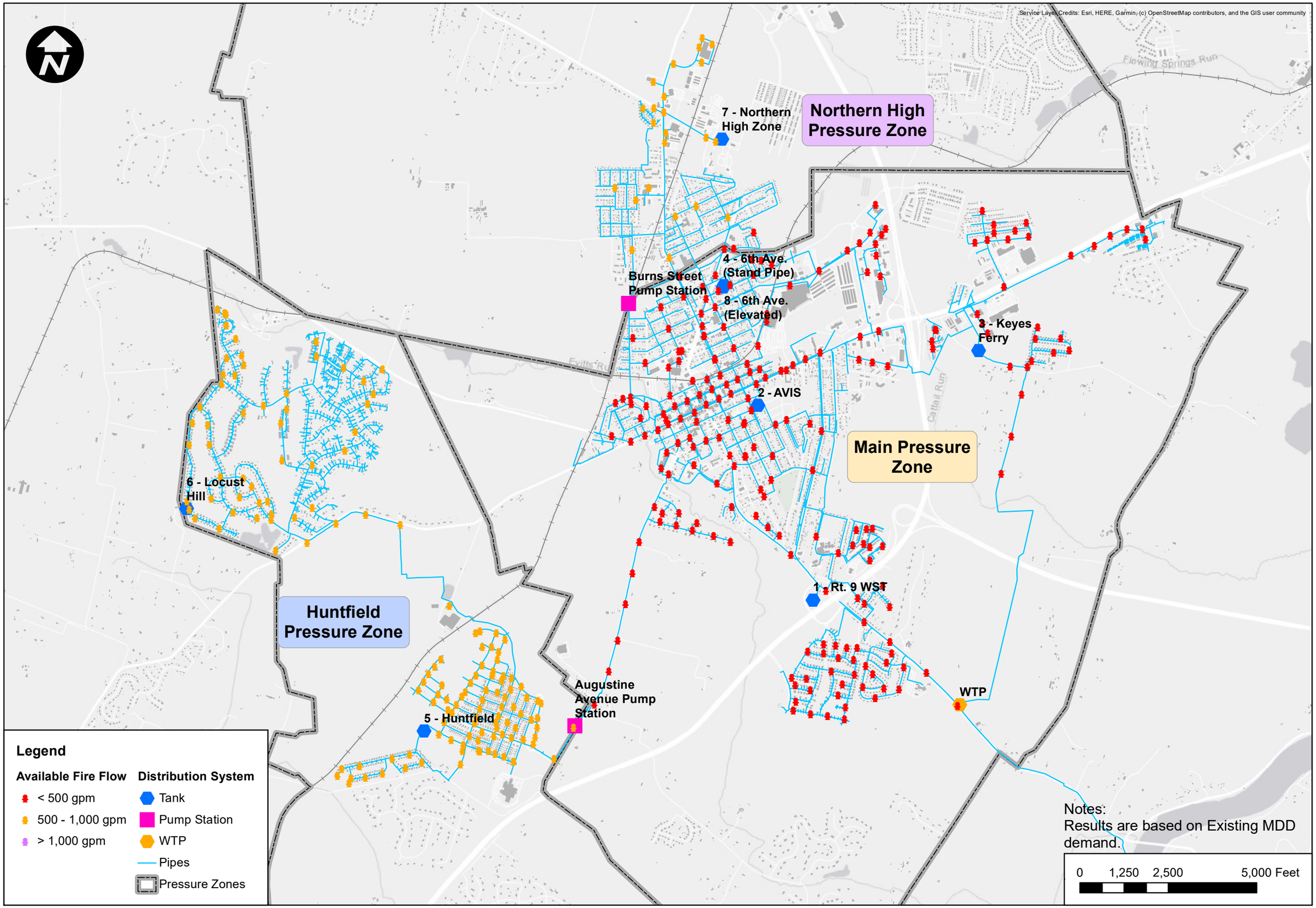


FIGURE NO. 3-7

TITLE AVAILABLE FIRE FLOW EXISTING MDD

SCALE 1 inch = 2,500 feet

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DATE MAY 2022

PROJ. NO. 5107007

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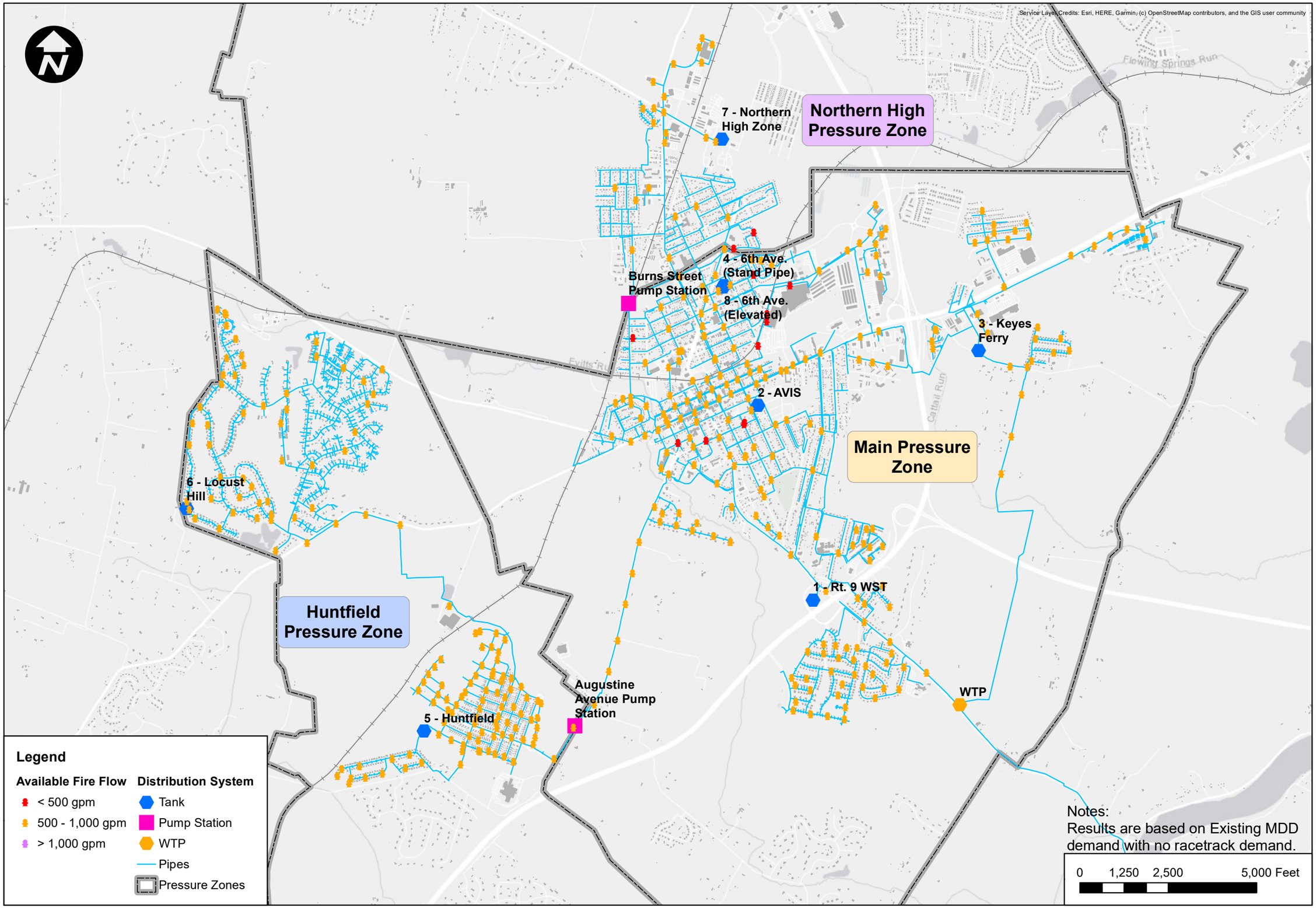

FIGURE NO. 3-8

TITLE AVAILABLE FIRE FLOW
EXISTING MDD - NO RACETRACK

WATER MASTER PLAN
CHARLES TOWN UTILITY BOARD

SCALE 1 inch = 2,500 feet

PROJECT

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Fig 3-8 - 2021 MDD FF - no track.mxd

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Northern High Pressure Zone

Main Pressure Zone

Huntfield Pressure Zone

7 - Northern High Zone

4 - 6th Ave. (Stand Pipe)

8 - 6th Ave. (Elevated)

Burns Street Pump Station

2 - AVIS

3 - Keyes Ferry

1 - Rt. 9 WST

WTP

6 - Locust Hill

5 - Huntfield

Augustine Avenue Pump Station

1

9

12

14

15

16

19

22

23

24

27

30

31

32

33

Flowing Springs Run

Fyffes Run

Old Run

Legend

Available Fire Flow
- < 500 gpm
- 500 - 1,000 gpm
- > 1,000 gpm
- Proposed Improvements
- Development Parcel ID

Distribution System
- Tank
- Pump Station
- WTP
- Pipes
- Pressure Zones

Notes:
- Results are based on 2040 MDD demand with Proposed Improvements online.
- See Section 4 for more information on Proposed Improvements.
- Hatching denotes Development Parcels. See Figure 2-3.

0 1,250 2,500 5,000 Feet

FIGURE NO. 3-9

TITLE AVAILABLE FIRE FLOW 2040 MDD

SCALE 1 inch = 2,500 feet

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3.3 System Pressure Evaluation

System pressure was evaluated to identify nodes that do not meet state and local pressure requirements. **Figure 3-10** shows a color-coded map of minimum system pressure for the existing system with existing MDD. The low pressures in the system occur around the racetrack, Avis Tank and the higher ground elevations in the NHPZ, insets on the figure show a more detailed of each area. The areas around the Avis tank and in the NHPZ are above 20 psi. Low pressure of 30 psi is a preferred minimum, these areas are close to the tanks and the tank level is driving the pressure. The low pressures at the racetrack are caused by the hydraulic restrictions discussed in **Section 3.3**.

Figure 3-11 shows the maximum system pressures for the existing system with existing MDD. There are a few areas above 100 psi in the northern High Zone, near the discharge of BSPS, and in the easternmost area of the zone. The high pressure in the NHPZ is caused by the hydraulic restrictions discussed in **Section 3.1**, the steep system curve (high headloss) is causing the pumps to discharge at a high head to allow the tanks to fill.

Figure 3-12 shows the minimum system pressure with the recommended improvements online and 2040 MDD. Comparison of this figure to **Figure 3-10**, shows that the recommended improvements fix the low pressures surrounding the racetrack. Otherwise, the low pressures are generally consistent between the existing and 2040 systems.

Figure 3-13, the maximum pressure for the 2040 system, shows a significant improvement in high pressures in the NHPZ. The reduction in pressure is due to the reduction in system head loss that comes with the proposed improvements flattening the system curve, as discussed in **Section 3.1**. Some areas will have pressures greater than 100 psi as the system grows. The high pressures are the result of ground elevation.

The most feasible solution for the high pressures is to install individual PRV's at any service connection with high pressure. Dewberry recommends installing a PRV at any residential service connection below the ground elevations shown in **Table 3-2**. The Huntfield and Northern High zone do not currently have ground elevations below the high-pressure limit, however, as the system grows it has the potential to expand into the lower elevations which will exceed the high-pressure limit.

TABLE 3-2: SERVICE ELEVATION PRV LIMIT

PRESSURE ZONE	GROUND ELEVATION
Main	404 ft
Northern High	446 ft
Huntfield	487 ft

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Inset - Low Pressure near Racetrack

7 - Northern High Zone

Northern High Pressure Zone

4 - 6th Ave. (Stand Pipe)

Burns Street Pump Station

8 - 6th Ave. (Elevated)

3 - Keyes Ferry

2 - AVIS

6 - Locust Hill

1 - Rt. 9 W

Main Pressure Zone

WTP

Augustine Avenue Pump Station

5 - Huntfield

Huntfield Pressure Zone

Legend

Minimum Pressure	Distribution System
< 20 psi	Tank
20- 30 psi	Pump Station
30-40 psi	WTP
40 - 100 psi	Pipes
> 100 psi	Pressure Zones

Notes:
Results are based on Existing MDD demand.

0 1,250 2,500 5,000 Feet

FIGURE NO. 3-10

TITLE MINIMUM SYSTEM PRESSURE - EXISTING MDD

SCALE 1 inch = 2,083 feet

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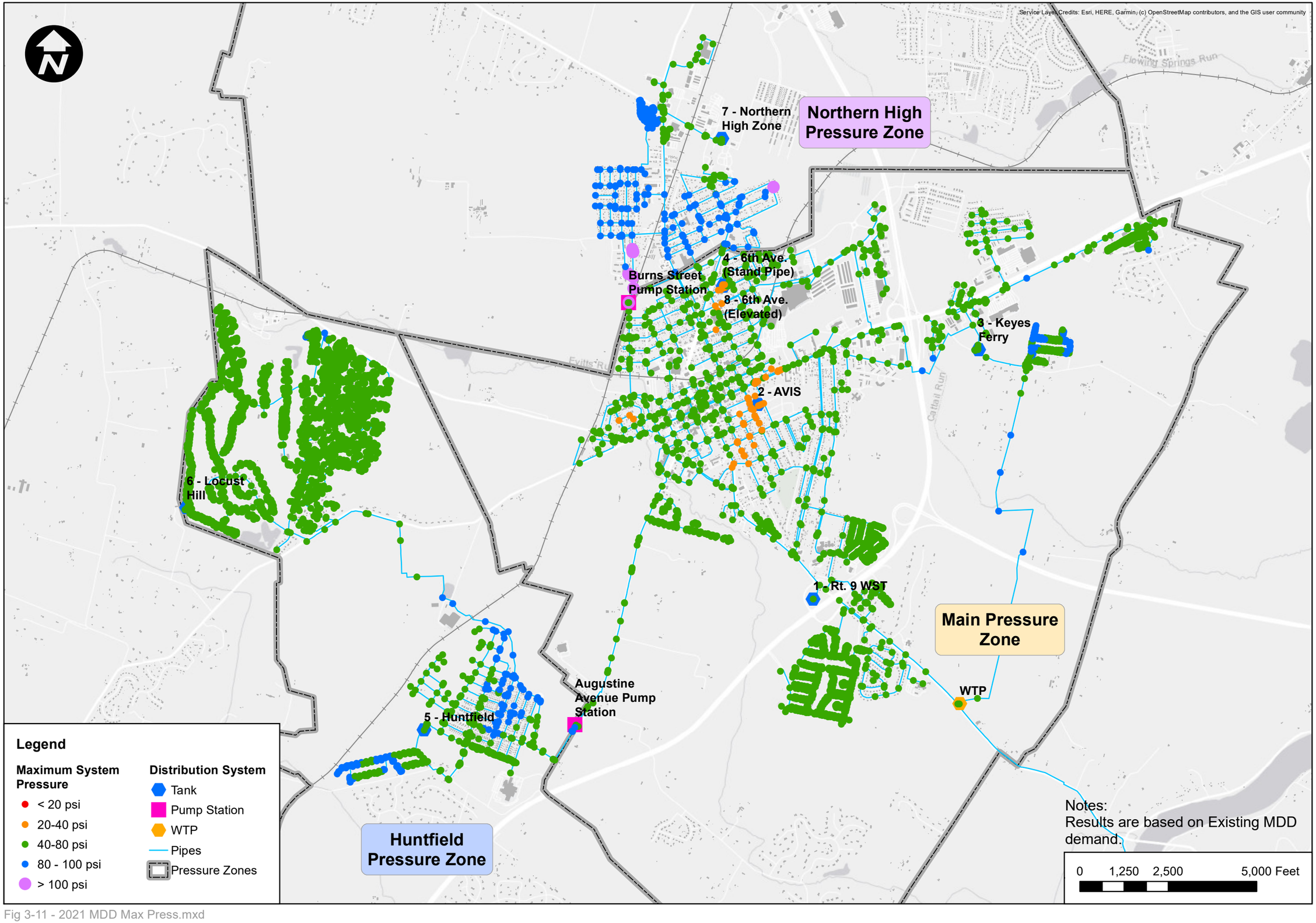

FIGURE NO. 3-11

TITLE MAXIMUM SYSTEM PRESSURE - EXISTING MDD

SCALE 1 inch = 2,500 feet

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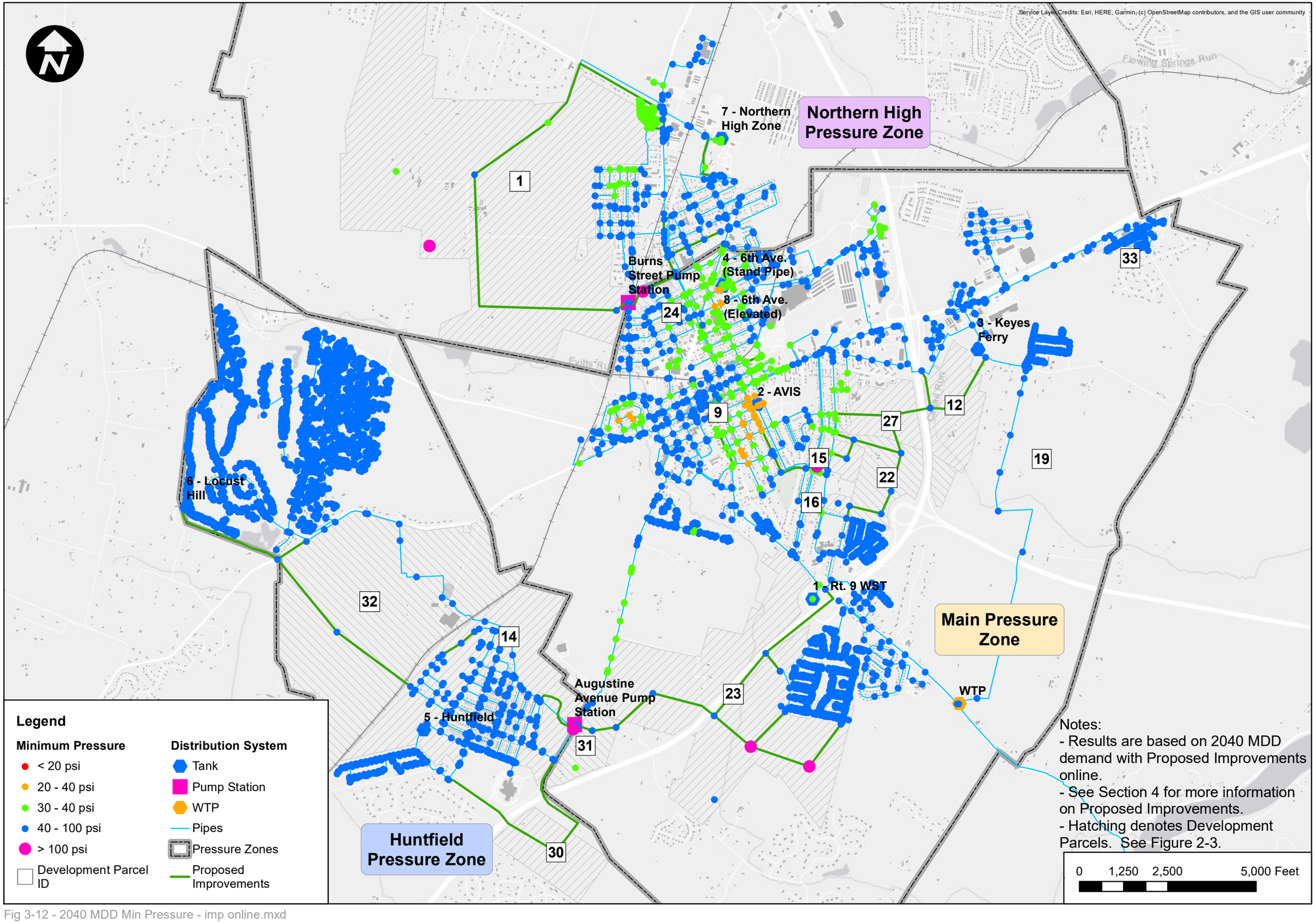

FIGURE NO. 3-12

TITLE MINIMUM SYSTEM PRESSURE - 2040 MDD

SCALE 1 inch = 2,500 feet

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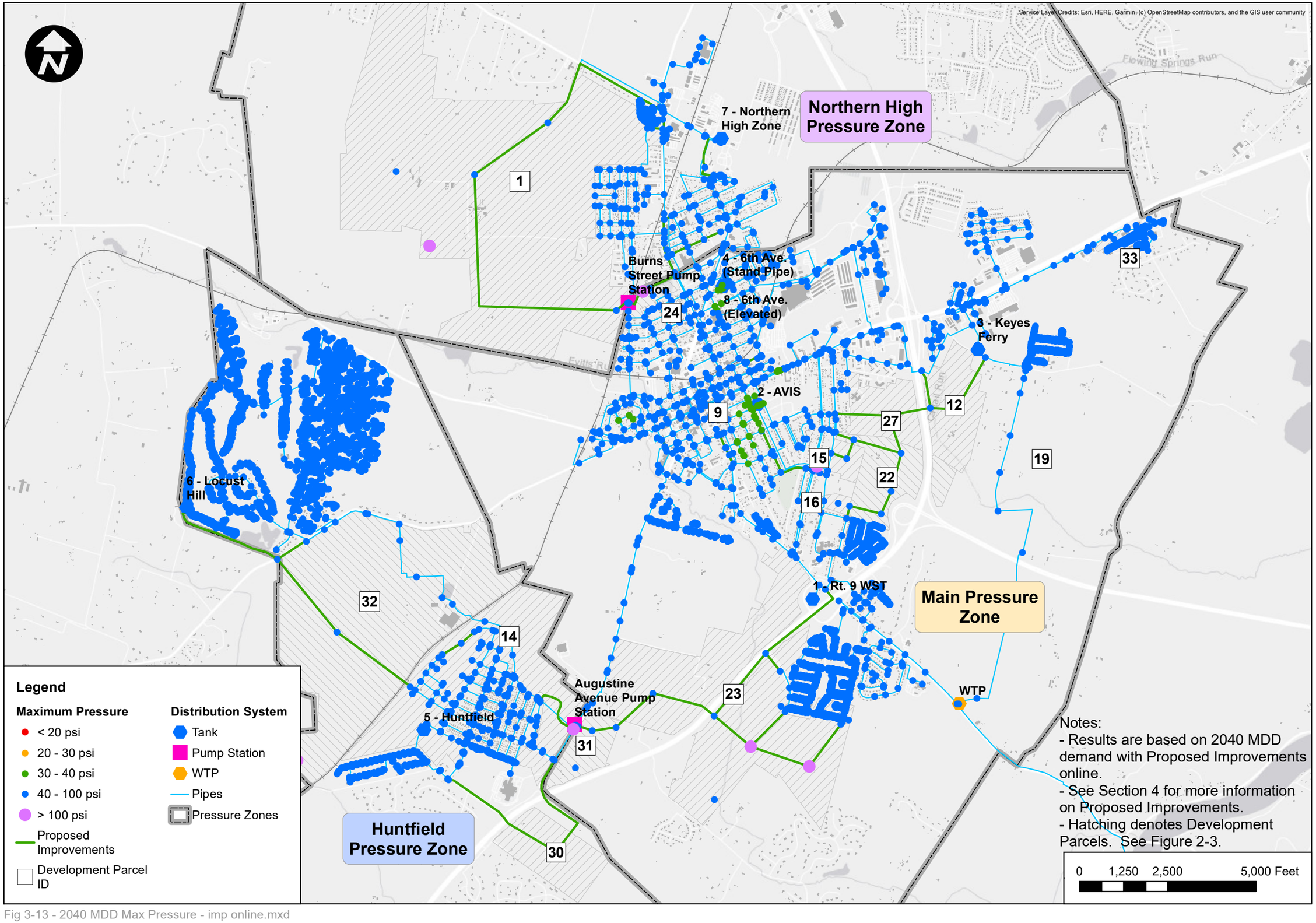

FIGURE NO. 3-13

TITLE MAXIMUM SYSTEM PRESSURE - 2040 MDD

SCALE 1 inch = 2,500 feet

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3.4 Condition Assessment

On July 15, 2021, Dewberry Engineers performed a site visit of the water distribution system facilities to perform a limited condition assessment. The assessment includes a visual evaluation of the outside of each site, with photos taken of any apparent defects. An inspection of the inside of each tank was not performed, however, it is recommended to be completed on a 5-year interval. No testing or structural evaluations are performed as part of this assessment. The facilities include:

- Route 9 Elevated Storage Tank
- Northern High Zone Standpipe
- 6th Avenue Standpipe/Elevated Tank
- Avis Standpipe
- Huntfield Standpipe
- Locust Hill Standpipe
- Keyes Ferry Elevated Tank
- Burns Street Pumping Station
- Augustine Avenue Pumping Station

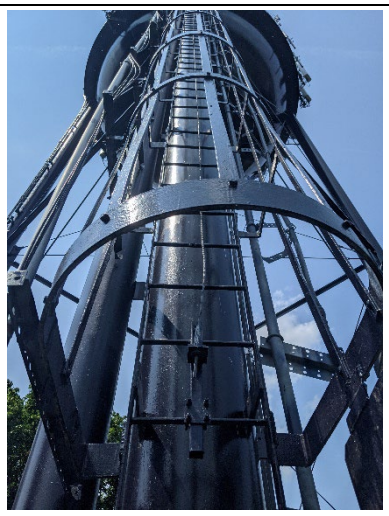
A general issue common to all facilities is grass clippings left on coated parts of the structure and sealed joints. The grass clippings, if not removed, can collect dirt and moisture which can lead to premature failure of the coating or joint. Notify grounds crews to remove all clippings from the structure before leaving the site.

3.4.1 6th Avenue Standpipe/Elevated Tank

The 6th Avenue site contains an elevated toro-spheroid with a volume of 125,000 gallons constructed in 1991 and a standpipe with a volume of 337,000 gallons.

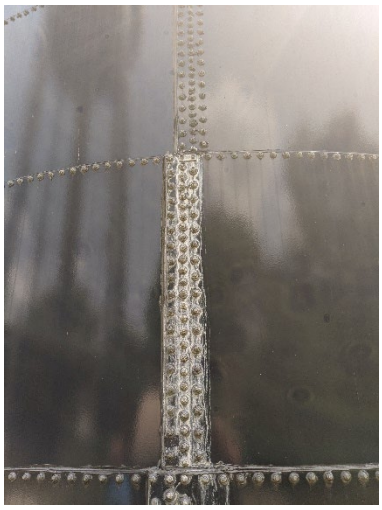
The elevated tank is in good condition. The following deficiencies are noted:

- The vertical climbing system cable on the access ladder is bent or slack. Inspect and repair cable per manufacturer's recommendations. See **Photo 2**.
- Bent Bird screen on the overflow drainpipe air gap. Replace screen or install Duckbill style check valve. See **Photo 3**.

Photo 1 – Tank View	Photo 2 – Safety Cable	Photo 3 – Bird Screen
		

The standpipe is in fair condition. Several of the joints between plates and bolt penetrations are leaking and have been patched with caulk. The caulk appears to be hard, brittle, and failing in several locations. The following deficiencies are noted:

- Failing caulk at joints and bolt holes. Remove clean and replace caulking with a flexible sealant that is NSF rated for drinking water similar to Sikaflex®-201 US or Sikaflex®-291. The sealant manufacturer should be consulted to determine the appropriate product for the application.

Photo 3 – Failing Caulk/Leak	Photo 4 – Failing Caulk	Sealant Options
		Sikaflex®-201 Sikaflex®-291

3.4.2 Avis Standpipe

The Avis standpipe has a volume of 500,000 gallons constructed in 1976. In general, the tank appears in good condition with some minor repairs and maintenance as noted below:

- Clean, prime, and recoat coating failure at access port. See **Photo 6**.
- Repair or remove the loose cable. Cable is a safety issue, potential trip hazard, and may cause damage to grounds maintenance equipment. See **Photo 7**.
- Repair loose fence rail. See **Photo 8**.
- Add gravel/rip-rap to overflow drainpipe outfall to prevent erosion of soil. See **Photo 9**.
- Cut back vegetation 3 to 4-feet beyond the fence line. The vegetation against the tank and fence will cause premature failure in the coatings of both systems. See **Photo 10**.

Photo 5 – Tank View	**Photo 6 – Access Port Coating Failure**	**Photo 7 – Loose Cable**
		
Photo 8 – Loose Fence Rail	**Photo 9 – Missing Gravel**	**Photo 10 – Vegetation Overgrowth**
		

3.4.3 Huntfield Standpipe

The Huntfield tank is a short standpipe located on a concrete pedestal base with a volume of 260,000 gallons. The fenced area surrounding the tank is overgrown which limited access for visual assessment.

- Remove vegetation should be removed 3 to 4-feet beyond the fence line. See **Photo 11**.

Photo 11– Vegetation overgrowth



3.4.4 Keyes Ferry Elevated Storage Tank

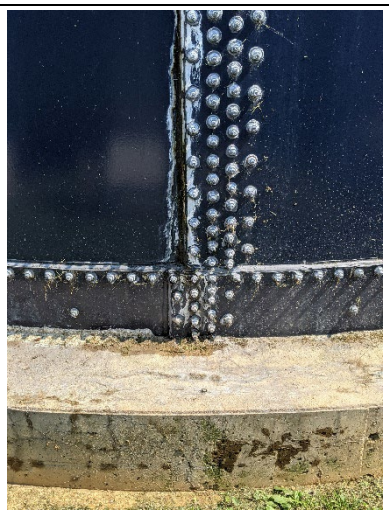
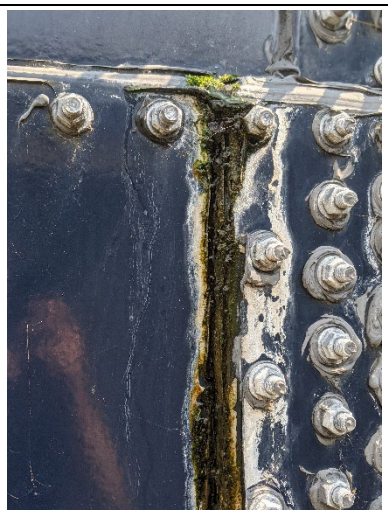
The Keyes Ferry tank is an elevated toro-ellipsoidal style tank with a volume of 500,000 gallons constructed in 1988. The tank is in good condition and no deficiencies were identified.

Photo 12– Tank View



3.4.5 Locust Hill

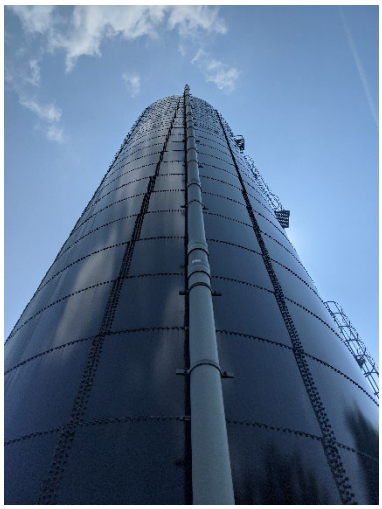
The Locust Hill standpipe has a volume of 498,000 gallons. Several active leaks were noted along the joints near the base. One of the leaks has moss growth along the joint, which is a potential source of contamination in the water. The tank should be inspected for additional leaks and all leaks cleaned, primed, and sealed with a similar product as noted in **Section 3.5.1**.

Photo 13 – Active Leak	**Photo 14 – Active Leak**	**Photo 15 – Active leak with moss growth**
		

3.4.6 Northern High Zone Standpipe

The Northern High Zone standpipe has a volume of 360,000 gallons. The tank is in good condition with no deficiencies identified. Following are items on the grounds to be addressed:

- Repair bent fence rail, see **Photo 17**.
- Cut back vegetation 3 to 4-feet beyond the fence line. See **Photo 18**.

Photo 16 – Tank View	**Photo 17 – Bent Fence Rail**	**Photo 18 – Vegetation Overgrowth**
		

3.4.7 Route 9 Elevated Storage Tank

The Route 9 Tank is a toro-ellipsoidal style tank with a volume of 500,000 gallons constructed in 1988. The tank is in good condition. The following deficiencies are noted:

- Repair or replace bent bird screen, consider installing a duckbill style valve. See **Photo 20**.
- Add riprap at the tank overflow drain. See **Photo 21**.

Photo 19 – Tank View	Photo 20 – Bent Bird Screen	Photo 21 – Add Riprap
		

3.4.8 Augustine Avenue Pumping Station

The Augustine Ave pumping station has a firm capacity of 0.65 mgd. The facility is in good condition. Deficiencies are noted below:

- Repair leak at joint between the check valve and the turbine meter. See **Photo 23**.
- A plastic bag hanging on the control panel is a fire risk and should be removed. See **Photo 24**.

Photo 22 – Station View	Photo 23 – Joint Leak	Photo 24 – Fire Hazard
		

3.4.9 Burns Street Pumping Station

The Burns Street pumping station is an above-ground station with CMU block walls on a slab. The station has a capacity of 1.08 mg. The station is in good condition. Vegetation growth is the only area of concern. The vegetation should be cleared 3 to 4-feet beyond the fence line.

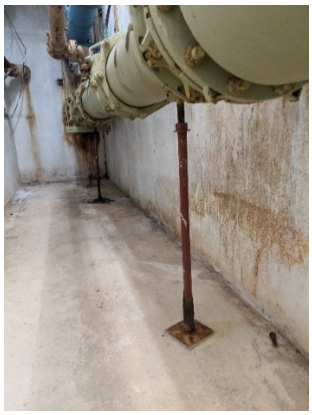
Photo 25 – Station View	Photo 26 – Vegetation Overgrowth	Photo 27 – Vegetation Overgrowth
		

3.4.10 Water Treatment Plant

The Charles Town Utility Board Water Treatment Plant has a capacity of 2.8 mgd and was originally constructed in 1989 with subsequent upgrades. The plant is in good condition with the following deficiencies identified:

- Clean, prime and recoat pipe and fittings showing signs of coating failure. See **Photos 28 and 29**.
- Replace pipe stands that have corroded and are no longer structurally sound. See **Photo 30**.

The plant is currently under evaluation for plant-wide upgrades and improvements (Refer to the *'Water Treatment System Facility Plan Update', April 2022*, for more information regarding upgrades to the plant). It is assumed that the deficiencies noted will be addressed during the plant improvements.

Photo 28 – Pipe and Fitting Coating Failure	Photo 29 – Pipe and Fitting Coating Failure	Photo 30 – Pipe Stand Failure
		

4. RECOMMENDED IMPROVEMENTS

Table 4-1 shows a summary of each project including a brief description and cost estimate and phasing for each project. Phase A is to be constructed between the years 2022-2024, Phase B years 2025-2027, and Phase C years 2028-2031 **Figure 4-1** shows an overall map of the project locations. **Figures 4-2** through **Figure 4-28** (Appendix B) provide a detailed view of each project.

TABLE 4-1: SUMMARY OF IMPROVEMENTS

MAIN PRESSURE ZONE							
PROJECT ID	PROJECT NAME	DESCRIPTION	FIGURE	SIZE	QUANTITY	ESTIMATED COST	PHASE
PR-MZ-01	Charles Town Racetrack	8" loop closure around the racetrack to improve normal operating pressure and increase fire flow capacity.	4.12	8"	500 LF	$88,000	A
PR-MZ-02	Fritts & Old Town Ranson	8" loop providing capacity for Fritts Property and Old Town Ranson.	4.13	8"	7,400 LF	$1,295,000	C
PR-MZ-03	Magnolia Springs	8" loop providing capacity for Magnolia Springs.	4.14	8"	6,200 LF	$1,085,000	C
PR-MZ-04	Church Street	8" line along Church Street between Avis tank and Route 34 to close a loop and increase fire flow capacity.	4.15	8"	3,400 LF	$595,000	B
PR-MZ-05	South George Street	8" loop closure along S. George St. between Mason St. and E. Academy with a connection to the 6" in Hunter St. Increases fire flow capacity in the MPZ.	4.16	6" 8"	20 LF 1,000 LF	$178,000 $101,000	B
PR-MZ-06	Water Street	12" loop closure along S. Water St. between W. Avis St. and W. Congress St. Increases fire flow capacity in the MPZ.	4.17	12"	400 LF	$2,400,000	B
PR-MZ-07	Route 340	12" line along Route 340 from S. George St. to Augustine Ave. PS. Provides redundant capacity to the pump station and eliminates the need for an upgrade to the station. Provides capacity to the west side of Norborne Greene.	4.18	12"	9,600 LF	$1,173,000	B
PR-MZ-08	Norborne Greene	8" looping to provide capacity to the Norborne Greene.	4.19	8"	6,700 LF	$7,000	C
PR-MZ-09	5th Street Hydrant	Connect fire hydrant in W. 5th Avenue to the 12" line in McDonald St. Increases fire flow capacity in the MPZ. Currently connected to a 2" line.	4.20	6"	50 LF	$7,000	A
PR-MZ-10	6th Avenue Hydrant	Connect fire hydrant in E. 6th Avenue to the 12" line in S. Marshall St. Increases fire flow capacity in the MPZ. Currently connected to a 2" line.	4.21	6"	50 LF	$7,000	A
PR-MZ-11	S. Mildred Hydrants	Provide a connection from the 8" line in E. academy St. to the two hydrants at the intersection. Increases fire flow capacity in the MPZ. Currently connected to a 2" line.	4.22	6"	50 LF	$9,000	A
PR-MZ-12	7th Avenue	Close loop between 8" lines at the intersection of E. 7th Avenue and S. Mildred Street. Increases fire flow capacity in the MPZ.	4.23	8"	50 LF	$35,000	A
PR-MZ-13	Charles Town	8" line to provide capacity to Charles Town Infill.	4.24	8"	200 LF	$35,000	C
PR-MZ-14	Windmill Crossing	8" line to provide capacity to Windmill Crossing.	4.25	8"	200 LF	$7,000	C
PR-MZ-15	W. Avis Hydrant	Connect fire hydrant at the intersection of W. Avis St. and S. West St. Increases fire flow to the MPZ.	4.26	6"	50 LF	$9,000	A
PR-MZ-16	W. Academy Tie	Connect 6" waterlines at the intersection of W. Academy St. and	4.27	8"	50 LF	$88,000	A
PR-MZ-17	Main Zone Maintenance	Repairs to tank and WTP facilities were identified in the condition assessment.	3.4	---	---	$28,000	A
					Main Pressure Zone Subtotal	**$7,147,000**	

TABLE 4-1: SUMMARY OF IMPROVEMENTS – CONT'D							
NORTHERN HIGH PRESSURE ZONE							
PROJECT ID	**PROJECT NAME**	**DESCRIPTION**	**FIGURE**	**SIZE**	**QUANTITY**	**ESTIMATED COST**	**PHASE**
PR-NZ-01	Huntwell West	8" loop providing capacity for Huntwell West.	4.6	8"	15,400 LF	$2,695,000	B
PR-NZ-02	Ameritech Street	8" loop closure between the Northern High Zone Tank and the 8" line at the intersection of N. Marshal St. and E. 14th St. to increase fire flow capacity to the NHPZ.	4.7	8"	1,900 LF	$333,000	A
PR-NZ-03	N. Mildred Street A	8" loop closure from Burns St. PS along W. Beltline Ave., N. Mildred St., E. 13th St. to N. Preston St. to increase fire flow capacity in the NHPZ.	4.8	8"	3,700 LF	$648,000	B
PR-NZ-04	N. Mildred Street B	12" loop closure between the 10" line feeding the subdivision near Robelie Dr, along N. Mildred St. to the intersection of 16th St. to increase fire flow capacity to the NHPZ.	4.9	12"	800 LF	$200,000	A
PR-NZ-05	E. 10th St.	8" loop along E. 1oth St. from the proposed 8" line in N. Mildred St. (PR-NZ-03) to the 6" line near the intersection of N. Fairfax Blvd. to increase fire flow capacity in the NHPZ.	4.10	8"	1,700 LF	$298,000	B
PR-NZ-06	Burns St. PS Upgrade	Upgrade Pumps at the Burns Street Pumping Station.	4.11	700 gpm	2 EA	$3,526,000	A
PR-NZ-07	Northern High Zone Maintenance	Repairs to tank and pumping station facilities identified in the condition assessment.	3.4	---	---	$2,000	A
					Northern High Pressure Zone Subtotal	**$7,702,000**	
HUNTFIELD ZONE							
PROJECT ID	**PROJECT NAME**	**DESCRIPTION**	**FIGURE**	**SIZE**	**QUANTITY**	**ESTIMATED COST**	**PHASE**
PR-HZ-01	Augustine Ave. PS Discharge	8" discharge line from Augustine Ave. PS to provide capacity to Huntfield. Also provides redundant supply to Huntfield, Winchester, and Locust Hill.	4.2	8"	1,700 LF	$298,000	C
PR-HZ-02	Locust Hill	12" loop from Huntfield to Locust Hill to provide capacity to Winchester. Also provides a redundant loop to Locust Hill.	4.3	12"	9,600 LF	$2,400,000	C
PR-HZ-03	Huntfield	8" loop closure along the backside of Huntfield to provide additional capacity to Huntfield.	4.4	8"	1,200 LF	$210,000	B
PR-HZ-04	Roper/Stolipher	8" loop to provide capacity for Roper/Stolipher.	4.5	8"	7,100 LF	$1,243,000	C
PR-HZ-05	Augustine Ave. PS Upgrade	Add a new pump to the station.	4.6	450 GPM	1	$780,000	C
PR-HZ-06	Huntfield Zone Maintenance	Repairs to tank and pumping station facilities identified in the condition assessment.	3.4	---	---	$10,000	A
					Huntfield Pressure Zone Subtotal	**$4,941,000**	
					Total	**$19,790,000**	

In addition to the projects outlined above, this report makes the following recommendations:

- ***Develop a preliminary engineering report to evaluate the capacity of the Burns Street pumping station and evaluate upgrade options required to meet future demand and system conditions.***
- ***Evaluate the existing and future WTP hydraulic grade and flow requirements to ensure the plant has the capacity to deliver existing and future demands while maintaining the ability to fill the Main PZ tanks.***
- ***Install individual PRV's at service connections with pressures greater than 135 psi.***

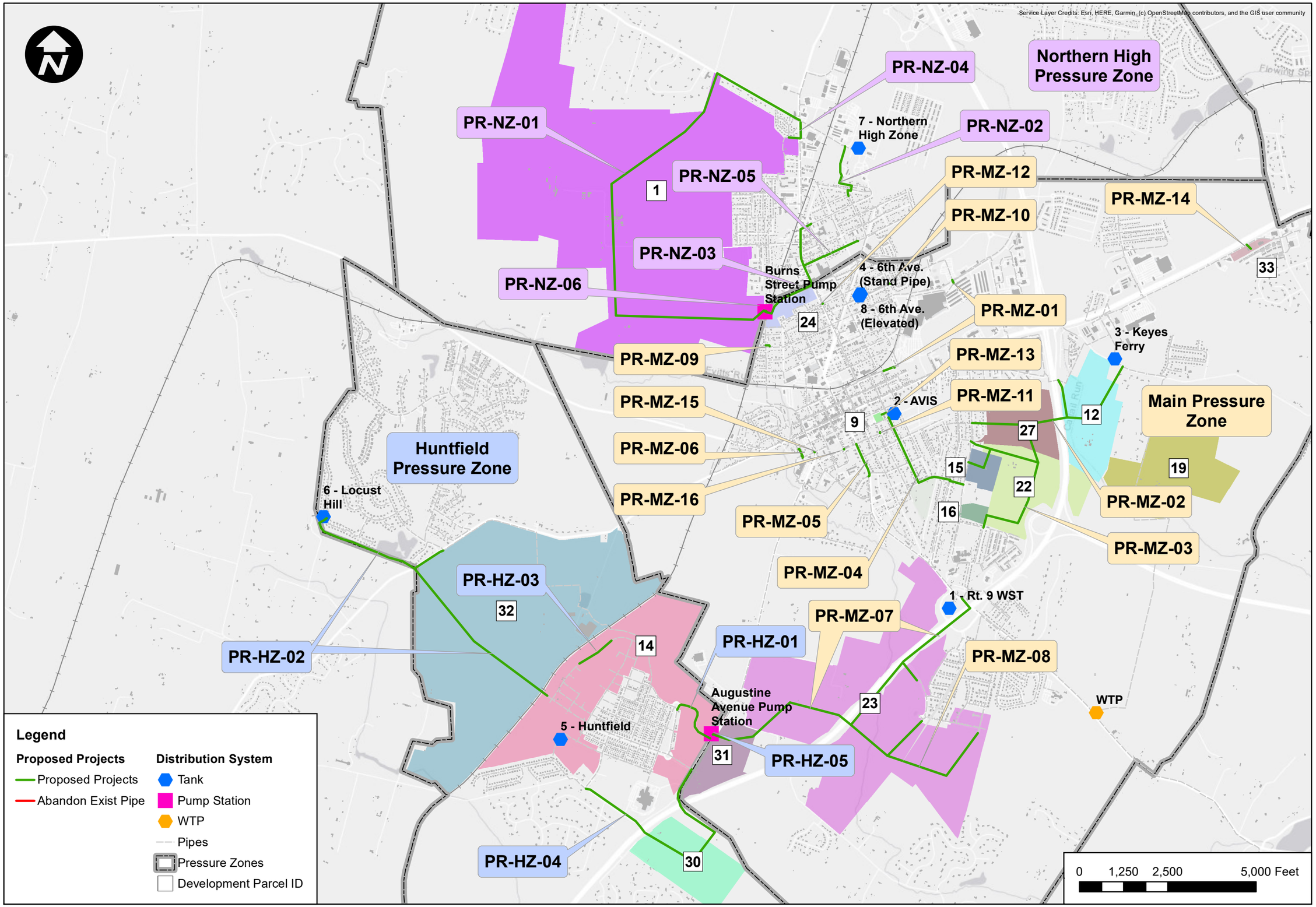


FIGURE NO. 4-1

TITLE PROPOSED PROJECTS

SCALE 1 inch = 2,500 feet

PROJECT WATER MASTER PLAN
CHARLES TOWN UTILITY BOARD

DATE MAY 2022

PROJ. NO. 5107007

Dewberry®
Dewberry Engineers Inc.
4805 LAKE BROOK DRIVE, SUITE 200
GLEN ALLEN, VIRGINIA 23060
PHONE: 804.290.7957
FAX: 804.290.7928

APPENDIX A

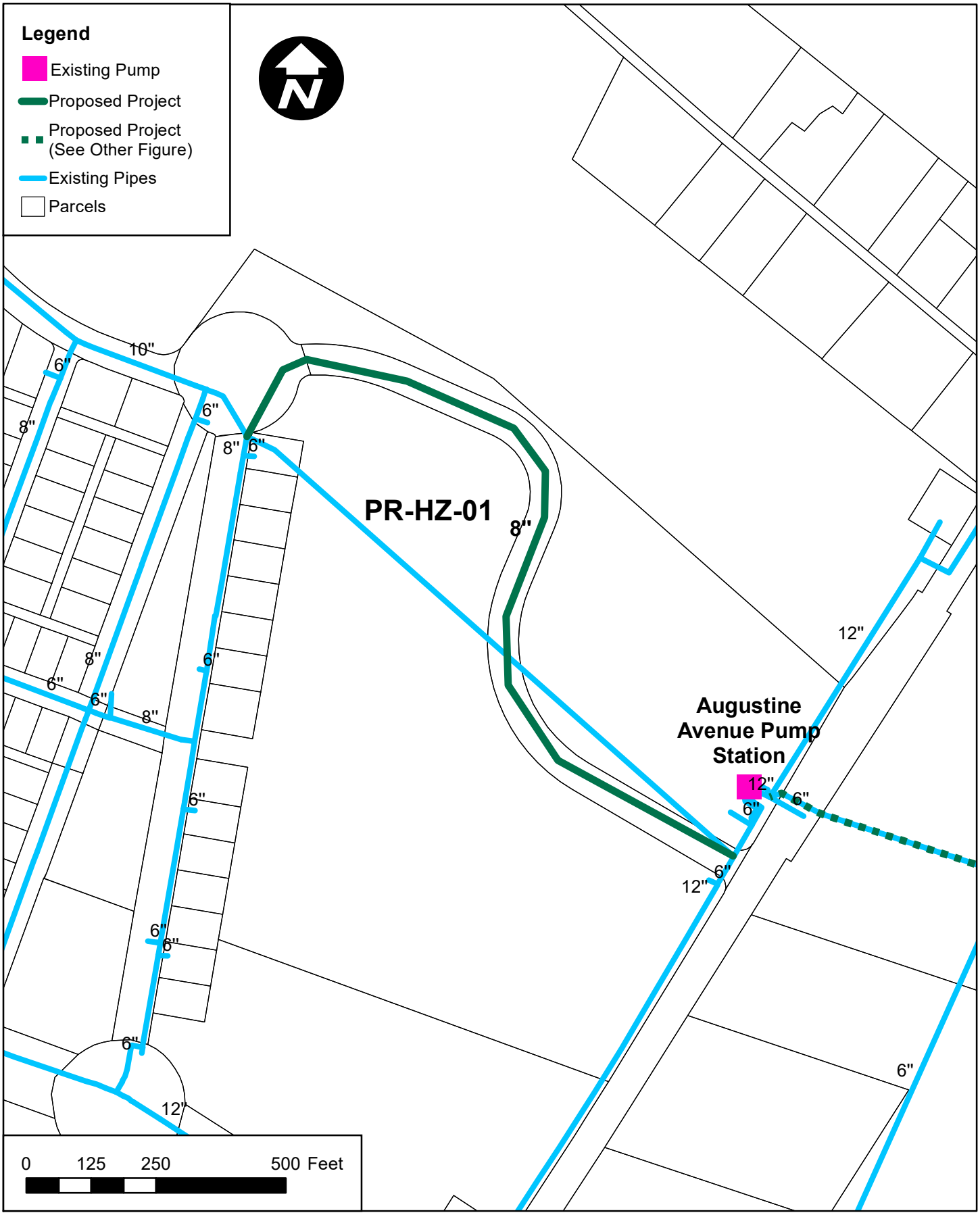
FUTURE GROWTH DEMAND DERIVATION

ID	Development	Total Design EDUs	Total Built as of 2021	20 year forecast to be built	Total Flow	Beyond 20 year forecast	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2031 to 2040	TOTAL @ Year 20	Total Remaining	2021-2040 - Aggressive Growth			2021-2040 - Conservative			ID
																														GPD	GPM	MGD	GPD	GPM	MGD	
1	American Heritage (Huntwell)	500	0	500	75,000	180	0	0	**20**	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0	0	160	320	180	48,000	33.33	0.05	24,000	16.67	0.02	1
9	Charles Town Infill	250	0	250	37,500	150	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	100	150	15,000	10.42	0.02	7,500	5.21	0.01	9
12	Fritts Property	370	0	370	55,500	50	0	0	0	0	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	320	50	48,000	33.33	0.05	24,000	16.67	0.02	12
14	Huntfield	3,200	421	2,779	480,000	2,399	0	**20**	**20**	**20**	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	380	2399	57,000	39.58	0.06	28,500	19.79	0.03	14
15	Jefferson Heights North	262	0	262	39,300	122	0	0	20	20	15	15	15	15	15	15	10	0	0	0	0	0	0	0	0	0	10	140	0	21,000	14.58	0.02	10,500	7.29	0.01	15
16	Tate Manor	80	0	80	12,000	0	20	20	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	12,000	8.33	0.01	6,000	4.17	0.01	16
19	Langlet	1,000	0	1,000	150,000	800	0	0	0	0	0	0	0	0	0	0	20	20	20	20	20	20	20	20	20	20	200	200	800	30,000	20.83	0.03	15,000	10.42	0.02	19
22	Magnolia Springs	300	0	300	45,000	0	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0	0	0	0	0	100	300	0	45,000	31.25	0.05	22,500	15.63	0.02	22
23	Norborne Glebe	1,050	246	804	157,500	484	0	0	0	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0	180	320	484	48,000	33.33	0.05	24,000	16.67	0.02	23
24	Old Town Ranson - Infill	250	0	250	37,500	150	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	100	150	15,000	10.42	0.02	7,500	5.21	0.01	24
27	Prospect Place	170	0	170	25,500	0	0	0	0	0	9	9	25	25	25	25	25	27	0	0	0	0	0	0	0	0	52	170	0	25,500	17.71	0.03	12,750	8.85	0.01	27
30	Stolipher	324	0	324	48,600	124	0	0	0	0	0	0	0	0	0	0	20	20	20	20	20	20	20	20	20	20	200	200	124	30,000	20.83	0.03	15,000	10.42	0.02	30
31	Washington Landing	274	0	274	41,100	0	0	0	0	50	50	50	50	50	24	0	0	0	0	0	0	0	0	0	0	0	0	274	0	41,100	28.54	0.04	20,550	14.27	0.02	31
32	Winchester Cold Storage	675	0	675	101,250	125	0	0	0	0	0	0	0	0	0	50	50	50	50	50	50	50	50	50	50	50	500	550	125	82,500	57.29	0.08	41,250	28.65	0.04	32
33	Windmill Crossing	150	146	4	22,500	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	600	0.42	0.001	300	0.21	0.0003	33
	Total Projected Development	**8,855**	**813**	**8,042**	**1,328,250**	**4,584**	**51**	**71**	**111**	**181**	**184**	**184**	**200**	**200**	**174**	**200**	**235**	**227**	**200**	**200**	**200**	**180**	**180**	**180**	**160**	**140**	**1,902**	**3,458**	**4,462**	**518,700**	**360.21**	**0.52**	**259,350**	**180.10**	**0.26**	

APPENDIX B

PROPOSED IMPROVEMENTS

FIGURE 4-2 TO FIGURE 4-28



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-HZ-01	FIGURE NO. 4-02
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		

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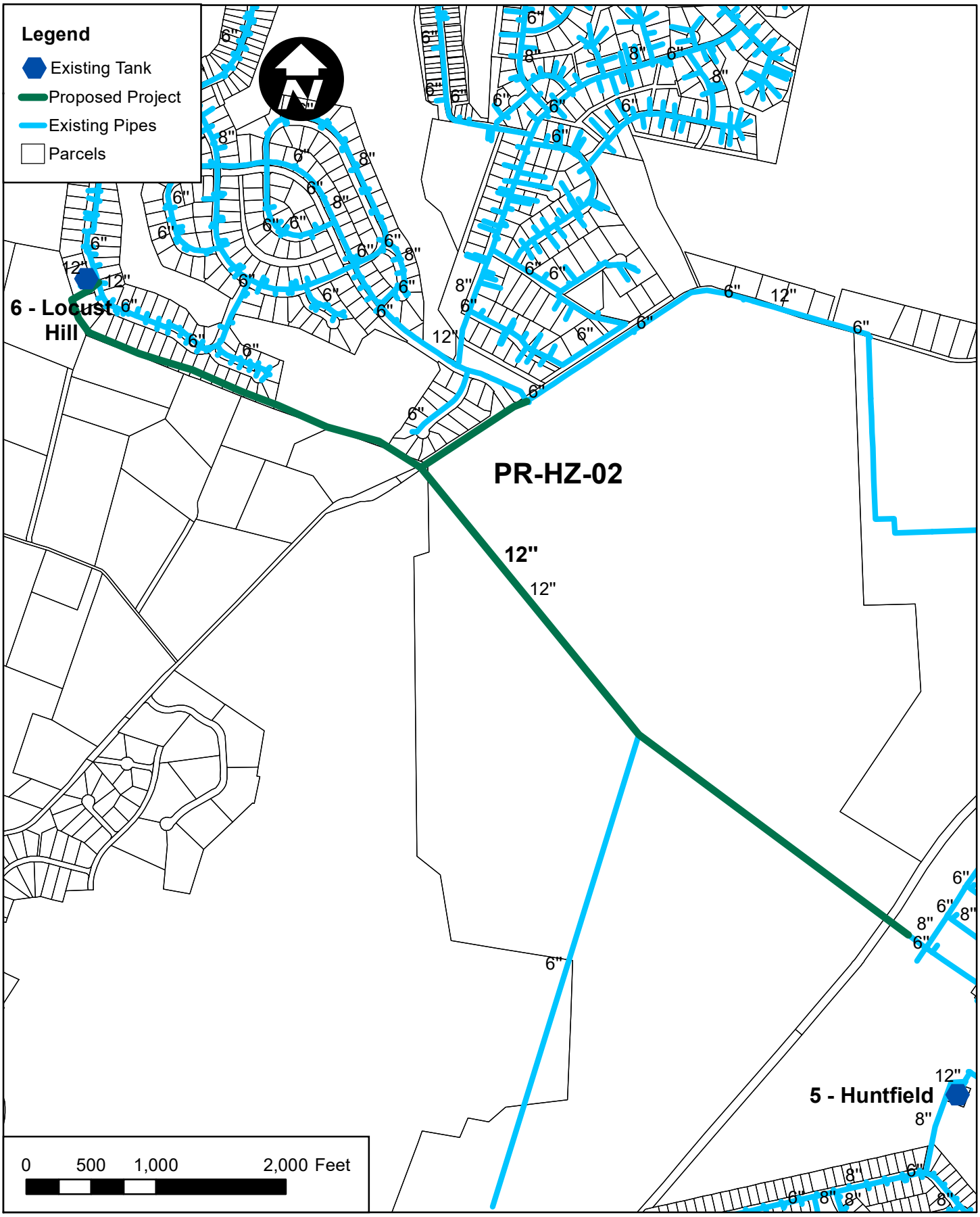
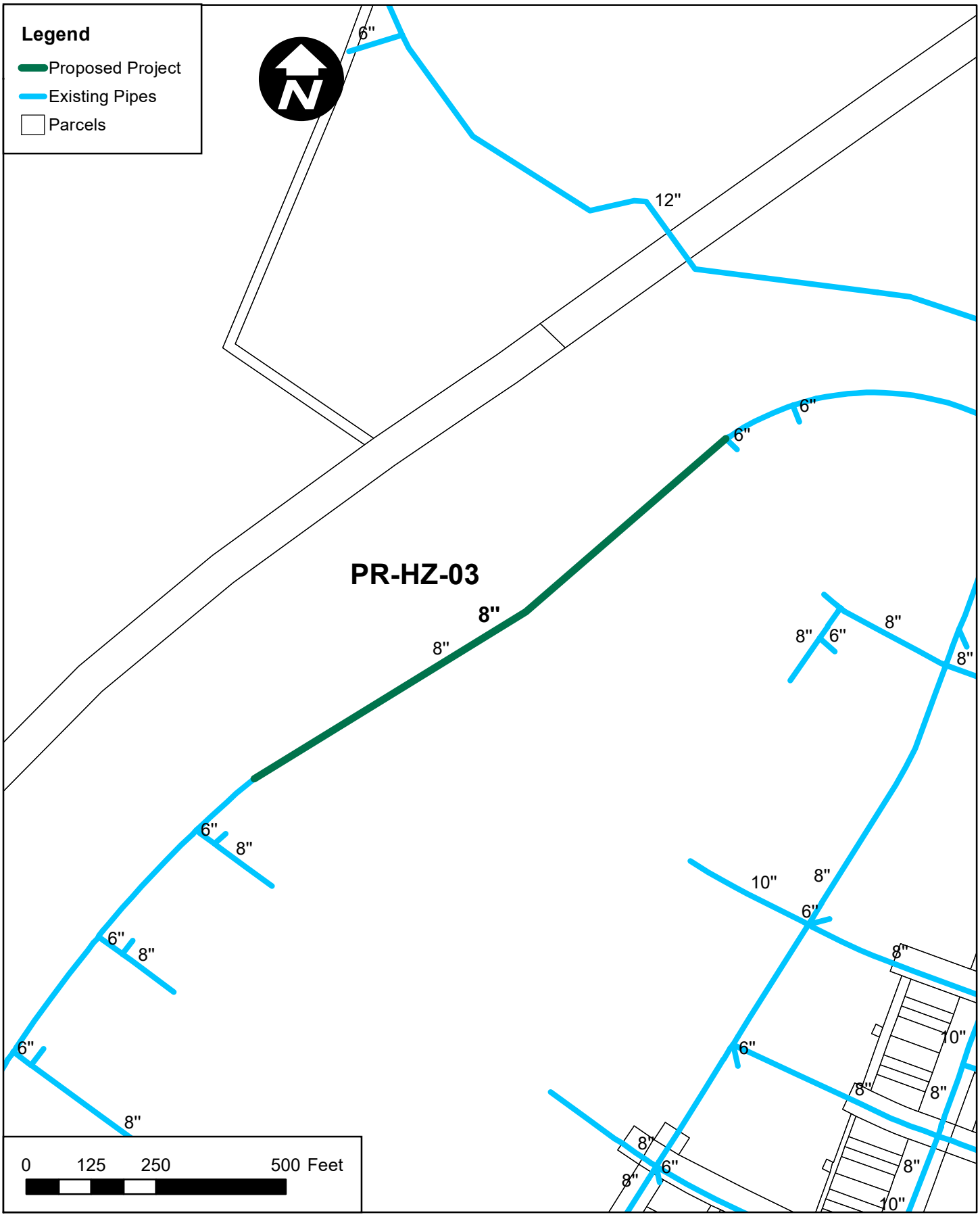
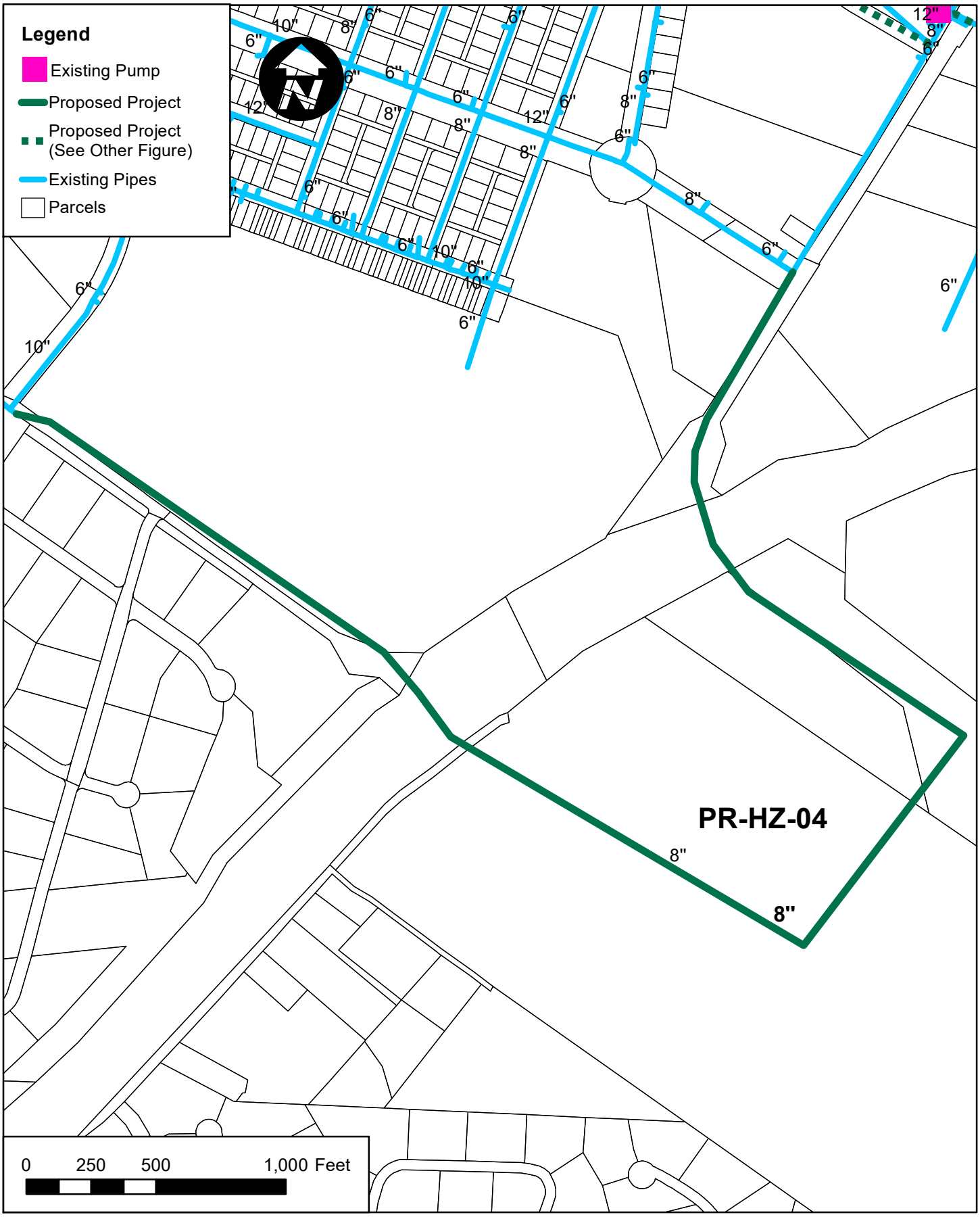


Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 1,000 feet	TITLE PR-HZ-02
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO. 4-03



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-HZ-03
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO. 4-04



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 500 feet	TITLE PR-HZ-04	FIGURE NO. 4-05
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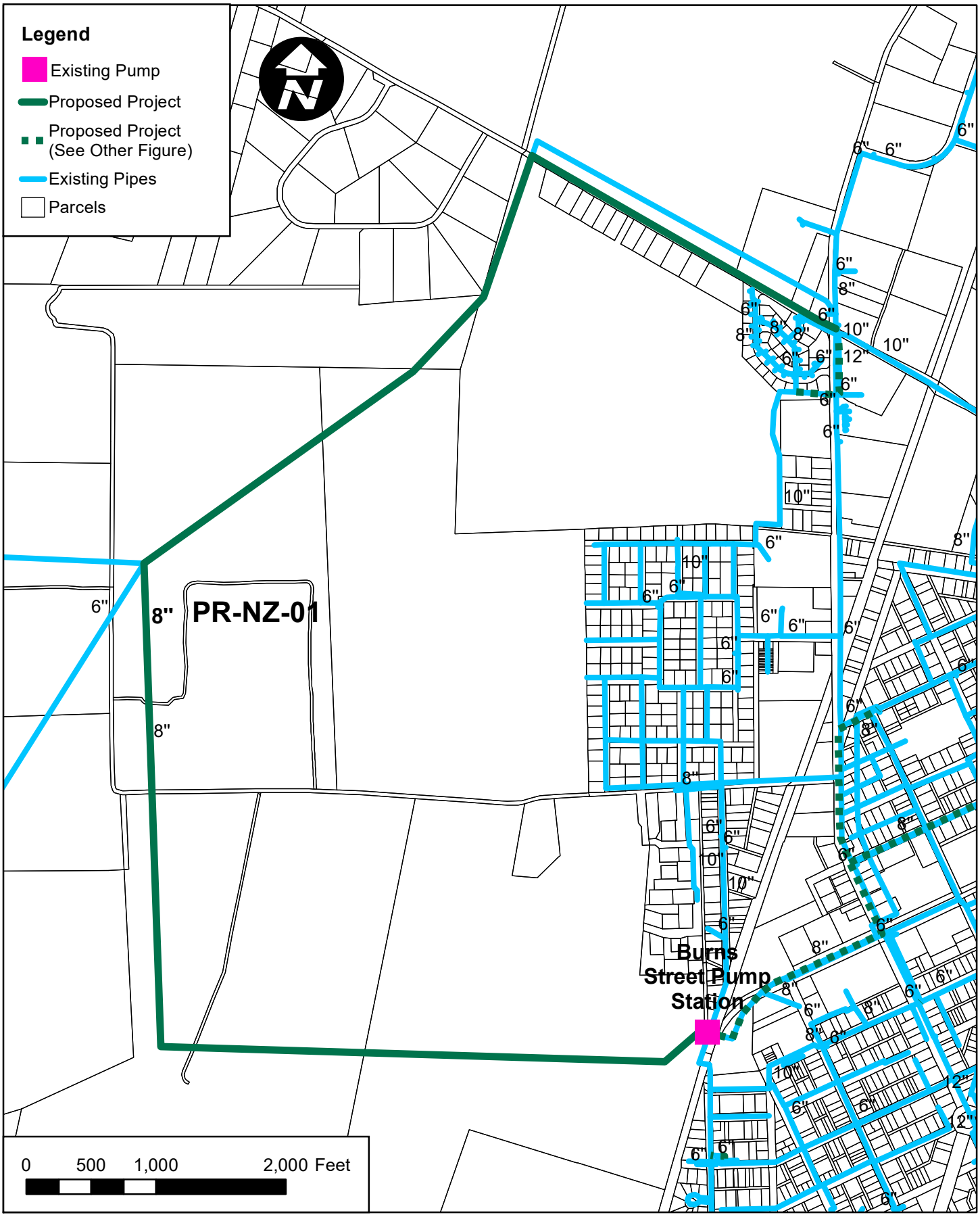

Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 1,000 feet	TITLE PR-NZ-01	FIGURE NO. 4-06
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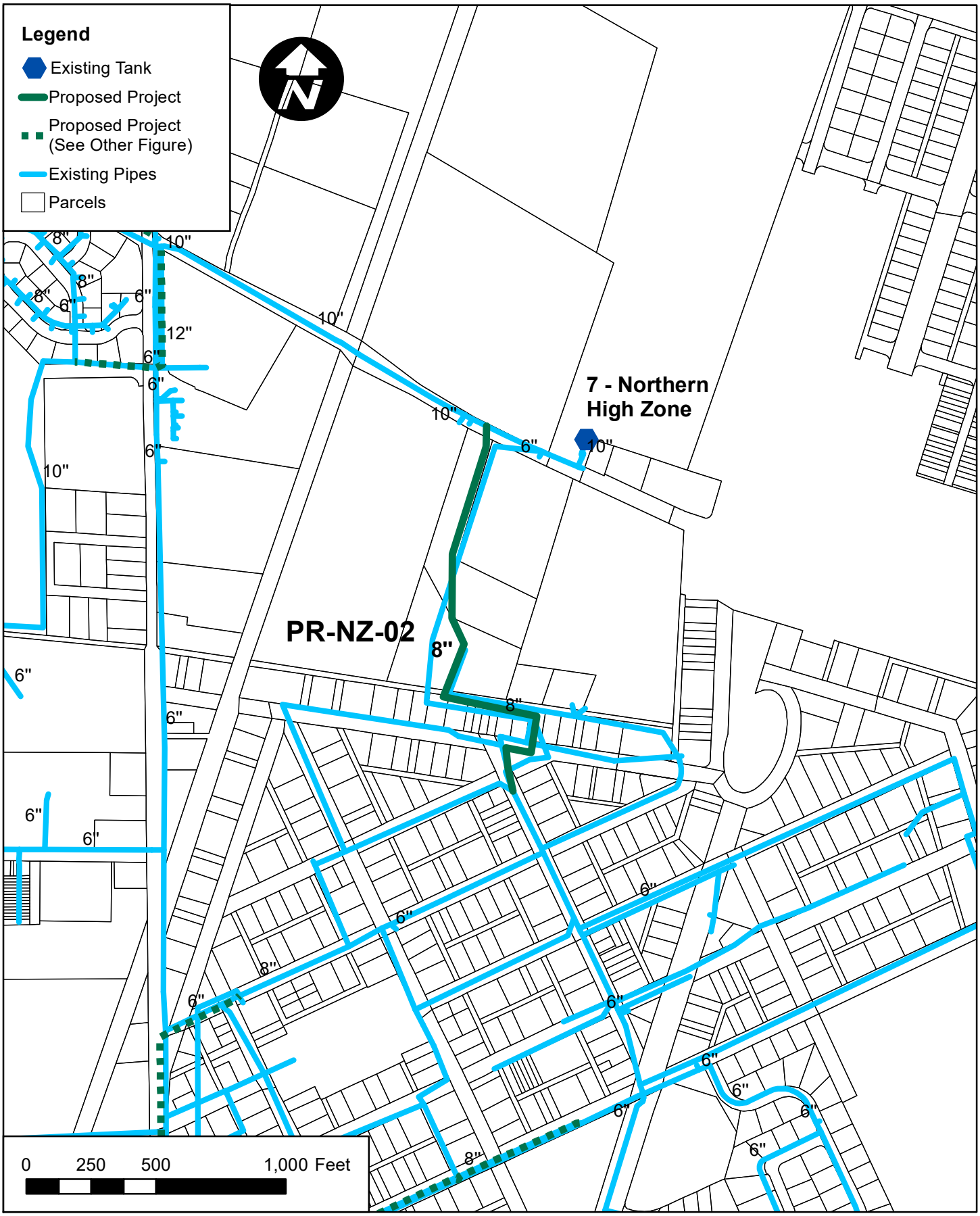
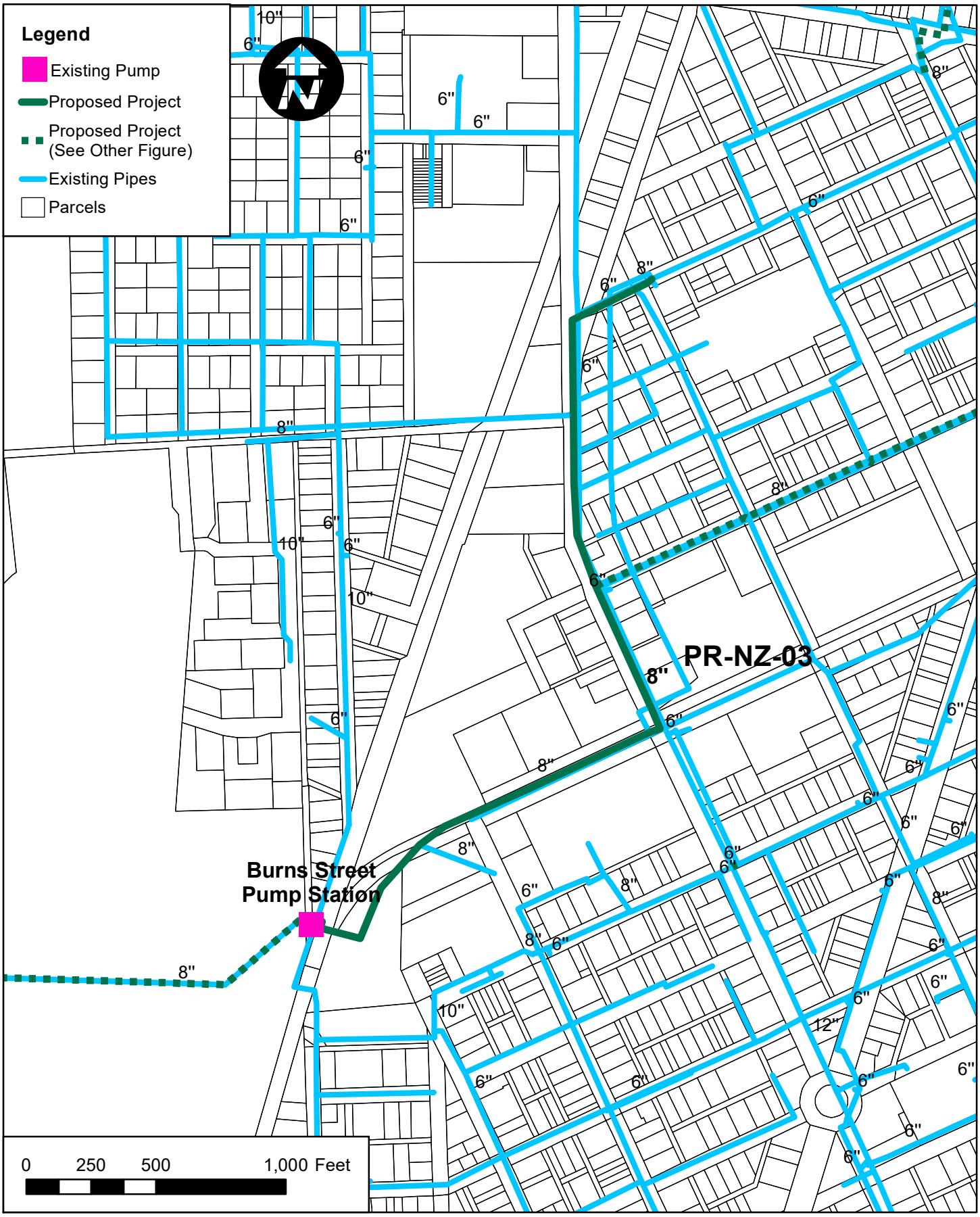


Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 500 feet	TITLE PR-NZ-02
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO. 4-07



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 500 feet	TITLE PR-NZ-03	FIGURE NO. 4-08
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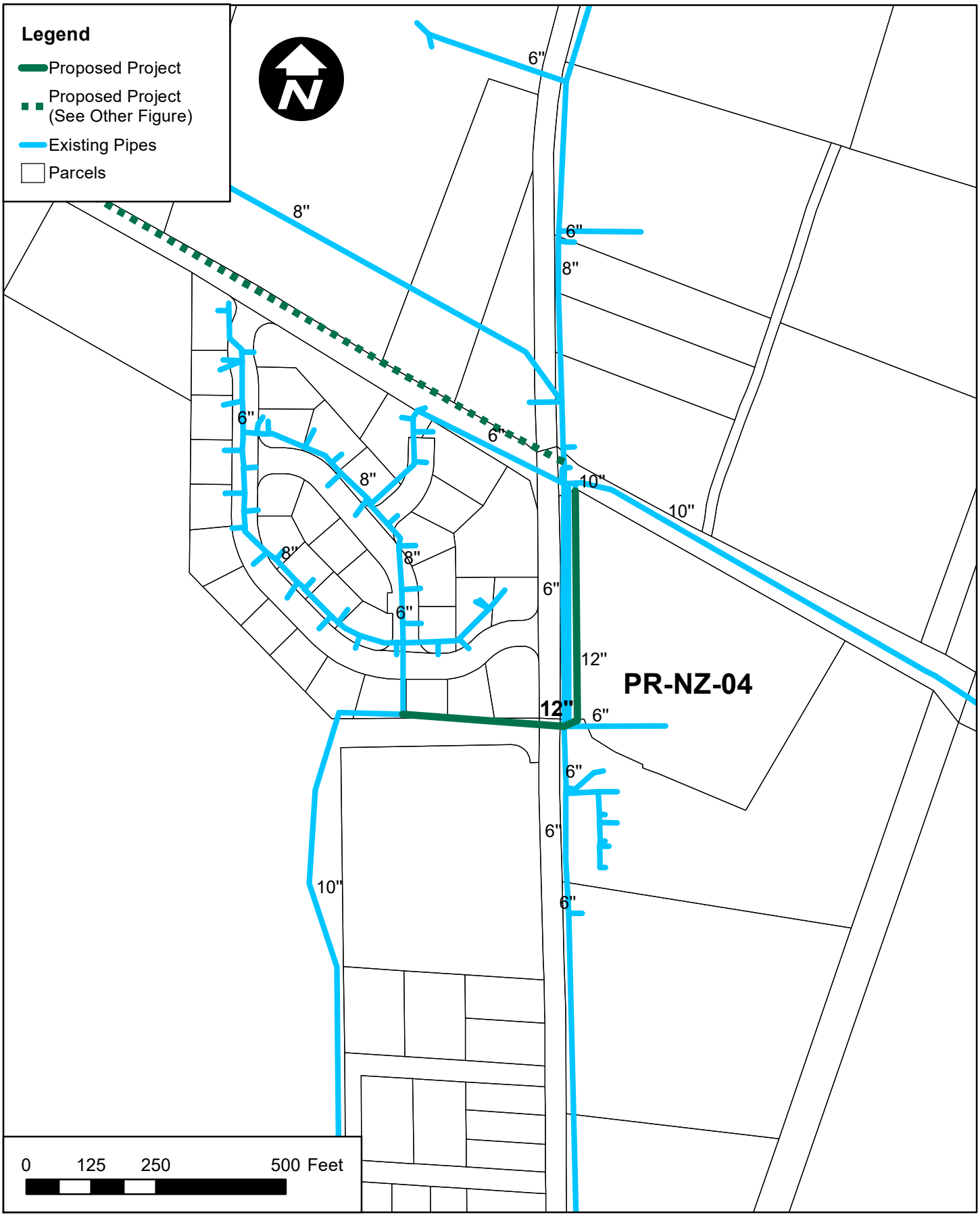

Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-NZ-04	FIGURE NO. 4-09
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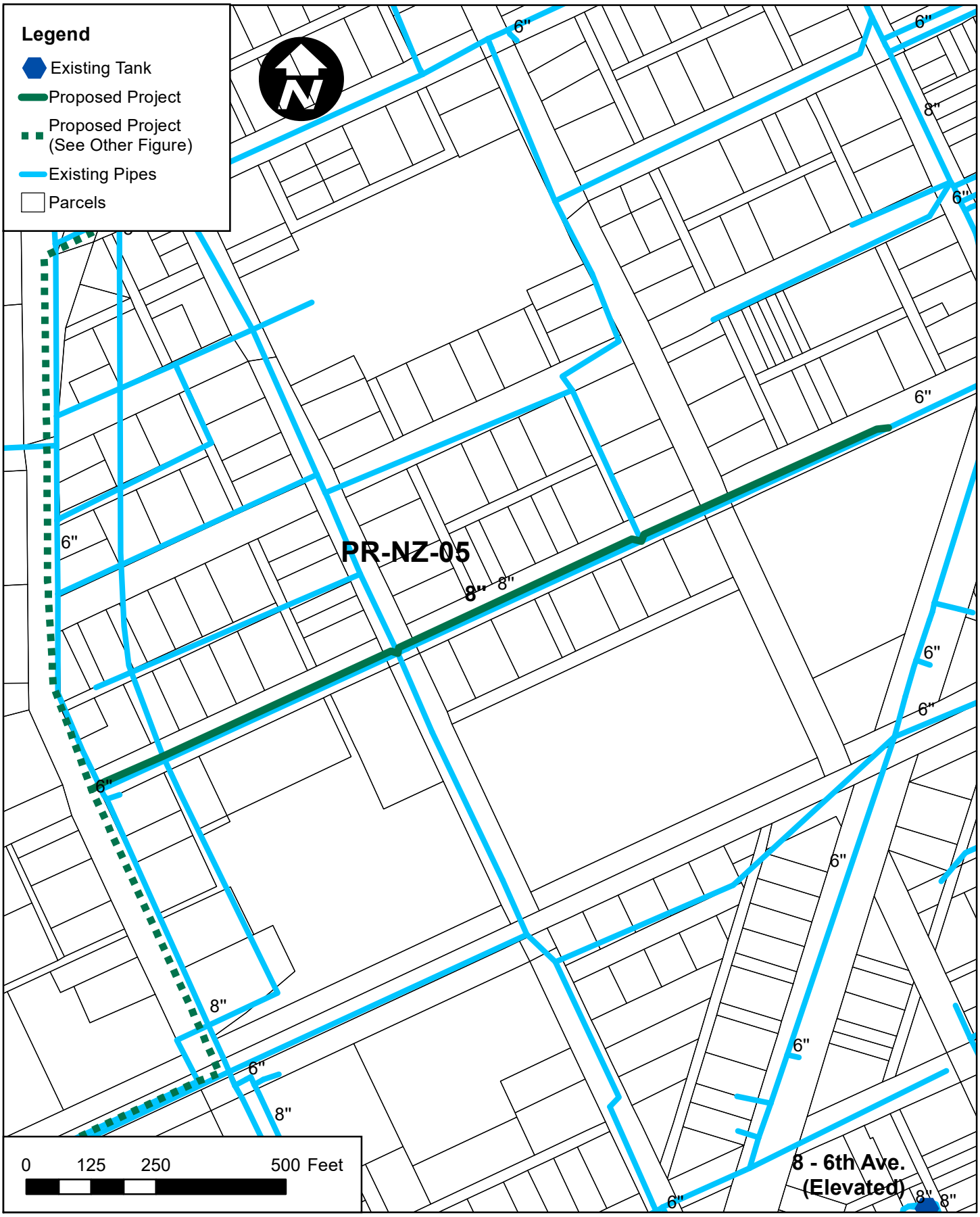

Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-NZ-05	FIGURE NO. 4-10
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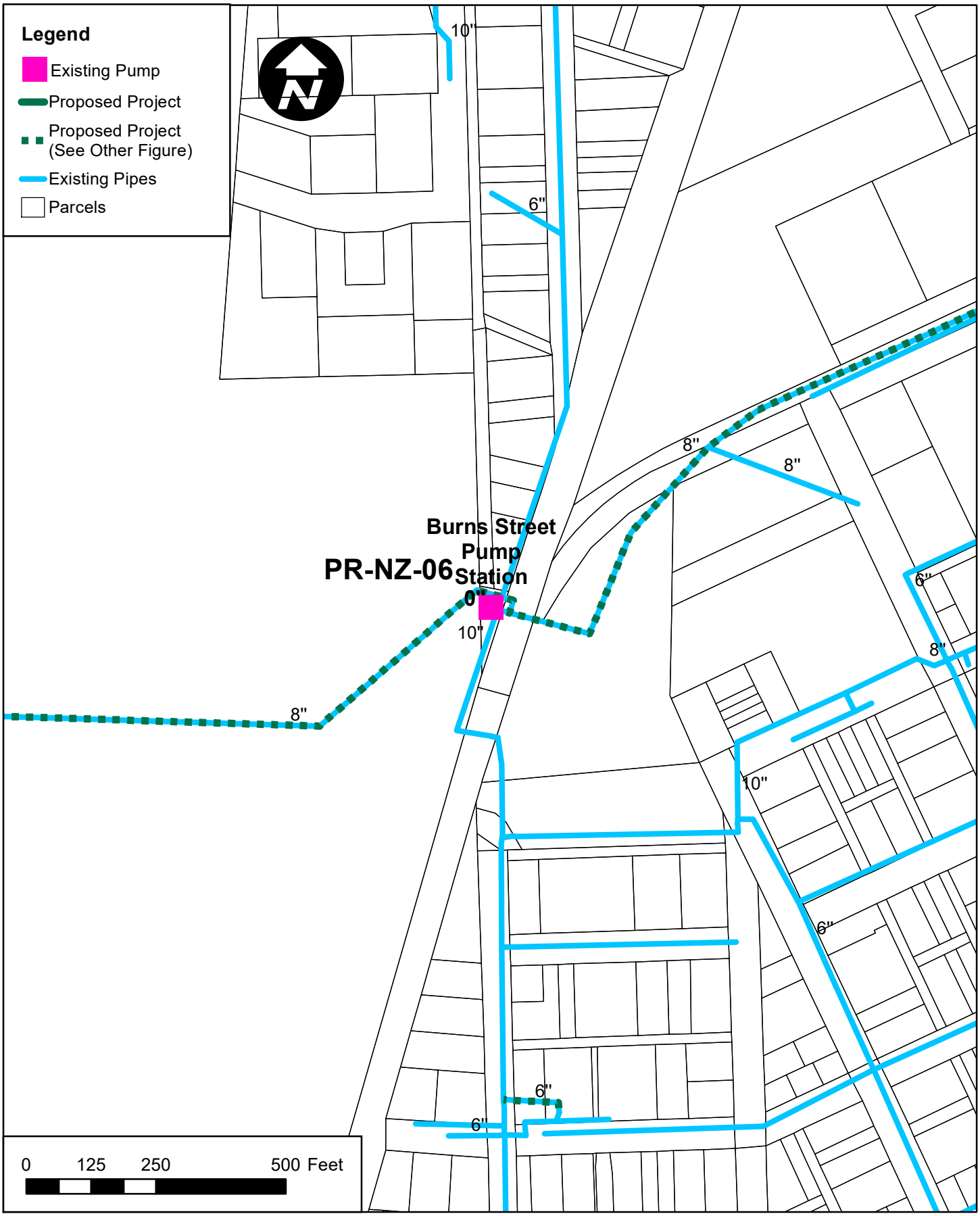

Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-NZ-06	FIGURE NO. 4-11
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		

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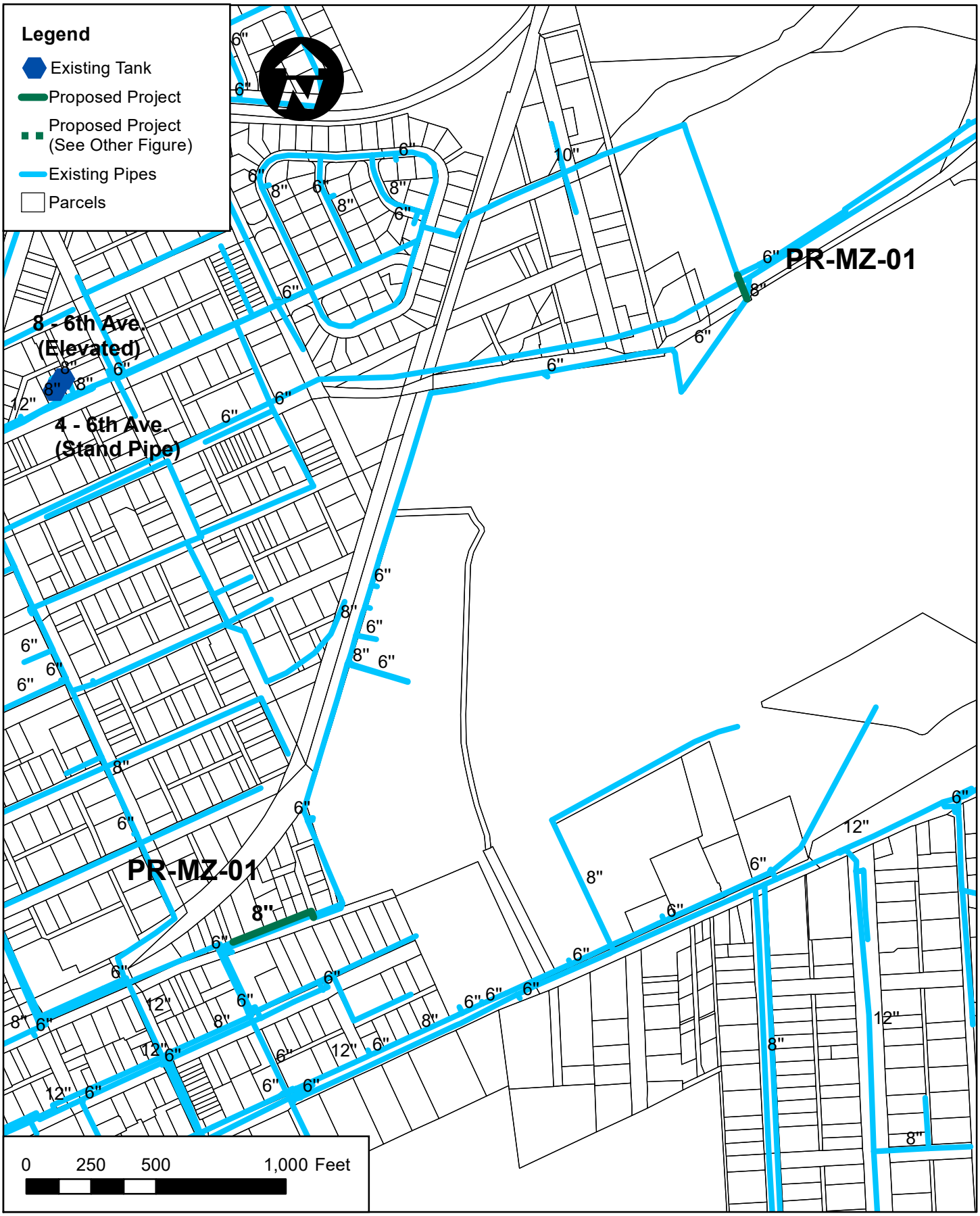

Dewberry	DATE: NOVEMBER 2021	SCALE: 1 inch = 500 feet	TITLE: PR-MZ-01
Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	PROJ. NO.: 5107007	PROJECT: WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO.: 4-12

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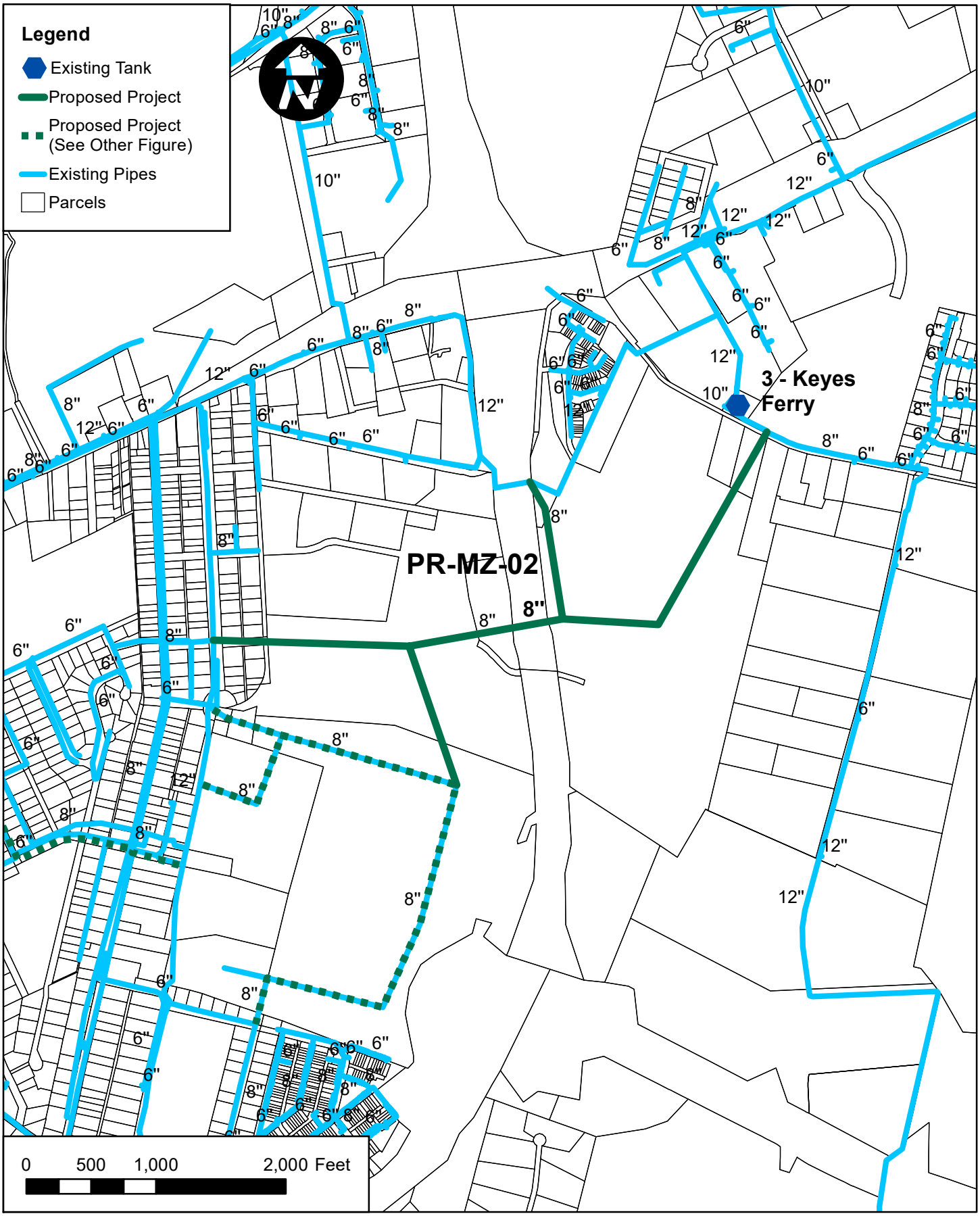
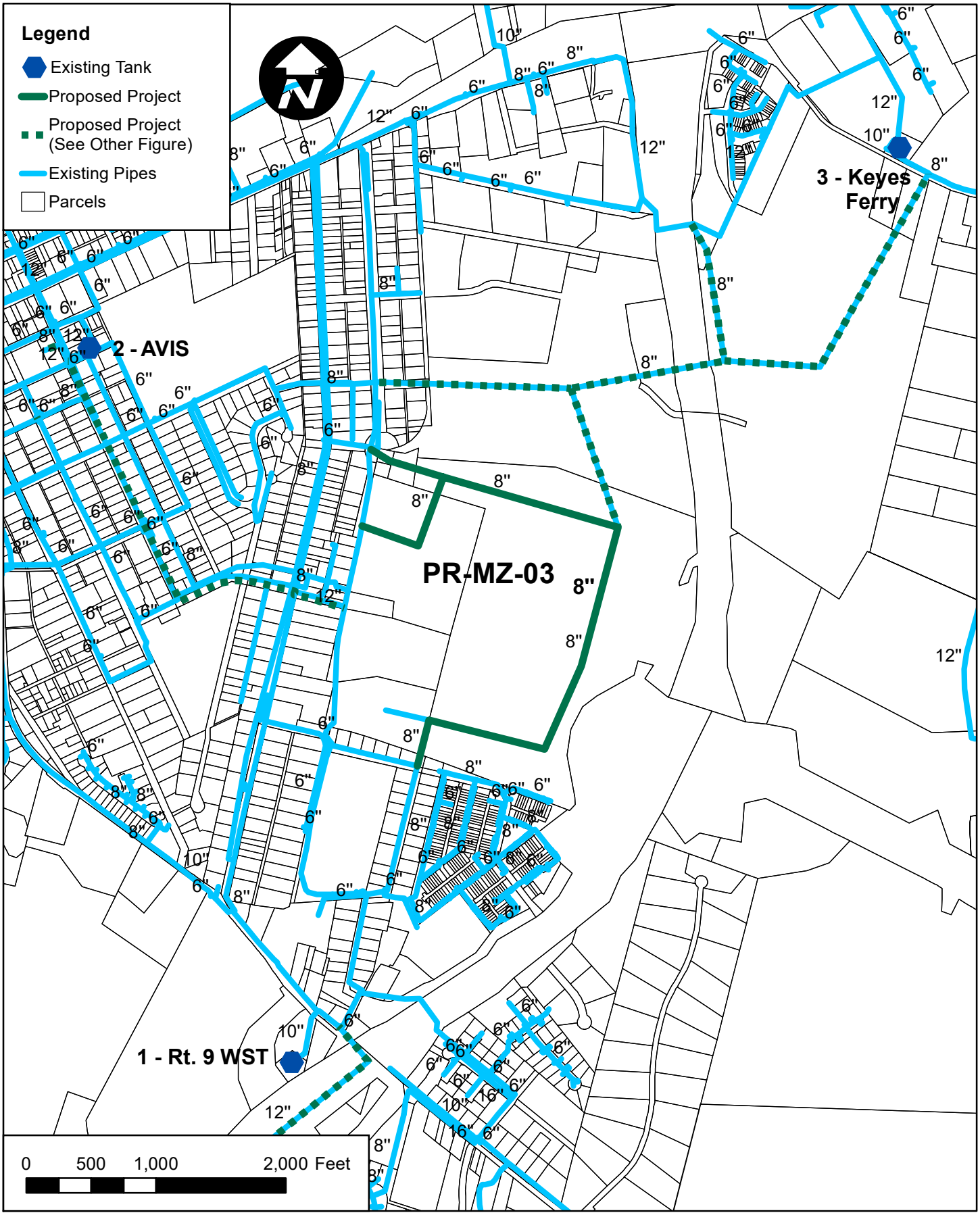
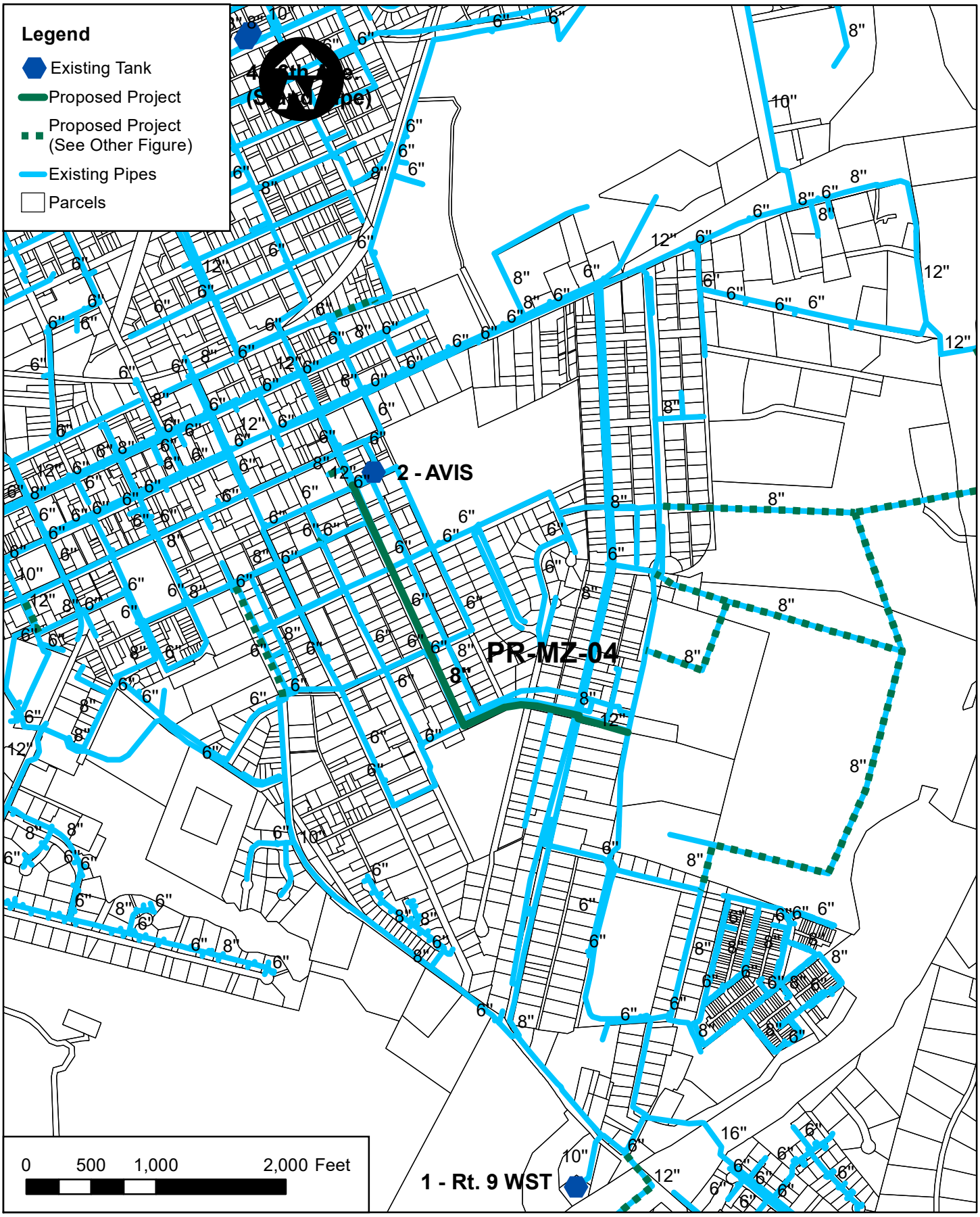


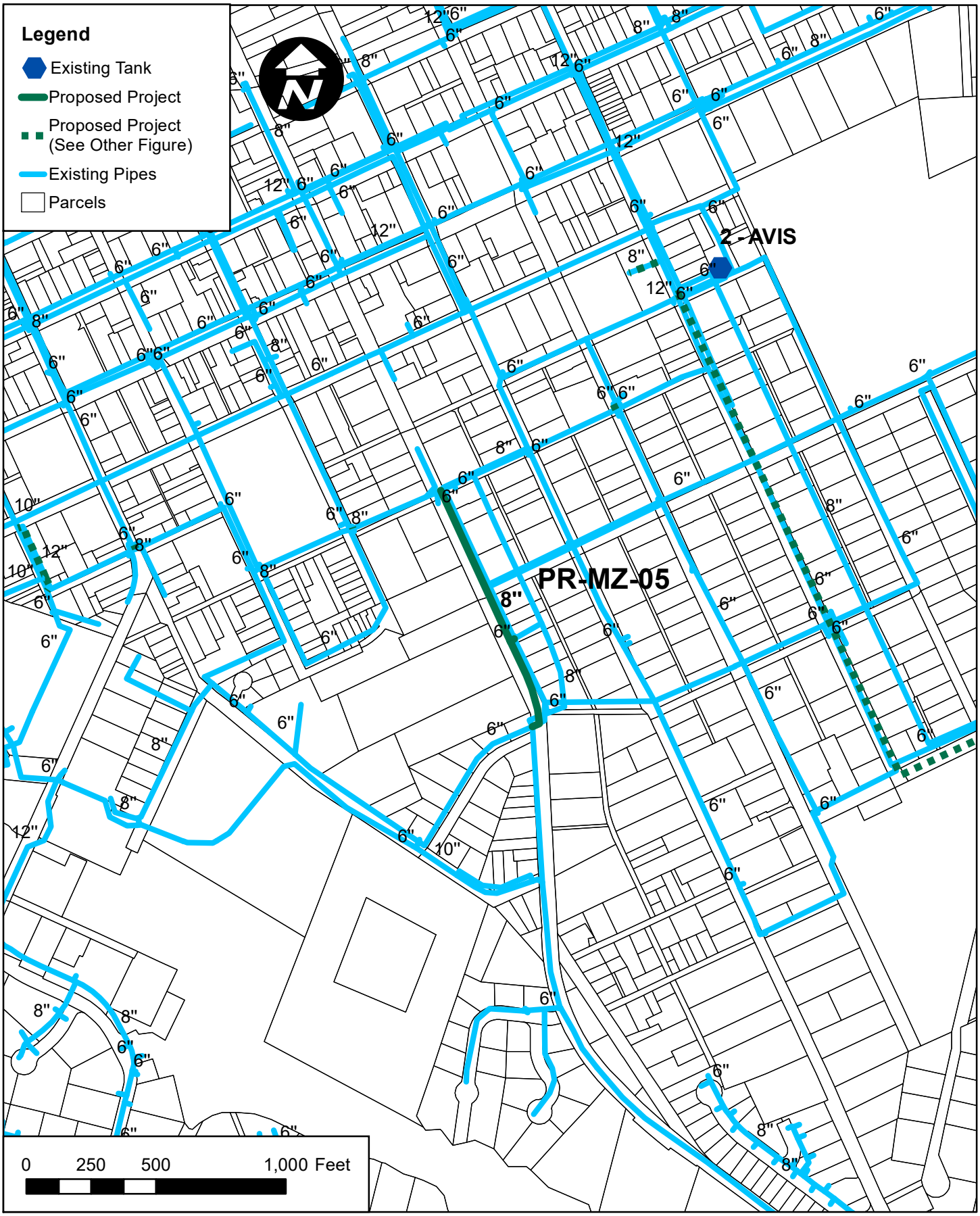
Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE: NOVEMBER 2021	SCALE: 1 inch = 1,000 feet	TITLE: PR-MZ-02
	PROJ. NO.: 5107007	PROJECT: WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO.: 4-13



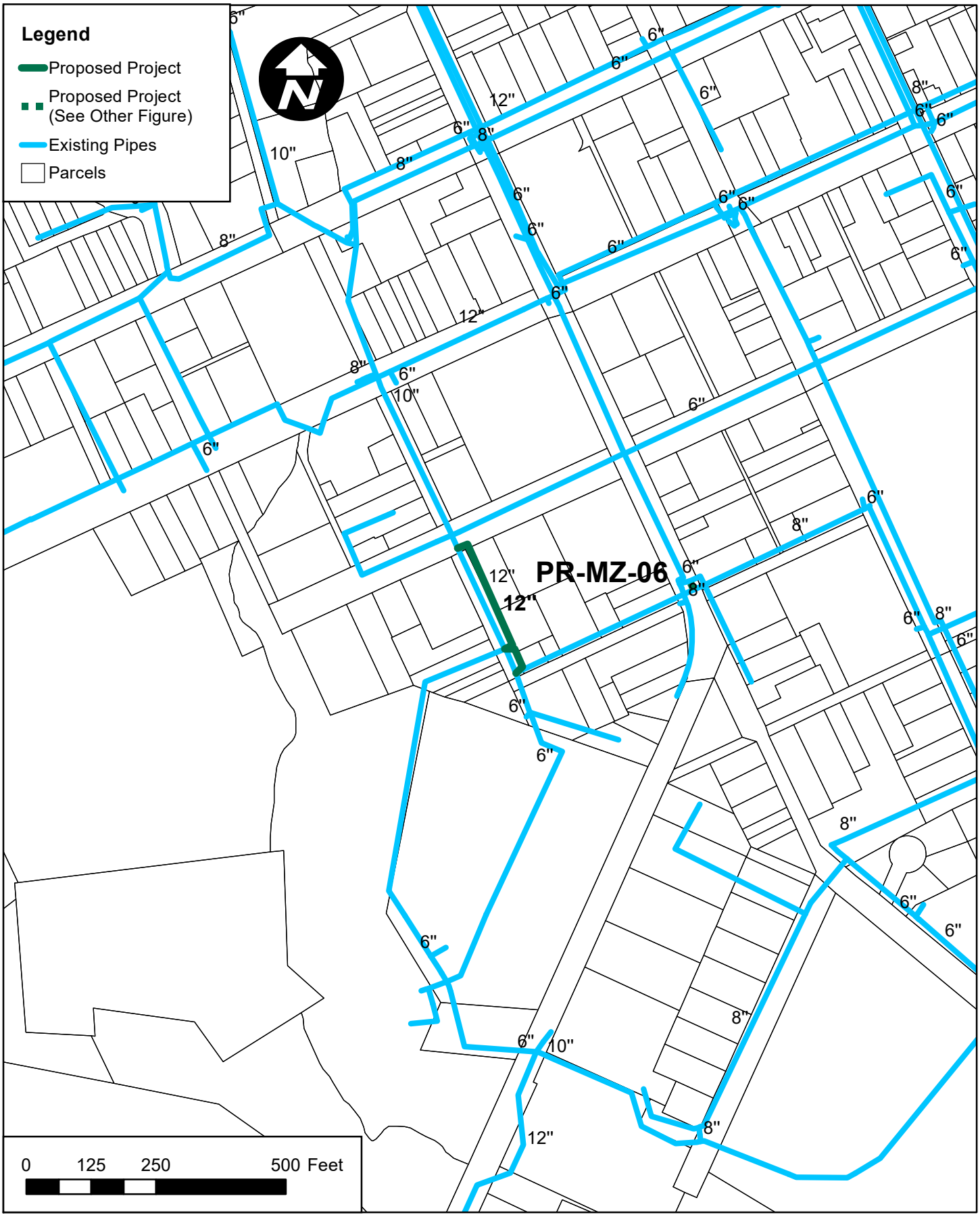
Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 1,000 feet	TITLE PR-MZ-03
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO. 4-14



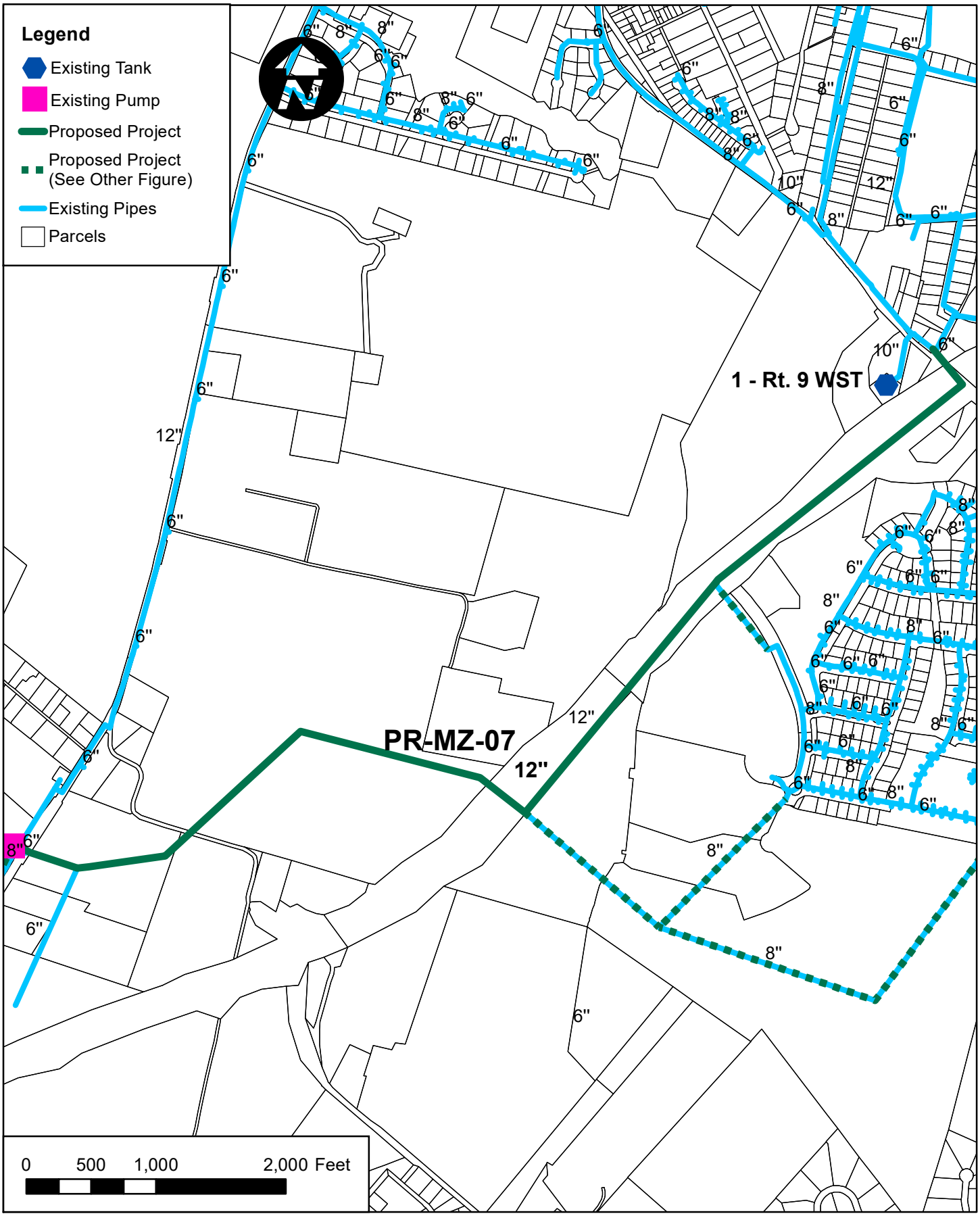
Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 1,000 feet	TITLE PR-MZ-04
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO. 4-15



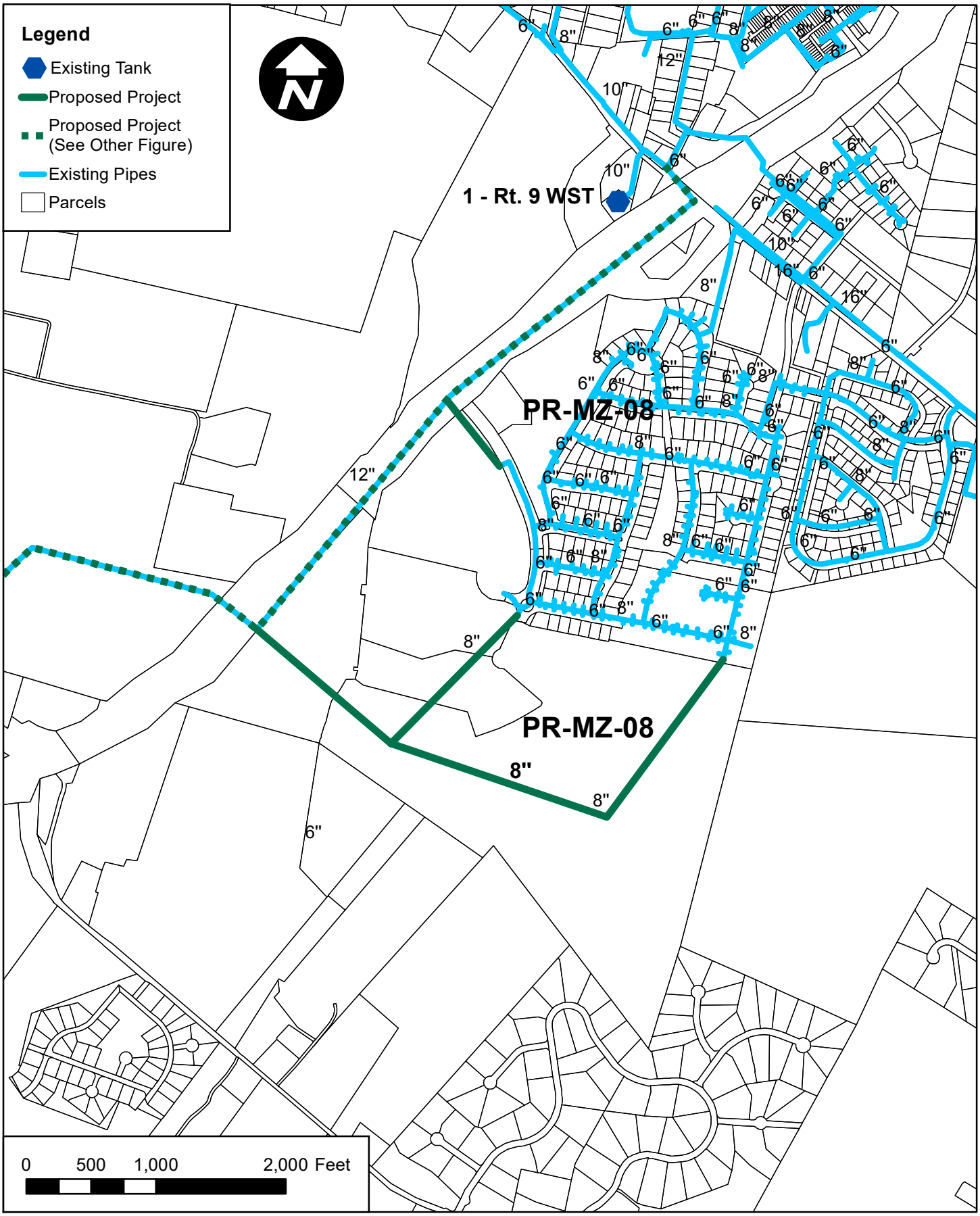
Dewberry	DATE	SCALE	TITLE
Dewberry Engineers Inc.	NOVEMBER 2021	1 inch = 500 feet	PR-MZ-05
4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO. 4-16



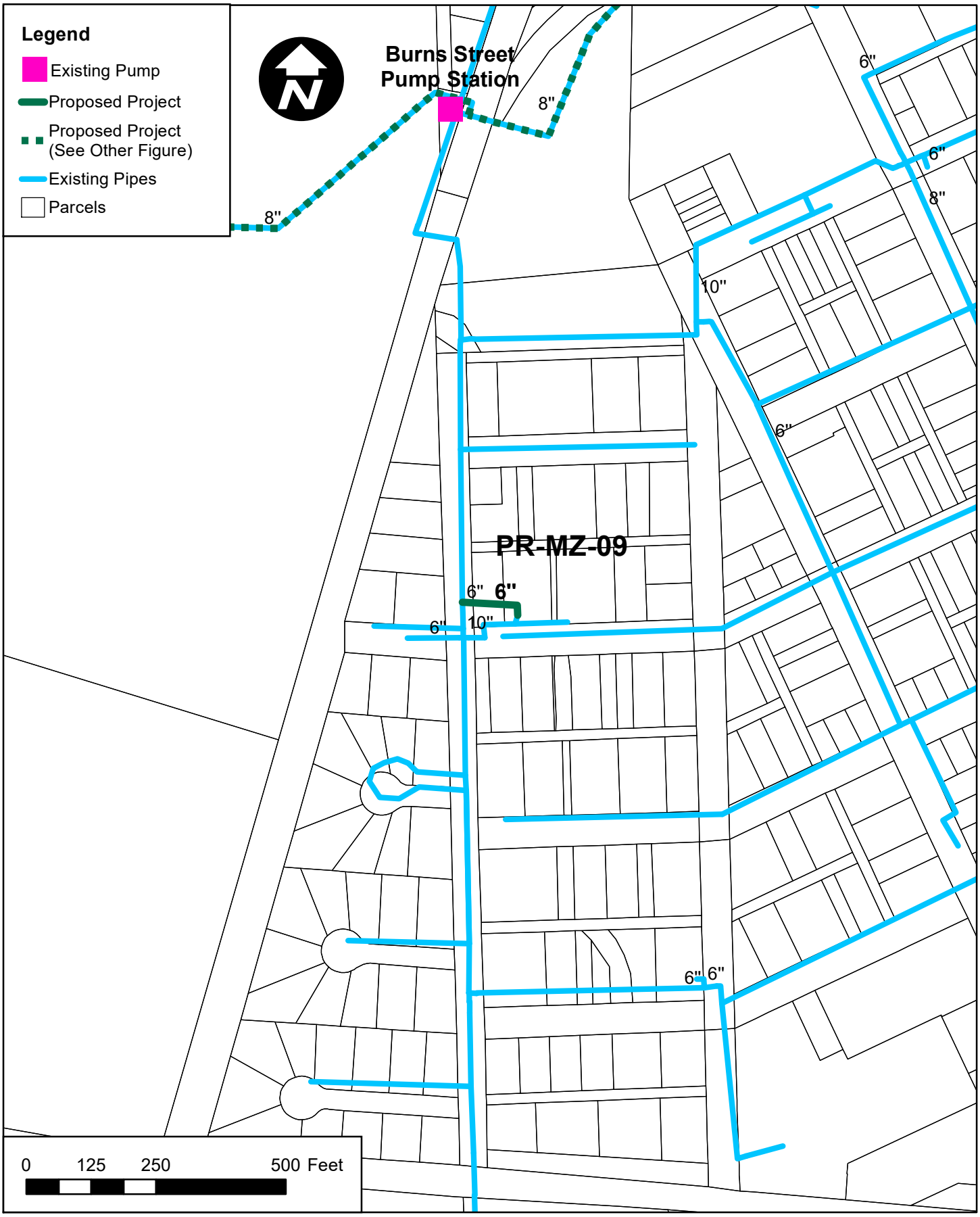
Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-MZ-06	FIGURE NO. 4-17
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		



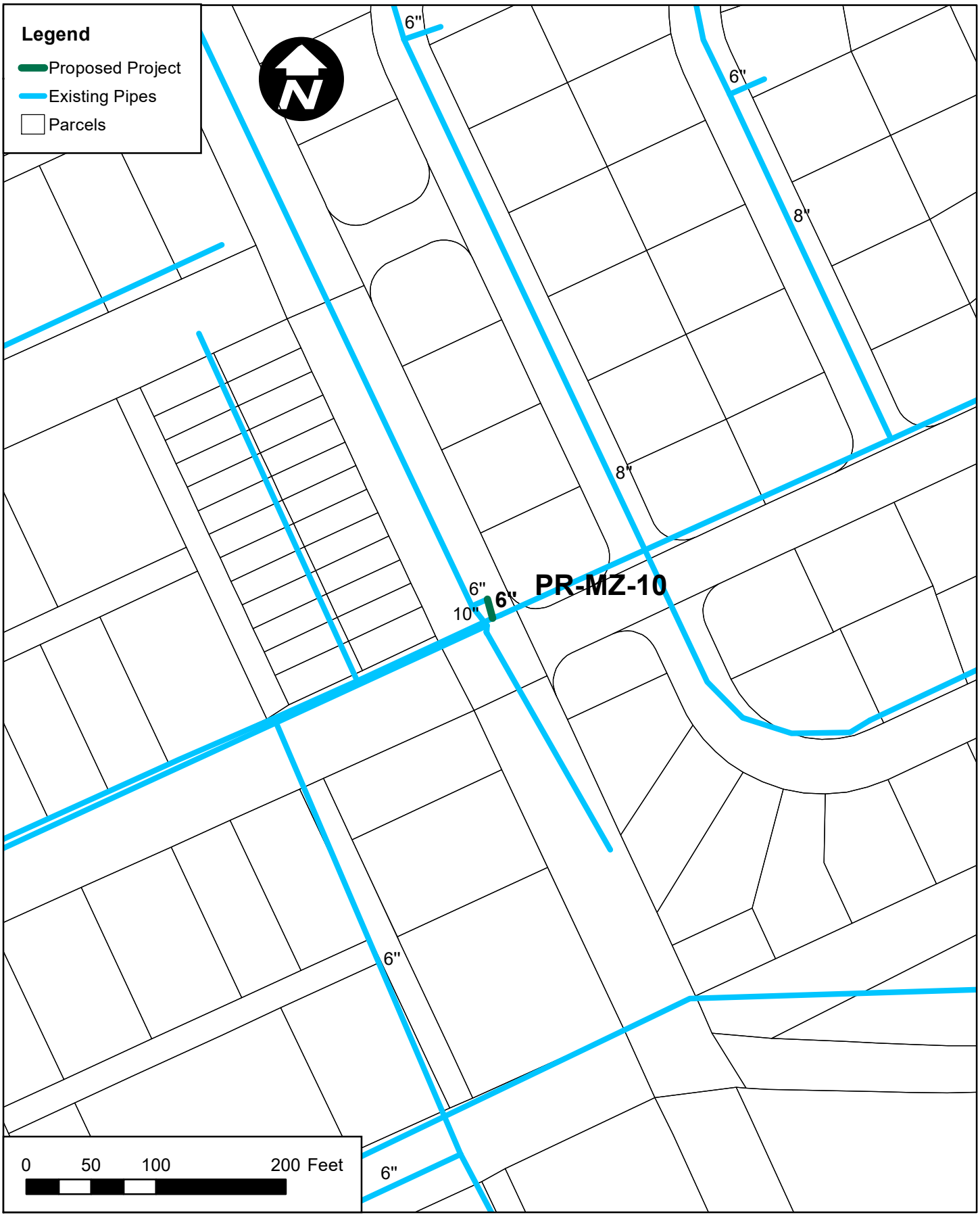
Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE: NOVEMBER 2021	SCALE: 1 inch = 1,000 feet	TITLE: PR-MZ-07
	PROJ. NO.: 5107007	PROJECT: WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO.: 4-18



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE: NOVEMBER 2021	SCALE: 1 inch = 1,000 feet	TITLE: PR-MZ-08
	PROJ. NO.: 5107007	PROJECT: WATER MASTER PLAN CHARLES TOWN UTILITY BOARD	FIGURE NO.: 4-19



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-MZ-09	FIGURE NO. 4-20
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 100 feet	TITLE PR-MZ-10	FIGURE NO. 4-21
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 100 feet	TITLE PR-MZ-11	FIGURE NO. 4-22
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		

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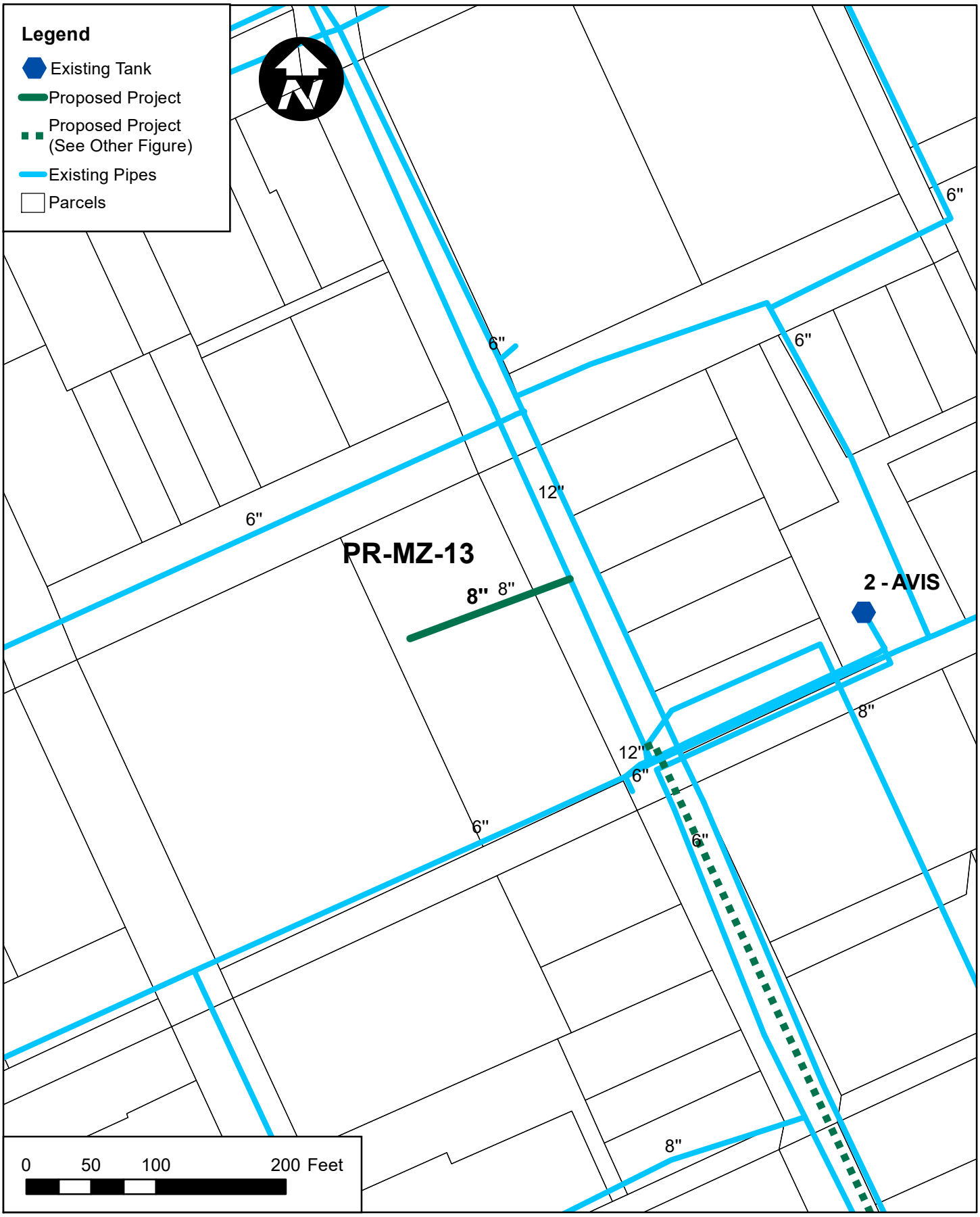
Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 100 feet	TITLE PR-MZ-12	FIGURE NO. 4-23
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 100 feet	TITLE PR-MZ-13	FIGURE NO. 4-24
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		

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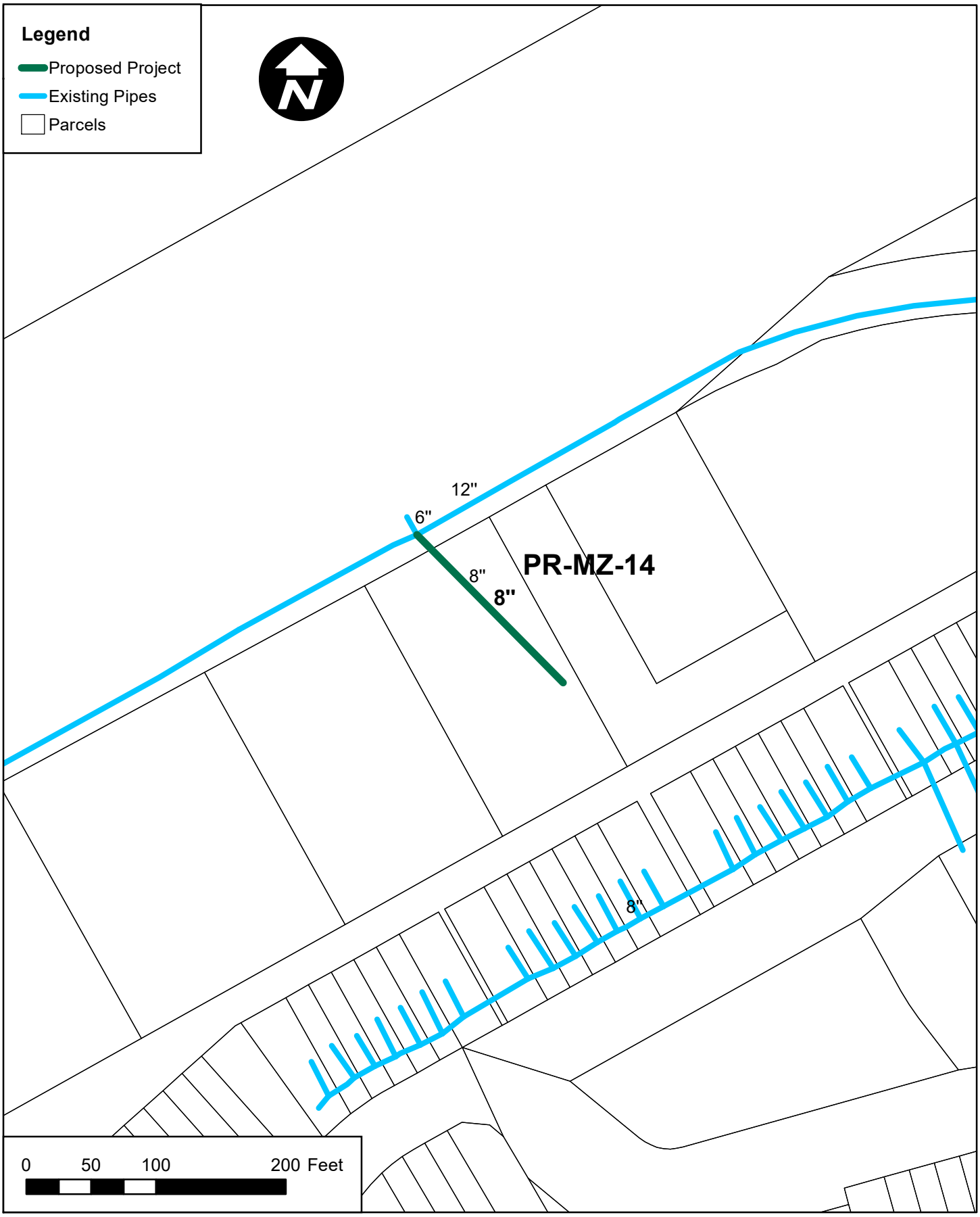
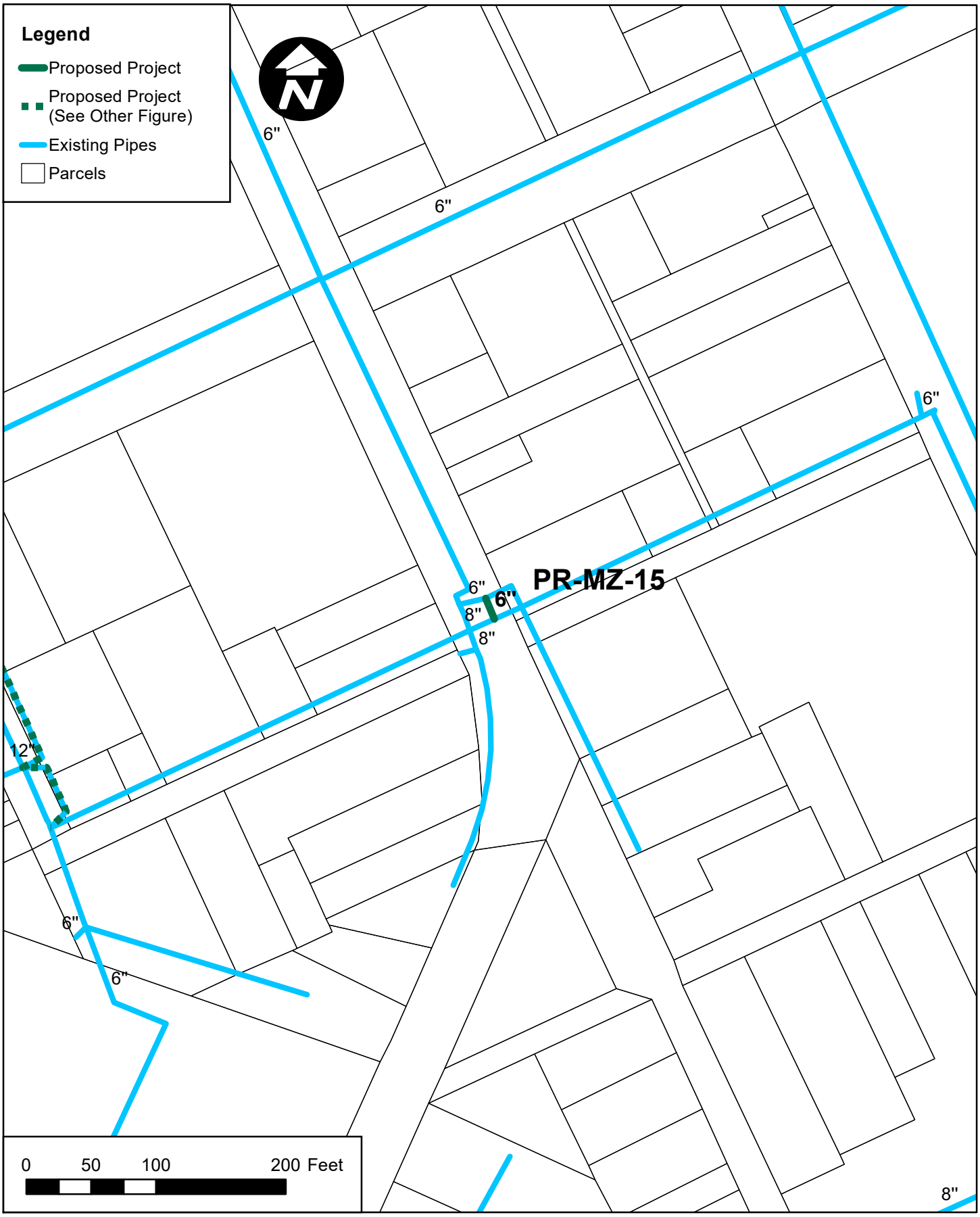
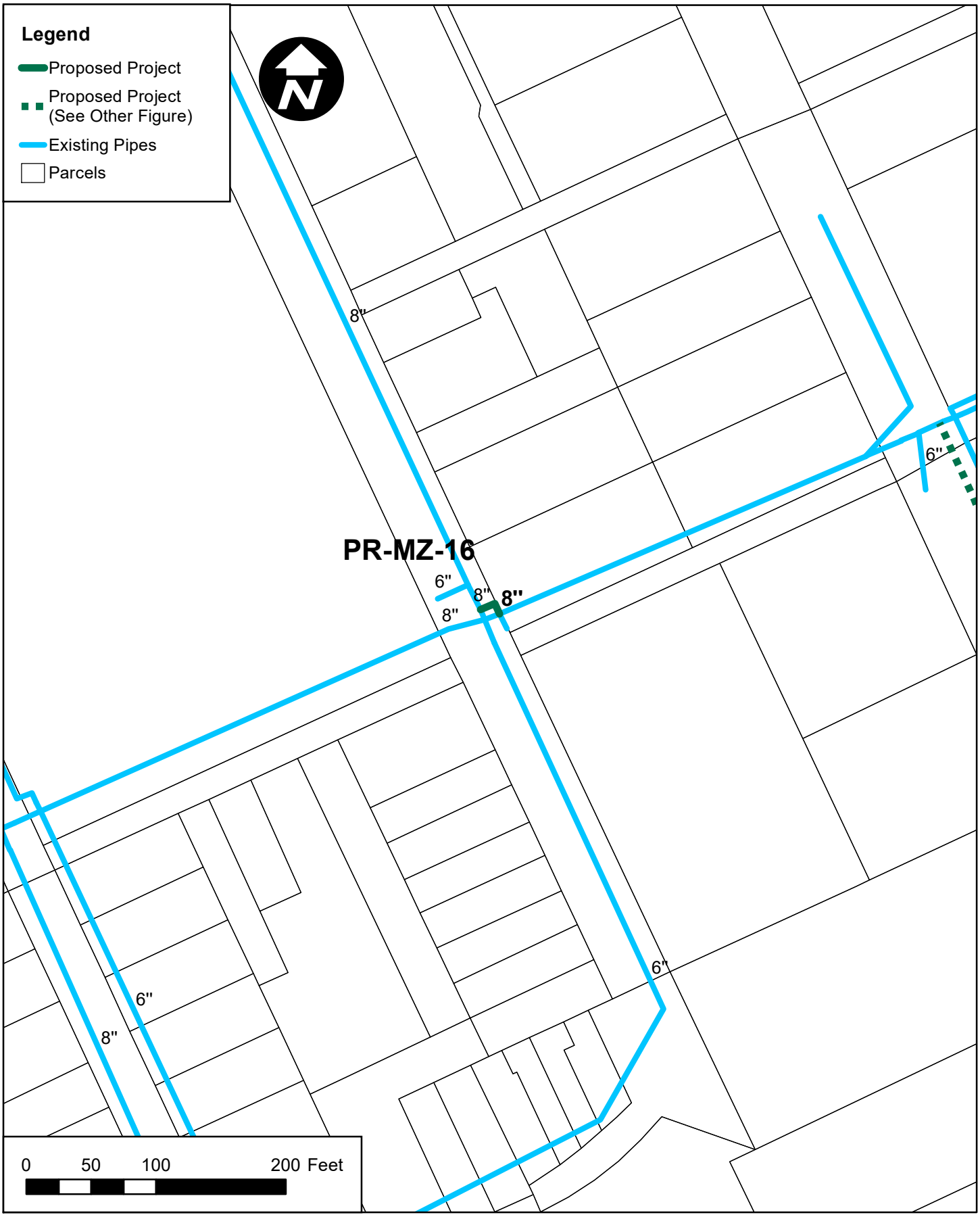


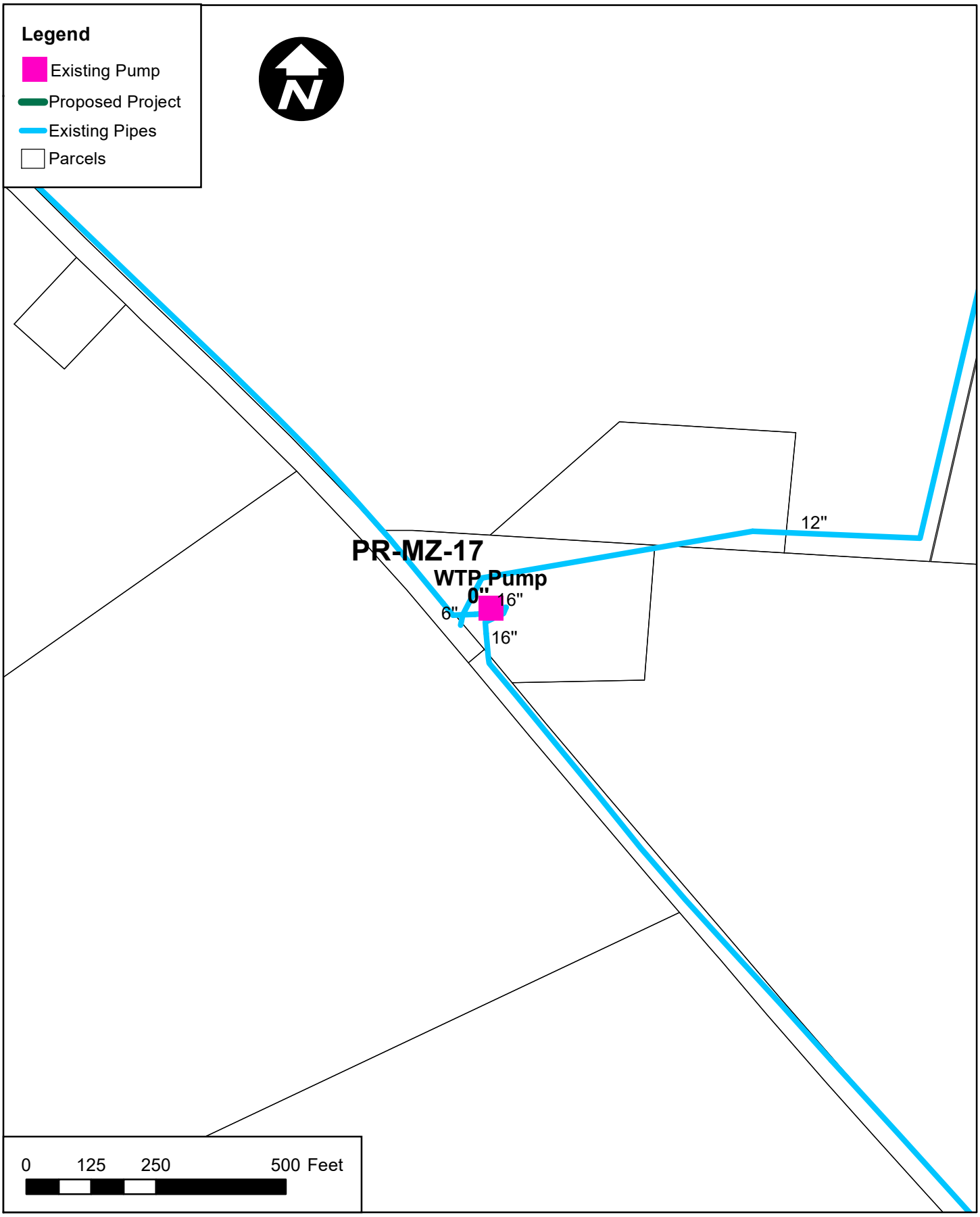
Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 100 feet	TITLE PR-MZ-14	FIGURE NO. 4-25
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 100 feet	TITLE PR-MZ-15	FIGURE NO. 4-26
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 100 feet	TITLE PR-MZ-16	FIGURE NO. 4-27
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		



Dewberry Dewberry Engineers Inc. 4805 LAKE BROOK DRIVE, SUITE 200 GLEN ALLEN, VIRGINIA 23060 PHONE: 804.290.7957 FAX: 804.290.7928	DATE NOVEMBER 2021	SCALE 1 inch = 250 feet	TITLE PR-MZ-17	FIGURE NO. 4-28
	PROJ. NO. 5107007	PROJECT WATER MASTER PLAN CHARLES TOWN UTILITY BOARD		

Dewberry

TECHNICAL MEMORANDUM
WATER CAPACITY IMPROVEMENT FEE (CIF) ANALYSIS AND BENCHMARKING STUDY

Date: June 15, 2022

To: Ms. Kristen M. Stolipher, Utility General Manager, Charles Town Utility Board (CTUB)

From: Martin A. Kazmierczak, PE, PMP, Principal Engineer, Senior Associate, Dewberry Engineers, Inc. (Dewberry)

Subject: Water CIF Validation and Benchmarking Study

Background

The Charles Town Utility Board (CTUB) authorized Dewberry Engineers, Inc. (Dewberry) to proceed with a Capacity Improvement Fee (CIF) analysis for the CTUB and a benchmarking study of other similar district's CIFs.

Disclaimer

In evaluating the CIF presented in this report, Dewberry has used "generally accepted" engineering and rate-making principles. This statement should not, however, be construed as a legal opinion with respect to West Virginia Law. Dewberry recommends that CTUB have appropriate legal counsel review the CIF set forth in this Technical Memorandum for compliance with West Virginia Law.

Overview of Capacity Improvement Fees

Capacity improvement fees are generally defined as follows:

"One time charges assessed against new wastewater (and/or water) customers or developers/builders to recover a proportional share of capital costs incurred to provide capacity for the new utility customers.[1]"

This service capacity may be already constructed, funded, and available in existing facilities, or the service capacity may be planned and included as future capital projects in a capital improvements plan (CIP). The application of such fees has generally occurred in areas that are experiencing relatively rapid growth and development. CIFs seek to recognize equity between historical and new customers where new capital required for expanding a water system to accommodate growth is often more costly per unit of capacity than the historical costs for the original infrastructure benefitting the existing customers. CIFs are generally adopted to add equity so that "growth pays for growth" and so that existing customers do not subsidize new growth through their user rates.[2]

Capacity Fee Evaluation

Dewberry reviewed data provided by, or developed in conjunction with, CTUB including the following:

- The timing of capital projects to be implemented over the next 10 years, including water main improvements, pump station improvements, storage tank improvements, and treatment plant improvements, and the costs associated with each.
- The anticipated useful life of historical and planned assets.
- The timing of existing and future projected bond issuances.
- The historical cost for water treatment projects constructed in 2016.
- Existing water treatment plant production data.

[1] *Water and Wastewater Financing and Pricing,* Chapter 5, George A. Raftelis, CPA, 2015, CRC Press.

[2] Ibid.

While some CIFs use upwards of 20-year planning horizons for future capital projects, CTUB elected to only include projects in a 10-year planning horizon.

Dewberry applied construction cost indices from *Engineering News Record (ENR)* to determine the current asset value for historical assets and to project costs for planned capital projects over the next 10 years. Based on the ENR Index over the last 5 years, a 4.08% annual inflation rate for future construction costs was applied in the CIF evaluation. For historical assets, the asset was also depreciated to account for a reduction in asset value over time. Historical projects that were not undertaken specifically to improve system-wide capacity were not included.

The growth-related percentage for each historical or planned CIP project was determined in consultation with CTUB based upon the project's intended purpose and use.

In aggregate, $14.10 million in non-growth related costs were identified and $53.33 million in growth-related costs as shown in Attachment A. The non-growth related costs are not applied in the CIF determination.

A debt principal credit calculation was performed on existing and future projected bond-financed projects included in the CIF so that new customers paying the CIF are not charged twice – once when the CIF is paid, and a second time when user rates are paid over time to help retire the debt.[3] The debt principal credit calculation is shown in Attachment B and totals $18.03 million at an anticipated weighted average bond interest rate of 3.98 percent. The resulting net growth-related costs (including the credit) are $35.30 million.

Upon implementing the capital improvements, the equivalent average day excess capacity available in the water treatment and distribution system will be 0.99 million gallons per day (MGD) based on the CTUB's water production records. In applying the current flow per EDU of 154 gpd, 6,439 new EDUs are accommodated with the excess capacity available through implementation of the historical and planned projects.

The resulting Capacity Improvement Fee can therefore be determined as follows:

Parameter	Value	Units
Expanded Plant Capacity (Max. Day)	3.80	MGD
Current Average Plant Demand	1.70	MGD
Current Ratio of Max. Day to Average Day	1.41	
Current Max. Day Demand	2.40	MGD
Max. Day Capacity Available	1.40	MGD
Equivalent Average Day Excess Capacity Available	0.99	MGD
Average Demand Per EDU	154	gpd per EDU
Number of EDUs Supported	6,439	EDUs
Growth Related Costs per Capital Improvement Plan	$53,329,807	Dollars
Debt Principal Credit	$(18,034,765)	Dollars
Net Growth Related Costs	$35,295,042	Dollars
Calculated CIF	5,481	Per EDU
Calculated CIF	35.59	Per gpd

[3] *Water and Wastewater Financing and Pricing,* Chapter 5, George A. Raftelis, CPA, 2015, CRC Press.

Under these assumptions, each new residential EDU would be assessed a fee of $5,481. Each commercial or industrial user would be assessed $35.59 per gpd of capacity.

Care should be exercised by CTUB in the exact wording of their CIF resolution to avoid misapplication or misuse.

Comparable Water Service Providers

Comparable Water Service Providers were reviewed by looking at various utilities within a 50-mile radius of Jefferson County that have implemented a CIF (or similar fee), and those that serve populations generally between 1,000 and 100,000 customers.

Summary of CIFs for Various Water Service Providers

Using available public records, Dewberry researched the CIFs in place for water service providers and the time periods they went into effect. A table summarizing this information with a list of the water service providers and their CIFs is shown in Attachment C.

During Dewberry's research, it was also found that water service providers used varying amounts of water flow for one equivalent dwelling unit (EDU) in the calculations of their CIF. These varying flows per EDU are provided in Attachment C. For ease of comparison, Dewberry calculated a normalized CIF price expressed in terms of cost per gallon per day ($ per gpd) of water (the CIF charge divided by the respective flow per EDU) to normalize the fees.

Results

Dewberry found that there are several water service providers within the state of West Virginia that currently impose a CIF, such as the City of Martinsburg and the Berkeley County Public Service Water District. Many other water service providers from the nearby geographic regions of Virginia and Maryland include, but are not limited to, the City of Frederick, City of Hagerstown, and the Town of Leesburg. The CIFs for these providers ranged from $1,301 to $14,115, with a mean of $5,714, including the proposed CIF for CTUB. Similarly, the normalized price per gpd, based on the service provider's CIF and respective flow per EDU, ranged from $4.44 to $56.46 per gpd, with a mean of $23.15 per gpd.

Dewberry confirmed the CTUB CIF methodology per AWWA Manual M1 standards and concluded that a CIF of $5,481 per EDU or $35.59 per gpd was appropriate for CTUB (based on 154 gallons as the utility's demand per EDU). Attachment D shows a table and graph of the published CIFs of water service providers, ordered least to greatest, in comparison to that of CTUB. Attachment E, similarly, shows a table and a graph of the normalized CIFs of these varying water service providers, ordered least to greatest, in comparison to that of CTUB.

In summary, compared to others in the region, the CTUB proposed CIF is slightly below the mean CIF value and above the mean normalized CIF value.

Dewberry

TECHNICAL MEMORANDUM
WATER CAPACITY IMPROVEMENT FEE (CIF) ANALYSIS AND BENCHMARKING STUDY

Attachments

1. **Attachment A – Capacity Improvement Fee Analysis**
2. **Attachment B – Debt Principal Credit Calculation**
3. **Attachment C – Various Water Service Providers in the Region and their CIFs**
4. **Attachment D – Various Water Service Providers' Published CIFs**
5. **Attachment E – Various Water Service Providers' Normalized CIFs**

Attachment A
Charles Town Utility Board
Water Capacity Improvement Fee Analysis

6/15/2022

Name of Improvement	Year Completed or Proposed	Useful Life Yrs	Total Cost of Project	Local Cost to CTUB	Notes	ENR Factor Relative to 2022	Local Replacement Value	Depreciation Percentage Relative to 2022	Replacement Cost New Less Depreciation	Percent System Improvement	Percent Non-Growth Related	Percent Growth Related	Notes	Value for Local Non-Growth System Improvement	Value for Local Growth Related Improvement
Prior Projects															
2016 Water Projects - WTP Improvements	2016	30	$ 7,695,000.00	$ 7,695,000		1.270	$ 9,772,650	20%	$ 7,818,120	100%	85.7%	14.3%	1	$ 6,701,246	$ 1,116,874
		Sub Total	$ 7,695,000	$ 7,695,000			$ 9,772,650		$ 7,818,120					$ 6,701,246	$ 1,116,874
Current & Future 10-Year CIP Projects (Opinions of Probable Cost)															
Charles Town Racetrack	2022	40	$ 88,000	$ 88,000		1.0000	$ 88,000	0%	$ 88,000	100%	50%	50%		$ 44,000	$ 44,000
5th Street Hydrant	2022	40	$ 7,000	$ 7,000		1.0000	$ 7,000	0%	$ 7,000	100%	70%	30%		$ 4,900	$ 2,100
6th Avenue Hydrant	2022	40	$ 7,000	$ 7,000		1.0000	$ 7,000	0%	$ 7,000	100%	70%	30%		$ 4,900	$ 2,100
S. Mildred Hydrants	2022	40	$ 9,000	$ 9,000		1.0000	$ 9,000	0%	$ 9,000	100%	70%	30%		$ 6,300	$ 2,700
7th Avenue	2023	40	$ 35,000	$ 35,000		1.0408	$ 36,428	0%	$ 36,428	100%	70%	30%		$ 25,500	$ 10,928
W. Avis Hydrant	2023	40	$ 9,000	$ 9,000		1.0408	$ 9,367	0%	$ 9,367	100%	70%	30%		$ 6,557	$ 2,810
W. Academy Tie	2023	40	$ 88,000	$ 88,000		1.0408	$ 91,590	0%	$ 91,590	100%	70%	30%		$ 64,113	$ 27,477
Main Zone Maintenance	2023	40	$ 28,000	$ 28,000		1.0408	$ 29,142	0%	$ 29,142	100%	100%	0%		$ 29,142	$ -
Northern High Zone Maintenance	2023	40	$ 2,000	$ 2,000		1.0408	$ 2,082	0%	$ 2,082	100%	100%	0%		$ 2,082	$ -
Huntfield Zone Maintenance	2023	40	$ 10,000	$ 10,000		1.0408	$ 10,408	0%	$ 10,408	100%	100%	0%		$ 10,408	$ -
Ameritech Street	2023	40	$ 333,000	$ 333,000		1.0408	$ 346,586	0%	$ 346,586	100%	70%	30%		$ 242,610	$ 103,976
New Well / Spring Sources	2023	30	$ 2,125,000	$ 2,125,000		1.0408	$ 2,211,700	0%	$ 2,211,700	100%	10%	90%		$ 221,170	$ 1,990,530
N. Mildred Street B	2024	40	$ 200,000	$ 200,000		1.0833	$ 216,653	0%	$ 216,653	100%	10%	90%		$ 21,665	$ 194,988
Burns St. PS Upgrade	2024	30	$ 3,526,000	$ 3,526,000		1.0833	$ 3,819,591	0%	$ 3,819,591	100%	10%	90%		$ 381,959	$ 3,437,632
Well Development/Spring Source Construction	2024	40	$ 1,480,000	$ 1,480,000		1.0833	$ 1,603,232	0%	$ 1,603,232	100%	25%	75%		$ 400,808	$ 1,202,424
Church Street	2025	40	$ 595,000	$ 595,000		1.1275	$ 670,840	0%	$ 670,840	100%	25%	75%		$ 167,710	$ 503,130
South George Street	2025	40	$ 279,000	$ 279,000		1.1275	$ 314,562	0%	$ 314,562	100%	80%	20%		$ 251,649	$ 62,912
Water Street	2025	40	$ 2,400,000	$ 2,400,000		1.1275	$ 2,705,908	0%	$ 2,705,908	100%	70%	30%		$ 1,894,136	$ 811,773
Route 340	2025	40	$ 1,173,000	$ 1,173,000		1.1275	$ 1,322,513	0%	$ 1,322,513	100%	0%	100%		$ -	$ 1,322,513
Raw Water Intake	2025	30	$ 1,581,000	$ 1,581,000		1.1275	$ 1,782,517	0%	$ 1,782,517	100%	10%	90%		$ 178,252	$ 1,604,265
Huntwell West (Formerly American Heritage)	2026	40	$ 2,695,000	$ 2,695,000		1.1735	$ 3,162,481	0%	$ 3,162,481	100%	0%	100%		$ -	$ 3,162,481
N. Mildred Street A	2026	40	$ 648,000	$ 648,000		1.1735	$ 760,404	0%	$ 760,404	100%	20%	80%		$ 152,081	$ 608,323
E. 10th St.	2026	40	$ 298,000	$ 298,000		1.1735	$ 349,692	0%	$ 349,692	100%	70%	30%		$ 244,784	$ 104,908
Membrane / GAC Pilot	2026	30	$ 80,000	$ 80,000		1.1735	$ 93,877	0%	$ 93,877	100%	10%	90%		$ 9,388	$ 84,489
Huntfield	2027	40	$ 210,000	$ 210,000		1.2213	$ 256,481	0%	$ 256,481	100%	0%	100%		$ -	$ 256,481
Fritts & Old Town Ranson	2028	40	$ 1,295,000	$ 1,295,000		1.2712	$ 1,646,165	0%	$ 1,646,165	100%	0%	100%		$ -	$ 1,646,165
Magnolia Springs	2028	40	$ 1,085,000	$ 1,085,000		1.2712	$ 1,379,220	0%	$ 1,379,220	100%	0%	100%		$ -	$ 1,379,220
Norborne Greene	2028	40	$ 7,000	$ 7,000		1.2712	$ 8,898	0%	$ 8,898	100%	0%	100%		$ -	$ 8,898
Charles Town Infill	2028	40	$ 35,000	$ 35,000		1.2712	$ 44,491	0%	$ 44,491	100%	0%	100%		$ -	$ 44,491
Windmill Crossing	2028	40	$ 7,000	$ 7,000		1.2712	$ 8,898	0%	$ 8,898	100%	0%	100%		$ -	$ 8,898
WTP Design	2028	30	$ 1,345,000	$ 1,345,000		1.2712	$ 1,709,724	0%	$ 1,709,724	100%	10%	90%		$ 170,972	$ 1,538,752
Augustine Ave. PS Discharge	2029	40	$ 298,000	$ 298,000		1.3230	$ 394,264	0%	$ 394,264	100%	0%	100%		$ -	$ 394,264
Locust Hill	2029	40	$ 2,400,000	$ 2,400,000		1.3230	$ 3,175,281	0%	$ 3,175,281	100%	0%	100%		$ -	$ 3,175,281
Roper/Stolipher	2029	40	$ 1,243,000	$ 1,243,000		1.3230	$ 1,644,531	0%	$ 1,644,531	100%	0%	100%		$ -	$ 1,644,531
Augustine Ave. PS Upgrade	2029	30	$ 780,000	$ 780,000		1.3230	$ 1,031,966	0%	$ 1,031,966	100%	0%	100%		$ -	$ 1,031,966
WTP Upgrade	2031	30	$ 20,000,000	$ 20,000,000		1.4332	$ 28,663,918	0%	$ 28,663,918	100%	10%	90%		$ 2,866,392	$ 25,797,526
		Sub Total	$ 46,401,000	$ 46,401,000			$ 59,614,411		$ 59,614,411					$ 7,401,479	$ 52,212,933
		Totals	$ 54,096,000	$ 54,096,000			$ 69,387,061		$67,432,531					$ 14,102,724	**$ 53,329,807**

Capacity Improvement Fee Determination			
Expanded Plant Capacity (Max. Day):	3.80	MGD	
Current Average Plant Demand:	1.70	MGD	
Current Ratio of Max. Day to Average Day:	1.41		
Current Max. Day Demand:	2.40	MGD	
Max. Day Capacity Available:	1.40	MGD	
Equivalent Average Day Excess Capacity Available:	0.99	MGD	
Average Demand Per EDU:	154	gpd/EDU	
Number of EDUs Supported:	6,439	EDUs	
Growth Related Costs per Capital Improv. Plan	$ 53,329,807		
Debt Principal Credit	$ (18,034,765)	(See Attachment B)	
Net Growth Related Costs	$ 35,295,042		
Calculated Capacity Improvement Fee	**$ 5,481**	per EDU	
Calculated Capacity Improvement Fee	$ 35.59	per gpd	

	Year	Capital Costs by Year	Growth Costs by Year
	2022	$ 111,000	$ 50,900
	2023	$ 2,737,304	$ 2,135,722
	2024	$ 5,639,476	$ 4,835,043
	2025	$ 6,796,340	$ 4,304,593
	2026	$ 4,366,453	$ 3,960,201
	2027	$ 256,481	$ 256,481
	2028	$ 4,797,396	$ 4,626,424
	2029	$ 6,246,043	$ 6,246,043
	2030	$ -	$ -
	2031	$ 28,663,918	$ 25,797,526
Not Included	2032	$ -	$ -
Not Included	2033	$ -	$ -
Not Included	2034	$ -	$ -
Not Included	2035	$ -	$ -
Not Included	2036	$ -	$ -
	TOTAL	$ 59,614,411	$ 52,212,933

Notes:
1. Based on current plant max. demand of 2.4 MGD versus current plant capacity of 2.8 MGD.

Attachment B
Debt Principal Credit Calculation

Year	Total Existing Debt Principal (Growth-Related Portion)	Projected New Debt Principal (Growth-Related Portion)	Total Debt Service Principal (Growth-Related Portion)	Present Value of Debt Service Principal (Growth-Related Portion)
2022	$ (27,447)	$ -	$ (27,447)	$ (27,447)
2023	$ (28,284)	$ 0	$ (28,284)	$ (27,202)
2024	$ (29,147)	$ (44,244)	$ (73,391)	$ (67,880)
2025	$ (30,036)	$ (110,541)	$ (140,576)	$ (125,044)
2026	$ (30,952)	$ (173,348)	$ (204,300)	$ (174,771)
2027	$ (31,896)	$ (180,282)	$ (212,178)	$ (174,563)
2028	$ (32,869)	$ (250,068)	$ (282,937)	$ (223,867)
2029	$ (33,871)	$ (359,214)	$ (393,085)	$ (299,115)
2030	$ (34,904)	$ (373,582)	$ (408,487)	$ (298,937)
2031	$ (35,969)	$ (823,988)	$ (859,956)	$ (605,241)
2032	$ (37,066)	$ (856,947)	$ (894,013)	$ (605,126)
2033	$ (38,196)	$ (891,225)	$ (929,421)	$ (605,013)
2034	$ (39,361)	$ (926,874)	$ (966,235)	$ (604,902)
2035	$ (40,562)	$ (963,949)	$ (1,004,511)	$ (604,793)
2036	$ (41,799)	$ (1,002,507)	$ (1,044,306)	$ (604,687)
2037	$ (43,074)	$ (1,042,607)	$ (1,085,681)	$ (604,582)
2038	$ (44,388)	$ (1,084,311)	$ (1,128,699)	$ (604,479)
2039	$ (45,742)	$ (1,127,684)	$ (1,173,425)	$ (604,378)
2040	$ (47,137)	$ (1,172,791)	$ (1,219,928)	$ (604,279)
2041	$ (48,574)	$ (1,219,703)	$ (1,268,277)	$ (604,182)
2042	$ (50,056)	$ (1,268,491)	$ (1,318,547)	$ (604,087)
2043	$ (51,583)	$ (1,319,231)	$ (1,370,813)	$ (603,993)
2044	$ (53,156)	$ (1,372,000)	$ (1,425,156)	$ (603,902)
2045	$ (54,777)	$ (1,426,880)	$ (1,481,657)	$ (603,812)
2046	$ -	$ (1,483,955)	$ (1,483,955)	$ (581,601)
2047	$ -	$ (1,543,313)	$ (1,543,313)	$ (581,713)
2048	$ -	$ (1,605,046)	$ (1,605,046)	$ (581,825)
2049	$ -	$ (1,669,248)	$ (1,669,248)	$ (581,937)
2050	$ -	$ (1,736,017)	$ (1,736,017)	$ (582,049)
2051	$ -	$ (1,805,458)	$ (1,805,458)	$ (582,161)
2052	$ -	$ (1,877,676)	$ (1,877,676)	$ (582,273)
2053	$ -	$ (1,952,784)	$ (1,952,784)	$ (582,385)
2054	$ -	$ (1,887,393)	$ (1,887,393)	$ (541,338)
2055	$ -	$ (1,753,604)	$ (1,753,604)	$ (483,713)
2056	$ -	$ (1,634,379)	$ (1,634,379)	$ (433,570)
2057	$ -	$ (1,699,754)	$ (1,699,754)	$ (433,653)
2058	$ -	$ (1,564,789)	$ (1,564,789)	$ (383,939)
2059	$ -	$ (1,305,821)	$ (1,305,821)	$ (308,135)
2060	$ -	$ (1,358,054)	$ (1,358,054)	$ (308,194)
Total Debt Principal Credit (Growth Related Portion)			**$**	**(18,034,765)**

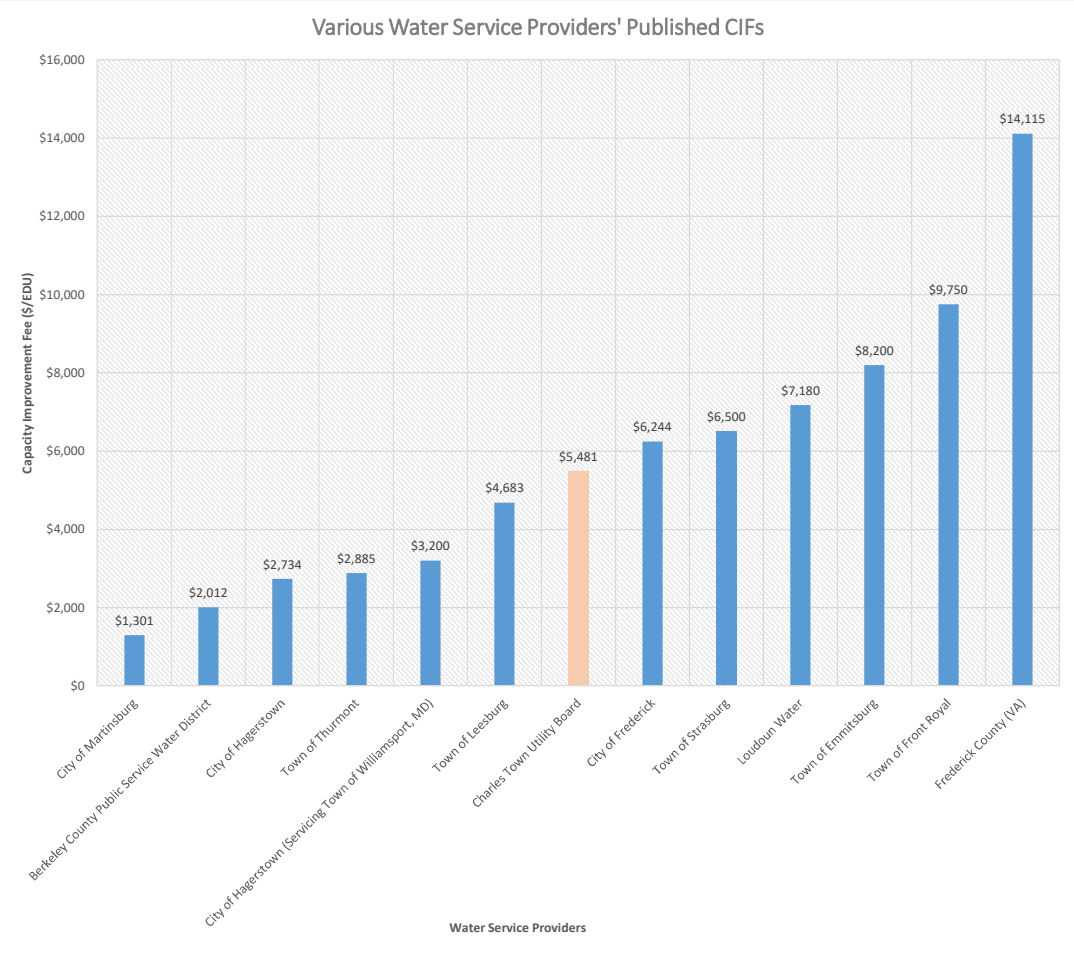
ATTACHMENT C - VARIOUS WATER SERVICE PROVIDERS IN THE REGION AND THEIR CIFS

Service Provider	Geographic Region	Number of Customers	Primary Water Source (Ground/Surface)	Effective Date of CIF	Published CIF ($/EDU)	Flow per EDU (gpd)	Normalized CIF ($/gpd)
West Virginia							
Charles Town Utility Board	Jefferson County, WV	5,890	Surface	2022	$5,481	154	$35.59
Berkeley County Public Service Water District	Berkeley County, WV	27,000	Surface	2019 - Present	$2,012	152	$13.24
City of Martinsburg	Berkeley County, WV	6,500	Ground	2020 - Present	$1,301	293	$4.44
Maryland							
City of Frederick	Frederick County, MD	48,000	Surface	2011 - Present	$6,244	250	$24.98
City of Hagerstown	Washington County, MD	89,000	Surface	July 1, 2020 - Present	$2,734	200	$13.67
City of Hagerstown (Servicing Town of Williamsport, MD)	Washington County, MD	2,139	Ground	2017 - Present	$3,200	200	$16.00
Town of Thurmont	Frederick County, MD	6,200	Ground	2013 - Present	$2,885	250	$11.54
Town of Emmitsburg	Frederick County, MD	2,821	Surface	2014 - Present	$8,200	200	$41.00
Virginia							
Frederick County (VA)	Frederick County, VA	15,911	Surface	2019 - Present	$14,115	250	$56.46
Town of Strasburg	Shenandoah County, VA	2,684	Surface	2019 - Present	$6,500	350	$18.57
Town of Leesburg	Loudoun County, VA	18,174	Surface Ground	2016 - Present	$4,683	350	$13.38
Loudoun Water	Loudoun County, VA	82,387	Surface	2020 - Present	$7,180	550	$13.05
Town of Front Royal	Warren County, VA	6,000	Surface	2013 - Present	$9,750	250	$39.00

ATTACHMENT D - VARIOUS WATER SERVICE PROVIDERS' PUBLISHED CIFS

Service Provider	Published CIF ($/EDU)
City of Martinsburg	$1,301
Berkeley County Public Service Water District	$2,012
City of Hagerstown	$2,734
Town of Thurmont	$2,885
City of Hagerstown (Servicing Town of Williamsport, MD)	$3,200
Town of Leesburg	$4,683
Charles Town Utility Board	$5,481
City of Frederick	$6,244
Town of Strasburg	$6,500
Loudoun Water	$7,180
Town of Emmitsburg	$8,200
Town of Front Royal	$9,750
Frederick County (VA)	$14,115

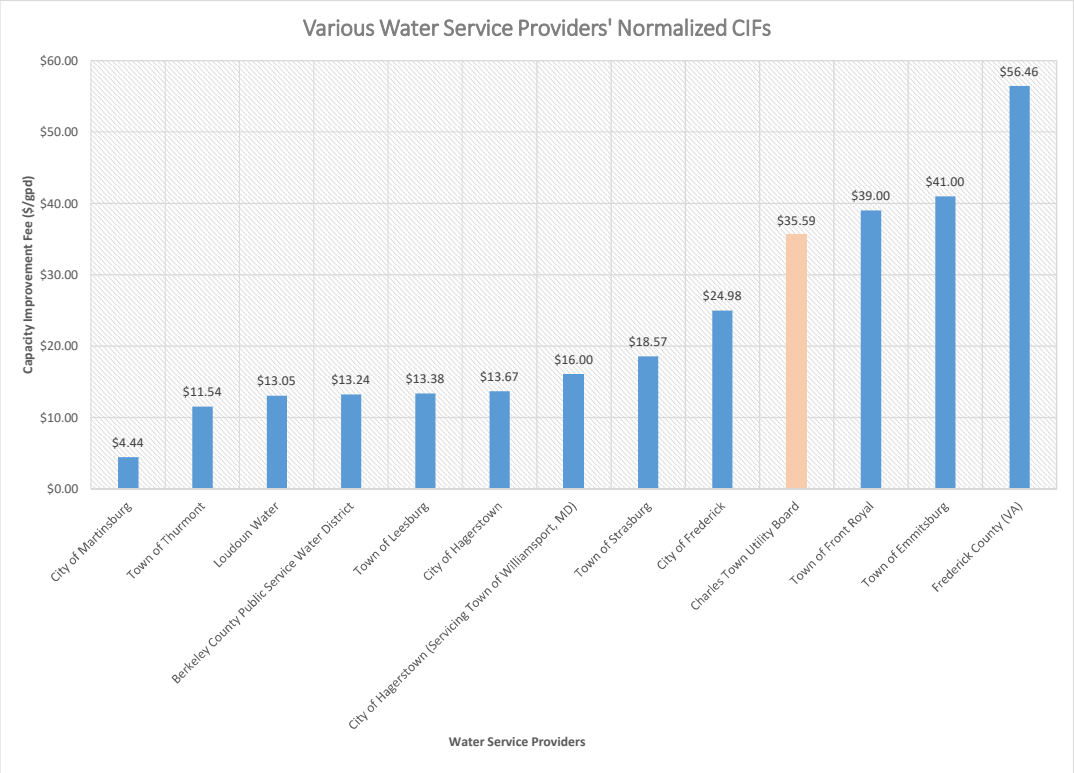
Mean Fee: $5,714



ATTACHMENT E - VARIOUS WATER SERVICE PROVIDERS' NORMALIZED CIFS

Service Provider	$/GPD
City of Martinsburg	$4.44
Town of Thurmont	$11.54
Loudoun Water	$13.05
Berkeley County Public Service Water District	$13.24
Town of Leesburg	$13.38
City of Hagerstown	$13.67
City of Hagerstown (Servicing Town of Williamsport, MD)	$16.00
Town of Strasburg	$18.57
City of Frederick	$24.98
Charles Town Utility Board	$35.59
Town of Front Royal	$39.00
Town of Emmitsburg	$41.00
Frederick County (VA)	$56.46

Mean Dollars per GPD: $23.15



Charles Town
Utility Board

661 S. George Street, Suite 101 Charles Town, WV 25414
Phone: (304) 725-2316 ♦ Fax: (304) 725-7150 ♦ Web: www.ctubwv.com

UTILITY BOARD

INTERIM CHAIRMAN
City of Charles Town
Mayor Bob Trainor

VICE CHAIRMAN
City of Ranson
Mayor
Duke
Pierson

TREASURER
Thomas
Stocks

INTERIM SECRETARY
Ashley
Stottlemyer

County Commission Representative
Jacquelyn
Milliron

Board Member
Jefferson
Whitten

UTILITY MANAGER
Kristen
Stolipher

Date

Re: Charles Town Utility Board
Water/Sewer Availability

Dear _____:

The Charles Town Utility Board (CTUB) has received your request for water and/or sewer availability for the subject property located at _____ and offer the following:

Water Service:

(CTUB) has available water service capacity to serve your project at this time. Please note that CTUB's Water Tariff does not allow for reservation of capacity. Therefore, water system capacity is provided on a first come, first serve basis. A Water Capacity Improvement Fee (CIF) at the time of building permit will apply. The current water CIF is $2,576.00 per equivalent dwelling unit (EDU). Additionally, a tap fee will be required per tap should CTUB perform this service. The current water tap fee is $500.00. Please provide our office with separate checks for the CIF fees and tap fees. A copy of the CTUB Rates, Rules and Regulations as well as the Public Service Commission of West Virginia Water Rules and Regulations can be found at: www.ctubwv.com.

Sewer Service:

(CTUB) has available sewer service capacity to serve your project at this time. Please note that CTUB's Sewer Tariff does not allow for reservation of capacity. Therefore, sewer system capacity is provided on a first come, first serve basis. A Sewer Capacity Improvement Fee (CIF) at the time of building permit will apply. The current sewer CIF is $2,930.00 per equivalent dwelling unit (EDU). Additionally, a tap fee will be required per tap should CTUB perform this service. The current sewer tap fee is $400.00. Please provide our office with separate checks for the CIF fees and tap fees. A copy of the CTUB Rates, Rules and Regulations as well as the Public Service Commission of West Virginia Water Rules and Regulations can be found at: www.ctubwv.com.

If you have any questions, please contact me at (304) 725-2316.

Sincerely,

Travis Markley
Engineering Technician

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ALTERNATE MAINLINE SEWAGE COLLECTION SYSTEM AGREEMENT

THIS AGREEMENT (the "Agreement") is made and effective this ___ day of _____, 2020, by and between the **CITY OF CHARLES TOWN, by and through the CHARLES TOWN UTILITY BOARD, and its Agents,** (hereinafter, the "CTUB" and "Agents") **and Fairfax Crossing Real Estate, LLC** (hereinafter "Developer") and its assigns. CTUB and its Agents, the Developer, and its assigns are sometimes herein collectively referred to as Parties (the "Parties") or parties (the "parties").

WHEREAS, CTUB has been authorized by City Ordinance Chapter 13, Article II to develop sewage collection and treatment facilities throughout its service area, so as to provide the greatest number of persons residing in the service area, together with vicinity residents and businesses, with public sewer service; and

WHEREAS, CTUB wishes to make public sewage collection and treatment facilities available to the greatest number of residential, commercial and industrial customers located within the service area as expeditiously as possible; and

WHEREAS, Developer is planning to develop certain lands known as Lakeland Place at Fairfax Crossing Phase IIIA Subdivision (the "Development") located within CTUB's service territory within Jefferson County for residential property on a phased basis; and

WHEREAS, the Development will be located to the west of Route 9 along Fairfax Boulevard in the City of Ranson in the Fairfax Crossing Subdivision.

WHEREAS, Developer intends to construct approximately 460 residential units as depicted on EXHIBIT 'A', for a total anticipated usage of 82,800 gallons per day, in approximately ten (10) or fewer phases as currently planned, dependent on market conditions. It is understood by both parties to this Agreement that any substantial increase in the number of EDUs will require

the submission of an amended mainline sewage collection system agreement to the PSC for its consent and approval; and

WHEREAS, Developer intends to construct an on-site Gravity Sewage Collection Systems on the Development (the "Sewage Collection Systems") to service the Development, which will connect to the sewage collection and the New Lakeland Place Sewage Pump Station of CTUB; and

WHEREAS, a portion of the development cannot gravity sewer to the existing system therefore 96 townhomes in Phase IIIB will need a pump station to connect to the existing system the New Lakeland Place Sewage Pump Station to be constructed by CTUB; and

WHEREAS, CTUB has coordinated with the Developer to design a sewage pumping station and forcemain (the "Pump Station System") that can accommodate the development along with existing CTUB customers and other future CTUB customers. Pursuant to the report and top-level budget prepared by RK&K as EXHIBIT 'C' herein the Developer's contribution for 96 townhomes is calculated as being 44% of the installation of the Pump Station System, and the estimated cost of that contribution is $211,200.00 (hereinafter referred to as the "Developer Cost of Pump Station and associated improvements"). The amount to be paid by the Developer to CTUB will be 44% of the actual cost of the design and installation of the Pump Station System shall not to exceed $300,000; and

WHEREAS, the CTUB is responsible for the construction of the Pump Station System and associated improvements and will reimbursed from the developer, subject to the provisions in Article IV, Section 4.01,and future builders (through separate agreement) connecting to the system; and

WHEREAS, the construction of the Development is contingent upon Developer designing and installing Sewage Collection Systems; and

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WHEREAS, it is in the best interests of the existing and future users of the Development to have public sewage collection facilities available; and

WHEREAS, Developer and the CTUB have agreed that CTUB will receive reimbursement by CTUB of the Developer's pro-rata cost of the Pump Station System in accordance with the provisions of this Agreement.

ARTICLE I
DESIGN AND REGULATORY APPROVAL

Section 1.01. The Developer hereby agrees to employ qualified engineers to design the Sewage Collection System for the Developer's project, as described in general herein. All designs will be prepared at the Developer's expense. All designs shall be reviewed and approved by CTUB's engineer prior to submission to the West Virginia Bureau for Public Health and the West Virginia Division of Environmental Protection for permits to construct and prior to the commencement of construction. Neither CTUB or its engineers or agents shall bear any financial or any other responsibility for the design and construction of the Sewage Collection Systems.

Section 1.02. The Developer shall, at its expense, submit all plans and specifications for the project to the appropriate State, Federal and local governmental agencies for the Sewage Collection Systems only. Any changes in the plans and specifications required by the governmental agencies shall be subject to the approval of CTUB.

Section 1.03. CTUB hereby agrees to employ qualified engineers to design the Pumping Station System to serve the developer as well as existing and future CTUB customers pursuant to the terms of reimbursement defined herein. The Developer will be responsible for the pro-rata share of the design costs estimated to be $39,600.00. Final design costs will be provided to the Developer at time of final bidding. All designs shall be reviewed and approved by CTUB prior to submission to the West Virginia Bureau for Public Health and the West Virginia Division of Environmental Protection for permits to construct and prior to the commencement of construction.

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Section 1.02. CTUB shall, at its expense, submit all plans and specifications for the Pump Station System to the appropriate State, Federal and local governmental agencies. Any changes in the plans and specifications required by the governmental agencies shall be subject to the approval of CTUB.

ARTICLE II
CONSTRUCTION AND INSPECTION

Section 2.01. Developer will construct in phases the Sewage Collection Systems under this Agreement, including, but not limited to, all main lines, trunk lines, laterals, or other necessary appurtenances, to serve the Development. All construction shall be done in accordance with the approved plans and specifications for the Development and CTUB's current specifications. Developer shall obtain, at Developer's own expense, with the cooperation and support of CTUB, all necessary permits, authorizations and approvals of State and Federal agencies and other City departments during the construction phase and shall make such changes as are required by said agencies and departments during this phase and such changes shall not be subject to further approval by CTUB.

Section 2.02. Developer shall, with the cooperation and support of CTUB, grant all necessary on-site rights-of-way, real property for the pump station, and easements within the Developer's property only to complete the on-site Pump Station System and, excepting the Pump Station System, the Sewage Collection Systems at Developer's own expense. CTUB, in support of the Pump Station System only, shall if required, take such actions as are permitted by law to aid in obtaining the necessary off-site rights of way, real property or easements on land not owned by Developer, including, but not limited to, legal actions. The cost of said actions pursued by CTUB, including amounts paid to property owners for the required off-site real estate and easements as well as all litigation costs undertaken by CTUB shall be borne by CTUB.

In recognition of the real and tangible value of the lost development opportunity costs due to the Pump Station System needs, CTUB and Developer agree that CTUB shall acquire the land

for the Pump Station System from the Developer for a total purchase price of $_____ (___ dollars and ____ cents).

Said acquisition cost shall not be an offset nor credit to the Developers Contribution outlined in ARTICLE IV Section 4.01 of this Agreement.

Section 2.03. Prior to the substantial completion of the construction of the Sewage Collection Systems or phase thereof, CTUB shall have the right to inspect and approve the system or phase thereof to ensure that: (1) sewage will be satisfactorily transported from the Development in accordance with the terms of this Agreement and all applicable statutes, rules and regulations legally applicable to CTUB; (2) infiltration will be minimized; (3) illegal and improper sources of inflow are eliminated; and (4) the system was constructed using sound engineering and construction standards, and using materials in compliance with CTUB's standards and specifications.

Section 2.04. CTUB shall have the right to inspect all work of the Developer, and its contractors, during all phases of construction to insure adequate installation of the Sewage Collection Systems. The Developer shall pay CTUB for its construction inspection services. All fees shall be paid by the Developer to CTUB within fifteen (15) days of the date of the preconstruction meeting. Inspection services shall be no more than $4,000.00 per week for inspection service for sewer installation. In no event shall the Developer be obligated pursuant to this paragraph to pay for inspection services in excess of a total amount of $48,000.

Section 2.05. At the conclusion of construction, the Developer shall provide to CTUB a complete set of reproducible copies as well as electronic AUTO-CAD files of the record drawings of the completed construction for the Sewage Collection Systems, signed and sealed by the engineer who prepared the plans. Also, the Developer shall provide CTUB with executed easements for all sewer mains. SEWER SERVICE FROM THE SEWAGE COLLECTION SYSTEMS COVERED BY THIS AGREEMENT WILL NOT BE GRANTED UNTIL THE "RECORD DRAWINGS" AND THE EXECUTED EASEMENTS ARE RECEIVED BY CTUB**. Similarly, it shall be the sole obligation of CTUB to prepare and process all AUTO-CAD** files

of the record drawings of the completed construction for the Pump Station System, signed and sealed by the engineer who prepared the plans.

Section 2.06. At all times during the construction of said Sewage Collection Systems the Developer shall maintain sole ownership of the system.

Section 2.07. The Developer shall strive to complete the Sewage Collection Systems covered by this Agreement within five (5) years from the date of this Agreement. Failure to do so may make this Agreement null and void as to any uncompleted portions of the Sewage Collection Systems. CTUB reserves the right to require the Developer to enter into a new agreement, have a design review and secure new permitting for the completion of the Project if sufficient proof can be demonstrated by CTUB, and that the Developer agrees thereto, that rules, regulations or surrounding conditions have materially changed during the five (5) year timeframe.

ARTICLE III
TRANSFER OF OWNERSHIP

Section 3.01. Upon completion of the construction of the Sewage Collection Systems, or phase thereof, or parts of phases thereof at the discretion of CTUB, Developer shall, with the cooperation and support of CTUB, obtain such State, Federal, and local certifications, authorizations and/or approvals as are required, at Developer's expense. After said certifications, authorizations and/or approvals are obtained, and the Sewage Collection Systems or phases thereof are completed in all respects, Developer shall provide CTUB with written notice of said completion. As used in this and subsequent Sections, "completed in all respects" includes, but is not limited to: (i) the system or phase thereof being physically complete; (ii) all testing performed by the certifying engineer; (iii) all electrical and mechanical systems inspected and certified by approved factory authorized representatives of the manufacturers; (iv) all systems or phase thereof having passed component validation, start-up and demonstration periods and training performed; (v) all engineers, material men, contractors and subcontractors of Developer being paid for their work on said system or phase thereof; (vi) all rights of way, real property and easements required for the operation of the Sewage Collection Systems or phase thereof are acquired; (vii) all legal

disputes regarding the Sewage Collection Systems or phase thereof being materially resolved; and (viii) no outstanding liens on the Sewage Collection Systems or phase thereof existing.

Section 3.02. Upon receipt of the written notice described in Section 3.01, CTUB shall have thirty (30) days to inspect said Sewage Collection Systems or phases thereof and run such tests, at CTUB's sole expense, as CTUB feels are appropriate and necessary to determine that the Sewage Collection Systems or phases thereof has been properly designed and constructed using sound engineering and construction standards. Within the thirty (30) day period, CTUB shall provide to Developer, in writing, a list of repairs which CTUB reasonably believes are required to cause the Sewage Collection Systems or phase thereof to comply with the plans and specifications previously approved by CTUB, as may have been modified by the changes required by any applicable State or Federal agency or other City department, and a list of other actions, which Developer must take so that the system or phase thereof is completed in all respects in accordance with the approved plans. Developer, at Developer's own expense, shall make said reasonable repairs and once said repairs have been made, Developer will provide CTUB with an additional written notice as set forth in Section 3.01. and CTUB shall have the same rights as it had upon receipt of the initial notice. Developer shall not connect any businesses or structures to the sewer system or phase thereof until it has been fully tested by the engineer and CTUB and all repairs required by CTUB have been made. Notwithstanding the foregoing, if CTUB does not inspect the Sewage Collection Systems or phase thereof within thirty (30) days after receipt of the written notice described in Section 3.01., CTUB's right to such inspection shall terminate.

Section 3.03. If after receipt of the notice set forth in Section 3.01., CTUB determines that the Sewage Collection Systems or phase thereof is completed in all respects, Developer shall deliver, and CTUB shall accept, ownership of the Sewage Collection Systems or phases thereof, including rights-of-way, and all real property and easements necessary for the ownership, operation and maintenance of the Sewage Collection Systems or phases thereof. The transfer of ownership shall occur no later than fifteen (15) days after the expiration of CTUB's right of inspection and testing, set forth in Section 3.02. At the time of the transfer of ownership of the Sewage Collection Systems or phases thereof to CTUB, to the extent that any of Developer's funds are bonded or subject to a letter of credit tied to the Sewage Collection Systems or phases thereof,

Developer shall retain ownership in such funds and such funds shall be automatically returned to Developer upon the termination of any such bond or letter of credit.

Section 3.04. Ownership of the Sewage Collection Systems or phase thereof shall be transferred by Developer to CTUB prior to connection to the Sewage Collection Systems built by the Developer as part of the Development.

Section 3.05. When the Developer or its assigns applies for a building permit to construct a residential, commercial or industrial building in the Development, subject to the existence of an existing sewer lateral constructed with the Sewage Collection Systems, Developer or its assigns shall apply for individual service as a "New Customer" and shall pay to CTUB (i) a non-refundable tap and inspection fee pursuant to approved CTUB tariff and (ii) a non-refundable capacity improvement fee pursuant to the approved CTUB tariff. Payments shall be made on the same date Developer or its assigns applies for a building permit to construct the residential, commercial or industrial building in the Development, which will result in said New Customer. Notwithstanding the foregoing, CTUB shall only be entitled to obtain a Developer or assigns tap or connection fee if CTUB, using its own resources, actually installs or inspects the tap and/or connection line and physically connects or inspects the connection to the New Customer's service. Once CTUB collects a tap or connection fee in accordance with the terms of this Agreement, CTUB shall not be permitted to collect from the Developer, its assigns, nor the New Customer any additional tap or service connection fee. CTUB shall only be permitted to collect one tap or connection fee per New Customer service connection in accordance with its Tariff on file with the PSC. CTUB's right to either retain Developer's or its assigns tap or connection fee deposit or to assess a tap or connection fee from a New Customer is contingent upon CTUB installing the tap and/or connection line, which physically connects a New Customer's service to Developer's collection system.

ARTICLE IV

DEVELOPER REIMBURSEMENT

Section 4.01. Developer will reimburse CTUB for its pro rata share of the Pump Station System, including design costs. The construction and design cost is estimated at the time of execution of this Agreement to be a total of $250,800. However, the actual contribution by the

Developer shall be 44% of the actual cost of design and construction of the Pump Station System in an amount not to exceed $300,000.

CTUB shall provide to Developer copies of all invoices itemizing the cost of construction of the Pump Station System within thirty (30) days of its completion. Thereafter, Developer and/or assigns shall reimburse CTUB on a per-unit basis at time of building permit applications for each and every residential unit within the Development. For purposes of illustration, the Development currently anticipates 460 residential units; therefore, the per-unit fee to be reimbursed to CTUB at time of building permit application shall be $545.22. CTUB shall bear no financial or other responsibility for the construction of the Developer's on-site Sewage Collection System. Developer expressly waives any right to any reimbursement, other than as detailed in this Agreement above, under the PSC Rules and Regulations for the Government of Sewer Utilities, 150 CSR 5, Rule 5.5 (see EXHIBIT 'B') and understands that CTUB's extension of service outlined in the Agreement herein shall be construed as an exemption to Rule 5.5. The Developer shall not be entitled to any reimbursement for the costs of constructing the pump station and sewer system other than that specified in this Agreement.

ARTICLE V
CONDITIONS PRECEDENT

Section 5.01. This Agreement and the respective obligations of the parties are expressly conditioned upon the decision by the Developer, such decision to be made in the sole and absolute discretion of the Developer, to commence construction of the Development and upon the written approval of this Agreement by the PSC.

Section 5.02. Deleted in its entirety.

Section 5.03. As a condition to obtaining a final acceptance of service from CTUB, Developer shall grant to CTUB the necessary easements which would allow CTUB to make future extensions into unserved areas only within areas designated on the Final Plats for the Development and approved by CTUB. The granting of the necessary easements shall be made without CTUB being required to pay additional consideration for the additional easements to the Developer. CTUB has the right to further extend mains from and beyond the terminus of the mains constructed pursuant to this Agreement only within the easements and rights of ways granted by the Developer

and assigns. In such an event, the Developer and its assigns shall not be entitled to any refund for the connection of customers to such extension.

ARTICLE VI
SUBSEQUENT CONNECTIONS

Section 6.01. Developer agrees that after the transfer of the ownership of the Sewage Collection Systems, or any portion thereof, to CTUB, Developer shall be assessed, to the extent Developer and/or assigns owns the property for which a connection is requested, for each new connection upon the issuance of a sewer availability letter, , (i) a non-refundable tap and inspection fee pursuant to approved CTUB tariff and (ii) a non-refundable capacity improvement fee pursuant to the approved CTUB tariff of Two Thousand Nine Hundred and Thirty Dollars ($2,930.00) for connections made and (iii) a non-refundable capacity improvement fee pursuant to the approved CTUB tariff of One Thousand Six Hundred and Twenty Five Dollars ($1,625.00). Payments shall be made on the same date Developer or its assigns applies for a building permit to construct the residential, commercial or industrial building in the Development, which will result in said New Customer. Notwithstanding the foregoing, CTUB shall only be entitled to retain a Developer or assigns tap or connection fee if CTUB, using its own resources, actually installs or inspects the tap and/or connection line and physically connects or inspects the connection to the customer's service. Once CTUB collects a tap or connection fee in accordance with the terms of this Agreement, CTUB shall not be permitted to collect from the New Customer any additional tap or service connection fee. CTUB shall only be permitted to collect one tap or connection fee per service connection in accordance with its Tariff on file with the PSC. CTUB's right to either retain Developer's or its assigns tap or connection fee deposit or to assess a tap or connection fee from a New Customer is contingent upon CTUB installing the tap and/or connection line, which physically connects a New Customer's service to Developer's Sewage Collection systems.

Section 6.02. Developer hereby agrees that in the event that Developer transfers, prior to completion, any portion of Developer's land in the Development to any individual, corporation or other entity who will continue to engage in development of said land as contemplated by this Agreement, resulting in additional customers for CTUB, Developer shall require, as a term of said

transfer, that said individual, corporation or other entity assume the obligations of this Agreement, and thenceforth the Developer shall no longer have any obligation with respect to this Agreement.

ARTICLE VII
REPRESENTATIONS AND WARRANTIES

Section 7.01. The Parties represent and warrant that the execution, delivery and performance of this Agreement by them has been duly authorized and this Agreement constitutes a valid and binding obligation of the Parties in force full and accordance with its terms.

Section 7.02. Developer and/or assigns represents and warrants that the Sewage Collection Systems or phases thereof will be designed and constructed in a proper workmanlike manner using sound principles of engineering and construction. Developer and/or assigns hereby warrants Developer's and/or assigns materials and construction of the Sewage Collection Systems or phases thereof for one (1) year from the date of the transfer of ownership of the Sewage Collection Systems or phases thereof to CTUB and, during such period, will make such repairs at Developer's and/or assigns expense, as are needed to maintain the Sewage Collection Systems or phases thereof in a proper operating condition in accordance with the approved plans therefore. CTUB will be responsible for reasonable maintenance of the system according to sound operating procedures and manufacturer's recommendations. Developer shall not be responsible for the cost or performance of any and all repairs due to CTUB or its Agents failing to reasonably maintain the system or any other cause due to CTUB's or its Agents operation and maintenance of the Sewage Collection Systems and/or the Pump Station System.

Section 7.03. Upon notice from CTUB that all construction and testing requirements have been met, Developer or its assigns shall post a one (1) year warranty bond in an amount sufficient to replace the Sewer Collection Systems or phases thereof constructed by Developer or its assigns. The amount of the bond shall be 100-percent of the cost of the improvements to be bonded at that time, and shall be for a period of 365 days that will begin on the date ownership of the Sewage Collection Systems or phases thereof is transferred to CTUB. At the conclusion of such one (1) year period, any warranty bond with respect to the Sewage Collection Systems or phases thereof shall automatically terminate and all bonded funds shall automatically be returned to Developer.

ARTICLE VIII

MISCELLANEOUS PROVISIONS

Section 8.01. Except as provided herein, this Agreement shall in no manner alter or affect presently existing rates, charges, minimums or tariffs of CTUB and the same rates, fees, charges, minimums and tariffs shall apply uniformly to all customers of the District. This Agreement shall at all times be subordinate to any present or future trust indentures or other similar liens on the assets of CTUB, and the Parties hereto recognize the priority of any such obligations and upon occurrence of default or assumption of operation and control by the trustee or holders of the bonds of CTUB this Agreement shall be subordinate to such obligations. In no case shall any current or future Developer's or assign's Deeds of Trusts or Mortgage Liens be subordinate to any CTUB obligations or liens.

Section 8.02. Nothing in this Agreement shall be construed to make CTUB or its engineer and Agents liable or responsible for any obligations of Developer.

Section 8.03. Developer and its assigns hereby agrees to save and hold harmless CTUB, its engineer and Agents against all claims for damages arising from accidents by Developer, its assigns, agents, employees, contractors and sub-contractors, occasioned by third persons occurring prior to the date of the transfer of the Sewage Collection Systems and its phases to CTUB, except for those legally attributable to CTUB, its engineer or Agents other than Developer, or employees of CTUB. Developer will defend any and all suits that may be brought against CTUB on account of any such accidents and will make good to, and reimburse, CTUB for any reasonable, out-of-pocket expenditures (including, but not limited to reasonable legal fees and expenses) that CTUB may make by reason of such accidents.

Likewise, CTUB and its assigns hereby agrees to save and hold harmless Developer, its engineer and Agents against all claims for damages arising from accidents by CTUB, its assigns, agents, employees, contractors and sub-contractors, occasioned by third persons occurring after the date of the transfer of the Pump Station System to Developer, except for those legally

attributable to Developer, its engineer or Agents other than CTUB, or employees of Developer. CTUB will defend any and all suits that may be brought against Developer on account of any such accidents and will make good to, and reimburse, Developer for any reasonable, out-of-pocket expenditures (including, but not limited to reasonable legal fees and expenses) that Developer may make by reason of such accidents.

Section 8.04. Developer hereby agrees to save and hold harmless CTUB, its engineer and Agents from all claims, demands, causes of action, or suits of whatever nature arising out of the labor and materials used by Developer and his contractors or sub-contractors, and from all laborers', materialmen's and mechanics' liens upon the Sewage Collection Systems or phases upon the property upon which the Sewage Collection Systems or phases are located arising out of the labor and materials used by Developer and its contractors or sub-contractors, and Developer shall keep the Sewage Collection Systems or phases thereof and said property free and clear of all liens, claims and encumbrances at the time of the transfer of ownership of the Sewage Collection System or phase thereof to CTUB.

Likewise, CTUB hereby agrees to save and indemnify and keep harmless Developer, its engineer and agents from all claims, demands, causes of action, or suits of whatever nature arising out of the labor and materials used by CTUB and its contractors or sub-contractors, and from all laborers', materialmen's and mechanics' liens upon the Pump Station System upon the property upon which the Pump Station System is located arising out of the labor and materials used by CTUB and its contractors or sub-contractors, and CTUB shall keep the Pump Station System or phase thereof and said property free and clear of all liens, claims and encumbrances at all times prior to and at the transfer of and/or acceptance of ownership of the Pump Station System or phase thereof to CTUB.

Section 8.05. After transfer of the ownership of the Sewage Collection Systems or phases thereof to CTUB, nothing in this Agreement shall be construed to provide Developer or its assigns with any ownership or other interest in the Sewage Collection Systems or phases thereof which

will become the exclusive property of CTUB, or with a right to be reimbursed by CTUB for any and all construction cost, except as provided in this Agreement.

Section 8.06. Developer hereby agrees to not pursue any lawsuit, cause of action, or claim of any kind against CTUB regarding insufficient sewage treatment capacity unless the Developer and/or assigns reserves capacity by paying the Capacity Improvement Fee and the Additional Capacity Improvement Fee at any time prior to or at the Developer's and/or assigns building permit stage.

Section 8.07. This Agreement constitutes the entire Agreement between CTUB and Developer and/or assigns with respect to the matters addressed and, except for the provisions of Article VIII Section 8.08, may be amended only in a subsequent writing executed by both Parties. In addition, any approval required by either Party pursuant to this Agreement shall not be unreasonably withheld.

Section 8.08. This Agreement may not be assigned by CTUB without the prior written consent of the other party. Developer may assign this Agreement without the consent of CTUB if Developer sells all or any portion of the Development and the Developer shall have no further obligations pursuant to this Agreement thereafter.

Section 8.09. The article and section headings in this Agreement are merely for the convenient reference of the parties and shall not affect the meaning or interpretation of this Agreement.

WITNESS the following signatures and seals this ____ day of _____, 2022.

Attest:

CITY OF CHARLES TOWN, by and through the CHARLES TOWN UTILITY BOARD

_____

DRAFT

By: _____

Its: _____

Attest:

FAIRFAX CROSSING REAL ESTATE, LLC
By: _____
Edward D. Scott
Its: Managing Member

DRAFT

EXHIBIT A

DEVELOPER'S PROJECT

The Sewage Collection System to be constructed by Developer is described in the attached pages.

DRAFT

EXHIBIT B

PUBLIC SERVICE COMMISSION RULE 5.5

Public Service Commission of West Virginia Rules and Regulations for the Government of Sewer Utilities, 150CSR7, Rule 5.5, Extension of Mains

DRAFT

EXHIBIT C

RK&K FORREST AVENUE AND FAIRFAX CROSSING TOP LEVEL BUDGET

DRAFT

Date: June 16, 2022

Charles Town Utility Board
Renewal and Replacement Project
DRAFT Schedule B

	BUDGET Original Engineer's Estimate	APPROVED BUDGET Base Bid 1 - Add Alternatives	Notes
1 **CONSTRUCTION**			
a. Engineer's Estimate of Construction	$ 7,797,970.00	$ 9,764,000.00	a
b. Construction Contingency (10% Reduced to 5% in Approved Budget)	$ 779,797.00	$ 507,550.00	b
2 **ENGINEERING SERVICES**			
GDF Engineering fees (including CA and RPR)	$ 760,000.00	$ 760,000.00	
Additional RPR inspection (not yet Board approved)	$ 125,000.00	$ 125,000.00	
Initial GDF R&R Report	$ 40,082.50	$ 40,082.50	
3 **LEGAL SERVICES**			
a. Local Project Attorney	$ 20,000.00	$ 20,000.00	
b. Permitting / Ord Attorney	$ -	$ -	
c. Bond Issuance Costs	$ 455,000.00	$ 455,000.00	
4 **ADMINISTRATIVE SERVICES**			
a. Project Accountant (CPA)	$ 20,000.00	$ 20,000.00	
b. Other Administrative Costs	$ 10,000.00	$ 10,000.00	
5 **LAND COSTS**			
a. Easements	$ -	$ -	
6 **PROJECT CONTINGENCY**			
a. Soft Cost Contingency	$ 527,577.00	$ -	
7 Sub Total Lines 1-6	**$ 10,535,426.50**	**$ 11,701,632.50**	
8 **ESTIMATED INTERNAL FUNDING APPLIED TO PROJECT**			
a. Capacity Improvement Fees	$ 877,305.00	$ 1,170,163.25	
b. Property Auctions (Included in c. under Approved Budget)	$ 118,121.00	$ -	
c. R&R, Operating Cash, Working Capital (Includes Property Auctions)	$ 1,000,000.00	$ 1,555,536.47	
8 Sub Total Line 8	**$ 1,995,426.00**	**$ 2,725,699.72**	
9 PROJECT TOTAL REDUCED WITH APPLICATION OF INTERNAL FUNDS			
9 Sub Total Line 7 - 8	**$ 8,540,000.50**	**$ 8,975,932.78**	
10 ADDITIONAL BID ALTERNATIVES			
a. Alternate A Influent Metering Vault (Add)	$ -	$ 152,000.00	
b. Alternate B WAS Metering Vault (ADD)	$ -	$ 235,000.00	
10 Sub Total Line 10		**$ 387,000.00**	
11 Renewal & Replacement Project to be Funded Through Public Bond Issue or BAN			
Total Line 9-10	**$ 8,540,000.50**	**$ 9,362,932.78**	

Notes:
a) Bid over-run in grant requests is difference between base bid amount and original base bid engineering estimate.
b) 5% bid contingency includes Bid Alternate A and Bid Alternate B which CTUB plans to include in project paid by internal funds.

Proposed Grant Request	
$ 1,966,030.00	Bid over-run
$ 2,725,699.72	Internal funding match request
$ 387,000.00	Additional Bid Alternatives
$ 5,078,729.72	

Charles Town Utility Board

Analysis of Debt Service Coverage - MADS Coverage Including 2015 A&B Refunding,
Collection System Project Proposed Financing, and Renewal and Replacement Project Proposed Financing

For the year ended June 30, 2021

Renewal and Replacement Project - Revised Schedule B

7th Draft

As of June 21, 2022

	Water Department	Sewer Department	Total	BAN Option
Revenues	$ 4,945,888	$ 6,762,143	$ 11,708,031	
Modification to Revenues:				
Interest	(7,960)	(10,632)	(18,592)	
Gain on Sale of Assets	(47,562)	(50,749)	(98,311)	
CIF & CAC Revenues	(253,075)	(470,499)	(723,574)	
Operating Revenues	4,637,291	6,230,263	10,867,554	
Expenses	4,458,172	6,236,850	10,695,022	
Modifications to Expenses:				
Depreciation and amortization expense	(1,250,724)	(1,817,881)	(3,068,605)	
Bond issuance costs	(113,021)	(175,063)	(288,085)	
Loss on disposition of assets	-	(559,000)	(559,000)	
Pension expense	(67,417)	(66,904)	(134,321)	
Pension contractual payments	92,315	91,613	183,928	
OPEB expense	58,378	54,840	113,218	
OPEB contractual payments	28,215	26,505	54,720	
Interest on Long Term Debt	(486,290)	(345,402)	(831,692)	
Administrative fees on Collection System Project Financing	-	4,192	4,192	
Operating Expenses Net of Non-cash Items and Interest Expense	2,719,627	3,449,750	6,169,377	
Operating Income Available for Debt Service	1,917,664	2,780,513	4,698,177	
Debt Service Expenditures:				
Principal Payments on Bond Issues	1,008,349	1,358,751	2,367,100	2,317,100
Interest Payments on Bond Issues	375,481	694,218	1,069,699	920,693
Total Debt Service Expenditures	1,383,830	2,052,969	3,436,799	3,237,793
Operating Income Available After Bond Debt Service	$ 533,834	$ 727,544	$ 1,261,378	$ 1,460,384
Debt Service Coverage Ratio	138.58%	135.44%	136.70%	157.03% (After CSP)
Required Debt Service Coverage Ratio	115.00%	115.00%	115.00%	
Amount of Coverage in Excess of 130%	$ 118,685	$ 111,653	$ 230,338	

Observations:
Monthly customer revenues have increased by approximately $ 8,000 per month (July-Oct.) in FY'22.
Although a combined system, MADS calculated separately for water and sewer (done for cost of service purposes).
BAN option calculated based on $ 9,390,000 issue size at 3% for 3 years. Coverage is not impacted by BAN.

Proposed collection system project financing:

Internal funds	$ 1,300,000	CIFS
CWSRF	500,000	Green Grant
CWSRF	2,844,984	Loan, 40 years, .25% interest, .25% administrative fee
CWSRF	216,016	Loan, 20 years, 2.50% interest, .50% administrative fee
Total project financing	$ 4,861,000	

Proposed renewal and replacement project financing:

Internal funds	$ 2,725,700
Public Bond Issue ($ 9,390,000)	9,362,933
Total project probable cost.	$ 12,088,633

Charles Town
Utility Board

661 S. George Street, Suite 101 Charles Town, WV 25414
Phone: (304) 725-2316 ♦ Fax: (304) 725-7150 ♦ Web: www.ctubwv.com

UTILITY BOARD

INTERIM CHAIRMAN
City of Charles Town
Mayor Bob Trainor

VICE CHAIRMAN
City of Ranson
Mayor
Duke Pierson

TREASURER
Thomas Stocks

INTERIM SECRETARY
Ashley Stottlemyer

County Commission Representative
Jacquelyn Milliron

Board Member
Jefferson Whitten

UTILITY MANAGER
Kristen Stolipher

June 16, 2022

Ms. Marie Prezioso
Executive Director
West Virginia Water Development Authority
1009 Bullitt Street
Charleston, West Virginia 25301

Dear Ms. Prezioso:

On behalf of the Charles Town Utility Board (CTUB), we are submitting a formal request for grant funding to your office. The project is the 2022 Renewal and Replacement Project for the Charles Town Wastewater Facility. This project will address aging infrastructure at the main wastewater treatment facility including significant upgrades to equipment, electrical, pumping and solids handling. This Renewal and Replacement Project is critical in terms of maintaining continuous facility operations, along with maintaining compliance with current and future regulatory requirements. These upgrades will result in a reduction of current operation and maintenance costs and will provide more environmentally friendly and safer working environments.

On June 10, 2022, CTUB received bids on the project and we are currently inside the 90-day bid hold period. Attached you will find a Schedule B for this project. The Schedule B demonstrates the bids exceeded the original engineering estimate by $1,966,030.00. The Schedule B also includes substantial investment of internal funds by CTUB in the amount of $2,725,699.72.

In addition to the Base Bid on this project, there were (2) two bid alternates that were included with the bidding documents in hopes that bids came in below estimates. The projects include a new influent metering vault and a waste activated sludge metering vault. These projects are equally important to the overall operational improvements necessary at the plant, therefore our request for grant funding includes our ability to complete these projects since they are designed and ready to construct.

Our formal request for funding for this project includes the above bid-over run, matching internal funds and completion of the two (2) bid alternatives in the project for a total of $5,078,729.72.

Thank you for consideration of this vital improvement project for our community and the direct impact it will have on the operations and environment for all CTUB customers as well as the City of Charles Town, the City of Ranson and Jefferson County.

Sincerely,

Kristen Stolipher
Utility General Manager

DRAFT

~~**April 26, 2022**~~ **Revised June 21, 2022**

Renewal and Replacement Bond Ordinance and Bidding Schedule

March 9, 2022 4:00 p.m. CTUB Regular Meeting

- Consideration of Resolution Requesting Issuance of Bonds

April 4, 2022 7:00 p.m. Council Regular Meeting

- First Reading and Adoption of Bond Ordinance

April 19, 2022 7:00 p.m. Council Regular Meeting

- Second Reading and Adoption of Bond Ordinance

April 27, 2022 First Publication in the Spirit of Jefferson and Farmer's Advocate of Notices of Public Hearing for May 16, 2022 for Public Hearing on Bond Ordinance.

April 29, 2022 Advertise for bid. Publication in the Spirit of Jefferson, Builder's Exchange, CTUB website, City of Charles Town website (?), GDF website.

May 4, 2022 Second Publication in the Spirit of Jefferson and Farmer's

May 20, 2022 10:00 a.m. - Pre-bid Meeting held at CTUB office/Site visit afterwards

June 8, 2022 CTUB Regular Board meeting

~~**June 3, 2022**~~ **June 10, 2022**

- 11:00 a.m. - Bid Opening at CTUB office

June 15, 2022

- CTUB Special Board meeting to discuss bid opening, schedule and financing options

June 21, 2022 Brief City Council on Bid opening, schedule and financing options

~~**June 21, 2022**~~ **July 5, 2022** City Council Special Meeting

- Present First Reading of BAN Ordinance for financing

July 18, 2022 Second Reading of BAN Ordinance

August 1, 2022 Third Reading and Public Hearing of BAN Ordinance

August 2-15, 2022

- Determination of Public Bond Issue, BAN or Grant funding
- Present Supplemental Parameters Resolution

~~**August 2, 2022**~~ **September 8, 2022** Bid Expiration

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT	AMOUNT

========== FUND TOTALS ==========	
50 WATER FUND	83,088.94
60 SEWER FUND	68,074.92
GRAND TOTAL:	151,163.86

TOTAL PAGES: 4

APPROVED BY: _____

APPROVED BY: _____

This Packet: $ 151,163.86

Security Deposit Refund, check dated 6/08/2022: 335.00

City of Charles Town Annual Loan Payment, check dated 6/08/2022: 12,816.00

Thomas Nalls May Tank Lot Rent, check dated 6/08/2022: 3,686.61

Total: $ 168,001.47

Note:

Highlighted invoices are for the Collection System Project;

Highlighted invoice is for the R&R Project

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT	AMOUNT
			TOTAL:	6,319.89
ROSS H BARE	SVCCLL TWWTP BLWR DRV	SEWER FUND	SEWER	480.00
	SVCCLL RCCLAPS NWCNTRLS	SEWER FUND	SEWER	3,312.02
			TOTAL:	3,792.02
SG PLUMBING, INC.	PACFEED BLDG- WA HTR RPLCD	WATER FUND	WATER	6,847.07
			TOTAL:	6,847.07
SNYDER ENVIRONMENTAL SERVICES, INC	GEORGE ST EXT	WATER FUND	WATER	2,120.00
	WALNUT GROVE 5/02/22	SEWER FUND	SEWER	580.00
	GEORGE ST EXT	SEWER FUND	SEWER	2,120.00
			TOTAL:	4,820.00
GERALD TAYLOR CO., INC.	VAC / TRANSPORT	WATER FUND	WATER	551.44
	VAC / TRANSPORT	WATER FUND	WATER	264.48
	TRANSPORT	SEWER FUND	SEWER	902.88
			TOTAL:	1,718.80
THE CI THORNBURG CO, INC.	520MM2MXUSNGLPRTTRNSCVR	WATER FUND	WATER	3,846.87
	5/8"X3/4"SRIITRPL100GPL/BT	WATER FUND	WATER	9,857.02
	1"SRIITRPL100GCI/BTM5WHMTR	WATER FUND	WATER	1,921.20
			TOTAL:	15,625.09
TIAA COMMERCIAL FINANCE, INC	COPIER	SEWER FUND	NON-DEPARTMENTAL	2,950.85
	COPIER	SEWER FUND	SEWER	793.15
			TOTAL:	3,744.00
USA BLUEBOOK	GOGGLE, MASK, VEST, CARTRI	SEWER FUND	SEWER	307.80
	PAINT	SEWER FUND	SEWER	331.25
			TOTAL:	639.05
WAKEFIELD & ASSOCIATES INC	MAY COLLECTIONS	WATER FUND	WATER	80.09
	MAY COLLECTIONS	SEWER FUND	SEWER	80.10
			TOTAL:	160.19
WV WATER DEVELOPMENT AUTHORITY	#2017-175 INFRSTRCTR FNDPR	SEWER FUND	NON-DEPARTMENTAL	803.08
			TOTAL:	803.08
XYLEM DEWATERING SOLUTIONS, INC	RPR TO 6" PORTABLE PUMP	SEWER FUND	SEWER	630.49
			TOTAL:	630.49

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT	AMOUNT
	W/E 6/12/22	SEWER FUND	SEWER	42.34
	W/E 6/19/22	SEWER FUND	SEWER	1,121.71
			TOTAL:	7,399.97
GASKINS SERVICES LLC	ROAD MAINT@ DEERFIELD PS	SEWER FUND	SEWER	2,375.00
			TOTAL:	2,375.00
GWIN DOBSON & FOREMAN INC	WA RETAINER SVCS	WATER FUND	WATER	900.73
	WWTP UPGRADE	SEWER FUND	NON-DEPARTMENTAL	7,444.33
			TOTAL:	8,345.06
GRANICUS	YRLY RNWL 7/24/22 - 7/23/2	WATER FUND	WATER	4,329.30
	YRLY RNWL 7/24/22 - 7/23/2	SEWER FUND	SEWER	4,329.30
			TOTAL:	8,658.60
HACH COMPANY	S-TKN TNT	SEWER FUND	SEWER	276.03
	S-TKN TNT	SEWER FUND	SEWER	412.16
			TOTAL:	688.19
HULL'S CRANE SERVICE, INC	CRN RNTL: WTP INTAKE MTR	WATER FUND	WATER	1,202.50
			TOTAL:	1,202.50
KABLE EXCAVATING, LLC	LOADER RENTAL 5/09 - 6/13/	SEWER FUND	SEWER	1,225.00
			TOTAL:	1,225.00
J.C. KUNKLE & ASSOCIATES, A.C.	PROFF SVCS 4/01 - 5/31/22	SEWER FUND	SEWER	1,825.00
			TOTAL:	1,825.00
DONALD MICKEY	6/17 MOWING SMMTPT & PLYGR	WATER FUND	WATER	137.50
	6/17 MOWING SMMTPT & PLYGR	SEWER FUND	SEWER	137.50
			TOTAL:	275.00
MISS UTILITY OF WV, INC.	MESSAGE FEES: MAY	WATER FUND	WATER	487.20
			TOTAL:	487.20
PACE ANALYTICAL SERVICES, LLC	TESTING: CAV QTRLY	WATER FUND	WATER	33.00
	TESTING: TUSC ANNUAL	SEWER FUND	SEWER	680.00
	TESTING: S01 QRTLY	SEWER FUND	SEWER	258.00
	TESTING: TUSC	SEWER FUND	SEWER	334.00
	TESTING: CT WV0022349/001	SEWER FUND	SEWER	213.00
	TESTING: WKLY WV00222349/0	SEWER FUND	SEWER	213.00
	TESTING: TUSC WKLY	SEWER FUND	SEWER	136.00
	TESTING: CT WKLY	SEWER FUND	SEWER	213.00
	TESTING: TUSC WKLY	SEWER FUND	SEWER	108.00
	TESTING: CT WKLY	SEWER FUND	SEWER	213.00
			TOTAL:	2,401.00
CORPORATION OF RANSON	APR UT COLLECTIONS	WATER FUND	NON-DEPARTMENTAL	2,598.37
	MAY UT COLLECTIONS	WATER FUND	NON-DEPARTMENTAL	2,773.49
			TOTAL:	5,371.86
RED VALVE COMPANY, INC	4" RDVLV TYPA RPLCMNT SLV	SEWER FUND	SEWER	767.04
			TOTAL:	767.04
RK & K ENGINEERS	TO12FRSTAVE/FRFXXNG/LKLNDP	SEWER FUND	NON-DEPARTMENTAL	3,434.94
	TO19 2021 CLLCTNSYSTM PRJC	SEWER FUND	NON-DEPARTMENTAL	2,884.95

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT	AMOUNT
AMERIGAS	PROPANE: SPRUCE HILL	SEWER FUND	SEWER	263.77
			TOTAL:	263.77
ARDEN EQUIPMENT REPAIR, INC.	JD V-BELT, INJECTOR CLEANE	SEWER FUND	SEWER	388.02
			TOTAL:	388.02
JOE BURRIS	EXPENSE 6/17/22 TRUCK PICK	SEWER FUND	SEWER	100.00
	EXPENSE 6/17/22 TRUCK PICK	SEWER FUND	SEWER	21.00
	REIMB HOMEDEPOT PAINT 4 PL	SEWER FUND	SEWER	87.96
			TOTAL:	208.96
CEDARCHEM, LLC	2,000G CEDARCLEAR 1757	WATER FUND	WATER	2,749.50
			TOTAL:	2,749.50
CITY OF CHARLES TOWN	UB COLLECTIONS APRIL	WATER FUND	NON-DEPARTMENTAL	15,057.23
	UB COLLECTIONS MAY	WATER FUND	NON-DEPARTMENTAL	15,990.82
			TOTAL:	31,048.05
COMCAST BUSINESS	8299 31 008 0138502	WATER FUND	WATER	179.69
	8299 31 008 0138502	SEWER FUND	SEWER	179.69
			TOTAL:	359.38
CORE & MAIN	2X1BRSSBRSHNG,3/4X10'ALLTH	WATER FUND	WATER	227.60
	74753Q 3/4 QNUTXMIP CPLNG	WATER FUND	WATER	180.18
	UFR1400-DA-4URETDI,MJL/PSL	WATER FUND	WATER	2,260.34
	4 PVC SDR 35 SWR 45 GXG	SEWER FUND	SEWER	44.82
			TOTAL:	2,712.94
COYNE CHEMICAL	AMMONM SULFATE 40%NSF, CP-	WATER FUND	WATER	4,155.20
	ZETAG 8868 FS	SEWER FUND	SEWER	9,246.86
			TOTAL:	13,402.06
C. R. SEMLER, INC.	PRECAST CONCRETE VAULT, FR	SEWER FUND	SEWER	5,465.00
			TOTAL:	5,465.00
D.R. HORTON, INC.	SEWER UPSIZING PER AMEA	SEWER FUND	NON-DEPARTMENTAL	7,500.00
			TOTAL:	7,500.00
WV DEPT OF HEALTH & HUMAN SERVICES	FLOURIDE TEST	WATER FUND	WATER	15.00
	BACTERIOLOGICAL TEST	WATER FUND	WATER	120.00
			TOTAL:	135.00
FASTENAL	S/SWRERPCLP,S/SFW,18-8TP,S	SEWER FUND	SEWER	747.30
	CREDIT ON PO ASJP3469	SEWER FUND	SEWER	127.04-
			TOTAL:	620.26
FRONTIER COMMUNICATIONS	304-876-9970-121914-4	WATER FUND	WATER	94.91
	304-876-2120-111514-4	WATER FUND	WATER	94.91
			TOTAL:	189.82
GUTTMAN ENERGY	W/E 6/05/22	WATER FUND	WATER	1,433.05
	W/E 6/12/22	WATER FUND	WATER	668.99
	W/E 6/19/22	WATER FUND	WATER	1,911.26
	W/E 6/05/22	SEWER FUND	SEWER	636.88
	W/E 6/05/22	SEWER FUND	SEWER	55.06
	W/E 6/12/22	SEWER FUND	SEWER	1,530.68