City of Tallahassee 2035 Master Sewer Plan Update

FINAL REPORT
February 19, 2016

HMM Project No. 342595

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City of Tallahassee

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2035 Master Sewer Plan Update

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Acronyms Used in the Report

AAD	annual average day
ADF	average daily flow
AWT	advanced wastewater treatment
AWWA	American Water Works Association
BEBR	University of Florida Bureau of Business and Economic Research
$CBOD_5$	5-day carbonaceous biochemical oxygen demand
CCFM	Capital Circle Force Main
CCNW	Capital Circle Northwest
CCSE	Capital Circle Southeast
CIP	Capital Improvements Program
COT	City of Tallahassee
CUP	consumptive use permit
DRI	development of regional impact
EAR	Evaluation and Appraisal Report
ERC	equivalent residential connection
F.A.C.	Florida Administrative Code
fps	feet per second
FCV	flow control valve
FDEP	Florida Department of Environmental Protection
FSAWWA	Florida Section of the American Water Works Association
GIS	geographic information system
gpcd	gallons per capita per day
gpd	gallons per day
HARN	High-Accuracy Reference Network
HDPE	High-Density Polyethylene
HMM	Hatch Mott McDonald
I/I	infiltration and inflow
ISO	Insurance Services Office
LBR	Lake Bradford Road wastewater treatment facility
LOS	level of service
MG or MGAL	million gallons
MGD	million gallons per day
MSP	master sewer plan
NAD	North American Datum
NWFWMD	Northwest Florida Water Management District
PGDB	Personal Geodatabase
PS	pump station
psi	pounds per square inch
RDII	rainfall-derived infiltration and inflow
SCADA	supervisory control and data acquisition
SOP	Standard Operating Procedure
TAZ	Traffic Analysis Zone
TDH	Total Dynamic Head
TEC	Talquin Electric Cooperative
TIGER	Topologically Integrated Geographic Encoding and Referencing
TLCPD	Tallahassee-Leon County Planning Department
TPSWRF	Thomas P. Smith Water Reclamation Facility
TRRF	Tram Road Reuse Facility
TSS	total suspended solids
USA	Urban Service Area
WWTP	Wastewater Treatment Plant

Executive Summary

Introduction

This report presents the City of Tallahassee *2035 Master Sewer Plan Update*. The report contains an update to the City's existing Sewer Trunk System Model to include conceptual future piping, infrastructure, and projected wastewater flows through the year 2035. This report also provides hydraulic and capacity analysis observations, and recommends improvements for a 20-year Capital Improvements Program (CIP).

The CIP serves as a planning tool and is not intended to be used as a mandate to construct the projects. The City will need to monitor growth and may need to adjust the CIP schedule and timing of projects as growth occurs, and as dictated by economic feasibility and available funding. For example, growth in one development may occur more quickly than projected, and as such, certain improvements may need to happen sooner than indicated. On the other hand, growth may not return as quickly as projected, meaning certain projects will be delayed.

This report meets the requirements of the May 2005 Water and Sewer Agreement between the City of Tallahassee and Leon County, which stipulates that the City maintain a long-range master plan for the provision of sewer service.

Hatch Mott MacDonald (HMM) was selected by the City to perform the 2035 Master Sewer Plan Update and also completed the 2030 Master Sewer Plan in 2010. An overview of the key components of the project is highlighted below.

2014 Trunk System Model Summary

The existing 2014 Trunk System Model consists of all City-owned pump stations and force mains, along with gravity sewers 10 inches and larger in diameter. Some gravity sewers less than 10 inches are included only to ensure connectivity between the existing gravity and force main systems.

Urban Service Area Population Projections

The Master Sewer Plan Update service area is the area within the existing USA and Woodville. HMM received GIS information from the City containing 2007 and 2035 population projection information. This population data is categorized according to TAZ boundaries, and includes all of Leon County.

The consultant used linear interpolation and GIS to estimate TAZ populations for years 2015, 2020, 2025, 2030, and 2035. Population projections were multiplied by 100 gallons per capita-day (gpcd) to estimate the total wastewater flow for each planning year.

Unsewered Area Evaluation Summary

A detailed analysis, including updated opinion of probable construction cost, of 13 unsewered target areas was performed to determine the present day cost required to provide central sewer to these areas. HMM personnel studied each area to verify the general topography, the extent of existing development, and the proximity to existing sanitary sewer system infrastructure, from which new infrastructure would be extended to serve each respective area.

Other Franchise and Unsewered Areas Evaluation Summary

Talquin Electric Cooperative (Talquin) has four water and sewer franchise areas within the existing USA. Talquin owns and operates a wastewater treatment plant in each of its four USA franchise areas.

Wastewater flows from each of the four Talquin franchise areas for this 2035 Master Sewer Plan Update were estimated as described previously. All 2035 projected wastewater flow from the four TEC franchise areas has been incorporated into the 2035 Trunk System Model.

In order to ensure flow from other unsewered areas was included in the overall 2035 Master Sewer Plan Update, HMM and the City worked jointly to adjust and expand the sewershed basin boundaries to include the entire USA. These new basin demarcations subdivide the entire USA into discrete sewersheds, most of which will be served by an existing master pump station.

2035 Trunk System Model Summary

The 2035 Trunk System Model was adapted by the City from the 2030 model created for the 2030 Master Sewer Plan, completed in 2010.

This model contains all force mains and pump stations, and all gravity sewers 10-inches diameter and larger. Reaches of gravity sewer less than 10-inches diameter were included where required for connectivity.

Once the 2035 dry- and wet-weather Trunk System Models were fully established and running, HMM performed a capacity and operational assessment of the gravity sewer system, pump stations, and sewer force main system, in order to establish an updated 2035 infrastructure solution set.

Sewer System Capacity Analysis Summary

The model's gravity sewer system capacity was analyzed on a depth-of-flow basis. Gravity sewers flowing full were considered to be at 100 percent capacity to identify potential problem areas. There are no overflowing, or "flooding," manholes in the final wet-weather 2035 Trunk System Model. There were several reaches of gravity sewers flowing full under the 2035 wet-weather scenario. Profiles of several longer stretches of gravity sewers flowing full were extracted from the model output. The majority of the surcharging conditions do not warrant additional analysis or concern.

A force main capacity analysis was also performed, using a limiting condition of 6.5 feet per second (fps) maximum instantaneous velocity. The majority of these force mains have average velocities much less than 6.5 fps. Four reaches of the Capital Circle Force Main have average velocities above 10 fps.

20-Year Capital Improvements Program Summary

A sanitary sewer system 20-Year Capital Improvements Program through the year 2035 was developed. At the City's request, the 20-Year CIP lists improvements in one-year increments through 2020, then in five-year increments thereafter. This phasing plan is for general guidance only, and individual projects will be driven by both policy decisions and available funds as the City's sewer system expands.

Summary & Recommendations

- The City of Tallahassee's *InfoSWMM* Trunk System Model represents a valid working model of the existing system as of 2014. All model entities are matched one-to-one with the City's GIS.

- A detailed analysis of 13 unsewered target areas was performed to determine the present day cost required to provide central sewer to these areas.

- Population projections for the existing USA were established via TAZ data provided by the Tallahassee – Leon County Planning Department (2014).

- The 2035 Trunk System Model was established to provide sewer service to the entire existing USA, and the Woodville Rural Community.

- Capacity analysis of the gravity system showed minor manhole surcharging in the system during wet-weather. Most of the observed gravity system surcharging is of little concern, due to minimal surcharging of manholes and significant system storage capacity prior to surface discharge (manhole "flooding"). Minor surcharging of the system and manholes without detriment to connected customers or risk of overflow is acceptable, practical and economical. These reaches should be periodically reviewed for rehabilitation, repair, or replacement in order to reduce RDII entering the system upstream of the applicable area.

- The Shannon Lakes area tributary to PS84 should be monitored as the flows in this area of the system increase over the Master Planning period. This trunk system was identified in the 2030 Master Sewer Plan, prepared in 2010, as an area of interest, due to irregular pipe slopes, negative pipe slopes, and larger pipes upstream of smaller diameter pipes.

- All pump stations were reviewed for both dry- and wet-weather operation, and some inefficiencies in pump cycle times were observed, many of which may be rectified by adjusting pump operating levels. Several pump stations run minimally throughout the day and have significant capacity available for future flows.

- The wet-weather force main capacity analysis revealed several instances where force mains are either nearing or are exceeding capacity, based on a limiting condition of 6.5 fps. Velocities in four reaches of the large diameter CCFM average 10 fps and above.

The following recommendations are offered to the City as a result of this project:

- Continue updating the model's physical data, calibration (via flow monitoring), and operating scenario(s) to reflect evolving system conditions, operating protocol(s), and bypassing capabilities.

- Develop a Trunk System Model maintenance guidelines and specifications protocol, to ensure modifications are uniformly made to the Trunk System Model by all entities who use of the model. A semiannual update period is recommended.

- Consider adjustments to several pump station operating levels, to better equalize the stations' performance.

- Consider modifications to several pump impellers and/ or motors, to better equalize the stations' performance, enabling pumps to operate more efficiently.

- Now that RDII into Pump Station 36 trunk system has been studied via a flow monitoring program, remedial actions should be undertaken where practicable to reduce flows into and out of this pump station.

- Continue coordinating development of the Capital Circle West/ Southwest Force Main with the proposed widening of Capital Circle.

1. Introduction

This report presents the City of Tallahassee *2035 Master Sewer Plan Update*. The report contains an update to the City's existing Sewer Trunk System Model to include conceptual future piping, infrastructure, and projected wastewater flows through the year 2035. This report also provides hydraulic and capacity analysis observations; and recommends improvements for a 20-year Capital Improvements Program (CIP).

The CIP serves as a planning tool and is not intended to be used as a mandate to construct the projects. The City will need to monitor growth and may need to adjust the CIP schedule and timing of projects as growth occurs, and as dictated by economic feasibility and available funding. For example, growth in one development may occur more quickly than projected, and as such, certain improvements may need to happen sooner than indicated. On the other hand, growth may not return as quickly as projected, meaning certain projects will be delayed.

This report meets the requirements of the May 2005 Water and Sewer Agreement between the City of Tallahassee and Leon County, which stipulates that the City maintain a long range master plan for the provision of sewer service.

HMM's scope of work for this project included the following:

- Calibrate the City's 2014 Trunk System Model (dry and wet weather) against recent recorded flows.
- Use the 2014 Trunk System Model to perform a collection system assessment for both capacity and operational parameters.
- Develop population and wastewater flow projections through 2035 for the existing Urban Service Area (USA), using 100 gallons per capita-day (gpcd) flow.
- Update cost opinions for 10 unsewered target areas identified in the 2030 Master Sewer Plan, completed in 2010.
- Provide preliminary layout and cost opinions of new infrastructure for three additional unsewered target areas (i.e., Avondale, Plantation Estates, Northwest Leon County Areas), project 2035 wastewater flows based on Tallahassee-Leon County Traffic Analysis Zone (TAZ) population projections, and incorporate trunk system elements for these areas into the 2035 Trunk System Model.

- Develop system-wide future conditions flow data for both dry-weather and wet-weather flow conditions in the 2035 Trunk System Model.

- Using the 2035 Trunk System Model, summarize future conditions collection system capacity and operation.

- Prepare a 20-year CIP.

The scope of the master-planned system was for a conventional gravity and force main sewer system, and therefore does not plan for or rely on low-pressure sewer systems to implement solutions.

2. Existing Conditions Model

2.1 2014 Trunk System Model

The 2014 Trunk System Model consists of all City-owned pump stations and force mains, along with gravity sewers 10 inches and larger in diameter; some gravity sewers less than 10 inches are included only to ensure connectivity between the existing gravity and force main systems. Model nomenclature matches the City's GIS Facility IDs for all modeled elements. As with the model developed during the 2030 Master Sewer Plan created in 2010, the updated model accounts for rainfall-derived infiltration and inflow (RDII) associated with a 25-year, 4-hour rainfall event.

The 2014 trunk system model contains the following data as outlined in **Table 2-1**, below:

TABLE 2-1: 2014 InfoSWMM Model Elements

Gravity Main Diameter	Quantity	Unit	Force Main Diameter	Quantity	Unit
6 inches	6,510	Linear Feet	4 inches	33,100	Linear Feet
8 inches	171,520	Linear Feet	6 inches	105,540	Linear Feet
10 inches	246,500	Linear Feet	8 inches	82,700	Linear Feet
12 inches	159,400	Linear Feet	10 inches	28,940	Linear Feet
14 inches	3,670	Linear Feet	12 inches	69,630	Linear Feet
15 inches	110,360	Linear Feet	14 inches	12,630	Linear Feet
16 inches	2,220	Linear Feet	16 inches	9,790	Linear Feet
18 inches	57,140	Linear Feet	18 inches	9,690	Linear Feet
20 inches	1,570	Linear Feet	20 inches	8,720	Linear Feet
21 inches	50,730	Linear Feet	24 inches	55,880	Linear Feet
24 inches	31,890	Linear Feet	30 inches	25,640	Linear Feet
27 inches	5,310	Linear Feet	36 inches	11,330	Linear Feet
30 inches	21,490	Linear Feet	42 inches	48,710	Linear Feet
36 inches	47,320	Linear Feet	48 inches	50	Linear Feet
42 inches	15,600	Linear Feet			
TOTALS:	931,230	Linear Feet		502,350	Linear Feet

Model Element	Quantity	Unit
Pump Stations	106	Each
Manholes in Model	4,499	Each
Treatment Plants	1	Each

An illustration of the Overall 2014 Trunk System Model is shown in **Appendix A Figure 2-1**.

The City provided data for the 2013 annual average weekday influent flow to the T.P. Smith Water Reclamation Facility (TPSWRF). This value averaged approximately 17.836 MGD. Using this value, calibration of the 2014 dry-weather Trunk System Model was performed as follows:

1. The 2014 dry-weather model provided by the City was run and showed an average 24-hour inflow to the TPSWRF of approximately 21.207 MGD.
2. All model dry-weather inflows were globally multiplied by 0.841 (17.836 ÷ 21.207), and the model was re-run.
3. A second global adjustment of 0.994 was made to the dry-weather inflows and the model was run again. This resulted in a calibrated 2014 dry-weather Trunk System Model flow of approximately 17.896 MGD to the TPSWRF.

To produce the 2014 wet-weather model, the wet-weather flows and flow patterns in the calibrated 2014 dry-weather flow set were activated to simulate RDII entering the system. This RDII was established during creation of the 2010 Master Sewer Plan Trunk System Model, and is judged to be applicable for the 2014 wet-weather Trunk System Model.

The City's TPSWRF wet-weather inflow data for 2013 averaged between 28 and 30 MGD; the calibrated 2014 wet-weather Trunk System Model shows an average inflow of approximately 29.604 MGD to the TPSWRF. No adjustments were necessary to the RDII inflows and flow patterns for the 2014 wet-weather model.

A summary of the 2014 dry- and wet-weather Trunk System Models is shown in **Appendix C**.

3. Evaluation of Unsewered Target Areas

3.1 Identification of Unsewered Target Areas

Following is a list of unsewered target areas identified for this 2035 Master Sewer Plan Update:

1. Killearn Acres
2. Buck Lake/ Lafayette Oaks/ Mahan
3. Lake Jackson
4. Huntington Estates
5. Lake Munson/ Four Points
6. Woodville Rural Community (currently outside the USA)
7. Bobbin Mill/ Bobbin Brook
8. Centerville Trace
9. Rose Hill
10. Avondale
11. Harbinwood Estates
12. Northwest Leon County
13. Plantation Estates

Areas 1 through 9 and Area 11 were included in the 2030 Master Sewer Plan prepared in 2010. Cost opinions associated with constructing conventional sewer infrastructure in these areas have been updated as part of this 2035 Master Sewer Plan Update. Evaluation of Areas 10, 12, and 13 have been added as part of this 2035 Master Sewer Plan Update as per the City's request. Preliminary layouts of proposed sewer infrastructure were provided by the City, and HMM created maps of each area. These maps and associated cost opinions are included in **Appendix B**.

3.2 Analysis of Unsewered Target Areas

Wastewater flows from each unsewered area were estimated using TAZ population data and 100 gpcd, as previously described. **Table 3-1** summarizes the population and flow projections for each area through 2035.

Table 3-1: Unsewered Target Area Population And Flow Projections

Unsewered Target Area	Population Projections				
	2015	2020	2025	2030	2035
1 Killearn Acres	3,094	3,111	3,128	3,145	3,162
2 Buck Lake/ Lafayette Oaks/ Mahan	4,950	5,218	5,486	5,753	6,020
3 Lake Jackson	3,795	3,849	3,903	3,956	4,010
4 Huntington Estates	2,294	2,326	2,357	2,388	2,419
5 Lake Munson/ Four Points	5,137	5,237	5,336	5,435	5,534
6 Woodville Rural Community (currently outside the USA)	1,281	1,314	1,345	1,377	1,408
7 Bobbin Mill/ Bobbin Brook	1,252	1,253	1,255	1,256	1,257
8 Centerville Trace	1,292	1,329	1,366	1,403	1,439
9 Rose Hill	202	214	225	237	248
10 Avondale	156	158	159	161	162
11 Harbinwood Estates	1,503	1,509	1,514	1,520	1,524
12 Northwest Leon County	1,781	1,843	1,905	1,966	2,027
13 Plantation Estates	155	158	160	162	163
Total Unsewered Area Population:	26,891	27,519	28,139	28,759	29,373
Total Estimated Flows (gpd at 100 gpcd):	2,689,089	2,751,900	2,813,900	2,875,900	2,937,344
Incremental Increase (gpd):	N/ A	62,811	62,000	62,000	61,444

HMM updated opinions of probable project cost for infrastructure construction in each area. The unit and lump-sum prices incorporated into these construction cost opinions were taken from recent contractors' bids for similar work items; a 20% construction contingency, and estimated engineering and inspection cost of 17% were likewise included in each opinion of probable cost. From these values, the total project cost and an average cost per sanitary sewer connection were computed (see **Tables 3-2a** and **3-2b**).

The total number of connections in 2035 represents the maximum estimated number of expected sanitary sewer connections for each study area at the end of the 2035 planning period. This value was used to determine the average cost per connection in each study area.

Table 3-2a: Unsewered Target Area Sewer Connection Statistics (2035)

Unsewered Target Area	Estimated Project Cost	Maximum Estimated Number of Sanitary Sewer Connections	Cost per Connection
1 Killearn Acres	$ 26,200,000	1,602	$ 16,355
2 Buck Lake	$ 37,600,000	1,901	$ 19,779
3 Lake Jackson	$ 31,200,000	1,532	$ 20,366
4 Huntington Estates	$ 11,700,000	729	$ 16,049
5 Lake Munson	$ 37,900,000	3,162	$ 11,986
6 Woodville	$ 26,400,000	2,150	$ 12,279
7 Bobbin Mill	$ 16,300,000	837	$ 19,474
8 Centerville Trace	$ 6,100,000	483	$ 12,629
9 Rose Hill	$ 4,500,000	98	$ 45,918
10 Avondale	$ 3,100,000	187	$ 16,578
11 Harbinwood Estates	$ 18,100,000	1,080	$ 16,759
12 Northwest Leon County	$ 15,800,000	850	$ 18,588
13 Plantation Estates	$ 3,300,000	167	$ 19,760

Table 3-2b: Unsewered Target Area Sewer Connection Statistics (2035)
(sorted by Cost per Connection)

Unsewered Target Area	Estimated Project Cost	Maximum Estimated Number of Sanitary Sewer Connections	Cost per Connection
5 Lake Munson	$ 37,900,000	3,162	$ 11,986
6 Woodville	$ 26,400,000	2,150	$ 12,279
8 Centerville Trace	$ 6,100,000	483	$ 12,629
4 Huntington Estates	$ 11,700,000	729	$ 16,049
1 Killearn Acres	$ 26,200,000	1,602	$ 16,355
10 Avondale	$ 3,100,000	187	$ 16,578
11 Harbinwood Estates	$ 18,100,000	1,080	$ 16,759
12 Northwest Leon County	$ 15,800,000	850	$ 18,588
7 Bobbin Mill	$ 16,300,000	837	$ 19,474
13 Plantation Estates	$ 3,300,000	167	$ 19,760
2 Buck Lake	$ 37,600,000	1,901	$ 19,779
3 Lake Jackson	$ 31,200,000	1,532	$ 20,366
9 Rose Hill	$ 4,500,000	98	$ 45,918

Detailed cost opinions for each area are shown in **Appendix B**.

Parcel counts for Areas 10, 12 and 13 were extracted from the City's GIS parcel layer using ArcGIS tools.

The tables in this Section, as well as those in **Appendix B**, include construction costs for the Unsewered Target Areas; however these costs do not include sewer connection fees for the areas.

3.3 Factors Impacting Feasibility of Sewering Unsewered Target Areas

As part of the analysis, HMM identified factors that could impact the feasibility of constructing sanitary sewer systems in each study area, such as maintenance of traffic, right-of-way restoration, wetland impacts, etc. As a general statement for all areas, it should be noted that a significant amount of construction will occur in existing streets and roadways. As directed by City staff, the opinions of probable project cost include the cost of roadway replacement and right-of-way restoration where needed. Feasibility factors for each area are outlined in **Appendix B**.

As shown in **Table 3-2b**, the three most cost-effective areas to provide sanitary sewer service are Areas 5 (Lake Munson), 6 (Woodville), and 8 (Centerville Trace). All of the projected flows from the Unsewered Target Areas have been incorporated into the 2035 Trunk System Model. Two of the three areas noted above (i.e., Woodville and Centerville Trace Subdivision) are mentioned specifically as Target Water and Sewer Service Areas in the May 2005 City/ County "Water and Sewer Agreement." The "Water and Sewer Agreement" lists a third target area (i.e., Harbinwood Subdivision), which currently lies within a Talquin Electric Cooperative (Talquin) franchise area.

Appendix A Figure 3-1 illustrates the boundaries of these Unsewered Target Areas, and summarizes the cost and population statistics associated with each area.

4. Other Franchise and Unsewered Areas

4.1 Talquin Electric Cooperative Franchise Areas

Talquin Electric Cooperative (Talquin) has four water and sewer franchise areas within the existing USA (see **Appendix A Figure 4-1**). Talquin owns and operates a wastewater treatment plant (WWTP) in each of its four USA franchise areas. Because of increasing regulatory and environmental requirements, Talquin may one day wish to abandon its WWTPs, in favor of pumping its wastewater to the City's collection and treatment systems. If this were to occur, it is envisioned that Talquin would convert each WWTP to a master pumping station, which in turn would connect to the City's sewer system and be conveyed to the TPSWRF for treatment.

In order to estimate the wastewater flows from each of the four Talquin franchise areas for this 2035 Master Sewer Plan Update, HMM utilized the same population and flow projection methodology described previously. These values are summarized in **Table 4-1.**

Table 4-1: Talquin Service Area Population and Flow Projections

Talquin Areas	Population Projections (as per TAZ)				
	2015	2020	2025	2030	2035
1 Talquin K1 - Sandstone Ranch *	595	609	623	637	650
2 Talquin K2 - Lake Jackson	3,902	4,023	4,144	4,265	4,385
3 Talquin K3 - Killearn Lakes	6,348	6,464	6,581	6,697	6,813
4 Talquin K4 - Meadows at Woodrun	968	990	1,011	1,032	1,052
Total Talquin Area Populations:	11,812	12,086	12,359	12,631	12,900
Total Estimated Flows (gpd at 100 gpcd):	1,181,244	1,208,600	1,235,900	1,263,100	1,290,039
Incremental Increase (gpd):	N/ A	27,356	27,300	27,200	26,939

* Population for K1 based on 238 parcels at 2.5 persons per lot, since TAZ methodology under estimate the population.

All 2035 projected wastewater flow from the four TEC franchise areas has been incorporated into the 2035 Trunk System Model. These flows were included in this Master Plan for planning purposes. However, their impact on Wakulla Springs must be considered before implementing such a change.

4.2 Other Large Unsewered Areas

A goal of the 2030 Master Sewer Plan, completed in 2010, was to recommend a 20-year program for providing municipal sewer service to the entire USA. However, not all unsewered areas within the existing USA were specifically identified for detailed analysis,

unlike the Unsewered Target Areas and Talquin franchise areas. In order to ensure flow from these other unsewered areas was included in the overall 2035 Master Sewer Plan Update, HMM and the City worked jointly to adjust and expand the sewershed basin boundaries shown in **Appendix A Figure 2-1**, to include the entire USA. These new basin demarcations subdivide the entire USA into discrete sewersheds, most of which will be served by an existing master pump station. **Appendix A Figure 4-1** shows the Trunk System boundaries which have been established to serve the entire USA. Trunk System population and flow projections are likewise included thereon.

5. 2035 Trunk System Model

5.1 2035 Trunk System Model Development

The 2035 Trunk System Model was adapted from the 2030 Trunk System Model which was updated by the City for this project. The 2035 Trunk System Model model includes gravity and force main system extensions to serve future development. As with the 2014 Trunk System Model, the 2035 Trunk System Model contains all force mains and pump stations, and all gravity sewers 10-inches diameter and larger. Some reaches of gravity sewer less than 10-inches diameter are likewise included only where required for connectivity of the system's various components.

The 2035 Trunk System Model contains the elements outlined in **Table 5-1**:

TABLE 5-1: InfoSWMM Model Elements (2035 Trunk System Model)

Gravity Main Diameter	Quantity	Unit	Force Main Diameter	Quantity	Unit
6 inches	2,690	Linear Feet			
8 inches	198,380	Linear Feet	4 inches	44,400	Linear Feet
10 inches	252,210	Linear Feet	6 inches	88,240	Linear Feet
12 inches	192,130	Linear Feet	8 inches	75,490	Linear Feet
14 inches	3,670	Linear Feet	10 inches	59,620	Linear Feet
15 inches	121,770	Linear Feet	12 inches	96,350	Linear Feet
16 inches	2,170	Linear Feet	14 inches	17,580	Linear Feet
18 inches	57,340	Linear Feet	16 inches	47,830	Linear Feet
20 inches	1,860	Linear Feet	18 inches	16,000	Linear Feet
21 inches	51,630	Linear Feet	20 inches	35,930	Linear Feet
24 inches	37,220	Linear Feet	24 inches	55,870	Linear Feet
27 inches	8,790	Linear Feet	30 inches	25,640	Linear Feet
30 inches	20,930	Linear Feet	36 inches	11,330	Linear Feet
36 inches	48,830	Linear Feet	42 inches	48,140	Linear Feet
42 inches	15,330	Linear Feet	48 inches	60	Linear Feet
Total =	1,014,950	Linear Feet	Total =	622,480	Linear Feet

Model Element	Quantity	Unit
Pump Stations	110	Each
Manholes in Model	4,619	Each
Treatment Plants	1	Each

The 2035 Trunk System Model is shown in **Appendix A Figure 5-1**.

Following verification of the 2035 Trunk System Model, HMM calibrated the model's dry-weather flows against projected 2035 wastewater flows.

5.2 2035 Trunk System Population and Flow Projection Methodology

The 2035 Master Sewer Plan Update service area is the area within the existing USA and Woodville. HMM received GIS information from the City containing 2007 and 2035 population projection information. This population data is categorized according to TAZ boundaries, and includes all of Leon County. The US Census Bureau defines a TAZ as follows:

> "A traffic analysis zone (TAZ) is a special area delineated by state and/ or local transportation officials for tabulating traffic-related data, especially journey-to-work and place-of-work statistics. A TAZ usually consists of one or more census blocks, block groups, or census tracts."

For the TAZs partially inside the USA boundary, HMM used ArcGIS tools to calculate the percentage of TAZ polygons within the existing USA boundary, utilizing the most current GIS layers and shapefiles. This percentage was applied to the applicable TAZ population projections for 2035. **Appendix A Figure 5-2** shows the USA boundary map with TAZ boundaries. **Table 5-2** summarizes the TAZ analysis for the USA and Leon County.

Table 5-2: USA Traffic Analysis Zones

TOTAL LEON CO. TAZs	TAZs in USA		TOTAL TAZs in USA	TAZs not in USA (n)
	100% (n)	Portion (n)		
760	627	63	690	70

Table 5-3 shows the USA population and flow projections for 2035 based on TAZs.

Table 5-3: 2035 USA Population and Wastewater Flow Projection

YEAR	TOTAL USA POPULATION	EST. USA FLOW (MGD) *	TOTAL LEON CO. POPULATION	POP. NOT IN USA
2035	284,328	28.43	334,966	50,638

* At 100 gallons per capita-day (gpcd).

This population projection was multiplied by the City's established planning value of 100 gallons per capita-day (gpcd) to estimate the total USA wastewater flow for 2035. This value includes projected flow from existing areas within the USA currently served by

Talquin Electric Cooperative (Talquin), the 13 Unsewered Target Areas identified in Section 3, as well as other large unsewered areas currently within the USA but outside the City limits.

The previous 2030 Trunk System Model was constructed based on the Trunk System boundaries shown in **Appendix A Figure 4-1**, and included new infrastructure necessary to serve these areas (i.e., the entire USA and Woodville). This infrastructure was deemed appropriate for use in creating the 2035 Trunk System Model.

The total 2035 Master Sewer Plan Update flow projection is shown in **Table 5-4**. This flow is based solely on TAZ population projections.

Table 5-4: 2035 Master Sewer Plan Wastewater Flow Projection

YEAR	TOTAL USA POPULATION	EST. USA FLOW (MGD) *	TOTAL LEON CO. POPULATION	POP. NOT IN USA
2035	284,328	28.43	334,966	50,638
Est. 2035 Woodville Population:		1,408 (see **Table 3-1**)		
Est. 2035 Woodville Flow:		0.141 MGD *		
TOTAL PROJECTED 2035 FLOW:		**28.57 MGD**		

* At 100 gallons per capita-day (gpcd).

Calibration of the 2035 dry-weather Trunk System Model was performed as follows:

1. The 2030 dry-weather model provided by the City contained dry-weather inflows totaling 32.766 MGD. Therefore all dry-weather inflows were globally multiplied by 0.872 (28.571 ÷ 32.766), and the model was run. This resulted in a calibrated 2035 dry-weather Trunk System Model inflow of approximately 28.81 MGD to the TPSWRF.

The total wet-weather inflow of 11.6 MGD from the calibrated 2014 Trunk System Model was used to simulate the same wet-weather inflow condition in the 2035 Trunk System Model, for an average 2035 wet-weather inflow of 40.41 MGD (28.81 plus 11.6 MGD). This methodology assumes newly-constructed infrastructure will be adequately tested for leakage, thereby greatly reducing the likelihood of additional RDII entering the system via this new infrastructure.

Once the 2035 dry- and wet-weather Trunk System Models were fully established and running, HMM performed a capacity and operational assessment of the gravity sewer

system, pump stations, and sewer force main system, in order to confirm the updated 2035 infrastructure solution set will perform as desired.

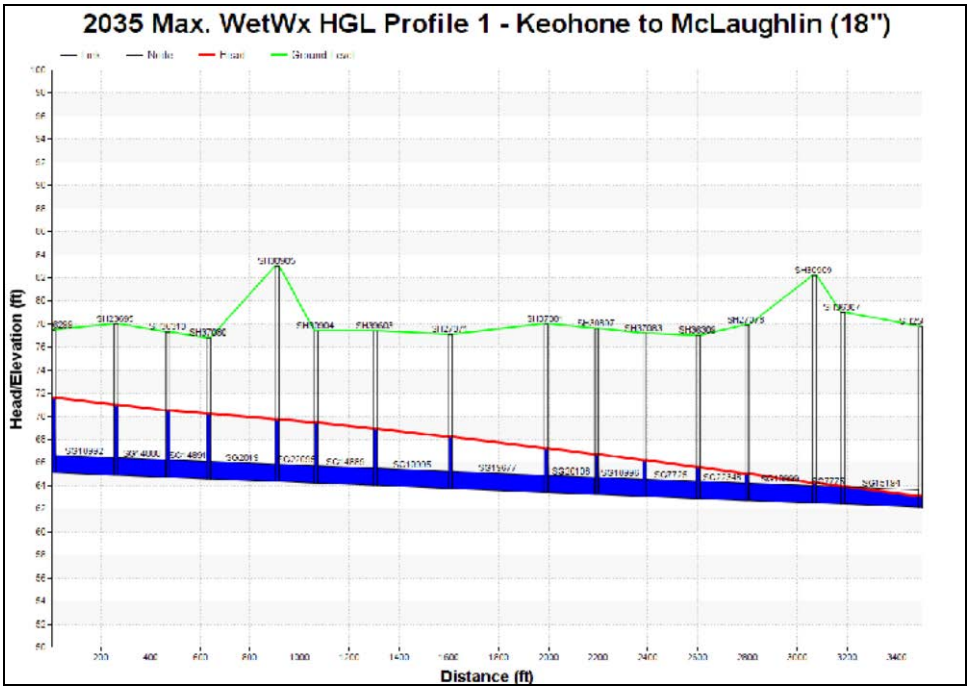
The 2035 Trunk System Model does not reflect any system rehabilitation improvements which may be identified by subsequent study authorized by the Underground Utilities Department. Some pipes may be rehabilitated, replaced or abandoned due to structural defects, material degradation, or impacts from other major infrastructure investments/ improvements.

6. Sewer System Capacity Analysis (2035 Trunk System Model)

6.1 Gravity System Capacity Analysis

The model's gravity sewer system capacity was analyzed on a depth-of-flow basis, based on flow projections derived in Section 5. Gravity sewers flowing full were considered to be at 100% capacity; profiles of those sewer reaches flowing 100% full at some point during the model run(s) were generated to verify the degree of manhole surcharging (i.e., manhole filling above highest influent or effluent pipe crown elevation), to identify potential problem areas. There are no overflowing, or "flooding," manholes in the final wet-weather 2035 Trunk System Model. However, there were several reaches of gravity sewers flowing full under the wet-weather scenario (see **Appendix A Figure 6-1**). Profiles of several longer stretches of gravity sewers flowing full were extracted from the model output. The comments on **Appendix A Figure 6-1** present HMM's observations regarding each of these profiles under the full-flow conditions. As the profile comments indicate, the majority of the surcharging conditions do not warrant additional analysis or concern.

Profiles of each surcharged reach are contained in **Appendix D**, an example of which follows:



It should be noted that the surcharged conditions in the cited profiles do not necessarily occur at the same time step in the model analysis. Minor surcharging of the system and manholes is acceptable, practical and economical without detriment to connected customers or risk of overflow. However, these reaches should be reviewed for rehabilitation, repair or replacement in order to reduce I/ I entering the system upstream of the applicable area.

6.2 Pump Station Capacity Analysis

A summary of each pump station's performance was extracted from the model output and reviewed:

- Number of pumps and pump stations running
- Average pump flow and total gallons pumped by each pump
- Total pump run time over 24 hours
- Number of pump starts over 24 hours

All of the pumps are currently modeled as constant-speed, the exception being Pump Station 149, whose pumps are modeled to maintain as close to a constant wet well level as possible throughout the simulation.

Wet wells were evaluated to identify those where surcharging into the upstream collection system was occurring.

The following observations were made during the course of the model runs:

- Several pump stations appear to surcharge into their respective influent gravity systems by design, due primarily to shallow wet wells.
- The following pump stations were upgraded in order to accommodate the increase in flow from 2014 to 2035:
    - PS33 (Mt. Sinai Road; increase pump capacity to 625 gpm at 140 ft. TDH)
    - PS127 (Silver Ridge; increase pump capacity to 350 gpm at 50 ft. TDH)
    - PS137 (Commerce Industrial Park; for future tie-in to the CCFM)
- Approximately 34 of the 108 pump stations running in the model appear to start at least 90 times within a 24-hour period. This indicates pump control level adjustments may be necessary in order to extend the useful life of these pumps.

6.3 Force Main Capacity Analysis – 2035 Wet Weather

In order to conduct a capacity analysis of the City's force main sewer system, it was necessary to establish a limiting capacity condition. The limiting condition chosen by HMM and COT for this analysis was an instantaneous force main velocity of 6.5 feet per second (fps). Three hundred nineteen force main segments were identified in the model with instantaneous velocities greater than 6.5 fps. **Appendix A Figure 6-2** identifies these force main reaches. However, 282 of these segments (approximately 90%) had average velocities less than 6.5 fps over the 24-hour model simulation. The large number of force main segments exhibiting maximum instantaneous velocities ≥ 6.5 fps is primarily due to various pumps starting and stopping instantaneously throughout the City's manifolded force main system over the duration of the model simulation.

Thirty-seven force main segments had an average velocity greater than 6.5 fps, 15 of which are 4-inch diameter. Of these 15 four-inch segments, 12 are less than 10 feet long, indicating they are very close to their respective pump discharges, and are therefore likely affected by rapid cycling of the pumps, not posing long-term concern.

Five force main segments exceeded an average velocity of 10 fps. These are:

- SP44533: 42" run of CCFM south of Apalachee Parkway (on downhill slope)
- SP44672: 42" run of CCFM south of Apalachee Parkway (on downhill slope)
- SP43839: 36" run of CCFM north of Apalachee Parkway
- SP44069: 36" run of CCFM north of Apalachee Parkway
- SP44361: 8" run on downhill slope discharging to gravity system upstream of PS33

These five should not be of concern given their design duty and slope.

Appendix D contains this capacity analysis information in tabular format for each pump station, under both dry- and wet-weather scenarios.

6.4 2035 Conceptual Capacity-Related Trunk System Infrastructure Expansion

Utilizing the capacity analyses in Sections 6.1, 6.2, and 6.3, 2035 conceptual trunk system improvements were developed and are shown in **Appendix A Figure 6.3**. This map represents the *minimum* additional trunk system components necessary to extend sanitary sewer service to the entire existing USA and the Woodville Rural Community. The conceptual expansion includes the pump stations and force mains necessary to service the

Unsewered Target Areas, as well as the four existing Talquin franchise areas within the existing USA, and the Other Large Unsewered Areas.

The 2035 set does not consider low-pressure sewer systems. These are considered by the City to be non-standard, high-maintenance, low-cost, temporary solutions which can be an impediment to the orderly expansion of a gravity sewer system. As such, low-pressure sewer systems are not considered for system expansion, as these systems are independent, not expandable, and are not typically sized to convey wastewater from adjacent abutting upland development.

A brief description of each potential capacity-related improvement follows. The letter prefix for each project corresponds to its corresponding Trunk System location as shown on **Appendix A Figure 4-1**.

Capacity-Related Improvements

B-04: Killearn Trunk Outfall Upgrade during Eastgate Drainage Improvements

Project B-04 involves the replacement of the existing 15-inch gravity system with approximately 5,800 linear feet of 18-inch gravity sewer and 29 manholes to serve the new development in the Olson Road area south of Interstate 10. It also accommodates Pump Station 84 emergency bypass through Killearn.

D-04: Pump Station 33 Upgrade

Project D-04 is the construction of a pump station upgrade along Apalachee Parkway. The pump station connects to the existing 8-inch force main with an average discharge of approximately 625 gpm.

G-01: Pump Station 137 (Tied to CCFM)

Project G-01 is the construction of a pump station upgrade and 12-inch force main along Woodville Highway. The force main connects to the 42-inch Capital Circle force main with an average discharge of approximately 900 gpm.

H-01: Capital Circle West Force Main – Phase 1

Project H-01 is the construction of new 16-inch and 20-inch force main along Capital Circle SW between Pump Station 73 and Highway 90 West, to provide additional capacity and redundancy along the western sewer trunk system.

H-02: Capital Circle West Force Main – Phase 2

Project H-02 is the construction of new 20-inch force main along Capital Circle SW between Pump Station 73 and the TPSWRF, to provide additional capacity and redundancy along the western sewer trunk system.

H-11: Pump Station 157 Force Main Extension

Project H-11 is the construction of new 6-inch force main between Appleyard Drive and Pat Thomas Parkway. This project is a capacity-related improvement that distributes a portion of the flow from Pump Station 157 to the 36-inch gravity main south of Pump Station 36.

H-13: Mission Road Gravity Sewer Upgrade

Project H-13 is the construction of new 10-inch and 15-inch gravity main along Mission Road to accommodate the flows from the Huntington Estates subdivision. This project is a capacity-related improvement that connects to the existing 15-inch gravity main discharging into Pump Station 36.

I-03: Pump Station 127 Upgrade

Project I-03 is an upgrade to the existing pumps in PS127, to prevent manhole flooding upstream of the station. The existing 350 gpm pumps would be upgraded from their current design head of approximately 24 feet to 50 feet.

I-04: Jake Gaither Inverted Siphon Modifications

Project I-04 involves the installation of a fourth channel to the inverted siphon and replacing upstream and downstream structures, which will increase the capacity from 10 MGD to 14 MGD. The additional capacity is needed to accommodate the Northeast Bypass operation and it also reduces the need for Pump Station 9, which is very difficult to maintain due to extended periods of in-operation. The new channel will be 250 linear feet of 24-inch HDPE installed by horizontal directional drilling.

M-02: Varsity Drive Upgrade

Project M-02 involves the construction of approximately 1,400 linear feet of 18-inch gravity main to parallel the existing 18-inch gravity main along Stadium Drive from Pensacola Street to Gaines Street. It also includes six manholes. This project would provide additional capacity during peak flow periods.

Alternatively, a pop-off connection may be constructed of approximately 300 linear feet of 18-inch gravity sewer from manhole SH31833 to manhole SH39350 to divert part of the flow from Varsity Drive into Pump Station 123 during peak flows. This option also involves the replacement of the two manholes mentioned above.

M-03: Pump Station 123 Force Main Extension to Airport Drive

Project M-03 is the construction of approximately 800 linear feet of 12-inch force main to connect the discharge of Pump Station 123 to the gravity sewer manhole at the intersection of Jackson Bluff Road and Eppes Street (SH36827). This has the combined effect of reducing flow into the 36-inch gravity main along Lake Bradford

Road to accommodate the Varsity Drive Upgrade (Project M-02), and utilizes existing reserve capacity in Pump Station 1.

6.5 Other 2035 Conceptual Trunk System Infrastructure Expansion

In addition to the capacity-related improvements, the Master Plan Update also includes other improvements, in the following categories:

1. Operational Strategy- Related Improvements
2. Target Unsewered Area-Related Improvements
3. Large Insewered Area Improvements (not included in Item 2)
4. Talquin Service Area Improvements

6.5.1 Operational Strategy-Related Improvements

Operational improvements include projects that make the system more efficient (and therefore cheaper) to operate, such as installing a gravity main to replace a pump station and force main.

A-02: Pump Station 112 Gravity Outfall

Project A-02 is the construction of new 8-inch gravity main along Bradfordville Road and Velda Dairy Road, which allows the City to abandon the existing pump station. This project is an operational strategy improvement that connects to the existing 8-inch gravity main discharging into Pump Station 84.

A-03: Pump Station 129 Gravity Outfall

Project A-03 is the construction of new 10-inch gravity main through easements and along Velda Dairy Road, which allows the City to abandon the existing pump station. This project is an operational strategy improvement that connects to the existing 10-inch gravity main discharging into Pump Station 84.

A-04: Pump Station 128 Gravity Outfall

Project A-04 is the construction of new 12-inch gravity main along minor streets and easements in the Ox Bottom subdivision, which allows the City to abandon the existing pump station. This project is an operational strategy improvement that connects to the existing 12-inch gravity main discharging into Pump Station 84.

A-05: Pump Station 85 Gravity Outfall

Project A-05 is the construction of new 10-inch gravity main through easements and along Meridian Road that allows the City to abandon the existing pump station. This

project is an operational strategy improvement that connects to the existing 20-inch gravity main discharging into Pump Station 94.

A-15: Velda Dairy 15-inch Gravity Sewer Upgrade

Project A-15 is the replacement of approximately 2,800 linear feet of 10-inch gravity sewer pipes with 15-inch gravity sewer pipes. This project will also involve the construction of 16 new manholes.

A-16: Replacement of Drop Manhole SH28379

Project A-16 is the replacement of a drop manhole which is roughly 16 feet deep, and is located in an easement near McLaughlin Drive.

A-17: Pump Station 155 Force Main Discharge into Velda Dairy Gravity Sewer

Project A-17 involves the construction of approximately 15 linear feet of 6-inch forcemain to connect the discharge from Pump Station 155 into the 15-inch gravity sewer along Velda Dairy Road. This will redirect thick pasty highly cohesive sewage from the 10-inch force main to the higher velocity gravity system until such time as the flows from Pump Station 155 increase sufficiently to provide flushing velocities in the force main. This project will also improve the wet-weather operation of Pump Station 94.

B-03: Raymond Diehl Road 10-inch Force Main Extension

Project B-03 involves the construction of approximately 1,100 linear feet of 10-inch forcemain from the intersection of Royal Palm Way and Raymond Diehl Road to the manhole located on Raymond Diehl Road upstream of the Interstate 10 crossing of the gravity sewer.

D-01: Pump Station 13 Gravity Outfall

Project D-01 is the construction of new 8-inch gravity main along an easement just south of Connie Road that allows the City to abandon the existing pump station. This project is an operational strategy improvement that connects to the existing 8-inch gravity main discharging into Pump Station 108.

D-13: Pump Station 74 Parallel Force Main

Project D-13 is the construction of a 30-inch force main to parallel and provide redundancy for the existing 30-inch force main that extends from Pump Station 74 to the 36-inch Capital Circle Force Main.

F-01: CCSE Force Main Flow Control Valve

Project F-01 is the construction of an automated flow control valve system on the existing 42-inch CCSE force main. This project will regulate flow in the entire

CCFM between PS84 and PS65, in order to maintain full-pipe conditions in the CCFM upstream of PS65.

G-02: CCSE Force Main Valve Replacement and Bleed-Off

Project G-02 is replacement of five existing plug valves with full-port valves on the 42-inch CCSE force main. These existing valves are located between Crawfordville Highway and the TPSWRF. This project also includes constructing three 8-inch diameter bleed-off lines to accommodate draining the CCFM to either the PS120 gravity system, the PS142 gravity system, or the PS65 gravity system.

H-03: Pump Station 160 Gravity Outfall

Project H-03 is the construction of new 24-inch gravity main along easements that allows the City to abandon the existing pump station. This project is an operational strategy improvement that connects to the proposed 27-inch gravity main which will discharge into Pump Station CCNW.

H-04: CCNW Pump Station and Force Main

Project H-04 is the construction of a new pump station and 14-inch force main along Capital Circle SW just South of Swamp Fox Road, to serve existing and future development. The force main connects to the proposed 20-inch Capital Circle West force main with an average discharge of approximately 1,800 gpm.

H-05: Pump Station 37 Gravity Outfall & Pump Station 78 Upgrade

Project H-05 is the construction of new 8-inch gravity main between Blountstown Highway and Century Park Road, which allows the City to abandon existing PS37 in favor of upgrading PS78. This project is an operational strategy improvement that connects to the existing 36-inch gravity main discharging into Pump Station 12.

H-06: Pump Station 95 Gravity Outfall

Project H-06 is the construction of new 8-inch gravity main between Rankin Road and Capital Circle, which allows the City to abandon the existing pump station. This project is an operational strategy improvement that connects to the existing 15-inch gravity main discharging into Pump Station 73.

H-10: Capital Circle West Force Main – Phase 3

Project H-10 is the construction of new 16-inch force main along Capital Circle NW between Highway 90 West and the proposed Talquin 2 Pump Station, to provide sewer service to the existing Talquin Electric Cooperative service area along the western sewer trunk system.

H-12: Pump Station 66 Relocation

Project H-12 is the relocation of a pump station and force main extension between Blountstown Highway and Burgess Road. The force main connects to the existing 6-inch force main with an average discharge of approximately 500 gpm.

H-24: Pump Station 12 Parallel Forcemain

Project H-24 is the construction of a 30-inch force main to parallel the existing 30" DIP force main and 42" gravity sewer along Orange Avenue and Springhill Road. The new force main connects to the existing PS12 30-inch force main at Pump Station 149.

H-25: Pump Station 12 Replacement

Project H-25 is the construction of a new pump station to replace Pump Station 12.

I-05: TPSWRF Force Main/ Valve Manifold

Project I-05 is the construction of a force main manifold system at the TPSWRF. This project will provide interconnection among the CCFM, PS149 and PS12 discharge force mains at the TPSWRF, as well as provide a means to partially drain any of these force mains to a TPSWRF influent holding pond.

J-01: Pump Station 117 (Tied to CCFM)

Project J-01 is the construction of an 8-inch bypass force main. The force main connects to the 20-inch Capital Circle force main with an average discharge of approximately 450 gpm.

M-01: Gravity Sewer from Lake Bradford Road to Gamble Street

Project M-01 is the construction of a 36-inch gravity line and a 42-inch gravity sewer to replace portions of the existing gravity sewer from a manhole on Lake Bradford Road to a manhole south of Gamble Street. This project includes a bored railroad crossing.

6.5.2 Target Unsewered Area-Related Improvements

A-07: Rose Hill

Project A-07 provides the existing Rose Hill subdivision septic tank area with central sewer. This project connects to the existing 12-inch force main along Ox Bottom Road, which discharges into the Pump Station 84 gravity main system.

A-08: Killearn Acres

Project A-08 provides the existing Killearn Acres subdivision septic tank area with central sewer. This project connects to the existing 10-inch gravity main just south of Pimlico Road, which discharges into Pump Station 84.

C-01: Centerville Trace

Project C-01 provides the existing Centerville Trace subdivision septic tank area with central sewer. This project connects to the existing Pump Station 118 along Centerville Road, which discharges into the existing 24-inch Centerville Road/ Capital Circle force main.

D-05: Buck Lake

Project D-05 provides the existing Buck Lake subdivision septic tank area with central sewer. This project connects to the existing 10-inch gravity main along Buck Lake Road that discharges into Pump Station 92.

D-11: Avondale

Project D-11 provides the existing Avondale subdivision septic tank area with central sewer. The northern third of the project connects by gravity to the existing 10-inch gravity sewer along Buck Lake Road; the southern two-thirds will be connected offsite to PS154.

D-12: Plantation Estates

Project D-12 provides the existing Plantation Estates subdivision septic tank area with central sewer. This project connects to the existing 12-inch gravity main along Highway 90. The City currently does not provide water service to Plantation Estates. The City requires properties connecting to the sewer system to also connect to City water. Therefore, the cost to construct a water system would need to be added to the cost of providing central sewer.

H-17: Lake Jackson

Project H-17 provides the existing Lake Jackson community septic tank area with central sewer. This project connects to the existing 21-inch gravity main along Meginnis Arm that discharges into Pump Station 43.

H-18: Bobbin Mill

Project H-18 provides the existing Bobbin Mill subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 6 along Timberlane Road.

H-19: Huntington Estates

Project H-19 provides the existing Huntington Estates subdivision septic tank area with central sewer. This project connects to the existing 15-inch gravity main along Mission Road.

H-22: Harbinwood Estates

Project H-22 provides Harbinwood with central sewer. This project connects to the proposed 12-inch gravity main along Old Bainbridge Road, which discharges into the proposed Huntington (Woodhill) PS.

H-23: Northwest Leon County

Project H-23 provides three selected areas in Northwest Leon County currently on septic tanks with central sewer. This project connects to a pump station proposed as part of Project H-19.

L-01: Lake Munson

Project L-01 provides the existing Lake Munson subdivision septic tank area with central sewer. This project connects to the existing 42-inch Capital Circle force main.

N-01: Woodville

Project N-01 provides the existing Woodville Rural Community septic tank area with central sewer. This project connects to the existing Pump Station 137 along Woodville Highway, which discharges into the 42-inch Capital Circle force main.

6.5.3 Large Unsewered Area Improvements

A-09: Maclean Hills

Project A-09 provides the existing Maclean Hills subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 84 sewer system.

A-10: Ox Bottom

Project A-10 provides the existing Ox Bottom subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 84 sewer system.

A-11: Spencer

Project A-11 provides the existing Spencer subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 84 sewer system.

A-12: High Grove

Project A-12 provides the existing High Grove subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 84 sewer system.

A-13: Velda Dairy

Project A-13 provides the existing Velda Dairy subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 84 sewer system.

A-14: Rabbit Pond

Project A-14 provides the existing Rabbit Pond subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 84 sewer system.

B-01: Middlebrook

Project B-01 provides the existing Middlebrook subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 43 sewer system along Live Oak Plantation Road.

D-03: Apalachee Parkway East

Project D-03 provides the existing Apalachee Parkway East septic tank area with central sewer in the Chaires Crossroads area. This project connects to the existing 8-inch force main along Apalachee Parkway.

D-06: Davis Subdivision

Project D-06 provides the existing Davis subdivision septic tank area with central sewer. This project connects to the existing 8-inch force main along Apalachee Parkway.

D-07: Tongue Hill

Project D-07 provides the existing Tongue Hill subdivision septic tank area with central sewer. This project connects to the 14-inch force main along Buck Lake Road that discharges into the Pump Station 74 gravity main system.

D-08: Windwood Hills

Project D-08 provides the existing Windwood Hills subdivision septic tank area with central sewer. This project discharges into the existing Pump Station 33 along Apalachee Parkway.

D-09: Apalachee Parkway/ Williams Road

Project D-09 provides the existing septic tank area near Williams Road and Apalachee Parkway with central sewer. This project connects to the proposed 12-inch gravity main which will discharge into Pump Station 33.

D-10: Twin Lakes Subdivision

Project D-10 provides the existing Twin Lakes subdivision septic tank area with central sewer. This project connects to the existing 15-inch gravity main, just South of Apalachee Parkway, which discharges into Pump Station 74.

E-01: CCSE (Sembler) Pump Station & Force Main

Project E-01 is the construction of a new pump station and 14-inch force main along Capital Circle SE just south of Tram Road, to serve future development in the Southwood community. The force main connects to the 42-inch Capital Circle force main with an average discharge of approximately 1,569 gpm.

H-08: West Tennessee Street Pump Station

Project H-08 provides the existing septic tank area along West Tennessee Street with central sewer. This project connects to the existing 10-inch gravity main that discharges into Pump Station 165.

H-09: West Jackson Bluff

Project H-09 provides the existing West Jackson Bluff community septic tank area with central sewer. This project connects to the proposed 8-inch gravity main along Aenon Church Road that discharges into the Pump Station CCNW gravity main system.

H-16: W. B. Rodgers Gravity Main

Project H-16 is the construction of new 10-inch gravity main North of Highway 90 West near W. B. Rodgers, to serve an existing unsewered area. The gravity main connects to the existing 18-inch gravity main that discharges into Pump Station 160.

H-20: Highway 20 West

Project H-20 provides the existing Highway 20 West community septic tank area with central sewer. This project connects to the proposed 12-inch gravity main along Trails End Road that discharges into Pump Station CCNW.

H-21: Highway 90 West

Project H-21 provides the existing Highway 90 West community septic tank area with central sewer. This project discharges into the existing Pump Station 165 along West Tennessee Street.

I-02: Lake Bradford Road

Project I-02 provides the existing Lake Bradford Road subdivision septic tank area with central sewer. This project connects to the existing 12-inch gravity main along Lake Bradford Road and discharges into Pump Station 132.

6.5.4 Talquin Electric Cooperative Service Area Improvements

K1-01: Pump Station & Force Main to Replace Talquin Sandstone Ranch WWTP

Project K1-01 is the construction of a new pump station, 6-inch force main, and 8-inch gravity main along Blountstown Highway to serve the existing Talquin service area. The gravity main connects to the proposed 12-inch gravity main along Trails End Road with an average discharge of approximately 308 gpm.

K2-01: Pump Station & Force Main to Replace Talquin Lake Jackson WWTP

Project K2-01 is the construction of a new pump station and 16-inch force main along easements and Tower Road to serve the existing Talquin service area. The force main connects to the proposed 16-inch force main along Capital Circle with an average discharge of approximately 1,869 gpm.

K3-01: Pump Station & Force Main to Replace Talquin Killearn Lakes WWTP

Project K3-01 is the construction of a new pump station and 12-inch force main along Deerlake and Tekesta Road to serve the existing Talquin service area. The force main connects to the existing 12-inch force main along Bannerman Road with an average discharge of approximately 1,297 gpm.

K4-01: Pump Station & Force Main to Replace Talquin Meadows at Woodrun WWTP

Project K4-01 is the construction of a new pump station and 8-inch force main along Apalachee Parkway to serve the existing Talquin service area. The force main connects to the proposed 12-inch gravity main along Apalachee Parkway with an average discharge of approximately 512 gpm.

Appendix A Figure 6-4 shows the location of the Capacity and Operational Strategy-Related improvements; **Appendix A Figure 6-5** shows the proposed USA Master Plan areas.

Phasing and associated opinions of probable capital cost for each of these proposed projects are discussed in the next Section.

7. 20-Year Capital Improvements Program (2035)

This Section presents a sanitary sewer system 20-Year Capital Improvements Program through the year 2035. In accordance with discussions with City staff, the following criteria were established in generating this Capital Improvements Program (CIP) for this 2035 Master Sewer Plan Update:

- Include capacity-related improvements based on projected population growth & deficiencies within existing service areas.
- Include service area expansion within the existing USA.
- Exclude service area expansion outside of the existing USA, with the exception of the existing Woodville Rural Community.
- Exclude rehabilitation and replacement of existing infrastructure.
- Generate a phased list of projects with input from City staff.
- Project construction cost derived from the costs in **Appendix B**.
- Engineering and Inspection Cost = 17% of estimated Construction Cost.
- Construction costs include a 20% contingency.
- All costs presented in 2015 dollars.

At the City's request, the 20-Year CIP for this project is presented in two parts.

Table 7-1 lists the projects applicable to extending the existing trunk system to serve the entire USA by 2035. Each of these projects is described in **Section 6**.

Table 7-2 contains a 20-year budget which the City intends to spend. The phasing plan lists improvements in one-year increments through 2020, then in five-year increments thereafter. As noted in **Table 7-2**, this phasing plan is for general guidance only, since it will be driven by both policy decisions and available funds as the City's sewer system expands.

In addition to the 20-Year CIP presented in Table 7.2, the City continues to provide funding for minor sewer line extensions within the USA as part of the annual budget appropriations. These minor sewer line extensions will continue to take place concurrently with projects programmed under the CIP.

TABLE 7-1: USA Master Plan Projects

Capacity Related Improvements

Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
B-04	Killearn Trunk Outfall Upgrade During Eastgate Drainage Improvements	$888,000	$151,000	$1,039,000
D-04	Pump Station 33 Upgrade	$420,000	$72,000	$492,000
G-01	Pump Station 137 (Tied to CCFM)	$1,056,000	$180,000	$1,236,000
H-01	Capital Circle West Force Main - Phase 1 (PS 73 to Hwy 90)	$300,000	$0	$300,000
H-02	Capital Circle West Force Main - Phase 2 (TPS to PS 73)	$3,238,000	$551,000	$3,789,000
H-11	Pump Station 157 Force Main Extension	$141,000	$24,000	$165,000
H-13	Mission Road Gravity Sewer Upgrade	$611,000	$104,000	$715,000
I-03	Pump Station 127 Pump Upgrade	$64,000	$11,000	$75,000
I-04	Jake Gaither Inverted Siphon Modifications	$330,000	$57,000	$387,000
M-02	Varsity Drive Upgrade	$208,000	$36,000	$244,000
M-03	Pump Station 123 Force Main Extension to Airport Drive	$81,000	$14,000	$95,000
	Total Capacity Related Improvements			**$8,537,000**
				(2.6% of CIP total)

Notes:

1) **Blue text** = capacity related improvements.

2) **Red text** = target unsewered area related improvements.

3) **Green text** = operational strategy related improvements.

4) **Purple text** = large unsewered area related improvements.

TABLE 7-1: USA Master Plan Projects (Continued)

Operational Strategy Related Improvements

Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
A-02	Pump Station 112 Gravity Outfall	$318,000	$55,000	$373,000
A-03	Pump Station 129 Gravity Outfall	$470,000	$80,000	$550,000
A-04a	Pump Station 128 Gravity Outfall	$384,000	$66,000	$450,000
A-04b	Pump Station 128 Gravity Outfall	$128,000	$22,000	$150,000
A-05	Pump Station 85 Gravity Outfall	$460,000	$79,000	$539,000
A-15	Velda Dairy 15" Gravity Sewer Upgrade	$252,000	$43,000	$295,000
A-16	Replace Drop Manhole SH28379	$12,000	$3,000	$15,000
A-17	Pump Station 155 Force Main Discharge into Velda Dairy Gravity Sewer	$8,000	$2,000	$10,000
B-03	Raymond Diehl Road 10" Force Main Extension	$30,000	$5,000	$35,000
D-01	Pump Station 13 Gravity Outfall	$287,000	$49,000	$336,000
D-13	PS 74 Parallel Force Main	$425,000	$73,000	$498,000
F-01	Flow Control Valve on CCSE Force Main	$300,000	$51,000	$351,000
G-02	Capital Circle 42" Force Main Valves and Bleed-Offs	$496,000	$85,000	$581,000
H-03	Pump Station 160 Gravity Outfall	$811,000	$138,000	$949,000
H-04	CCNW Pump Station and Force Main	$1,689,000	$288,000	$1,977,000
H-05	Pump Station 37 Gravity Outfall & Pump Station 78 Upgrade	$531,000	$91,000	$622,000
H-06	Pump Station 95 Gravity Outfall	$345,000	$30,000	$375,000
H-10	Capital Circle West Force Main - Phase 3 (PS Talquin2 to Hwy 90)	$2,514,000	$428,000	$2,942,000
H-12	Pump Station 66 Relocation	$362,000	$62,000	$424,000
H-24a	PS 12 Parallel Force Main	$3,470,000	$590,000	$4,060,000
H-24b	PS 12 Parallel Force Main	$876,000	$149,000	$1,025,000
H-25a	PS 12 Replacement	$171,000	$29,000	$200,000
H-25b	PS 12 Replacement	$256,000	$44,000	$300,000
H-25c	PS 12 Replacement	$775,000	$125,000	$900,000
H-25d	PS 12 Replacement	$1,260,000	$215,000	$1,475,000
I-05	TPSWRF Force Main/ Valve Manifold	$1,110,000	$190,000	$1,300,000
J-01	Pump Station 117 (Tied to CCSWFM)	$10,000	$2,000	$12,000
M-01a	Gravity Sewer Line from Lake Bradford Road to Gamble St.	$600,000	$150,000	$750,000
M-01b	Gravity Sewer Line from Lake Bradford Road to Gamble St.	$600,000	$0	$600,000
	Total Operational Strategy Related Improvements			**$22,094,000**
				(6.7% of CIP total)

Notes:

1) **Blue text** = capacity related improvements.

2) **Red text** = target unsewered area related improvements.

3) **Green text** = operational strategy related improvements.

4) **Purple text** = large unsewered area related improvements.

TABLE 7-1: USA Master Plan Projects (Continued)

Target Unsewered Area Related Improvements

Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
A-07	Rose Hill	$3,839,000	$653,000	**$4,492,000**
A-08	Killearn Acres	$22,315,000	$3,794,000	**$26,109,000**
C-01	Centerville Trace	$5,188,000	$882,000	**$6,070,000**
D-05	Buck Lake	$32,103,000	$5,458,000	**$37,561,000**
D-11	Avondale	$2,586,000	$440,000	**$3,026,000**
D-12	Plantation Estates	$2,780,000	$473,000	**$3,253,000**
H-17	Lake Jackson	$26,612,000	$4,525,000	**$31,137,000**
H-18	Bobbin Mill	$13,919,000	$2,367,000	**$16,286,000**
H-19	Huntington Estates	$9,930,000	$1,689,000	**$11,619,000**
H-22	Harbinwood Estates	$15,426,000	$2,623,000	**$18,049,000**
H-23	Northwest Leon County	$13,477,000	$2,292,000	**$15,769,000**
L-01	Lake Munson	$32,361,000	$5,502,000	**$37,863,000**
N-01	Woodville	$22,490,000	$3,824,000	**$26,314,000**
	Total Target Unsewered Area Related Improvements			**$237,548,000**

Notes:

1) **Blue text** = capacity related improvements.

2) **Red text** = target unsewered area related improvements.

3) **Green text** = operational strategy related improvements.

4) **Purple text** = large unsewered area related improvements.

TABLE 7-1: USA Master Plan Projects (Continued)

Large Unsewered Area Improvements (Not Included in Target Unsewered Areas)

Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
A-09	Maclean Hills	$3,455,000	$588,000	**$4,043,000**
A-10	Ox Bottom	$5,423,000	$922,000	**$6,345,000**
A-11	Spencer	$2,832,000	$482,000	**$3,314,000**
A-12	High Grove	$3,896,000	$663,000	**$4,559,000**
A-13	Velda Dairy	$2,602,000	$443,000	**$3,045,000**
A-14	Rabbit Pond	$2,553,000	$435,000	**$2,988,000**
B-01	Middlebrook	$728,000	$124,000	**$852,000**
D-03	Apalachee Parkway East	$416,000	$71,000	**$487,000**
D-06	Davis Subdivision	$1,974,000	$336,000	**$2,310,000**
D-07	Tongue Hill	$1,974,000	$336,000	**$2,310,000**
D-08	Windwood Hills	$1,322,000	$225,000	**$1,547,000**
D-09a	Apalachee Pkwy / Williams Road	$2,004,500	$341,000	**$2,345,500**
D-09b	Apalachee Pkwy / Williams Road	$2,108,000	$359,000	**$2,467,000**
D-10a	Twin Lakes Subdivision	$543,000	$92,000	**$635,000**
D-10b	Twin Lakes Subdivision	$1,368,000	$232,000	**$1,600,000**
E-01	CCSE (Sembler) Pump Station & Force Main	$522,000	$89,000	**$611,000**
H-08	West Tennessee Street Pump Station	$360,000	$62,000	**$422,000**
H-09	West Jackson Bluff	$5,183,000	$882,000	**$6,065,000**
H-16	W. B. Rodgers Gravity Main	$389,000	$67,000	**$456,000**
H-20	Highway 20 West	$1,979,000	$337,000	**$2,316,000**
H-21	Highway 90 West	$6,178,000	$1,051,000	**$7,229,000**
I-02	Lake Bradford Road	$3,333,000	$567,000	**$3,900,000**
	Total Large Unsewered Area Improvements			**$59,846,500**

Total Estimated Capital Cost **$328,025,500**

Estimated Total of City of Tallahassee CIP **$38,134,500**

Total of Currently Unfunded Projects **$289,891,000**

Notes:

1) **Blue text** = capacity related improvements.
2) **Red text** = target unsewered area related improvements.
3) **Green text** = operational strategy related improvements.
4) **Purple text** = large unsewered area related improvements.

TABLE 7-2: 20-Year Master Plan Improvements *
2015 - 2035 Phasing

Phase I (2015 - 2020)

Year	Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
2015	H-01	Capital Circle West Force Main - Phase 1 (PS 73 to Hwy 90)	$300,000	$0	$300,000
2015	H-06	Pump Station 95 Gravity Outfall	$345,000	$30,000	$375,000
2015	H-11	Pump Station 157 Force Main Extension	$141,000	$24,000	$165,000
2015	D-01	Pump Station 13 Gravity Outfall	$287,000	$49,000	$336,000
2015	M-01a	Gravity Sewer Line from Lake Bradford Road to Gamble St.	$600,000	$150,000	$750,000
2016	M-01b	Gravity Sewer Line from Lake Bradford Road to Gamble St.	$600,000	$0	$600,000
2016	I-05	TPSWRF Force Main/ Valve Manifold	$1,110,000	$190,000	$1,300,000
2016	H-24a	PS 12 Parallel Force Main	$3,470,000	$590,000	$4,060,000
2016	H-25a	PS 12 Replacement	$171,000	$29,000	$200,000
2017	A-02	Pump Station 112 Gravity Outfall	$318,000	$55,000	$373,000
2017	D-10a	Twin Lakes Subdivision	$543,000	$92,000	$635,000
2017	H-16	W. B. Rodgers Gravity Main	$389,000	$67,000	$456,000
2017	A-04a	Pump Station 128 Gravity Outfall	$384,000	$66,000	$450,000
2017	A-16	Replace Drop Manhole SH28379	$12,000	$3,000	$15,000
2017	B-03	Raymond Diehl Road 10" Force Main Extension	$30,000	$5,000	$35,000
2017	H-24b	PS 12 Parallel Force Main	$876,000	$149,000	$1,025,000
2017	H-25b	PS 12 Replacement	$256,000	$44,000	$300,000
2017	I-04	Jake Gaither Inverted Siphon Modifications	$330,000	$57,000	$387,000
2017	M-02	Varsity Drive Upgrade	$208,000	$36,000	$244,000
2018	A-04b	Pump Station 128 Gravity Outfall	$128,000	$22,000	$150,000
2018	D-10b	Twin Lakes Subdivision	$1,368,000	$232,000	$1,600,000
2018	H-25c	PS 12 Replacement	$775,000	$125,000	$900,000
2018	A-17	Pump Station 155 Force Main Discharge into Velda Dairy Gravity Sewer	$8,000	$2,000	$10,000
2018	A-15	Velda Dairy 15" Gravity Sewer Upgrade	$252,000	$43,000	$295,000
2018	M-03	Pump Station 123 Force Main Extension to Airport Drive	$81,000	$14,000	$95,000
2018	D-13	PS 74 Parallel Force Main	$425,000	$73,000	$498,000
2019	D-09a	Apalachee Pkwy / Williams Road	$2,004,500	$341,000	$2,345,500
2019	H-25d	PS 12 Replacement	$1,260,000	$215,000	$1,475,000
2020	D-09b	Apalachee Pkwy / Williams Road	$2,108,000	$359,000	$2,467,000
				Phase I (2015 - 2020)	**$21,841,500**

Notes:

1) **Blue text** = capacity related improvements.
2) **Green text** = operational strategy related improvements.
3) **Purple text** = large unsewered area related improvements.
4) Note that $2,150,000 has been allocated for MP projects. Any costs above that allocation will be funded via other sources.
5) Note that $2,260,000 has been allocated for MP projects. Any costs above that allocation will be funded via other sources.
6) Note that $2,305,200 has been allocated for MP projects. Any costs above that allocation will be funded via other sources.
7) Note that $2,420,500 has been allocated for MP projects. Any costs above that allocation will be funded via other sources.

Year	Estimated Capital Cost
2015	**$1,926,000**
2016 [4]	**$6,160,000**
2017 [5]	**$3,920,000**
2018 [6]	**$3,548,000**
2019 [7]	**$3,820,500**
2020	**$2,467,000**
Total	**$21,841,500**

* Phasing plan is for general guidance only. Policy decisions, based upon available revenue and expenditures for system growth versus system operational strategy improvements, may result in significantly different capital budgets and phasing.

TABLE 7-2: 20-Year Master Plan Improvements *
2015 - 2035 Phasing
(Continued)

Phase II (2021 - 2025)

Year	Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
2021-2025	B-04	Killearn Trunk Outfall Upgrade During Eastgate Drainage Improvements	$888,000	$151,000	$1,039,000
2021-2025	G-01	Pump Station 137 (Tied to CCFM)	$1,056,000	$180,000	$1,236,000
2021-2025	H-02	Capital Circle West Force Main - Phase 2 (TPS to PS 73)	$3,238,000	$551,000	$3,789,000
2021-2025	H-13	Mission Road Gravity Sewer Upgrade	$611,000	$104,000	$715,000
2021-2025	H-04	CCNW Pump Station and Force Main	$1,689,000	$288,000	$1,977,000
2021-2025	H-05	Pump Station 37 Gravity Outfall & Pump Station 78 Upgrade	$531,000	$91,000	$622,000
2021-2025	J-01	Pump Station 117 (Tied to CCSWFM)	$10,000	$2,000	$12,000
			Phase II (2021 - 2025)		**$9,390,000**

Notes:

1) **Blue text** = capacity related improvements.

2) **Green text** = operational strategy related improvements.

* Phasing plan is for general guidance only. Policy decisions, based upon available revenue and expenditures for system growth versus system operational strategy improvements, may result in significantly different capital budgets and phasing.

TABLE 7-2: 20-Year Master Plan Improvements *
2015 - 2035 Phasing
(Continued)

Phase III (2026-2030)

Year	Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
2026-2030	D-04	Pump Station 33 Upgrade	$420,000	$72,000	$492,000
2026-2030	I-03	Pump Station 127 Pump Upgrade	$64,000	$11,000	$75,000
2026-2030	A-03	Pump Station 129 Gravity Outfall	$470,000	$80,000	$550,000
2026-2030	A-05	Pump Station 85 Gravity Outfall	$460,000	$79,000	$539,000
2026-2030	F-01	Flow Control Valve on CCSE Force Main	$300,000	$51,000	$351,000
2026-2030	H-12	Pump Station 66 Relocation	$362,000	$62,000	$424,000
		Phase III (2026-2030)			**$2,431,000**

Notes:

1) **Blue text** = capacity related improvements.

2) **Green text** = operational strategy related improvements.

* Phasing plan is for general guidance only. Policy decisions, based upon available revenue and expenditures for system growth versus system operational strategy improvements, may result in significantly different capital budgets and phasing.

TABLE 7-2: 20-Year Master Plan Improvements *
2015 - 2035 Phasing
(Continued)

Phase IV (2031-2035)

Year	Project ID	Project Description	Construction Cost	Engineering/ Inspection Cost	Estimated Capital Cost
2031-2035	G-02	Capital Circle 42" Force Main Valves and Bleed-Offs	$496,000	$85,000	$581,000
2031-2035	H-03	Pump Station 160 Gravity Outfall	$811,000	$138,000	$949,000
2031-2035	H-10	Capital Circle West Force Main - Phase 3 (PS Talquin2 to Hwy 90)	$2,514,000	$428,000	$2,942,000
			Phase IV (2031-2035)		**$4,472,000**

Total Estimated Capital Cost (2015 - 2035) $38,134,500

Notes:

1) **Blue text** = capacity related improvements.

2) **Green text** = operational strategy related improvements.

* Phasing plan is for general guidance only. Policy decisions, based upon available revenue and expenditures for system growth versus system operational strategy improvements, may result in significantly different capital budgets and phasing.

8. Summary and Recommendations

8.1 Summary

- The City of Tallahassee's *InfoSWMM* Trunk System Model represents a valid working model of the existing system as of 2014. All model elements are matched one-to-one with the City's GIS.

- A detailed analysis of 13 unsewered target areas was performed to determine the present day cost required to provide central sewer to these areas.

- Population projections for the existing USA were established via TAZ data provided by the Tallahassee – Leon County Planning Department (2014).

- The 2035 Trunk System Model was established to provide sewer service to the entire existing USA, and the Woodville Rural Community.

- Capacity analysis of the gravity system showed minor manhole surcharging in the system during wet-weather. Most of the observed gravity system surcharging is of little concern, due to minimal surcharging of manholes and significant system storage capacity prior to surface discharge (manhole "flooding"). Minor surcharging of the system and manholes without detriment to connected customers or risk of overflow is acceptable, practical and economical. These reaches should be periodically reviewed for rehabilitation, repair or replacement in order to reduce RDII entering the system upstream of the applicable area.

- The Shannon Lakes area tributary to PS84 should be monitored as the flows in this area of the system increase over the Master Planning period. This trunk system was identified in the 2030 Master Sewer Plan, prepared in 2010, as an area of interest, due to irregular pipe slopes, negative pipe slopes, and larger pipes upstream of smaller diameter pipes.

- All pump stations were reviewed for both dry- and wet-weather operation, and some inefficiencies in pump cycle times were observed, many of which may be rectified by adjusting pump operating levels. Several pump stations run minimally throughout the day and have significant capacity available for future flows.

- The wet-weather force main capacity analysis revealed several instances where force mains are either nearing or are exceeding capacity, based on a limiting

condition of 6.5 fps. Velocities in four reaches of the large diameter CCFM average 10 fps and above.

- A phased Capital Improvements Program was created through the year 2035.

8.2 Recommendations

The following recommendations are offered to the City as a result of this project:

- Continue updating the model's physical data, calibration (via flow monitoring), and operating scenario(s) to reflect evolving system conditions, operating protocol(s), and bypassing capabilities.

- Develop a Trunk System Model maintenance guidelines and specifications protocol, to ensure modifications are uniformly made to the Trunk System Models by all entities whose use of the models is authorized by the City. A semiannual update period is recommended.

- Consider adjustments to several pump station operating levels, to better equalize the stations' performance.

- Consider modifications to several pump impellers and/ or motors, to better equalize the stations' performance, enabling pumps to operate more efficiently.

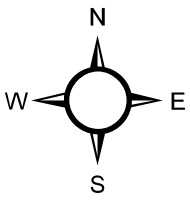
- Now that RDII into Pump Station 36 has been studied via a flow monitoring program, remedial actions should be undertaken where practicable to reduce flows into and out of this pump station.

- Continue coordinating development of the Capital Circle West/ Southwest Force Main with the proposed widening of Capital Circle.

Appendix A: Figures

MAY 2015

FIGURE 2-1: 2014 OVERALL TRUNK SYSTEM MODEL



N MONROE ST
CAPITAL CIR NW
N MERIDIAN RD
THOMASVILLE RD
CENTERVILLE RD
MICCOSUKEE RD
INTERSTATE 10
INTERSTATE 10
W THARPE ST
W TENNESSEE ST
E TENNESSEE ST
W PENSACOLA ST
W GAINES ST
BLOUNTSTOWN HWY
MAHAN DR
CAPITAL CIR NE
APALACHEE PKWY
ORANGE AVE W
ORANGE AVE E
S MONROE ST
CAPITAL CIR SE
CAPITAL CIR SW
CRAWFORDVILLE RD
WOODVILLE HWY
TRAM RD
SPRINGHILL RD
WAKULLA SPRINGS RD

Legend

- USA
- **2014_BasinBoundaries**
- **Cad Renderer**
- Trunk System A - Centerville Rd.
- Trunk System B - Riggins Rd.
- Trunk System C - Centre Ct.
- Trunk System D - Weems Rd.
- Trunk System E - Greenwood
- Trunk System F - Shumard Oak
- Trunk System G - Shelfer Rd.
- Trunk System H - Shoreline Dr.
- Trunk System I - Springhill Rd.
- Trunk System J - Airport
- Trunk System L - Madrone Ave.
- Trunk System M - Former LBR

Hatch Mott MacDonald

CITY OF TALLAHASSEE

FIGURE 3-1: UNSEWERED TARGET AREAS

MAY 2015

STUDY AREA 12: NORTHWEST LEON CO.
Estimated Project Cost: $15,800,000
Max Est Sanitary Sewer Connections: 850
Cost Per Connection: $18,600
Study Area Population (2015): 1,781
Study Area Population (2035): 2,027
Population Increase: 13.8%

STUDY AREA 11: HARBINWOOD
Estimated Project Cost: $18,100,000
Max Est Sanitary Sewer Connections: 1080
Cost Per Connection: $16,760
Study Area Population (2015): 1,503
Study Area Population (2035): 1,524
Population Increase: 1.4%

STUDY AREA 9: ROSE HILL
Estimated Project Cost: $4,500,000
Max Est Sanitary Sewer Connections: 98
Cost Per Connection: $45,920
Study Area Population (2015): 202
Study Area Population (2035): 248
Population Increase: 22.8%

STUDY AREA 1: KILLEARN ACRES
Estimated Project Cost: $26,200,000
Max Est Sanitary Sewer Connections: 1,602
Cost Per Connection: $16,355
Study Area Population (2015): 3,094
Study Area Population (2035): 3,162
Population Increase: 2.2%

STUDY AREA 13: PLANTATION ESTATES
Estimated Project Cost: $3,300,000
Max Est Sanitary Sewer Connections: 167
Cost Per Connection: $19,760
Study Area Population (2015): 155
Study Area Population (2035): 163
Population Increase: 5.2%

STUDY AREA 8: CENTERVILLE TRACE
Estimated Project Cost: $6,100,000
Max Est Sanitary Sewer Connections: 483
Cost Per Connection: $12,630
Study Area Population (2015): 1,292
Study Area Population (2035): 1,439
Population Increase: 11.4%

STUDY AREA 4: HUNTINGTON ESTATES
Estimated Project Cost: $11,700,000
Max Est Sanitary Sewer Connections: 729
Cost Per Connection: $16,050
Study Area Population (2015): 2,294
Study Area Population (2035): 2,419
Population Increase: 5.4%

STUDY AREA 7: BOBBIN MILL
Estimated Project Cost: $16,300,000
Max Est Sanitary Sewer Connections: 837
Cost Per Connection: $19,500
Study Area Population (2015): 1,252
Study Area Population (2035): 1,257
Population Increase: 0.4%

STUDY AREA 3: LAKE JACKSON
Estimated Project Cost: $31,200,000
Max Est Sanitary Sewer Connections: 1,532
Cost Per Connection: $20,370
Study Area Population (2015): 3,795
Study Area Population (2035): 4,010
Population Increase: 5.7%

STUDY AREA 2: BUCK LAKE
Estimated Project Cost: $37,600,000
Max Est Sanitary Sewer Connections: 1,901
Cost Per Connection: $19,780
Study Area Population (2015): 4,950
Study Area Population (2035): 6,020
Population Increase: 21.6%

STUDY AREA 10: AVONDALE
Estimated Project Cost: $3,100,000
Max Est Sanitary Sewer Connections: 187
Cost Per Connection: $16,580
Study Area Population (2015): 156
Study Area Population (2035): 162
Population Increase: 3.8%

STUDY AREA 5: LAKE MUNSON
Estimated Project Cost: $37,900,000
Max Est Sanitary Sewer Connections: 3,162
Cost Per Connection: $12,000
Study Area Population (2015): 5,137
Study Area Population (2035): 5,534
Population Increase: 7.7%

STUDY AREA 6: WOODVILLE
Estimated Project Cost: $26,400,000
Max Est Sanitary Sewer Connections: 2,150
Cost Per Connection: $12,280
Study Area Population (2015): 1,281
Study Area Population (2035): 1,408
Population Increase: 10%

THOMASVILLE RD
CENTERVILLE RD
N MERIDIAN RD
CAPITAL CIR NW
INTERSTATE 10
MICCOSUKEE RD
MAHAN DR
W THARPE ST
N MONROE ST
BLOUNTSTOWN H
W GAINES ST
LAKE BRADFORD RD
S MONROE ST
APALACHEE PKWY
ORANGE AVE W
ORANGE AVE E
CAPITAL CIR SE
SPRINGHILL RD
CAPITAL CIR SW
CRAWFORDVILLE RD
WOODVILLE HWY
TRAM RD
WAKULLA SPRINGS RD

N
W E
S

Legend

- USA
- Area 1 Killearn Acres
- Area 2 Buck Lake
- Area 3 Lake Jackson
- Area 4 Huntington Estates
- Area 5 Lake Munson
- Area 6 Woodville
- Area 7 Bobbin Mill
- Area 8 Centerville Trace
- Area 9 Rose Hill
- Area 10 Avondale
- Area 11 Harbinwood
- Area 12 Northwest Leon Co Areas
- Area 13 Plantation Estates

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FIGURE 4-1: SEWERSHED DEMOGRAPHICS

MAY 2015

N
W E
S

TRUNK SYSTEM "K3"
TALQUIN K3
2015 POP.: 6348 (0.63 MGD)
2035 POP.: 6813 (0.68 MGD)

TRUNK SYSTEM "K2"
TALQUIN K2
2015 POP.: 3902 (0.39 MGD)
2035 POP.: 8484 (0.85 MGD)
(INCLUDES HARBINWOOD & NW LEON CO. AREAS)

TRUNK SYSTEM "A"
PS84 - CENTERVILLE ROAD
2015 POP.: 30056 (3.0 MGD)
2035 POP.: 32980 (3.3 MGD)

TRUNK SYSTEM "C"
PS118 - CENTRE COURT
2015 POP.: 1500 (0.15 MGD)
2035 POP.: 3790 (0.38 MGD)

TRUNK SYSTEM "B"
PS22 - RIGGINS ROAD
2015 POP.: 25456 (2.5 MGD)
2035 POP.: 28328 (2.8 MGD)

TRUNK SYSTEM "H"
PS12 - ORANGE AVENUE
2015 POP.: 65167 (6.5 MGD)
2035 POP.: 72242 (7.2 MGD)

TRUNK SYSTEM "D"
PS74 - WEEMS ROAD
2015 POP.: 35515 (3.6 MGD)
2035 POP.: 42058 (4.2 MGD)

TRUNK SYSTEM "K4"
TALQUIN K4
2015 POP.: 968 (0.01 MGD)
2035 POP.: 1052 (0.11 MGD)

TRUNK SYSTEM "M"
FORMER LBRWWTP
2015 POP.: 35123 (3.5 MGD)
2035 POP.: 40857 (4.1 MGD)

TRUNK SYSTEM "K1"
TALQUIN K1
2015 POP.: 595 (0.06 MGD)
2035 POP.: 650 (0.07 MGD)

TRUNK SYSTEM "I"
PS149 - SPRINGHILL ROAD
2015 POP.: 29764 (2.8 MGD)
2035 POP.: 33140 (3.3 MGD)

TRUNK SYSTEM "F"
PS65 - SHUMARD OAK
2015 POP.: 5400 (0.54 MGD)
2035 POP.: 8028 (0.80 MGD)

TRUNK SYSTEM "J"
PS117 - AIRPORT
2015 POP.: 25 (0.003 MGD)
2035 POP.: 30 (0.003 MGD)

TRUNK SYSTEM "E"
NEW PS CCSE
2015 POP.: 811 (0.08 MGD)
2035 POP.: 2754 (0.28 MGD)

TRUNK SYSTEM "L"
PS53 - MADRONE AVENUE
2015 POP.: 2177 (0.22 MGD)
2035 POP.: 2439 (0.24 MGD)

TRUNK SYSTEM "G"
PS142 - SHELFER ROAD
2015 POP.: 1836 (0.18 MGD)
2035 POP.: 1963 (0.20 MGD)

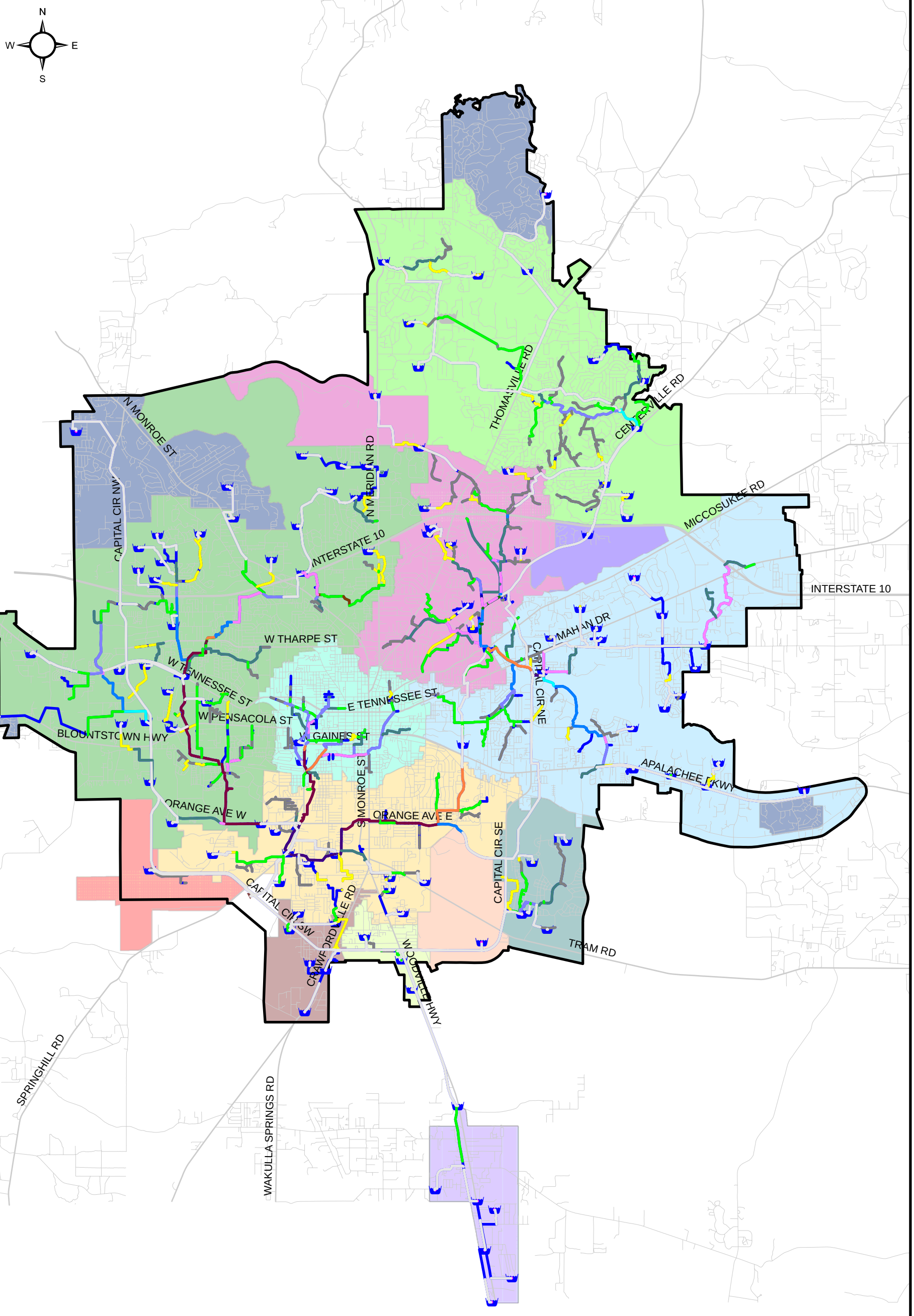
TRUNK SYSTEM "N"
PS WOODVILLE 6 - WOODVILLE HWY
2015 POP.: 1281 (0.13 MGD)
2035 POP.: 1408 (0.14 MGD)

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FIGURE 5-1: 2035 OVERALL TRUNK SYSTEM MODEL

MAY 2015



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MAY 2015

FIGURE 5-2: USA BOUNDARY MAP WITH TAZ

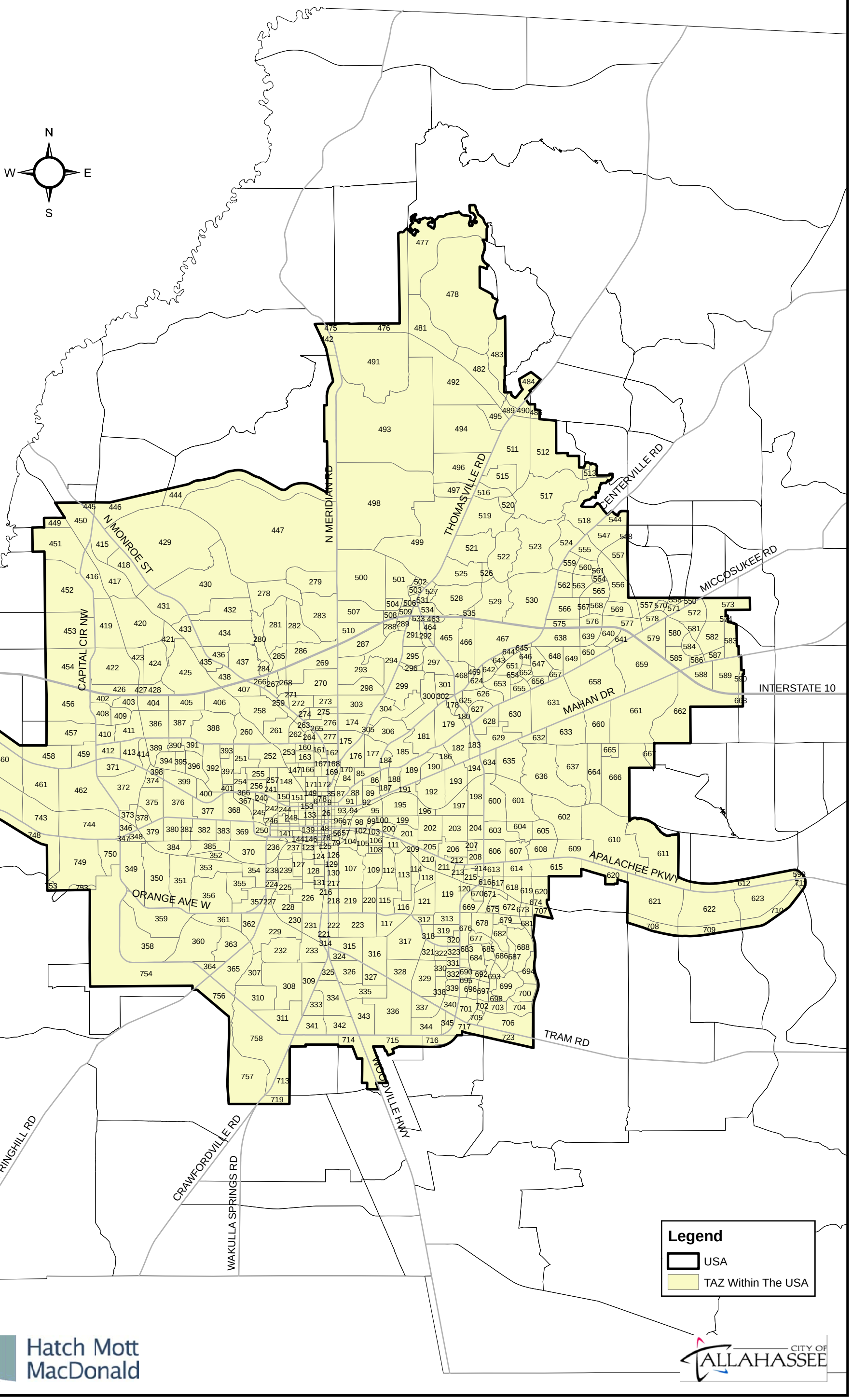
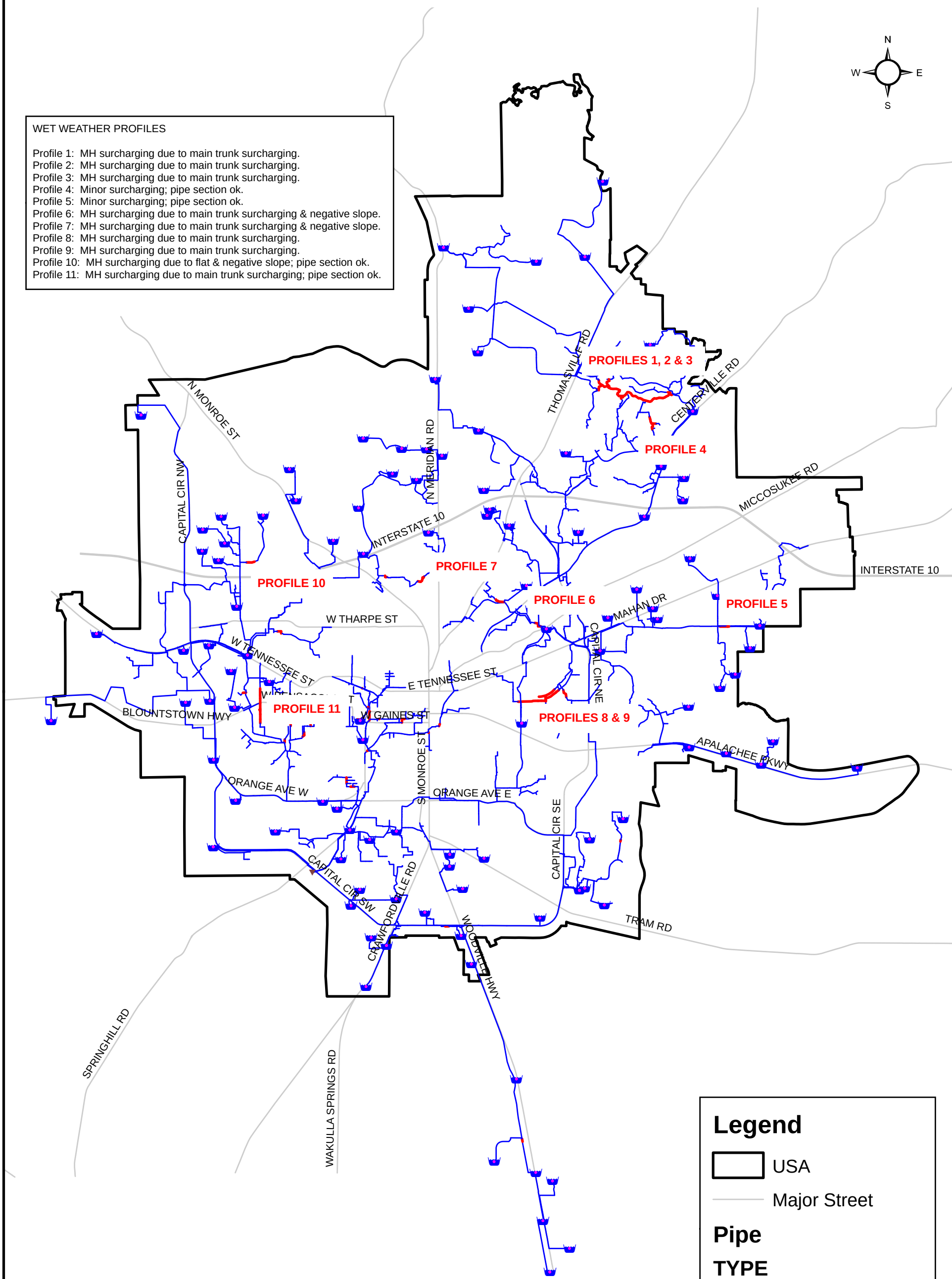


FIGURE 6-1: 2035 WET WEATHER TRUNK SYSTEM MODEL GRAVITY PIPES FLOWING FULL

MAY 2015

WET WEATHER PROFILES

Profile 1: MH surcharging due to main trunk surcharging.
Profile 2: MH surcharging due to main trunk surcharging.
Profile 3: MH surcharging due to main trunk surcharging.
Profile 4: Minor surcharging; pipe section ok.
Profile 5: Minor surcharging; pipe section ok.
Profile 6: MH surcharging due to main trunk surcharging & negative slope.
Profile 7: MH surcharging due to main trunk surcharging & negative slope.
Profile 8: MH surcharging due to main trunk surcharging.
Profile 9: MH surcharging due to main trunk surcharging.
Profile 10: MH surcharging due to flat & negative slope; pipe section ok.
Profile 11: MH surcharging due to main trunk surcharging; pipe section ok.

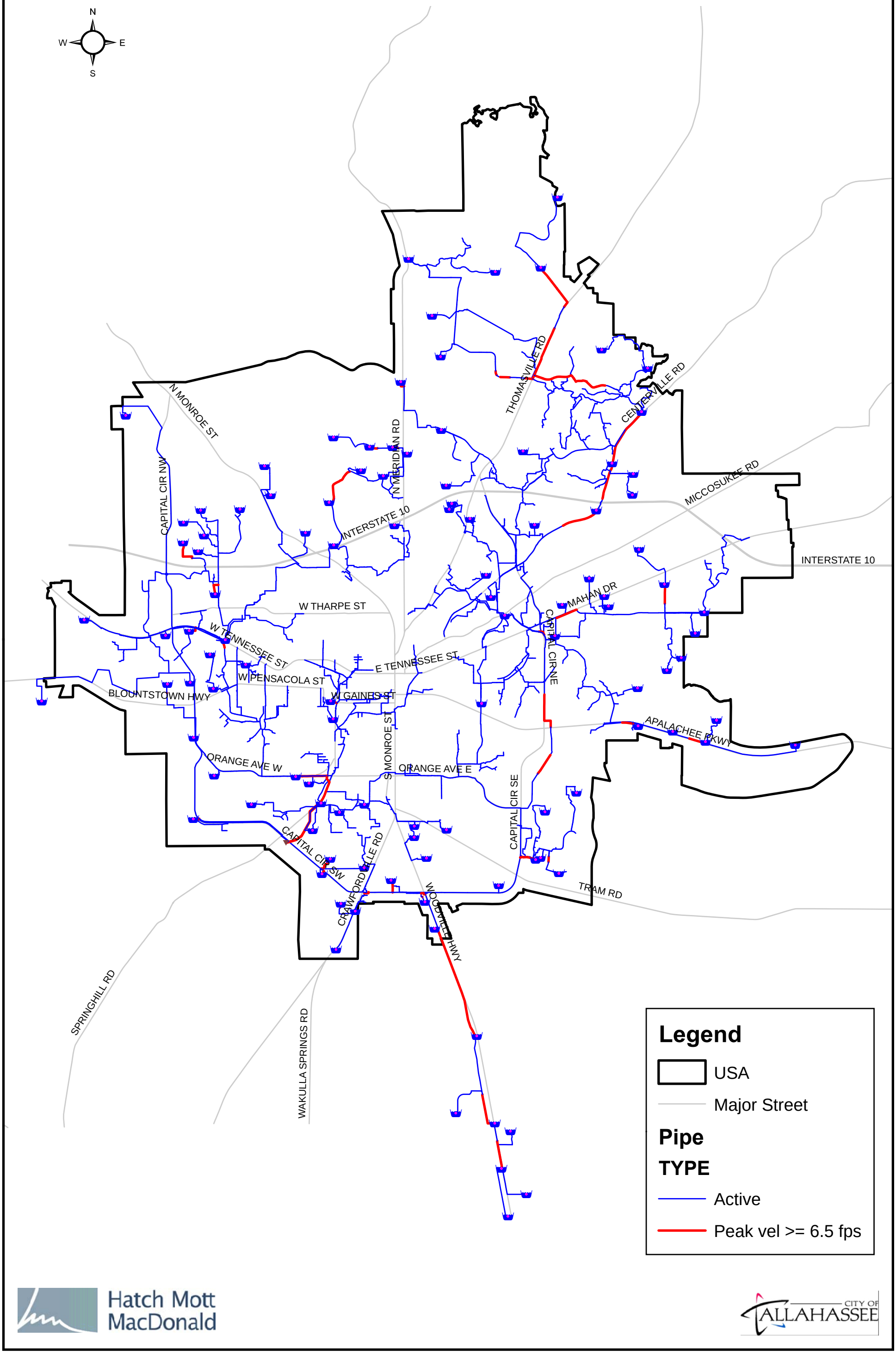


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FIGURE 6-2: 2035 WET WEATHER TRUNK SYSTEM MODEL FORCE MAIN PEAK VELOCITY ≥ 6.5 FPS

MAY 2015

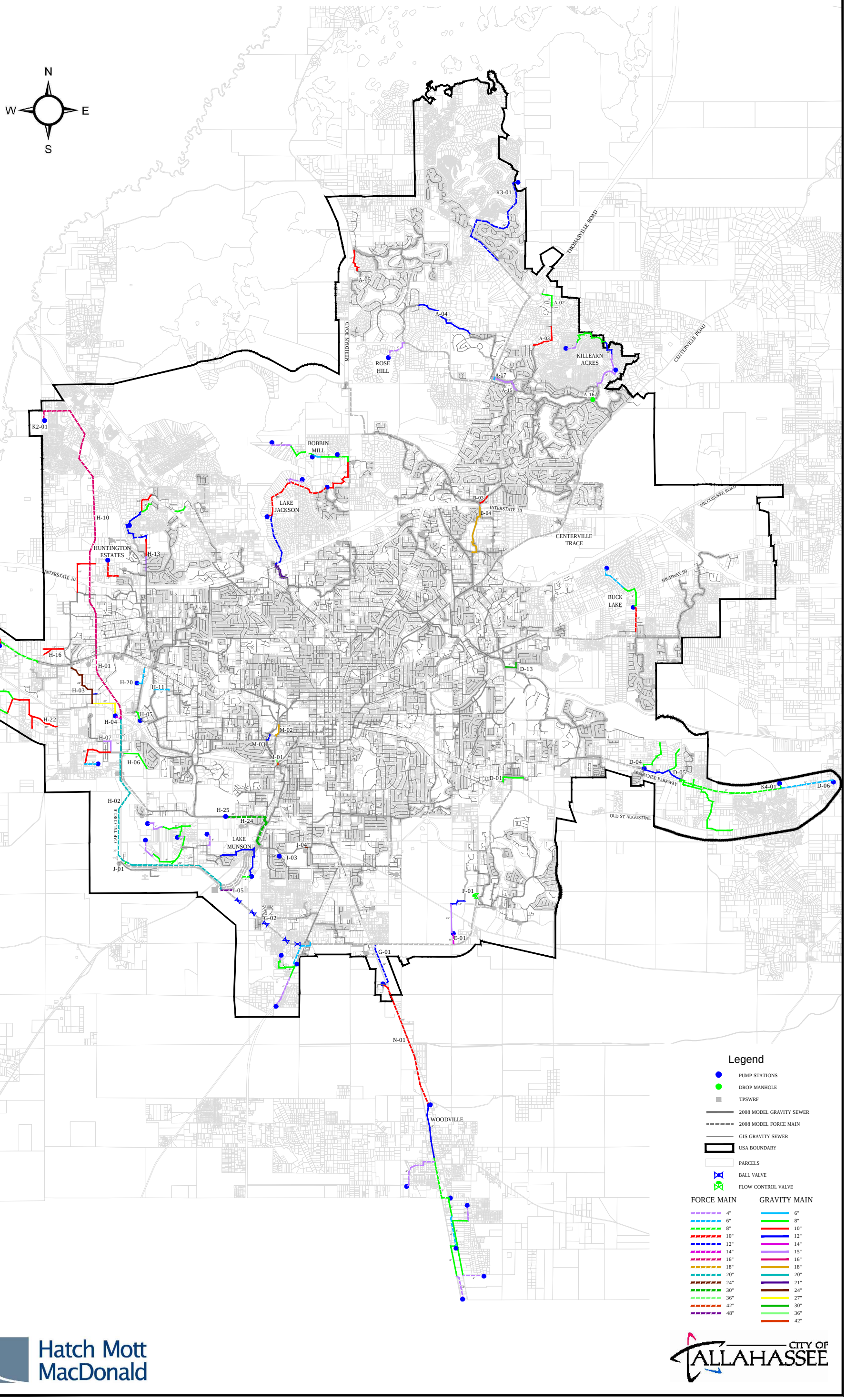


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CITY OF TALLAHASSEE

MAY 2015

FIGURE 6-3: 2035 NEW INFRASTRUCTURE

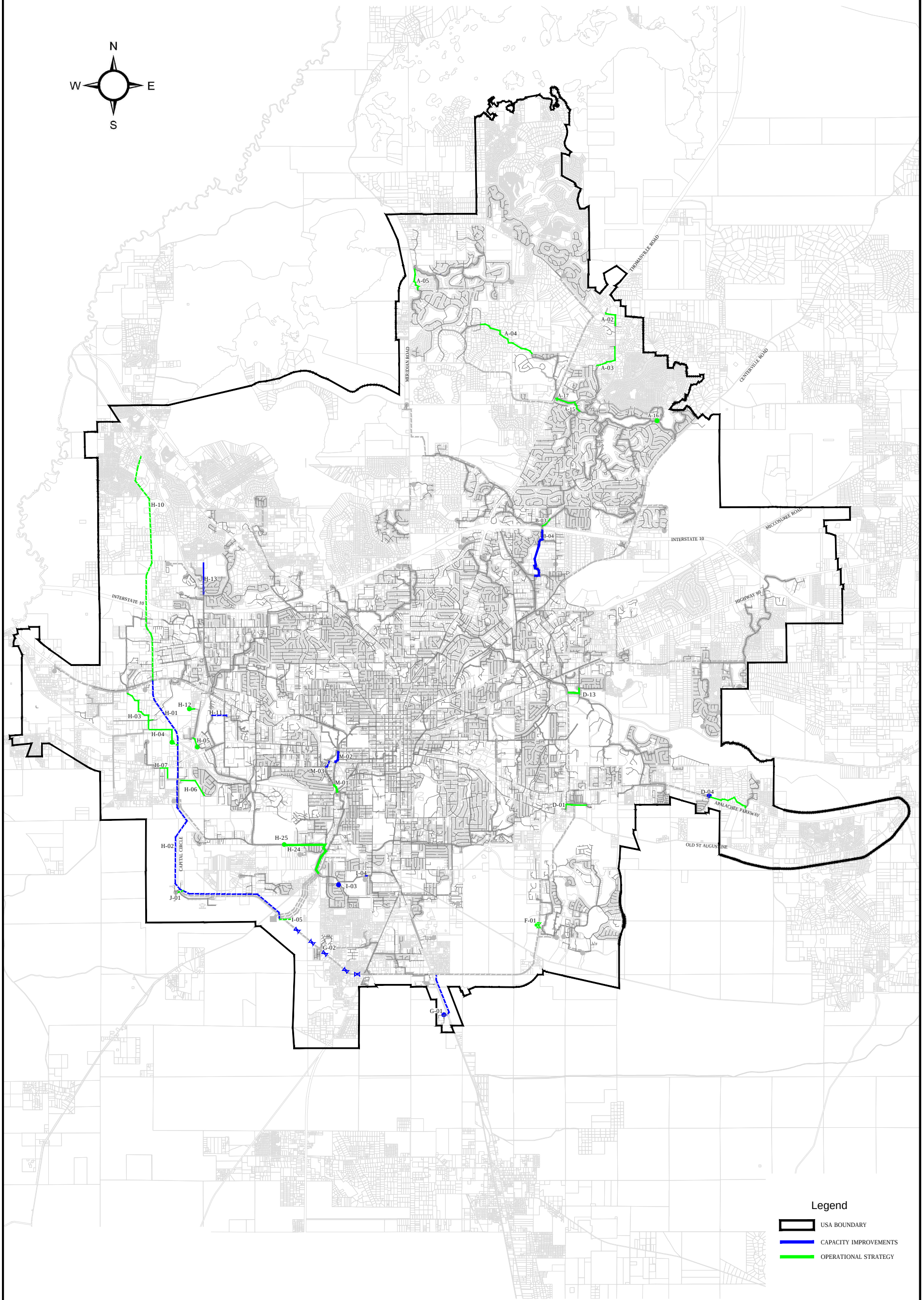


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CITY OF TALLAHASSEE

MAY 2015

FIGURE 6-4: 2035 URBAN SERVICE AREA (USA) MASTER PLAN CAPACITY & OPERATIONAL STRATEGY IMPROVEMENTS

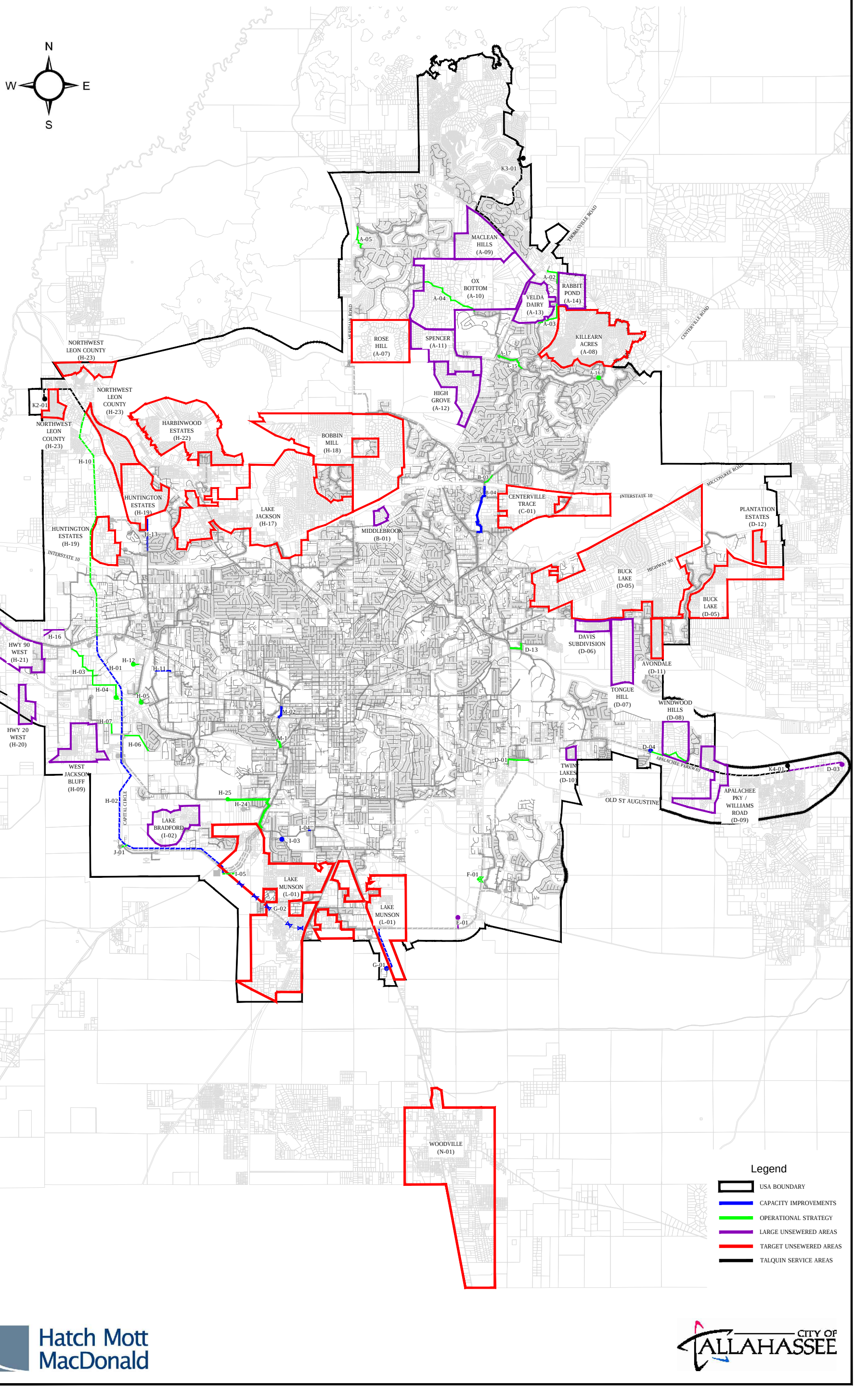


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MAY 2015

FIGURE 6-5: 2035 URBAN SERVICE AREA (USA) MASTER PLAN



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Appendix B: Evaluation of Unsewered Target Areas

Factors Impacting Feasibility of Sewering Unsewered Target Areas

As part of the analysis, HMM identified factors that could impact the feasibility of constructing sanitary sewer systems in each study area, such as maintenance of traffic, right-of-way restoration, wetland impacts, etc. As a general statement for all areas, it should be noted that a significant amount of construction will occur in existing streets and roadways. As directed by City staff, the opinions of probable project cost include the cost of roadway replacement and right-of-way restoration where needed.

The following is a summary of potential issues that could affect the feasibility of constructing sanitary sewers in each study area:

Area 1: Killearn Acres

- This is a densely populated area with few vacant lots. Construction will cause traffic flow and routing issues.
- Environmental issues (wetlands, water bodies, flood zones) should not be significant, although proper storm water runoff controls will be required to protect water bodies such as Gilbert Pond, Lake Killikee and others in the area.

Area 2: Buck Lake/ Lafayette Oaks/ Mahan

- Some construction activities will occur along major roadways (e.g., Buck Lake Road, Miccosukee Road, and Mahan Drive) resulting in traffic control issues.
- There are isolated low lands and wetland areas to avoid and where appropriate, storm water runoff protection will be appropriate. Runoff protection/ sedimentation control is essential to protect Buck Lake as well as tributaries to the Alford Arm of Lake Lafayette.
- There are portions of the gravity sewer system that are projected to be completed by others (e.g., Florida Department of Transportation and local developers), and are depicted as such on the maps for this study area. While the cost of these portions of the overall system is not included in the projected cost for the City, their completion is a vital part of the functional integrity of the overall sewer plan.

Area 3: Lake Jackson

- Construction along Lake Shore Drive will present challenges in relation to traffic control and roadway/ right-of way restoration due to the rolling nature of the roadway, storm water swales and numerous roadway curves. There are relatively few vacant lots in this study area.
- Due to the proximity to Lake Jackson (Ford's Arm and Meginnis Arm), storm water pollution prevention and sedimentation control will be a major concern.

Area 4: Huntington Estates

- There are isolated lowlands and wetland areas to avoid, and stormwater pollution prevention will be required where appropriate.
- Traffic control in the densely developed areas will be a requirement.

Area 5: Lake Munson/ Four Points

- While much of the construction is on side streets, there is a significant amount of anticipated construction activity along Crawfordville Highway, Woodville Highway and Capital Circle SW, all of which are main thoroughfares. Traffic control will be a significant concern.
- Isolated lowlands/ wetland areas will require filtration/ sedimentation control.
- Significant effort has been expended to restore and maintain Munson Slough and Lake Munson. Construction-related activities will need to be monitored carefully to ensure they do not cause undue harm to these water bodies.

Area 6: Woodville

- There are lowland/ wetland areas in the northern portion of the Woodville Highway area that must be avoided during construction.
- Woodville Highway is a major thoroughfare and traffic-control will be a major component of construction in this area.
- A significant cost is the length of force main (approximately 18,000 linear feet) necessary to connect this study area to the larger force main at Capital Circle.

Area 7: Bobbin Mill

- Due to their proximity to Lake Jackson, some areas will require more careful observation to ensure compliance with any stormwater pollution prevention plan.
- Isolated lowland/ wetlands will need to be avoided during construction.

Area 8: Centerville Trace

- Few construction-related issues are anticipated for this study area.

Area 9: Rose Hill

- Portions of the gravity sewer system are proposed to run along the boundary of Lake Elizabeth. Construction in this area could prompt complaints from residents if stormwater pollution prevention measures are not properly installed and maintained throughout construction.

Area 10: Avondale

- This is a fully built-out subdivision. Construction will cause traffic flow and routing issues.
- Due to their proximity to J R Alford Pond, some areas will require more careful observation to ensure compliance with any stormwater pollution prevention plan.
- Isolated lowland/ wetlands will need to be avoided during construction.

Area 11: Harbinwood Estates

- This is a fully built-out subdivision. Construction will cause traffic flow and routing issues.
- Due to their proximity to Lake Jackson, some areas will require more careful observation to ensure compliance with any stormwater pollution prevention plan.
- Requires construction of force main across N. Monroe St., and gravity sewer along Old Bainbridge Rd. (both major thoroughfares) to connect to downstream collection system; therefore traffic-control will be a major component of construction to service this area.

Area 12: Northwest Leon County Areas

- Force main construction required along CCNW, N. Monroe St., and Old Bainbridge Rd. (major thoroughfares).
- Due to their proximity to Lake Jackson, some areas will require more careful observation to ensure compliance with any stormwater pollution prevention plan.
- Isolated lowland/ wetlands will need to be avoided during construction.

Area 13: Plantation Estates

- GIS does not indicate existing road right-of-way. Construction of proposed collection system on private property may be required.
- Approximately 2,000 linear feet to easement required for new force main.
- Isolated lowland/ wetlands at south end of development will need to be avoided during construction.

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TABLE 3-1: UNSEWERED AREA No. 1 - KILLEARN ACRES

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area #1 Killearn Acres
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	69,034	LF	$28.00	$1,932,952.00
2	8" PVC Sanitary Sewer >10' Deep	23,224	LF	$44.00	$1,021,856.00
3	12" PVC Sanitary Sewer >10' Deep	2,140	LF	$46.00	$98,440.00
4	15" PVC Sanitary Sewer</=10' Deep	2,966	LF	$40.00	$118,640.00
5	15" PVC Sanitary Sewer>10' Deep	1,632	LF	$47.00	$76,704.00
6	4' - 10' Deep Manhole	336	EA	$4,000.00	$1,344,000.00
7	>10' Deep Manhole	158	EA	$7,000.00	$1,106,000.00
8	Pump Station	2	LS	$300,000.00	$600,000.00
9	Sand or Clay for Backfill	151,464	CY	$14.50	$2,196,228.00
10	Sanitary Sewer Service (SF & SFA 1528)	1,602	EA	$1,250.00	$2,002,500.00
11	PVC Force Main	2,382	LF	$16.00	$38,112.00
12	Pavement Replacement	206,136	SY	$31.00	$6,390,216.00
13	Right-of-Way Restoration	371,044	SY	$4.50	$1,669,698.00
	CONSTRUCTION SUBTOTAL :				**$18,595,346.00**
	CONST. CONTINGENCY 20% :				**$3,719,069.20**
	EST. CONST. TOTAL :				**$22,314,415.20**
	ENGINEERING/ADMIN 17% :				**$3,793,450.58**
	EST. PROJECT BUDGET :				**$26,200,000.00**

Hatch Mott MacDonald

TABLE 3-2: UNSEWERED AREA No. 2 - BUCK LAKE/LAFAYETTE OAKS

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area #2	Buck Lake/Lafayette Oaks
HMM Project No.:	342595
Basis of Estimate:	HMM Conceptual Design
Estimator:	M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	169,030	LF	$28.00	$4,732,840.00
2	8" PVC Sanitary Sewer >10' Deep	20,258	LF	$44.00	$891,352.00
3	10" PVC Sanitary Sewer </=10' Deep	5,530	LF	$31.00	$171,430.00
4	10" PVC Sanitary Sewer >10' Deep	694	LF	$45.00	$31,230.00
5	12" PVC Sanitary Sewer </=10' Deep	1,134	LF	$35.00	$39,690.00
6	4' - 10' Deep Manhole	671	EA	$4,000.00	$2,684,000.00
7	>10' Deep Manhole	87	EA	$7,000.00	$609,000.00
8	Pump Station	1	LS	$300,000.00	$300,000.00
9	Sand or Clay for Backfill	300,868	CY	$14.50	$4,362,586.00
10	Sanitary Sewer Service (SF & SFA 1679)	1,901	EA	$1,250.00	$2,376,250.00
11	PVC Force Main	3,330	LF	$16.00	$53,280.00
12	Pavement Replacement	268,558	SY	$31.00	$8,325,298.00
13	Right-of-Way Restoration	483,404	SY	$4.50	$2,175,318.00
	CONSTRUCTION SUBTOTAL :				**$26,752,274.00**
	CONST. CONTINGENCY 20% :				**$5,350,454.80**
	EST. CONST. TOTAL :				**$32,102,728.80**
	ENGINEERING/ADMIN 17% :				**$5,457,463.90**
	EST. PROJECT BUDGET :				**$37,600,000.00**

Hatch Mott MacDonald

TABLE 3-3: UNSEWERED AREA No. 3 - LAKE JACKSON

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area #3 Lake Jackson
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	110,010	LF	$28.00	$3,080,280.00
2	8" PVC Sanitary Sewer >10' Deep	27,161	LF	$44.00	$1,195,084.00
3	10" PVC Sanitary Sewer </=10' Deep	2,645	LF	$31.00	$81,995.00
4	10" PVC Sanitary Sewer >10' Deep	147	LF	$45.00	$6,615.00
5	12" PVC Sanitary Sewer >10' Deep	1,580	LF	$46.00	$72,680.00
6	4' - 10' Deep Manhole	458	EA	$4,000.00	$1,832,000.00
7	>10' Deep Manhole	129	EA	$7,000.00	$903,000.00
8	Pump Station	3	LS	$300,000.00	$900,000.00
9	Sand or Clay for Backfill	218,091	CY	$14.50	$3,162,319.50
10	Sanitary Sewer Service (SF & SFA 1336)	1,532	EA	$1,250.00	$1,915,000.00
11	PVC Force Main	15,372	LF	$16.00	$245,952.00
12	Pavement Replacement	224,589	SY	$31.00	$6,962,259.00
13	Right-of-Way Restoration	404,260	SY	$4.50	$1,819,170.00
	CONSTRUCTION SUBTOTAL :				**$22,176,354.50**
	CONST. CONTINGENCY 20% :				**$4,435,270.90**
	EST. CONST. TOTAL :				**$26,611,625.40**
	ENGINEERING/ADMIN 17% :				**$4,523,976.32**
	EST. PROJECT BUDGET :				**$31,200,000.00**

Hatch Mott MacDonald

TABLE 3-4: UNSEWERED AREA No. 4 - HUNTINGTON ESTATES

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area #4 Huntington Estates
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	36,220	LF	$28.00	$1,014,160.00
2	8" PVC Sanitary Sewer >10' Deep	16,150	LF	$44.00	$710,600.00
3	12" PVC Sanitary Sewer </=10' Deep	6,022	LF	$35.00	$210,770.00
4	4' - 10' Deep Manhole	155	EA	$4,000.00	$620,000.00
5	>10' Deep Manhole	17	EA	$7,000.00	$119,000.00
6	Pump Station	2	LS	$300,000.00	$600,000.00
7	Sand or Clay for Backfill	80,126	CY	$14.50	$1,161,827.00
8	Sanitary Sewer Service (SF & SFA 619)	729	EA	$1,250.00	$911,250.00
9	PVC Force Main	5,135	LF	$16.00	$82,160.00
10	Pavement Replacement	72,758	SY	$31.00	$2,255,498.00
11	Right-of-Way Restoration	130,964	SY	$4.50	$589,338.00
	CONSTRUCTION SUBTOTAL :				**$8,274,603.00**
	CONST. CONTINGENCY 20% :				**$1,654,920.60**
	EST. CONST. TOTAL :				**$9,929,523.60**
	ENGINEERING/ADMIN 17% :				**$1,688,019.01**
	EST. PROJECT BUDGET :				**$11,700,000.00**

Hatch Mott MacDonald

TABLE 3-5: UNSEWERED AREA No. 5 - LAKE MUNSON/FOUR POINTS

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area #5 Lake Munson/Four Points
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	159,770	LF	$28.00	$4,473,560.00
2	8" PVC Sanitary Sewer >10' Deep	1,450	LF	$44.00	$63,800.00
3	10" PVC Sanitary Sewer </=10' Deep	6,362	LF	$31.00	$197,222.00
4	10" PVC Sanitary Sewer >10' Deep	1,843	LF	$45.00	$82,935.00
5	12" PVC Sanitary Sewer </=10' Deep	4,869	LF	$35.00	$170,415.00
6	4' - 10' Deep Manhole	627	EA	$4,000.00	$2,508,000.00
7	>10' Deep Manhole	14	EA	$7,000.00	$98,000.00
8	Pump Station	5	LS	$250,000.00	$1,250,000.00
9	Sand or Clay for Backfill	266,700	CY	$14.50	$3,867,150.00
10	Sanitary Sewer Service (SF & SFA 2279)	3,162	EA	$1,250.00	$3,952,500.00
11	PVC Force Main	7,828	LF	$16.00	$125,248.00
12	Pavement Replacement	260,318	SY	$31.00	$8,069,858.00
13	Right-of-Way Restoration	468,572	SY	$4.50	$2,108,574.00
	CONSTRUCTION SUBTOTAL :				**$26,967,262.00**
	CONST. CONTINGENCY 20% :				**$5,393,452.40**
	EST. CONST. TOTAL :				**$32,360,714.40**
	ENGINEERING/ADMIN 17% :				**$5,501,321.45**
	EST. PROJECT BUDGET :				**$37,900,000.00**

Hatch Mott MacDonald

TABLE 3-6: UNSEWERED AREA No. 6 - WOODVILLE

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area # 6 Woodville
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	113,533	LF	$28.00	$3,178,924.00
2	10" PVC Sanitary Sewer </=10' Deep	9,308	LF	$31.00	$288,548.00
3	12" PVC Sanitary Sewer </=10' Deep	9,366	LF	$35.00	$327,810.00
4	4' - 10' Deep Manhole	423	EA	$4,000.00	$1,692,000.00
5	Pump Station	7	LS	$250,000.00	$1,750,000.00
6	Sand or Clay for Backfill	202,278	CY	$12.00	$2,427,336.00
7	Sanitary Sewer Service (SF & SFA 1369)	2,150	EA	$1,250.00	$2,687,500.00
8	PVC Force Main	19,377	LF	$12.00	$232,524.00
9	Pavement Replacement	197,958	SY	$20.00	$3,959,160.00
10	Right-of-Way Restoration	356,324	SY	$4.50	$1,603,458.00
11	12" PVC Force Main to Capital Circle	18,000	LF	$33.00	$594,000.00
	CONSTRUCTION SUBTOTAL :				**$18,741,260.00**
	CONST. CONTINGENCY 20% :				**$3,748,252.00**
	EST. CONST. TOTAL :				**$22,489,512.00**
	ENGINEERING/ADMIN 17% :				**$3,823,217.04**
	EST. PROJECT BUDGET :				**$26,400,000.00**

Hatch Mott MacDonald

TABLE 3-7: UNSEWERED AREA No. 7 - BOBBIN MILL

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area # 7 Bobbin Mill
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	64,197	LF	$28.00	$1,797,516.00
2	8" PVC Sanitary Sewer >10' Deep	14,775	LF	$44.00	$650,100.00
3	10" PVC Sanitary Sewer </=10' Deep	401	LF	$31.00	$12,431.00
4	10" PVC Sanitary Sewer >10' Deep	948	LF	$45.00	$42,660.00
5	12" PVC Sanitary Sewer </=10' Deep	7,103	LF	$35.00	$248,605.00
6	12" PVC Sanitary Sewer >10' Deep	2,487	LF	$46.00	$114,402.00
7	4' - 10' Deep Manhole	267	EA	$4,000.00	$1,068,000.00
8	>10' Deep Manhole	20	EA	$7,000.00	$140,000.00
9	Pump Station	2	LS	$350,000.00	$700,000.00
10	Sand or Clay for Backfill	137,981	CY	$14.50	$2,000,724.50
11	Sanitary Sewer Service (SF & SFA 666)	837	EA	$1,250.00	$1,046,250.00
12	PVC Force Main	4,428	LF	$16.00	$70,848.00
13	Pavement Replacement	94,811	SY	$31.00	$2,939,141.00
14	Right-of-Way Restoration	170,660	SY	$4.50	$767,970.00
	CONSTRUCTION SUBTOTAL :				**$11,598,647.50**
	CONST. CONTINGENCY 20% :				**$2,319,729.50**
	EST. CONST. TOTAL :				**$13,918,377.00**
	ENGINEERING/ADMIN 17% :				**$2,366,124.09**
	EST. PROJECT BUDGET :				**$16,300,000.00**

Hatch Mott MacDonald

TABLE 3-8: UNSEWERED AREA No. 8 - CENTERVILLE TRACE

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area # 8 Centerville Trace
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	15,760	LF	$28.00	$441,280.00
2	8" PVC Sanitary Sewer >10' Deep	13,181	LF	$44.00	$579,964.00
3	4' - 10' Deep Manhole	63	EA	$4,000.00	$252,000.00
4	>10' Deep Manhole	66	EA	$7,000.00	$462,000.00
5	Sand or Clay for Backfill	44,280	CY	$14.50	$642,060.00
6	Sanitary Sewer Service (SF &SFA 398)	483	EA	$1,250.00	$603,750.00
7	Pavement Replacement	34,318	SY	$31.00	$1,063,858.00
8	Right-of-Way Restoration	61,772	SY	$4.50	$277,974.00
	CONSTRUCTION SUBTOTAL :				**$4,322,886.00**
	CONST. CONTINGENCY 20% :				**$864,577.20**
	EST. CONST. TOTAL :				**$5,187,463.20**
	ENGINEERING/ADMIN 17% :				**$881,868.74**
	EST. PROJECT BUDGET :				**$6,100,000.00**

Hatch Mott MacDonald

TABLE 3-9: UNSEWERED AREA No. 9 - ROSE HILL

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area # 9 Rose Hill
HMM Project No.: 342595
Basis of Estimate: HMM Conceptual Design
Estimator: M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	16,987	LF	$28.00	$475,636.00
2	8" PVC Sanitary Sewer >10' Deep	4,486	LF	$44.00	$197,384.00
3	4' - 10' Deep Manhole	65	EA	$4,000.00	$260,000.00
4	>10' Deep Manhole	20	EA	$7,000.00	$140,000.00
5	Pump Station	1	LS	$250,000.00	$250,000.00
6	Sand or Clay for Backfill	32,854	CY	$14.50	$476,383.00
7	Sanitary Sewer Service (SF & SFA 80)	98	EA	$1,250.00	$122,500.00
8	PVC Force Main	2,620	LF	$16.00	$41,920.00
9	Pavement Replacement	31,587	SY	$31.00	$979,197.00
10	Right-of-Way Restoration	56,820	SY	$4.50	$255,690.00
	CONSTRUCTION SUBTOTAL :				**$3,198,710.00**
	CONST. CONTINGENCY 20% :				**$639,742.00**
	EST. CONST. TOTAL :				**$3,838,452.00**
	ENGINEERING/ADMIN 17% :				**$652,536.84**
	EST. PROJECT BUDGET :				**$4,500,000.00**

Hatch Mott MacDonald

TABLE 3-10: UNSEWERED AREA No. 10- AVONDALE

City of Tallahassee Master Sewer Plan 2015 Update

Preliminary Opinion of Probable Construction Cost

Hatch Mott MacDonald Florida, LLC

Study Area	Avondale
HMM Project No.:	342595
Basis of Estimate:	HMM Conceptual Design
Estimator:	M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	12,361	LF	$28.00	$346,108.00
2	8" PVC Sanitary Sewer >10' Deep	1,432	LF	$44.00	$63,008.00
3	4' - 10' Deep Manhole	45	EA	$4,000.00	$180,000.00
4	>10' Deep Manhole	7	EA	$7,000.00	$49,000.00
5	Sand or Clay for Backfill	13,429	CY	$14.50	$194,720.50
6	Sanitary Sewer Service (SF & SFA 80)	187	EA	$1,250.00	$233,750.00
7	Pavement Replacement	30,651	SY	$31.00	$950,181.00
8	Right-of-Way Restoration	30,651	SY	$4.50	$137,929.50
	CONSTRUCTION SUBTOTAL :				**$2,154,697.00**
	CONST. CONTINGENCY 20% :				**$430,939.40**
	EST. CONST. TOTAL :				**$2,585,636.40**
	ENGINEERING/ADMIN 17% :				**$439,558.19**
	EST. PROJECT BUDGET :				**$3,100,000.00**

Hatch Mott MacDonald

TABLE 3-11: UNSEWERED AREA No. 11 - HARBINWOOD ESTATES

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area	Harbinwood Estates
HMM Project No.:	342595
Basis of Estimate:	HMM Conceptual Design
Estimator:	M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	73,876	LF	$28.00	$2,068,528.00
2	8" PVC Sanitary Sewer >10' Deep	4,091	LF	$44.00	$180,004.00
3	4' - 10' Deep Manhole	261	EA	$4,000.00	$1,044,000.00
4	>10' Deep Manhole	16	EA	$7,000.00	$112,000.00
5	Pump Station	4	LS	$250,000.00	$1,000,000.00
6	Sand or Clay for Backfill	70,186	CY	$14.50	$1,017,697.00
7	Sanitary Sewer Service (SF & SFA 80)	1,080	EA	$1,250.00	$1,350,000.00
8	PVC Force Main	15,882	LF	$16.00	$254,112.00
9	Pavement Replacement	164,169	SY	$31.00	$5,089,239.00
10	Right-of-Way Restoration	164,169	SY	$4.50	$738,760.50
	CONSTRUCTION SUBTOTAL :				**$12,854,340.50**
	CONST. CONTINGENCY 20% :				**$2,570,868.10**
	EST. CONST. TOTAL :				**$15,425,208.60**
	ENGINEERING/ADMIN 17% :				**$2,622,285.46**
	EST. PROJECT BUDGET :				**$18,100,000.00**

Hatch Mott MacDonald

TABLE 3-12: UNSEWERED AREA No. 12 - NORTHWEST LEON COUNTY

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area	Northeast Leon County
HMM Project No.:	342595
Basis of Estimate:	HMM Conceptual Design
Estimator:	M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	53,140	LF	$28.00	$1,487,920.00
2	8" PVC Sanitary Sewer >10' Deep	3,115	LF	$44.00	$137,060.00
3	4' - 10' Deep Manhole	217	EA	$4,000.00	$868,000.00
4	>10' Deep Manhole	13	EA	$7,000.00	$91,000.00
5	Pump Station	8	LS	$250,000.00	$2,000,000.00
6	Sand or Clay for Backfill	56,968	CY	$14.50	$826,036.00
7	Sanitary Sewer Service (SF & SFA 80)	850	EA	$1,250.00	$1,062,500.00
8	PVC Force Main	20,020	LF	$16.00	$320,320.00
9	Pavement Replacement	125,011	SY	$31.00	$3,875,341.00
10	Right-of-Way Restoration	125,011	SY	$4.50	$562,549.50
	CONSTRUCTION SUBTOTAL :				**$11,230,726.50**
	CONST. CONTINGENCY 20% :				**$2,246,145.30**
	EST. CONST. TOTAL :				**$13,476,871.80**
	ENGINEERING/ADMIN 17% :				**$2,291,068.21**
	EST. PROJECT BUDGET :				**$15,800,000.00**

Hatch Mott MacDonald

TABLE 3-13: UNSEWERED AREA No. 13- PLANTATION ESTATES

City of Tallahassee Master Sewer Plan 2015 Update
Preliminary Opinion of Probable Construction Cost
Hatch Mott MacDonald Florida, LLC

Study Area	Plantation Estates
HMM Project No.:	342595
Basis of Estimate:	HMM Conceptual Design
Estimator:	M. Kane, C. Weaver

Item	Description	Quantity	Unit	Unit Price	Amount
1	8" PVC Sanitary Sewer </=10' Deep	13,595	LF	$28.00	$380,660.00
2	8" PVC Sanitary Sewer >10' Deep	95	LF	$44.00	$4,180.00
3	4' - 10' Deep Manhole	49	EA	$4,000.00	$196,000.00
4	>10' Deep Manhole	2	EA	$7,000.00	$14,000.00
5	Pump Station	1	LS	$250,000.00	$250,000.00
6	Sand or Clay for Backfill	9,983	CY	$14.50	$144,753.50
7	Sanitary Sewer Service (SF & SFA 80)	167	EA	$1,250.00	$208,750.00
8	PVC Force Main	2,394	LF	$16.00	$38,304.00
9	Pavement Replacement	30,422	SY	$31.00	$943,082.00
10	Right-of-Way Restoration	30,422	SY	$4.50	$136,899.00
	CONSTRUCTION SUBTOTAL :				**$2,316,628.50**
	CONST. CONTINGENCY 20% :				**$463,325.70**
	EST. CONST. TOTAL :				**$2,779,954.20**
	ENGINEERING/ADMIN 17% :				**$472,592.21**
	EST. PROJECT BUDGET :				**$3,300,000.00**

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
KILLEARN ACRES CONCEPTUAL SEWER LAYOUT
STUDY AREA 1

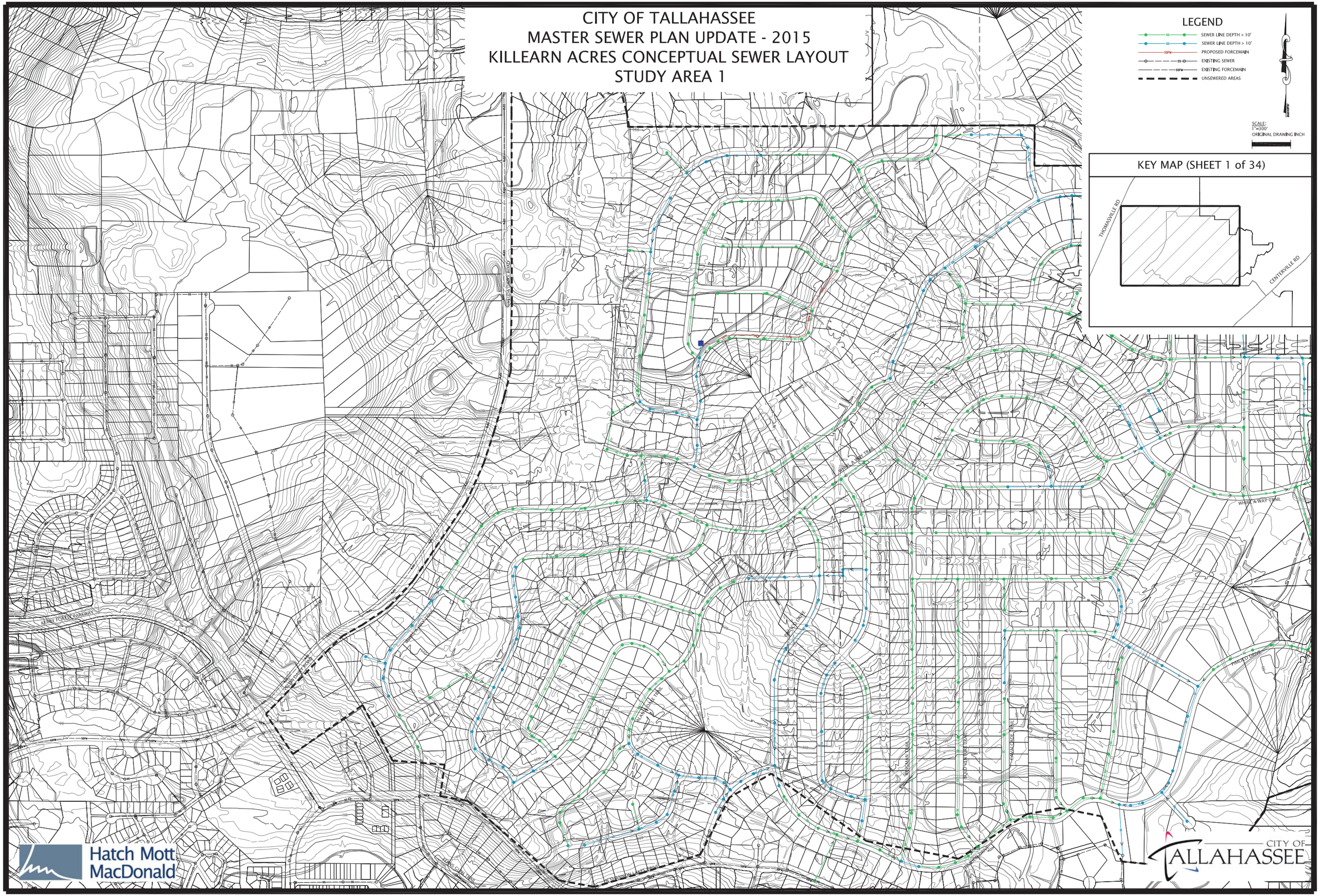
LEGEND

- SS — SEWER LINE DEPTH < 10'
- SS — SEWER LINE DEPTH > 10'
- SSFM — PROPOSED FORCEMAIN
- SS — EXISTING SEWER
- SSFM — EXISTING FORCEMAIN
- UNSEWERED AREAS

NORTH

SCALE:
1"=500'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 1 of 34)



Hatch Mott MacDonald

CITY OF TALLAHASSEE

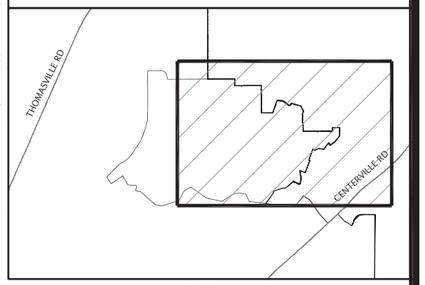
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
KILLEARN ACRES CONCEPTUAL SEWER LAYOUT
STUDY AREA 1

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 2 of 34)



Hatch Mott MacDonald

CITY OF TALLAHASSEE

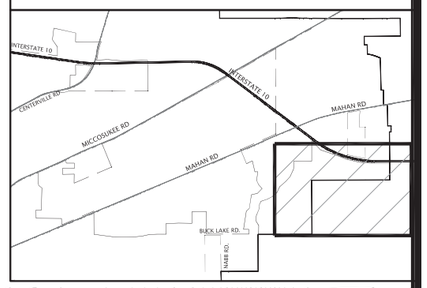
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
CONCEPTUAL SEWER LAYOUT
BUCKLAKE/LAFAYETTE OAKS STUDY AREA 2

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 3 of 34)

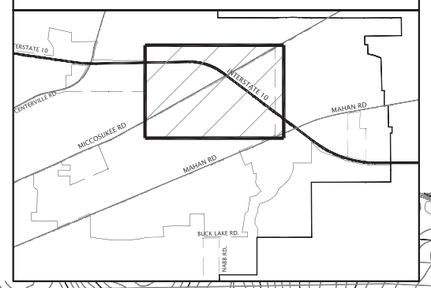


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CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
CONCEPTUAL SEWER LAYOUT
BUCKLAKE/LAFAYETTE OAKS STUDY AREA 2

KEY MAP (SHEET 4 of 34)



LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

MICCOSUKEE ROAD
LAFAYETTE OAKS ROAD
INTERSTATE 10

Hatch Mott MacDonald

CITY OF TALLAHASSEE

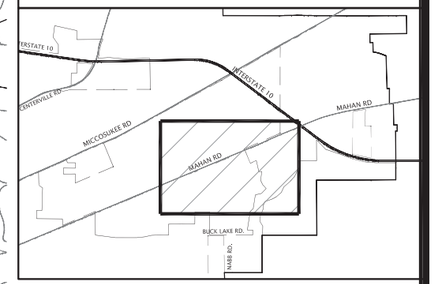
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
CONCEPTUAL SEWER LAYOUT
BUCKLAKE/LAFAYETTE OAKS STUDY AREA 2

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 5 of 34)



MAHAN BLVD

EXISTING 15"

MAHAN ROAD

N PEDRICK ROAD

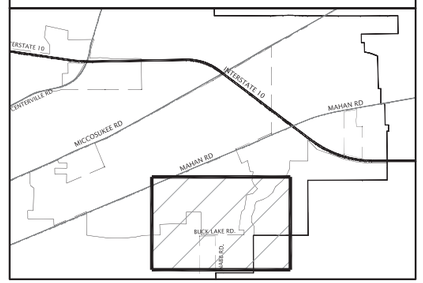
WALDEN ROAD

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
CONCEPTUAL SEWER LAYOUT
BUCKLAKE/LAFAYETTE OAKS STUDY AREA 2

KEY MAP (SHEET 6 of 34)



LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

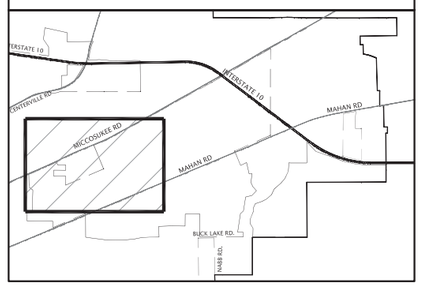
MAHAN ROAD
MCFERRIN ROAD
BUCK LAKE ROAD
LAFAYETTE OAKS DRIVE
OAK TRAIL WAY
OAK TRAIL DRIVE
EXISTING PUMP STATION

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
CONCEPTUAL SEWER LAYOUT
BUCKLAKE/LAFAYETTE OAKS STUDY AREA 2

KEY MAP (SHEET 7 of 34)



LEGEND

- SS — SEWER LINE DEPTH < 10'
- SS — SEWER LINE DEPTH > 10'
- SSFM — PROPOSED FORCEMAIN
- SS — EXISTING SEWER
- SSFM — EXISTING FORCEMAIN
- UNSEWERED AREAS
- SS — GRAVITY SEWER BY OTHERS
- SSFM — FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

EXISTING PUMP STATION

MIC-COSUKEE ROAD

DOGWOOD LANE

PIMPERNEL LANE

PIMPERNEL LANE ROAD

MAHAN ROAD

MAHAN DRIVE

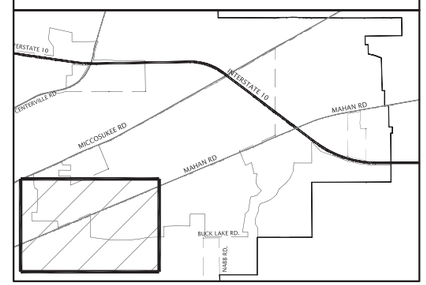
CHARLAIS STREET

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
CONCEPTUAL SEWER LAYOUT
BUCKLAKE/LAFAYETTE OAKS STUDY AREA 2

KEY MAP (SHEET 8 of 34)



LEGEND

- SS SEWER LINE DEPTH < 10'
- SS SEWER LINE DEPTH > 10'
- SSFM PROPOSED FORCEMAIN
- SS EXISTING SEWER
- SSFM EXISTING FORCEMAIN
- UNSEWERED AREAS
- SS GRAVITY SEWER BY OTHERS
- SSFM FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

Hatch Mott MacDonald

CITY OF TALLAHASSEE

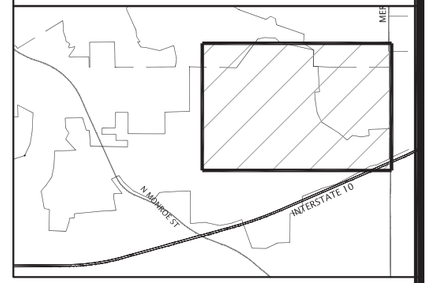
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE JACKSON CONCEPTUAL SEWER LAYOUT
STUDY AREA 3

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=500'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 9 of 34)



MASP L94

NEW PS-18

REPUMP STATION

EXISTING PS

Hatch Mott MacDonald

CITY OF TALLAHASSEE

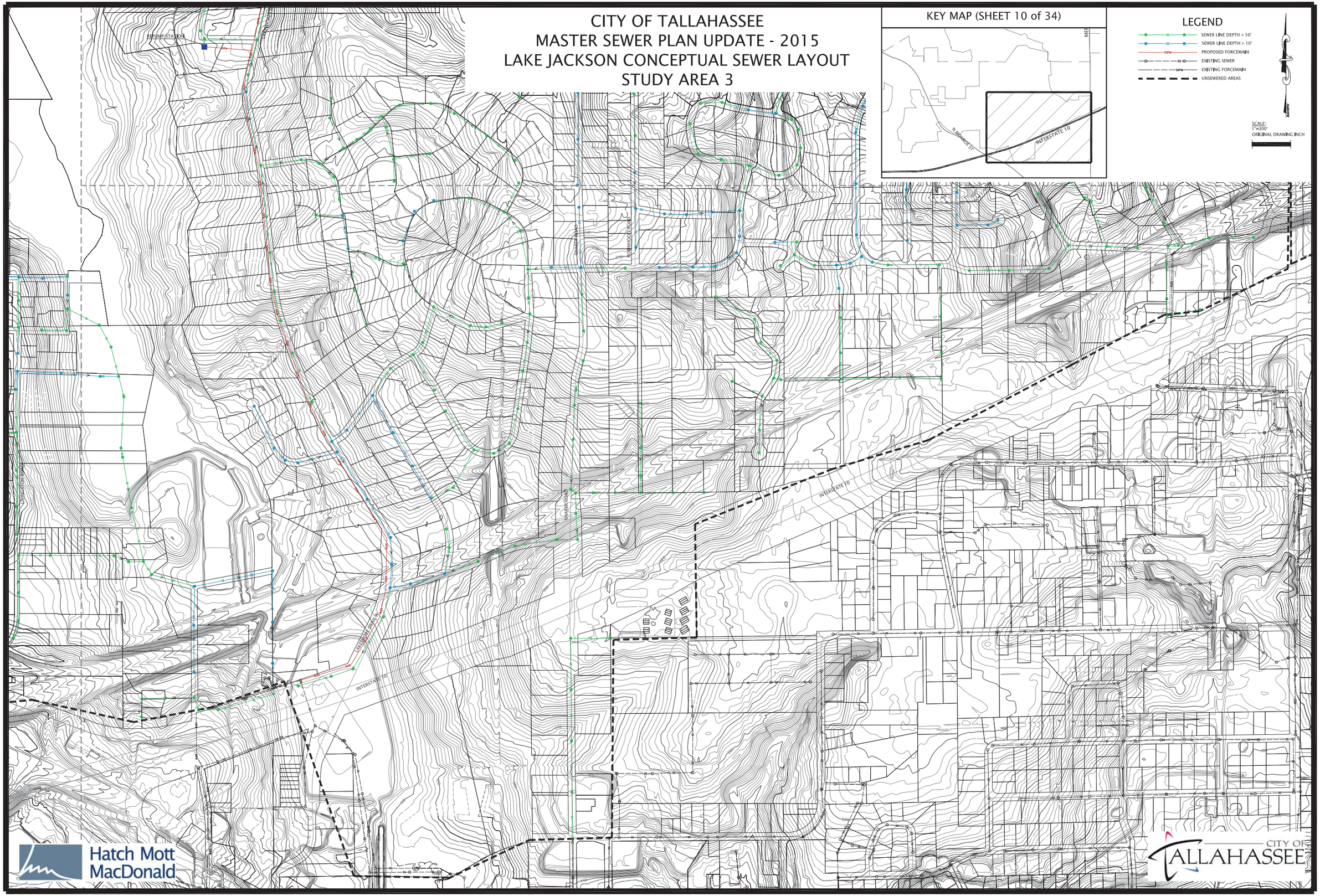
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE JACKSON CONCEPTUAL SEWER LAYOUT
STUDY AREA 3

KEY MAP (SHEET 10 of 34)

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH



Hatch Mott MacDonald

CITY OF TALLAHASSEE

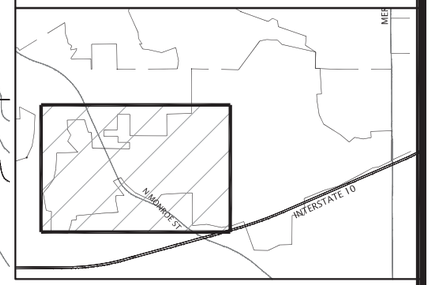
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE JACKSON CONCEPTUAL SEWER LAYOUT
STUDY AREA 3

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=500'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 11 of 34)



ABANDON EXISTING PUMP STATION
CROWDER ROAD
SWATTS ROAD
TALBOT ROAD
OLD BAINBRIDGE ROAD
FULLER ROAD
Hatch Mott MacDonald
CITY OF TALLAHASSEE

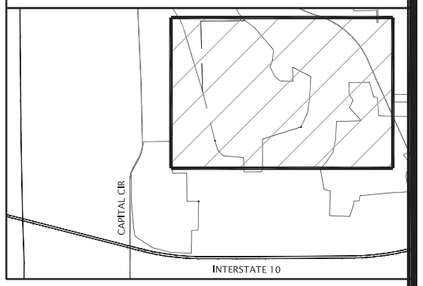
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
HUNTINGTON ESTATES CONCEPTUAL SEWER LAYOUT
STUDY AREA 4

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 12 of 34)



ABANDON EXISTING PUMP STATION

ABANDON EXISTING FOXWOOD PS

WOOD HILL DRIVE

CAMBRIDGE DRIVE

FRED GEORGE ROAD

HARVARD HEIGHTS

N WESTON ROAD

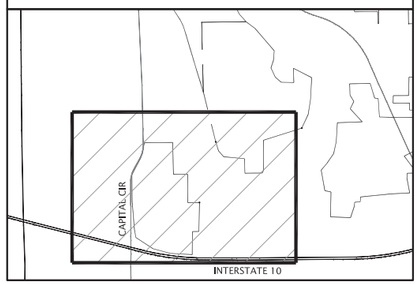
SWATTS ROAD

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
HUNTINGTON ESTATES CONCEPTUAL SEWER LAYOUT
STUDY AREA 4

KEY MAP (SHEET 13 of 34)



LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

FRED GEARGE ROAD

CAPITAL CIRCLE NW

GEARHART ROAD

KAMSON ROAD

Hatch Mott MacDonald

CITY OF TALLAHASSEE

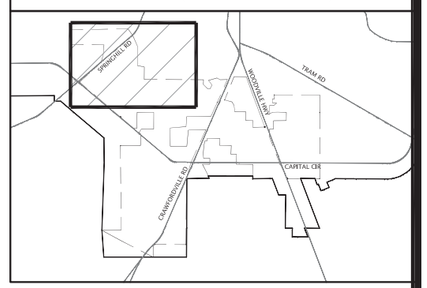
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE MUNSON/4 POINTS CONCEPTUAL SEWER LAYOUT
STUDY AREA 5

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 14 of 34)



ABANDON
EXISTING PS #77

SEASONS LANE

SPRINGHILL ROAD

CONNECT TO
EXISTING 30" FM

PS

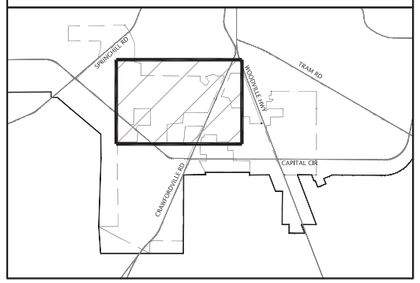
ABANDON
EXISTING PS #31

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE MUNSON/4 POINTS CONCEPTUAL SEWER LAYOUT
STUDY AREA 5

KEY MAP (SHEET 15 of 34)



LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

ABANDON EXISTING PS 81

ABANDON EXISTING PS 143

HANNON MILL ROAD

RELOCATE EXISTING PUMP STATION 120

CRAWFORDVILLE ROAD

SHELFER ROAD

CENTER DRIVE

WESTWOOD ROAD

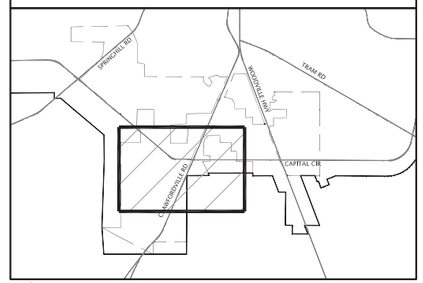
CAPITAL CIRCLE SW

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE MUNSON/4 POINTS CONCEPTUAL SEWER LAYOUT
STUDY AREA 5

KEY MAP (SHEET 16 of 34)



LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

RELOCATE EXISTING PS STATION 120

CENTER DRIVE

WESTWAY ROAD

CROSSWAY ROAD

CAPITAL CIRCLE SW

ABANDON EXISTING PS 124

CAPITAL CIRCLE ROAD

PS

PS

Hatch Mott MacDonald

CITY OF TALLAHASSEE

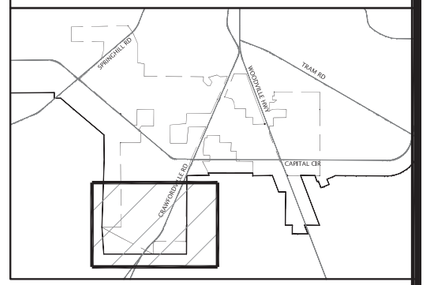
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE MUNSON/4 POINTS CONCEPTUAL SEWER LAYOUT
STUDY AREA 5

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=500'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 17 of 34)



CRAWFORDVILLE ROAD
PS
LINDEN DRIVE
CRAWFORDVILLE ROAD

Hatch Mott MacDonald

CITY OF TALLAHASSEE

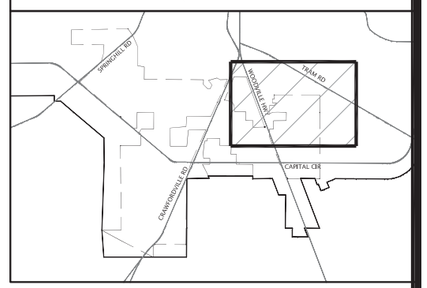
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE MUNSON/4 POINTS CONCEPTUAL SEWER LAYOUT
STUDY AREA 5

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 18 of 34)



HANNON MILL ROAD
SHELTER ROAD
ROSS ROAD
EXISTING PS MONTEJO
ST. MARKS RAIL TRAIL

Hatch Mott MacDonald

CITY OF TALLAHASSEE

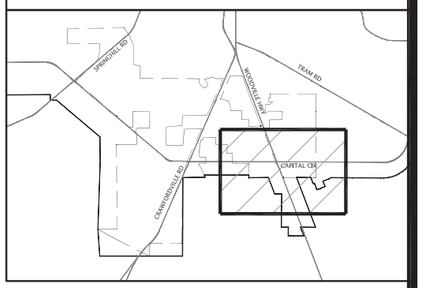
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
LAKE MUNSON/4 POINTS CONCEPTUAL SEWER LAYOUT
STUDY AREA 5

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 19 of 34)



ROSS ROAD

CROSSWAY ROAD

CAPITAL CIRCLE SW

PS

Hatch Mott MacDonald

CITY OF TALLAHASSEE

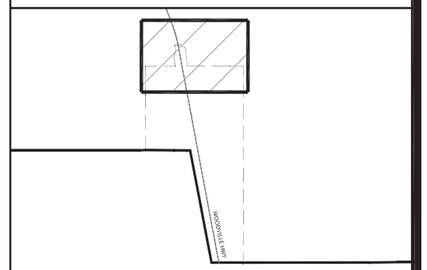
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
WOODVILLE CONCEPTUAL SEWER LAYOUT
STUDY AREA 6

LEGEND

- SS — SEWER LINE DEPTH < 10'
- SS — SEWER LINE DEPTH > 10'
- SSFM — PROPOSED FORCEMAIN
- SS — EXISTING SEWER
- SSFM — EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=500'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 20 of 34)



18,000 LF FM
TO CAPITAL CIR

CS

OLD WOODVILLE ROAD

ST. MARKS BIKE TRAIL

WOODVILLE HWY

OAK RIDGE ROAD E

REGISTER ROAD

Hatch Mott MacDonald

CITY OF TALLAHASSEE

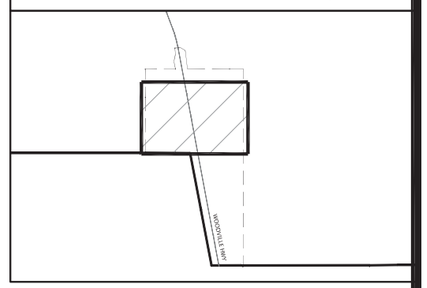
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
WOODVILLE CONCEPTUAL SEWER LAYOUT
STUDY AREA 6

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=500'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 21 of 34)



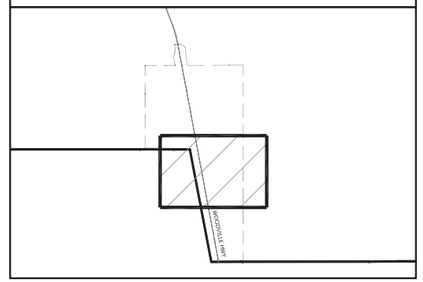
OAK RIDGE ROAD E
REGISTER ROAD
PACE ROAD
NATURAL BRIDGE ROAD
ELGIN ROAD
OLD WOODVILLE ROAD
WOODVILLE HWY
PS
NLMORE RD SEPS

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
WOODVILLE CONCEPTUAL SEWER LAYOUT
STUDY AREA 6

KEY MAP (SHEET 22 of 34)



LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

Hatch Mott MacDonald

CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
WOODVILLE CONCEPTUAL SEWER LAYOUT
STUDY AREA 6

WOODVILLE SOUTH PS

PS

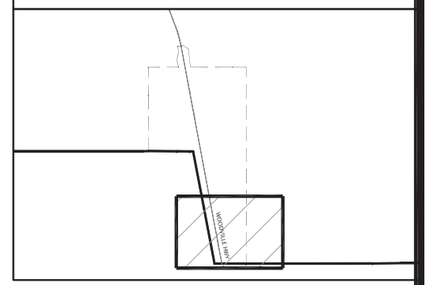
PS

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 23 of 34)

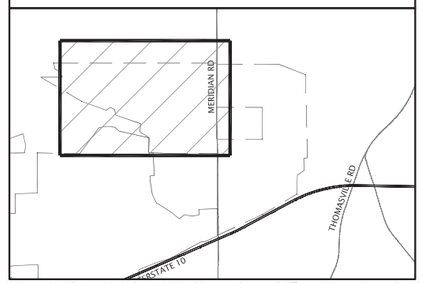


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CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
BOBBIN MILL CONCEPTUAL SEWER LAYOUT
STUDY AREA 7

KEY MAP (SHEET 24 of 34)



LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

Hatch Mott MacDonald

CITY OF TALLAHASSEE

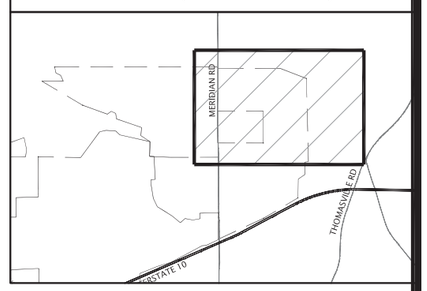
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
BOBBIN MILL CONCEPTUAL SEWER LAYOUT
STUDY AREA 7

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 25 of 34)



MACLAY ROAD
BLANN STAW ROAD
NORTH MERIDIAN ROAD
BOBBIN MILL ROAD
BOBBIN BROOK WAY
BOBBIN BROOK CIRCLE
BOBBIN BROOK END
RHODEN COVE ROAD
WOODBROOK DRIVE
EXISTING PS #33
FOREST LAIR
TIMBERLANE ROAD
SOMERSET WAY
THOMASVILLE ROAD

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CITY OF TALLAHASSEE

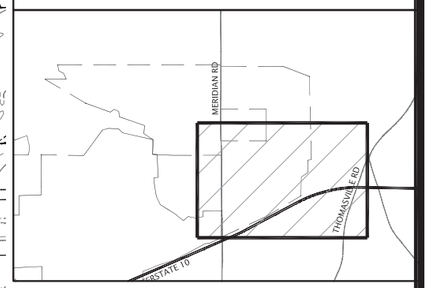
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
BOBBIN MILL CONCEPTUAL SEWER LAYOUT
STUDY AREA 7

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 26 of 34)



TIMBERLANE ROAD
FOREST LAIR
BRIAR CLIFF
EXISTING PS
INTERSTATE 10

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CITY OF TALLAHASSEE

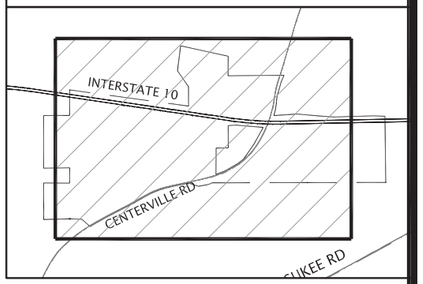
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
CENTERVILLE TRACE CONCEPTUAL SEWER LAYOUT
STUDY AREA 8

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 27 of 34)



INTERSTATE 10

EXISTING PUMP STATION #118

CENTERVILLE ROAD

STONE GATE DRIVE

PINE RIDGE DRIVE

Hatch Mott MacDonald

CITY OF TALLAHASSEE

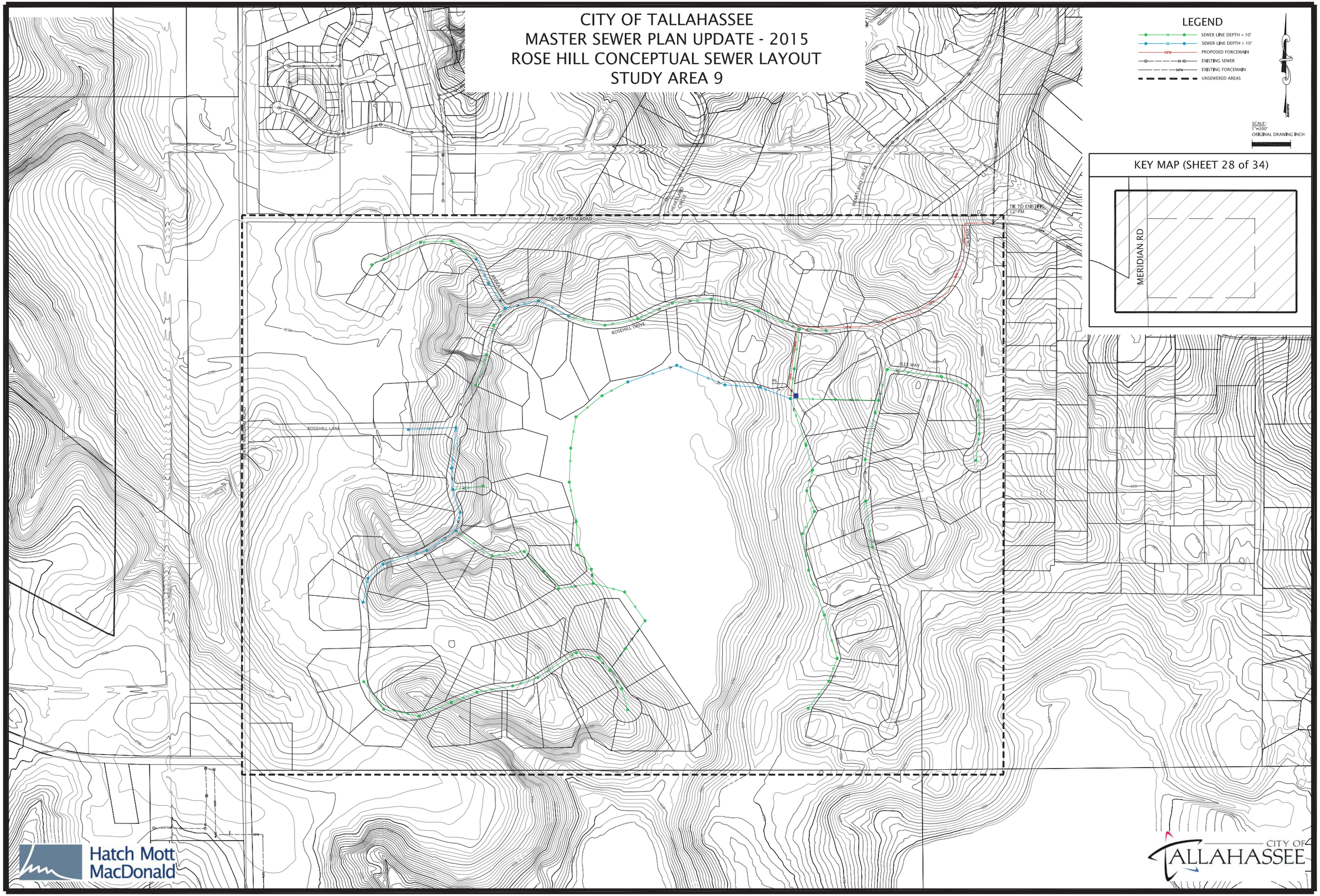
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
ROSE HILL CONCEPTUAL SEWER LAYOUT
STUDY AREA 9

LEGEND

- SS — SEWER LINE DEPTH < 10'
- SS — SEWER LINE DEPTH > 10'
- SSFM — PROPOSED FORCEMAIN
- SS — EXISTING SEWER
- SSFM — EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 28 of 34)



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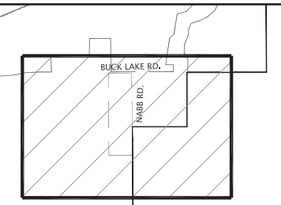
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
AVONDALE CONCEPTUAL SEWER LAYOUT
STUDY AREA 10

LEGEND

- SS — SEWER LINE DEPTH < 10'
- SS — SEWER LINE DEPTH > 10'
- SSFM — PROPOSED FORCEMAIN
- SS — EXISTING SEWER
- SSFM — EXISTING FORCEMAIN
- UNSEWERED AREAS
- SS — GRAVITY SEWER BY OTHERS
- SSFM — FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 29 of 34)



BUCK LAKE ROAD
HIGHLAND DRIVE
MABB ROAD
ADAMSON PS TOM

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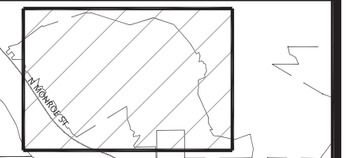
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
HARBINWOOD ESTATES CONCEPTUAL SEWER LAYOUT
STUDY AREA 11

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS

SCALE:
1" = 350'
ORIGINAL DRAWING IN

KEY MAP (SHEET 30 of 34)



PUMP STATION C

PUMP STATION B

PUMP STATION A

PUMP STATION D

W TENNESSEE ST

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CITY OF TALLAHASSEE

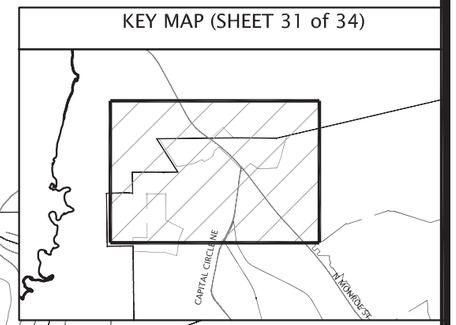
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
NORTHWEST LEON COUNTY CONCEPTUAL SEWER LAYOUT
STUDY AREA 12

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=200'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 31 of 34)



OLD BAINBRIDGE RD

CAPITAL CIRCLE NW

N. MONROE ST.

PS

PS

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MASTER SEWER PLAN UPDATE - 2015
NORTHWEST LEON COUNTY CONCEPTUAL SEWER LAYOUT
STUDY AREA 12

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 32 of 34)



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CITY OF TALLAHASSEE

CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
NORTHWEST LEON COUNTY CONCEPTUAL SEWER LAYOUT
STUDY AREA 12

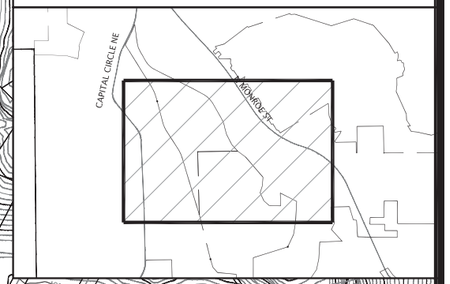
MATCHLINE SHEET 33

LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 33 of 34)



N. MONROE ST.

OLD BAINBRIDGE RD.

ABANDON EXISTING PS

ABANDON EXISTING SOXWOOD PS

ABANDON EXISTING PUMP STATION

CROWDER ROAD

CAPITAL CIRCLE NE

WOOD HILL DRIVE

SWATTS ROAD

Hatch Mott MacDonald

CITY OF TALLAHASSEE

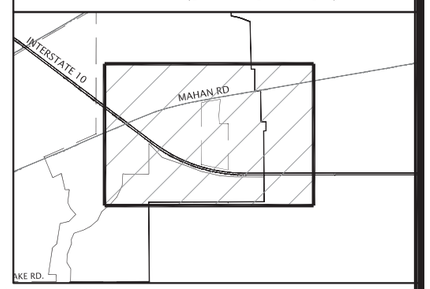
CITY OF TALLAHASSEE
MASTER SEWER PLAN UPDATE - 2015
PLANTATION ESTATES CONCEPTUAL SEWER LAYOUT
STUDY AREA 13

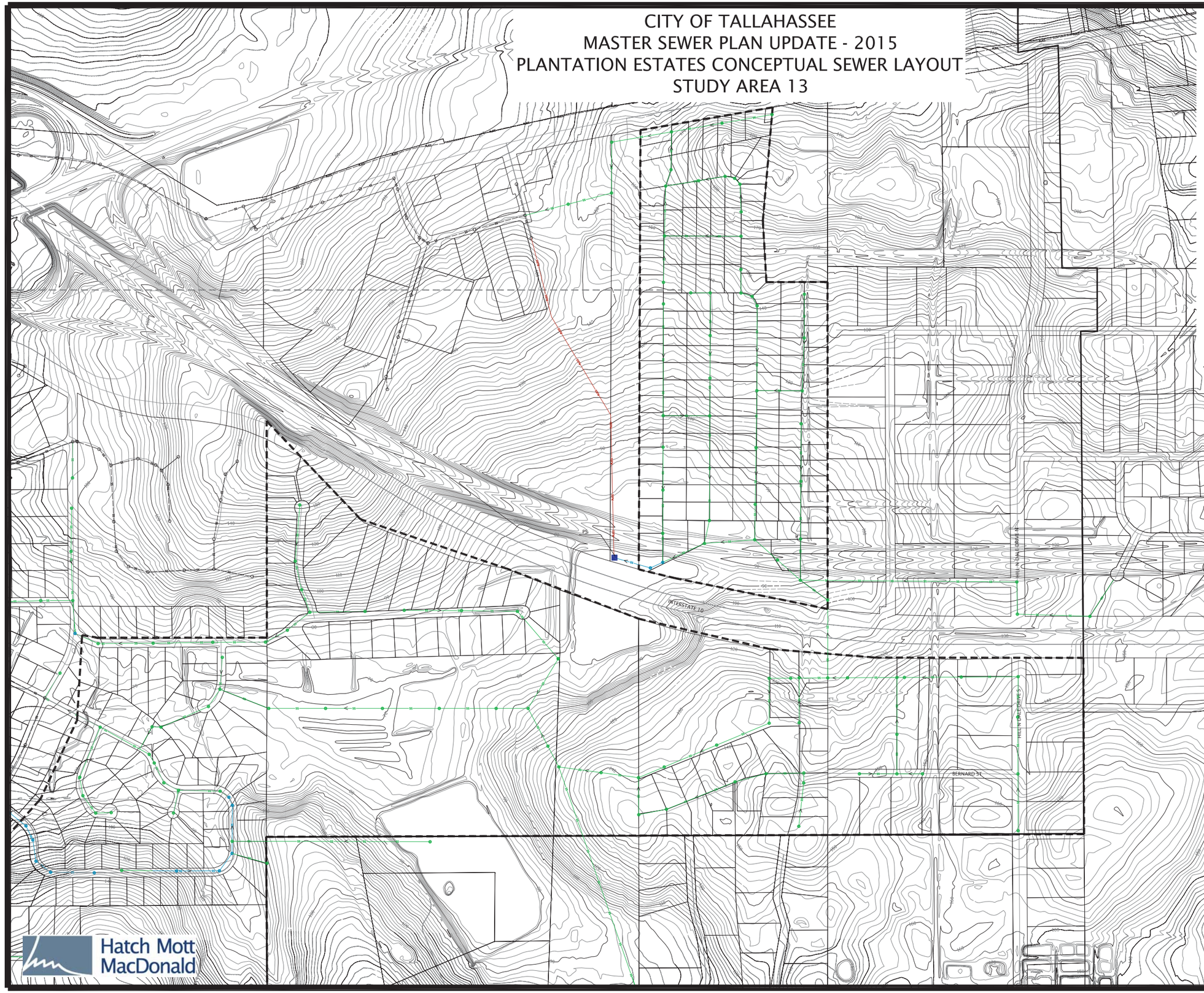
LEGEND

- SEWER LINE DEPTH < 10'
- SEWER LINE DEPTH > 10'
- PROPOSED FORCEMAIN
- EXISTING SEWER
- EXISTING FORCEMAIN
- UNSEWERED AREAS
- GRAVITY SEWER BY OTHERS
- FORCEMAIN BY OTHERS

SCALE:
1"=100'
ORIGINAL DRAWING INCH

KEY MAP (SHEET 34 of 34)



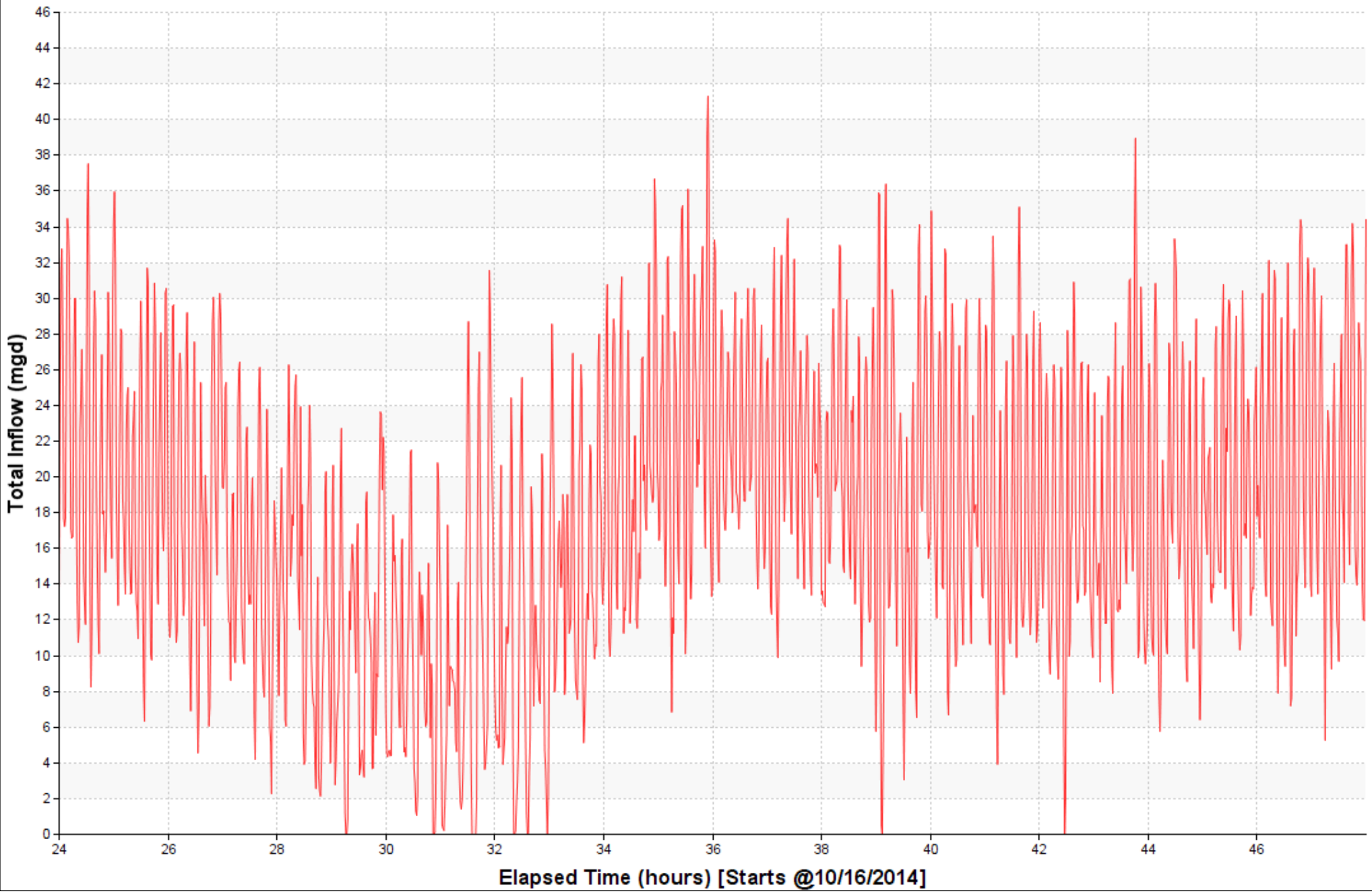


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CITY OF TALLAHASSEE

Appendix C: 2014 Model Calibration and Capacity Analysis

TPSWRF Inflow (2014 Dry Wx Model)



		MGD			
Object	**Variable**	**Minimum Value**	**Maximum Value**	**Average Value**	**Standard Deviation**
System	Total Inflow (mgd)	8.514	22.702	17.766	4.45
Outfall TPS	**Total Inflow (mgd)**	0.104	41.299	**17.896**	7.959
			Model Continuity Error:	3.725%	
			2013 AADF for TPSWRF:	**17.836**	**MGD**
	Running Pumps:	104	at 103 Pump Stations		
	Surcharging Manholes:	56			
	Flooding Manholes:	0			
	Surcharging Wet Wells:	15			
	Flooding Wet Wells:	0			

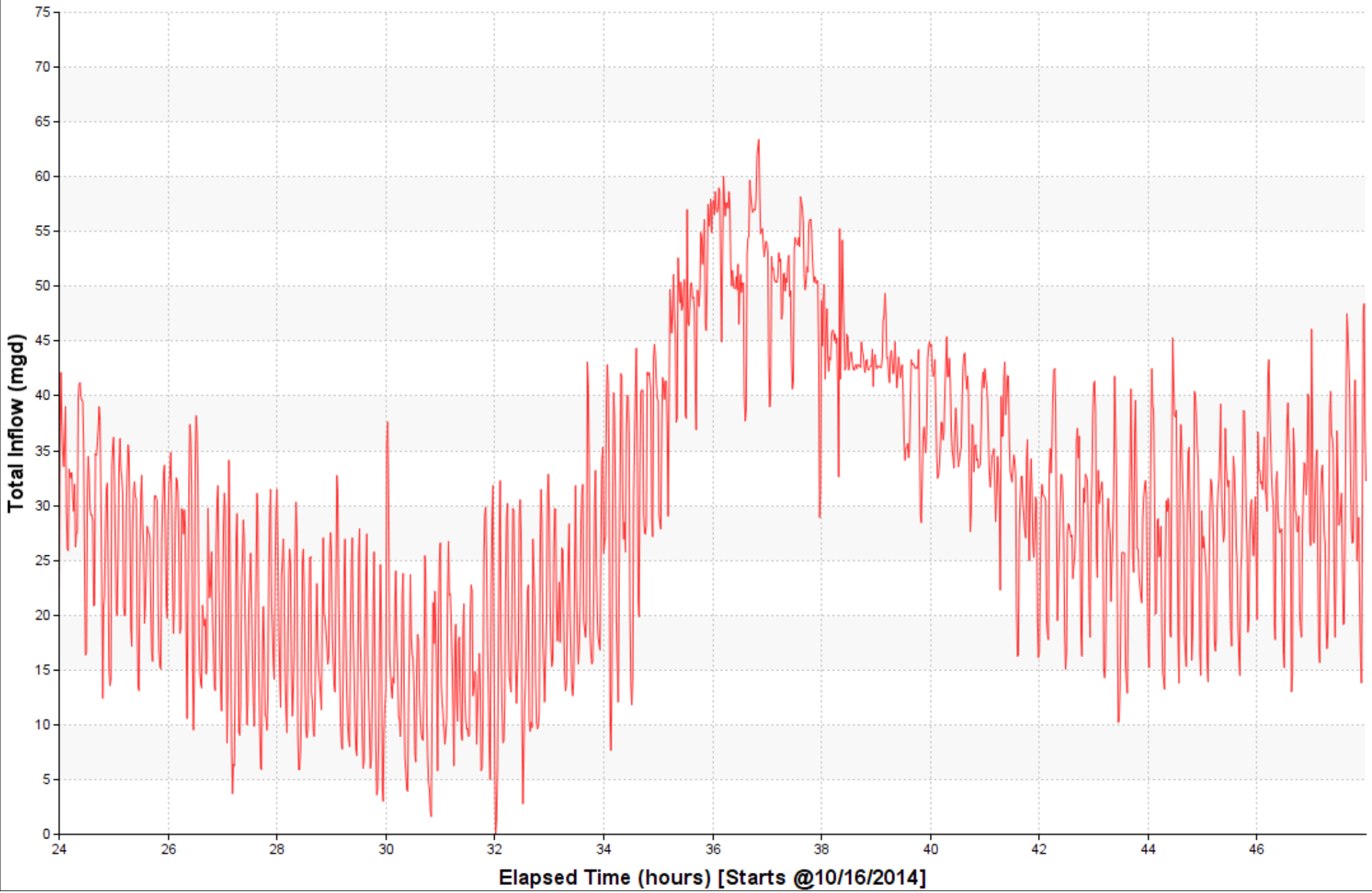
Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
PS106P1	Countryside at Benjamins Run	239	0.025	103	1.71	13
PS107P1	Swift Creek Middle School	214	0.009	40	0.67	18
PS108P1	Greenwood MH Park	944	0.038	39	0.66	20
PS110P1	PECAN GROVE	308	0.017	55	0.92	63
PS112P1	BRADFORDVILLE PUBLIX	361	0.001	4	0.06	9
PS113P1	GILCHRIST/TIMBERLANE	189	0.021	110	1.83	15
PS115P1	FOREST MEADOWS	664	0.006	9	0.14	24
PS117P1	Airport	445	0.015	34	0.56	22
PS118P1	Centre Court	879	0.002	2	0.03	6
PS119P1	Olson Road	201	0.013	66	1.09	17
PS11P1	SHORELINE DR	379	0.026	69	1.14	32
PS120P1	Crawfordville Trace	273	0.024	84	1.40	75
PS121P1	Piney Z	288	0.021	73	1.21	41
PS122P1		66	0.003	38	0.64	2
PS123P1	FSU	1386	0.961	693	11.55	111
PS124P1	Forest Village Shopping Center	590	0.008	13	0.22	14
PS125P1	Hampshire	306	0.012	38	0.63	12
PS126P1	Schoolhouse Rd./Southwood	527	0.006	11	0.19	10
PS127P1	Silver Ridge	452	0.085	189	3.14	192
PS128P1	Sleepy Hollow	600	0.08	133	2.21	36
PS129P1	Monterey Pines	631	0.002	2	0.04	2
PS12P1	LAKE BRADFORD RD	8525	4.912	576	9.60	184
PS131P1	Ox Bottom Reserve	400	0.002	6	0.10	3
PS132P1	Airport Commerce	302	0.002	7	0.12	7
PS133P1	Golden Pheasant south	559	0.007	13	0.22	13
PS134P1	Golden Pheasant north	305	0.006	20	0.33	11
PS136P1	Fox Wood	139	0.005	32	0.53	12
PS136P2	Fox Wood	161	0.002	12	0.20	12
PS137P1	Commerce Industrial park	950	0.002	2	0.03	1
PS138P1	South Wood Unit 17	164	0.01	62	1.03	19
PS139P1	Wolf Creek Subdivion	150	0.013	86	1.44	19
PS13P1	CAP CIRCLE SE	226	0.01	43	0.71	28
PS140P1	Summer Chase	380	0.024	64	1.06	42
PS141P1	Buck Head Phase III	181	0.008	43	0.72	8
PS142P1	Shelfer Rd	2725	0.146	52	0.87	91
PS143P1	Wood Briar	309	0.047	151	2.51	42
PS144P1	Gum Rd	766	0.001	1	0.01	1
PS145P1		145	0.007	50	0.83	13
PS146P1		375	0.001	3	0.04	4
PS147P1		304	0.005	16	0.27	15
PS148P1		115	0.003	23	0.38	6
PS149P1	SPRINGHILL RD	4852	6.217	1282	21.37	24
PS150P1		403	0.022	56	0.93	20
PS151P1		181	0.004	23	0.38	8
PS152P1	TEAM TOYOTA	634	0.029	46	0.76	7
PS153P1		393	0.005	12	0.20	5
PS154P1		382	0.001	1	0.02	1
PS155-P1		1505	0.076	50	0.83	12
PS156P1	LAKESHORE	504	0.125	248	4.13	27
PS157P1	CACTUS DR	568	0.286	499	8.31	137
PS158P1	PARKHILL	612	0.01	15	0.26	10
PS160P1		885	0.089	99	1.65	67
PS162P1	New Pump	684	0.001	1	0.01	1
PS163P1		442	0.002	4	0.07	5
PS164P1		218	0.009	40	0.67	39

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
PS165P1		1100	0	0	0.01	1
PS166P1		473	0.005	11	0.19	2
PS167P1		970	0.041	42	0.70	63
PS168P1		590	0.022	36	0.60	18
PS169P1		245	0.01	41	0.68	15
PS170_P1		779	0.093	117.4	1.96	48
PS171_P1		405	0.064	158	2.64	37
PS175P1		169	0.009	54	0.91	10
PS176P1		420	0.01	21	0.36	9
PS1P2	Pepper Dr	940	0.376	400	6.66	155
PS21P1	CHATEAU LAFAYETTE	374	0.01	25	0.42	17
PS22P1	RIGGINS RD	3096	2.337	755	12.58	136
PS23P1	MOORE SCHOOL	760	0.044	57	0.94	37
PS25P1	SUMMERBROOKE/WAXWING	202	0.082	404	6.73	109
PS27P1	MAXWELL DR	129	0.003	26	0.43	13
PS33P1	MT. SINAI RD.	754	0.012	16	0.27	23
PS36P1		6148	3.598	585	9.75	237
PS37P1	TANGLEWOOD TR PK	435	0.004	10	0.16	5
PS42P1	HILLSGATE CTR	180	0.007	38	0.63	7
PS43P1	MEGINNIS ARM	2647	0.833	314	5.24	78
PS46P1	MACON ROAD	112	0.002	19	0.31	8
PS47P1	SHAMROCK PLAZA	769	0.355	455	7.58	328
PS49P1	OKEEHEEPKEE RD	279	0.089	316	5.27	44
PS54P1	HUNTINGTON OAKS	555	0.001	2	0.04	9
PS56P1	CASCADE	370	0.008	21	0.35	38
PS59P1	WESTBURY	396	0.035	86	1.43	59
PS5P1	MILLSTREAM	223	0.005	24	0.39	8
PS62P1	Cypress Cove	118	0.003	28	0.46	6
PS65P1	STATE OFFICE COMPLEX	3353	0.459	137	2.28	45
PS66P1	PARK 20 WEST	650	0.002	3	0.05	4
PS6P1	TIMBERLANE RD	578	0.123	213	3.55	38
PS71P1	PARADISE VILLAGE	705	0.003	4	0.07	5
PS73P1	MUNICIPAL CODE	1515	0.079	52	0.86	7
PS74P1	WEEMS ROAD	3690	1.727	468	7.79	24
PS76P1	COMMONWEALTH	1685	0.246	144	2.40	129
PS77P1	BROADMOORE ESTATES	662	0.021	30	0.51	37
PS78P1	CENTURY PARK	542	0.002	3	0.06	1
PS7P1	BUCKHEAD	304	0.026	83	1.38	97
PS81P1	SUNSHINE TR PK	239	0.01	40	0.66	22
PS83P1	WOOD BROOK	378	0.031	81	1.34	48
PS84P1	MCLAUGHLIN RD	3563	1.835	514	8.57	43
PS85P1	OX BOTTOM	434	0.071	161	2.69	156
PS89P1	MOORE POND #2	179	0.078	434	7.23	107
PS92P1	BUCK LAKE RD SCHOOL	1431	0.045	31	0.51	17
PS94P1	SUMMERBROOKE	963	0.263	272	4.53	75
PS95P1	ROSWELL	129	0.003	26	0.43	9
PS96P1	TIMBERLANE SCHOOL RD	162	0.01	62	1.03	21
PS97P1	MACLAY RD	290	0.03	101	1.68	75
PS99P1		757	0.177	231	3.85	36
104	Pumps Running					

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH23653	130.29	158.86	5.05	135.34	23.7	12	4.05	23.52
SH24493	42.58	48.21	1.92	44.50	24.0	8	1.25	3.71
SH25227	59.43	66.72	0.69	60.12	19.0	8	0.03	6.60
SH25561	48.86	54.71	2.06	50.92	24.0	6	1.56	3.80
SH25708	39.56	43.85	1.21	40.77	24.0	8	0.55	3.08
SH26864	103.54	117.53	1.39	104.93	23.9	12	0.39	12.60
SH26983	136.42	144.26	1.09	137.51	0.7	12	0.09	6.75
SH27012	129.99	150.29	5.19	135.18	23.8	14	4.04	15.11
SH27231	46.01	65.45	3.52	49.53	23.5	10	2.69	15.92
SH27535	78.07	85.42	1.29	79.36	24.0	12	0.29	6.06
SH27810	42.34	56.86	3.23	45.57	24.0	36	0.23	11.29
SH27985	105.93	118.88	4.93	110.86	19.2	8	4.27	8.02
SH28935	46.24	52.26	1.65	47.89	24.0	8	0.98	4.37
SH29238	72.55	80.519	1.44	73.99	18.3	8	0.77	6.53
SH29362	114.61	123.31	1.06	115.67	0.0	8	0.39	7.65
SH29558	130.96	143.01	6.71	137.67	17.2	13	5.61	5.34
SH29660	130.7	150.29	2.39	133.09	24.0	10	1.56	17.20
SH30284	128.43	136.31	2.47	130.90	24.0	8	1.80	5.41
SH30756	78.29	84.04	1.08	79.37	10.7	12	0.08	4.68
SH30983	106.09	116.94	6.34	112.43	19.4	8	5.67	4.51
SH30985	104.36	117.13	4.87	109.23	24.0	8	4.20	7.90
SH31284	76.78	86.33	2.56	79.34	24.0	12	1.56	6.99
SH31668	74.42	88.32	3.23	77.65	24.0	24	1.23	10.67
SH31954	41.5	62	2.35	43.85	17.3	8	1.68	18.15
SH32135	74.02	79.41	2.15	76.17	1.3	24	0.15	3.24
SH32723	71.65	76.307	1.56	73.21	18.0	18	0.06	3.10
SH32733	63.59	75.69	0.78	64.37	21.9	9	0.05	11.32
SH33232	47.05	55.24	3.87	50.92	24.0	8	3.20	4.33
SH34157	43.12	49.32	1.49	44.61	24.0	12	0.49	4.71
SH34166	33.19	48.925	0.80	33.99	10.6	8	0.13	14.94
SH34669	38.22	49.76	1.16	39.38	22.5	8	0.49	10.38
SH34957	136.2	148.02	1.12	137.32	4.4	12	0.12	10.70
SH36544	76.96	86.71	2.39	79.35	24.0	12	1.39	7.36
SH36844	129.79	147.99	10.67	140.46	24.0	13	9.57	7.53
SH37156	113.98	123.94	1.52	115.50	0.4	8	0.85	8.44
SH37183	103.43	116.81	0.97	104.40	24.0	8	0.30	12.41
SH37274	75.9	83.47	3.43	79.33	24.0	12	2.43	4.14
SH38373	131.63	144.88	5.36	136.99	1.6	13	4.26	7.89
SH38621	125.08	142.97	1.06	126.14	0.2	12	0.04	16.83
SH38720	136.2	148.55	1.25	137.45	1.0	14	0.10	11.11
SH39080	76.13	83.78	3.20	79.33	24.0	12	2.20	4.45
SH39319	75.79	82.53	1.21	77.00	24.0	12	0.21	5.53
SH39345	106.51	118.01	1.45	107.96	24.0	10	0.62	10.05
SH39362	44.47	56.32	0.74	45.21	14.0	8	0.07	11.12
SH39721	42.19	66	1.49	43.68	3.7	12	0.49	22.32
SH39897	108.9	127.353	4.32	113.22	7.5	8	3.66	14.13
SH39905	109	118.8	5.52	114.52	18.1	8	4.85	4.28
SH40025	77.26	87.51	2.09	79.35	24.0	12	1.09	8.16
SH40203	72.66	79.57	3.49	76.15	12.0	24	1.49	3.42
SH40450	100.5	113.95	2.25	102.75	4.2	20	0.60	11.21
SH41794	34.79	46.056	1.02	35.81	20.3	8	0.35	10.25
SH42104	77.63	90.03	1.73	79.36	24.0	12	0.73	10.67
SH659134	42.51	48	1.99	44.50	24.0	13	0.92	3.50
SH659146	42.46	46	2.03	44.49	24.0	12	1.03	1.51
SH684743	104.941	113	2.78	107.72	24.0	8	2.11	5.28
SH948359	52.045	58.25	1.168	53.213	18.745		0.335	5.037
56	Surcharging Manholes							

Facility ID	Pump Station	Location	Wet Well Invert (ft)	Max. Depth (ft)	Max. HGLE	Max. Inflow Rate (gpm)	Total Inflow (Mgal)	Total Surcharge Time (hrs)	Max.Surcharge Height Above Crown (ft)	Min. Depth Below Rim (ft)
SN42613	PS-023	MOORE SCHOOL	130.00	5.78	135.78	316	0.098	14	0.99	7.01
SN42615	PS-042	HILLSGATE CTR	55.81	3.60	59.41	357	0.01	16	0.61	9.61
SN42609	PS-043	MEGINNIS ARM	75.00	8.01	83.01	2948	1.296	4	0.26	18.99
SN42606	PS-049	OKEEHEEPKEE RD	141.94	8.52	150.46	366	0.174	12	1.48	4.43
SN42649	PS-065	STATE OFFICE COMPLEX	34.01	8.20	42.21	476	0.831	13	1.95	16.05
SN42573	PS-066	PARK 20 WEST	69.76	7.09	76.85	2	0.004	24	7.09	3.61
SN42626	PS-106	Countryside at Benjamins Run	98.68	6.40	105.08	382	0.051	9	1.29	11.23
SN42576	PS-113	GILCHRIST/TIMBERLANE	156.00	5.42	161.42	392	0.102	14	0.39	13.03
SN42596	PS-118	Centre Court	105.07	3.54	108.61	2	0.004	24	2.87	20.33
SN42598	PS-122	1420 Oven Park Dr	132.63	4.50	137.13	67	0.005	6	0.62	10.33
SN42585	PS-128	Sleepy Hollow	127.00	6.44	133.44	1159	0.128	24	5.44	17.25
SN42622	PS-152	TEAM TOYOTA	38.18	5.50	43.68	974	0.058	9	1.00	17.00
SN642336	PS-155	Bannerman Rd	205.28	5.80	211.08	68	0.17	24	5.80	5.80
SN778393	PS-156	LAKESHORE	96.91	5.81	102.72	682	0.18	24	3.38	7.19
SN846584	PS-166	MORNINGSIDE BAPTIST CHURCH	45.75	8.50	54.25	566	0.012	5	0.94	20.15
15	Surcharging Wet Wells									

TPSWRF Inflow (2014 Wet Wx Model)



		MGD			
Object	**Variable**	**Minimum Value**	**Maximum Value**	**Average Value**	**Standard Deviation**
System	Total Inflow (mgd)	15.003	57.544	29.411	11.599
System	Flooding (mgd)	0	0.137	0.067	0.043
Outfall TPS	Total Inflow (mgd)	1.339	63.425	29.604	13.023
			Model Continuity Error:	1.855%	
	Average TPSWRF Inflow plus System Flooding:			**29.671**	**MGD**
	Running Pumps:	112	at 104 Pump Stations		
	Surcharging Manholes:	199			
	Flooding Manholes:	2	(minor flooding; do not flood in 2035 model)		
	Surcharging Wet Wells:	17			
	Flooding Wet Wells:	0			

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
PS106P1	Countryside at Benjamins Run	238	0.027	111	1.85	15
PS107P1	Swift Creek Middle School	208	0.009	42	0.69	18
PS108P1	Greenwood MH Park	892	0.037	41	0.69	20
PS110P1	PECAN GROVE	305	0.017	56	0.93	63
PS112P1	BRADFORDVILLE PUBLIX	367	0.002	5	0.09	13
PS113P1	GILCHRIST/TIMBERLANE	184	0.027	144	2.40	19
PS115P1	FOREST MEADOWS	624	0.008	12	0.21	33
PS117P1	Airport	450	0.014	32	0.53	21
PS118P1	Centre Court	724	0.002	2	0.04	6
PS119P1	Olson Road	192	0.014	74	1.23	18
PS11P1	SHORELINE DR	371	0.036	96	1.61	43
PS120P1	Crawfordville Trace	250	0.023	88	1.47	76
PS121P1	Piney Z	289	0.022	76	1.27	43
PS122P1		66	0.002	37	0.62	2
PS123P1	FSU	1389	1.313	946	15.76	90
PS123P2	FSU	1240	0.056	45	0.76	3
PS124P1	Forest Village Shopping Center	529	0.008	14	0.23	14
PS125P1	Hampshire	300	0.015	48	0.80	15
PS126P1	Schoolhouse Rd./Southwood	487	0.006	12	0.20	10
PS127P1	Silver Ridge	407	0.116	288	4.80	229
PS128P1	Sleepy Hollow	579	0.105	181	3.02	38
PS129P1	Monterey Pines	574	0.002	4	0.06	3
PS12P1	LAKE BRADFORD RD	8541	8.231	964	16.06	141
PS12P2	LAKE BRADFORD RD	8751	0.008	1	0.02	5
PS131P1	Ox Bottom Reserve	365	0.004	11	0.18	5
PS132P1	Airport Commerce	279	0.002	8	0.13	7
PS133P1	Golden Pheasant south	480	0.016	32	0.53	27
PS134P1	Golden Pheasant north	259	0.006	23	0.39	11
PS136P1	Fox Wood	132	0.005	34	0.57	12
PS136P2	Fox Wood	146	0.002	13	0.21	12
PS137P1	Commerce Industrial park	950	0.002	2	0.03	1
PS138P1	South Wood Unit 17	159	0.01	62	1.04	18
PS139P1	Wolf Creek Subdivion	142	0.014	95	1.59	20
PS13P1	CAP CIRCLE SE	226	0.01	43	0.71	28
PS140P1	Summer Chase	372	0.024	65	1.08	42
PS141P1	Buck Head Phase III	177	0.008	44	0.73	8
PS142P1	Shelfer Rd	2557	0.147	55	0.92	92
PS143P1	Wood Briar	306	0.046	151	2.52	41
PS144P1	Gum Rd	681	0.001	2	0.03	2
PS145P1		134	0.007	55	0.91	13
PS146P1		360	0.001	2	0.04	4
PS147P1		269	0.005	18	0.29	15
PS148P1		111	0.003	24	0.39	6
PS149P1	SPRINGHILL RD	5176	7.274	1412	23.53	6
PS149P2	SPRINGHILL RD	5425	2.693	497	8.28	28
PS149P3	SPRINGHILL RD	5428	0.774	143	2.38	1
PS149P4		5428	0.154	28	0.47	1
PS150P1		404	0.023	56	0.93	20
PS151P1		170	0.004	25	0.42	8
PS152P1	TEAM TOYOTA	606	0.175	287	4.78	30
PS153P1		386	0.004	11	0.19	5
PS154P1		324	0.001	2	0.03	1
PS155-P1		1398	0.076	54	0.90	12
PS156P1	LAKESHORE	503	0.265	523	8.72	41
PS157P1	CACTUS DR	544	0.338	612	10.20	138

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
PS158P1	PARKHILL	451	0.01	21	0.35	10
PS160P1		834	0.268	319	5.31	143
PS162P1	New Pump	685	0.001	1	0.01	1
PS163P1		441	0.002	5	0.08	6
PS164P1		210	0.009	40	0.67	38
PS165P1		1100	0	0.4	0.01	1
PS166P1		475	0.005	11	0.18	2
PS167P1		964	0.038	39	0.66	60
PS168P1		522	0.022	42	0.70	18
PS169P1		235	0.01	42	0.70	15
PS170_P1		740	0.1	134	2.23	52
PS171_P1		403	0.066	163	2.71	38
PS175P1		168	0.01	56	0.93	11
PS176P1		317	0.01	29	0.49	9
PS1P2	Pepper Dr	941	0.493	524	8.73	161
PS21P1	CHATEAU LAFAYETTE	360	0.013	35	0.59	23
PS22P1	RIGGINS RD	3037	3.364	1102	18.37	74
PS22P2	RIGGINS RD	2728	0.429	157	2.61	18
PS23P1	MOORE SCHOOL	688	0.046	65	1.08	40
PS25P1	SUMMERBROOKE/WAXWING	200	0.084	416	6.93	109
PS27P1	MAXWELL DR	126	0.003	26	0.43	13
PS33P1	MT. SINAI RD.	534	0.03	54	0.91	55
PS36P1		6147	5.555	904	15.07	210
PS37P1	TANGLEWOOD TR PK	401	0.035	85	1.42	36
PS42P1	HILLSGATE CTR	181	0.013	72	1.20	11
PS43P1	MEGINNIS ARM	2645	1.496	564	9.40	107
PS45P1	JACKSON TRADING POST	947	0.006	6	0.10	6
PS46P1	MACON ROAD	112	0.002	19	0.31	8
PS47P1	SHAMROCK PLAZA	715	0.378	514	8.57	330
PS49P1	OKEEHEEPKEE RD	276	0.082	297	4.95	42
PS54P1	HUNTINGTON OAKS	326	0.002	6	0.09	16
PS56P1	CASCADE	305	0.008	24	0.41	38
PS59P1	WESTBURY	369	0.041	108	1.80	68
PS5P1	MILLSTREAM	221	0.008	36	0.60	12
PS62P1	Cypress Cove	117	0.009	73	1.22	15
PS65P1	STATE OFFICE COMPLEX	3303	0.456	138	2.30	45
PS66P1	PARK 20 WEST	640	0.002	3	0.05	4
PS6P1	TIMBERLANE RD	557	0.269	481	8.02	63
PS71P1	PARADISE VILLAGE	707	0.003	4	0.06	4
PS73P1	MUNICIPAL CODE	1488	0.163	109	1.81	14
PS74P1	WEEMS ROAD	3608	3.077	850	14.17	22
PS74P2	WEEMS ROAD	3254	0.117	36	0.60	1
PS76P1	COMMONWEALTH	1646	0.3	178	2.97	153
PS77P1	BROADMOORE ESTATES	588	0.054	87	1.46	89
PS78P1	CENTURY PARK	543	0.002	3	0.05	1
PS7P1	BUCKHEAD	299	0.029	94	1.56	108
PS81P1	SUNSHINE TR PK	235	0.011	46	0.76	25
PS83P1	WOOD BROOK	351	0.037	102	1.70	56
PS84P1	MCLAUGHLIN RD	3477	2.569	734	12.24	44
PS85P1	OX BOTTOM	425	0.098	227	3.79	204
PS89P1	MOORE POND #2	178	0.08	448	7.46	107
PS92P1	BUCK LAKE RD SCHOOL	1209	0.185	149	2.48	64
PS94P1	SUMMERBROOKE	940	0.417	442	7.36	97
PS95P1	ROSWELL	129	0.011	82	1.37	27

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
PS96P1	TIMBERLANE SCHOOL RD	138	0.022	155	2.59	40
PS97P1	MACLAY RD	288	0.114	386	6.44	203
PS99P1		720	0.234	322	5.37	45
112	Pumps Running					

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH1047552	89.69	99.98	1.68	91.37	1.0	18	0.18	8.62
SH222965	74.88	81.84	1.47	76.35	1.0	14	0.32	5.49
SH23088	51.8	65.37	2.40	54.20	3.7	12	1.40	11.17
SH231230	60.67	72.03	2.89	63.56	16.3	21	1.14	8.47
SH23241	136.37	148.34	2.20	138.57	6.6	12	1.20	9.77
SH23279	65.64	77.22	3.15	68.79	2.5	19	1.56	8.43
SH23416	43.04	59.12	2.45	45.49	0.1	8	1.78	13.63
SH23653	130.29	158.86	7.02	137.31	23.8	12	6.02	21.55
SH23695	64.91	78	2.43	67.34	2.0	18	0.93	10.66
SH24047	75.51	82.92	1.03	76.54	0.1	12	0.03	6.38
SH24052	70.41	83.05	1.01	71.42	0.1	12	0.01	11.63
SH24218	55.33	65.46	1.50	56.83	2.0	12	0.50	8.63
SH24221	51.43	66.26	1.76	53.19	1.9	12	0.76	13.07
SH24467	54.3	60.09	2.24	56.54	2.8	12	1.24	3.56
SH24493	42.58	48.21	2.38	44.96	24.0	8	1.71	3.26
SH24726	112.42	129.993	1.82	114.24	5.4	12	0.82	15.75
SH24741	138.65	149.38	4.36	143.01	4.9	12	3.36	6.38
SH24765	141.76	160.41	5.81	147.57	3.5	12	4.81	12.84
SH24802	66.87	76.83	1.94	68.81	1.9	21	0.19	8.02
SH25344	60.64	72.881	2.98	63.62	10.1	24	0.95	9.26
SH25428	51.87	62.33	2.02	53.89	5.3	12	1.02	8.44
SH25561	48.86	54.71	2.15	51.01	24.0	6	1.65	3.71
SH25568	52.18	64.051	2.61	54.79	6.3	8	1.95	9.26
SH25704	52.04	62.45	2.69	54.73	3.5	12	1.69	7.72
SH25708	39.56	43.85	1.41	40.97	24.0	8	0.74	2.89
SH26089	142.38	152.03	8.95	151.33	3.9	11	8.04	0.70
SH26214	57.22	64.4	2.44	59.66	2.2	18	0.94	4.74
SH26863	140.51	147.32	5.17	145.68	4.0	12	4.17	1.64
SH26864	103.54	117.53	3.72	107.26	24.0	12	2.72	10.27
SH26983	136.42	144.26	5.07	141.49	17.9	12	4.07	2.77
SH27012	129.99	150.29	8.07	138.06	23.9	14	6.92	12.23
SH27071	63.75	77.1	1.83	65.58	1.3	18	0.33	11.52
SH27086	67.29	79.4	2.53	69.82	1.6	18	1.03	9.58
SH27094	66.56	77.31	3.13	69.69	2.0	20	1.44	7.62
SH27095	68.74	78	0.91	69.65	0.1	10	0.08	8.35
SH27231	46.01	65.45	3.52	49.53	23.5	10	2.69	15.92
SH27244	29.21	35.05	1.10	30.31	0.9	10	0.26	4.74
SH27460	143.39	151.9	5.13	148.52	2.5	12	4.13	3.39
SH27535	78.07	85.42	1.49	79.56	24.0	12	0.49	5.86
SH27627	46.25	64.56	1.57	47.82	0.0	18	0.07	16.74
SH27810	42.34	56.86	3.66	46.00	24.0	36	0.66	10.86
SH27985	105.93	118.88	5.29	111.22	19.7	8	4.62	7.67
SH28024	141.72	159.21	5.75	147.47	3.5	12	4.75	11.74
SH28110	74.21	82.64	3.83	78.04	5.4	24	1.83	4.60
SH28378	65.22	78.9	2.96	68.18	2.9	18	1.46	10.72
SH28413	66.97	77.76	2.81	69.78	1.9	18	1.31	7.98
SH28633	136.37	144.143	1.74	138.11	4.8	12	0.74	6.03
SH28935	46.24	52.26	1.82	48.06	24.0	8	1.15	4.20
SH29238	72.55	80.519	2.06	74.61	19.2	8	1.39	5.91
SH29362	114.61	123.31	1.95	116.56	0.8	8	1.29	6.75
SH29389	141.11	149.85	5.55	146.66	3.7	12	4.55	3.19
SH29486	70.01	90.16	1.59	71.60	1.5	12	0.59	18.56
SH29558	130.96	143.01	7.38	138.34	15.7	13	6.28	4.67
SH29605	63.02	78.38	1.08	64.10	1.3	12	0.08	14.29
SH29619	65.32	77.2	3.28	68.60	3.0	19	1.66	8.61
SH29660	130.7	150.29	2.49	133.19	24.0	10	1.66	17.10
SH29683	68.46	78.87	1.74	70.20	0.5	18	0.24	8.68
SH29873	140.45	146.07	5.13	145.58	4.1	12	4.13	0.49
SH29883	141.49	154.76	7.61	149.10	11.2	12	6.61	5.66
SH29893	144.8	151.414	3.75	148.55	2.0	12	2.75	2.87

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH30284	128.43	136.31	2.51	130.9	24.0	8	1.84	5.37
SH30307	57.38	66.07	2.30	59.68	3.5	12	1.30	6.39
SH30309	60.9	67.88	1.76	62.66	0.1	21	0.01	5.22
SH30313	46.21	62.47	1.56	47.77	0.0	18	0.06	14.70
SH30361	53.33	62.23	5.23	58.56	3.0	13	4.13	3.67
SH30362	52.11	63.74	2.64	54.75	4.1	12	1.64	8.99
SH30561	113.81	118.51	1.84	115.65	2.2	12	0.80	2.87
SH30565	139.51	149.51	4.69	144.20	4.5	12	3.69	5.31
SH30569	169.43	181.84	1.82	171.25	0.6	12	0.82	10.59
SH30603	82.47	93.01	1.34	83.81	1.8	15	0.09	9.20
SH30756	78.29	84.04	1.28	79.57	17.3	12	0.28	4.47
SH30897	63.24	77.6	1.55	64.79	0.6	18	0.05	12.81
SH30901	65.19	77.5	2.83	68.02	2.5	18	1.33	9.48
SH30904	64.22	77.4	2.08	66.30	1.4	18	0.58	11.10
SH30905	64.36	83.01	2.14	66.50	1.6	18	0.64	16.51
SH30928	66.18	77.19	3.08	69.26	2.3	18	1.58	7.93
SH30931	67.53	80.16	2.34	69.87	1.4	18	0.84	10.29
SH30983	106.09	116.94	6.78	112.87	20.3	8	6.11	4.07
SH30985	104.36	117.13	5.12	109.48	24.0	8	4.45	7.65
SH31019	139.72	144.4	4.68	144.40	4.5	12	3.68	0.00
SH31042	67.96	81.21	2.03	69.99	1.0	18	0.53	11.23
SH31060	65.99	77.3	3.62	69.61	3.2	18	2.12	7.70
SH31284	76.78	86.33	2.71	79.49	24.0	12	1.71	6.84
SH31655	61.67	75	1.96	63.63	2.3	21	0.21	11.37
SH31668	74.42	88.32	3.70	78.12	24.0	24	1.70	10.20
SH31833	58.43	64.2	3.56	61.99	2.1	18	2.06	2.21
SH31875	57.08	64.25	2.02	59.10	1.8	18	0.52	5.15
SH31954	41.5	62	6.57	48.07	16.8	8	5.90	13.93
SH32135	74.02	79.41	3.97	77.99	7.5	24	1.97	1.42
SH32368	137.98	142.31	4.20	142.18	5.5	12	3.20	0.13
SH32374	170.06	188.785	1.24	171.30	0.3	8	0.57	17.49
SH32481	142.99	152.24	9.25	152.24	3.5	8	8.58	0.00
SH32486	146.5	156	2.66	149.16	0.7	19	1.09	6.84
SH32723	71.65	76.307	1.85	73.50	18.1	18	0.35	2.81
SH32731	40.71	55.73	3.05	43.76	4.5	35	0.10	11.97
SH32733	63.59	75.69	0.82	64.41	21.9	9	0.09	11.28
SH32774	53.75	61.05	3.03	56.78	2.9	12	2.03	4.27
SH32775	52.16	64.15	2.41	54.57	2.9	12	1.41	9.58
SH32781	52.87	64.58	3.36	56.23	3.4	12	2.36	8.35
SH33193	71.9	76.815	1.63	73.53	2.2	18	0.13	3.29
SH33232	47.05	55.24	3.95	51.00	24.0	8	3.29	4.24
SH33252	54.04	59.645	3.18	57.22	2.9	12	2.18	2.42
SH33292	74.21	79.77	3.79	78.00	5.2	24	1.79	1.77
SH33700	45.97	63.065	1.70	47.67	3.0	10	0.87	15.39
SH34157	43.12	49.32	3.30	46.42	24.0	12	2.30	2.90
SH34166	33.19	48.925	1.46	34.65	18.7	8	0.80	14.27
SH34445	74.15	83.51	0.86	75.01	0.2	10	0.03	8.50
SH34669	38.22	49.76	1.59	39.81	24.0	8	0.92	9.95
SH34706	29.93	35.07	0.87	30.80	0.3	10	0.04	4.27
SH34849	136.42	148.29	3.26	139.68	13.5	12	2.26	8.61
SH34957	136.2	148.02	4.07	140.27	19.4	12	3.07	7.75
SH35393	37.1	43	0.85	37.95	0.3	10	0.01	5.06
SH35879	134.37	144.32	0.88	135.25	0.0	10	0.00	9.07
SH35891	65.65	77.79	3.24	68.89	2.8	18	1.70	8.90
SH35897	66.51	77.45	3.14	69.65	2.2	19	1.57	7.80
SH36034	115.47	122.82	1.49	116.96	0.6	8	0.82	5.86
SH36063	113.17	117.67	1.29	114.46	2.1	12	0.29	3.21
SH36174	57.99	63.7	3.00	60.99	2.0	18	1.50	2.71
SH36299	65.14	77.5	2.53	67.67	2.0	18	1.03	9.83
SH36310	64.74	77.3	2.33	67.07	1.9	18	0.83	10.23

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH36389	126.01	142.55	1.05	127.06	1.3	12	0.05	15.49
SH36544	76.96	86.71	2.55	79.51	24.0	12	1.55	7.20
SH36649	59.33	70.35	3.15	62.48	1.7	18	1.65	7.87
SH36653	59.83	68.5	2.70	62.53	1.3	21	0.95	5.97
SH36844	129.79	147.99	11.00	140.79	24.0	13	9.90	7.20
SH36958	65.28	81.23	1.79	67.07	0.2	21	0.04	14.17
SH36961	78.56	86.11	1.04	79.60	0.6	12	0.04	6.51
SH37078	65.16	90.11	2.72	67.88	2.3	18	1.22	22.23
SH37080	64.6	76.8	2.26	66.86	1.8	18	0.76	9.94
SH37081	63.41	78.01	1.65	65.06	1.0	18	0.15	12.95
SH37156	113.98	123.94	2.26	116.24	1.2	8	1.59	7.70
SH37183	103.43	116.81	1.67	105.10	24.0	8	1.01	11.71
SH37274	75.9	83.47	3.51	79.41	24.0	12	2.51	4.06
SH37653	65.98	77.1	3.08	69.06	2.4	18	1.58	8.04
SH37655	66.17	77.48	3.22	69.39	2.3	19	1.64	8.10
SH37850	143.03	151.9	5.61	148.64	2.7	12	4.61	3.26
SH38373	131.63	144.88	8.96	140.59	1.6	13	7.86	4.29
SH38609	145	154	9.00	154.00	2.6	25	6.93	0.00
SH38621	125.08	142.97	1.07	126.15	1.5	12	0.05	16.82
SH38640	29.63	34.41	0.94	30.57	0.5	10	0.11	3.84
SH38720	136.2	148.55	4.88	141.08	18.2	14	3.73	7.47
SH38779	48.72	55.21	0.93	49.65	5.5	8	0.26	5.56
SH38899	134.72	148.84	0.84	135.56	0.0	10	0.01	13.28
SH38970	68.05	80.88	1.97	70.02	0.9	18	0.47	10.86
SH38973	65.25	82.4	3.03	68.28	3.0	18	1.53	14.12
SH39041	137.78	145.05	4.09	141.87	5.6	12	3.09	3.18
SH39042	139.06	150.01	4.49	143.55	4.6	12	3.49	6.46
SH39080	76.13	83.78	3.30	79.43	24.0	12	2.30	4.35
SH39148	29.01	38.02	1.17	30.18	2.0	10	0.34	7.84
SH39231	74.68	84.03	1.60	76.28	1.1	14	0.40	7.75
SH39319	75.79	82.53	1.35	77.14	24.0	12	0.35	5.39
SH39345	106.51	118.01	1.55	108.06	24.0	10	0.72	9.95
SH39348	49.17	61.5	1.55	50.72	0.7	18	0.05	10.78
SH39362	44.47	56.32	1.05	45.52	16.7	8	0.38	10.80
SH39437	50.91	66.14	1.66	52.57	3.9	12	0.66	13.57
SH39554	105.52	119.75	2.76	108.28	3.6	12	1.76	11.47
SH39603	64.02	77.4	1.96	65.98	1.4	18	0.46	11.42
SH39680	74.78	84.34	3.29	78.07	3.4	24	1.29	6.27
SH39721	42.19	66	4.55	46.74	3.7	12	3.55	19.27
SH39897	108.9	127.353	4.84	113.74	10.2	8	4.17	13.62
SH39905	109	118.8	6.11	115.11	18.2	8	5.44	3.69
SH39943	139.17	149.51	4.53	143.70	4.6	12	3.53	5.81
SH39953	142.26	151.37	6.97	149.23	3.5	12	5.97	2.14
SH40025	77.26	87.51	2.26	79.52	24.0	12	1.26	7.99
SH400539	75.63	86.83	1.17	76.80	1.0	12	0.17	10.03
SH40092	67.58	81.35	2.32	69.90	1.4	18	0.82	11.45
SH40137	104.2	117.29	2.18	106.38	4.9	12	1.18	10.91
SH40203	72.66	79.57	5.31	77.97	17.7	24	3.31	1.60
SH40332	68.39	78.76	1.76	70.15	0.6	18	0.26	8.61
SH40450	100.5	113.95	10.14	110.64	4.2	20	8.49	3.32
SH40732	69.34	80.08	1.48	70.82	7.6	12	0.48	9.26
SH40758	87.71	93.35	1.40	89.11	0.5	12	0.40	4.24
SH40803	67.82	80.468	2.14	69.96	1.1	18	0.64	10.51
SH40804	68.27	78.61	1.80	70.07	0.6	18	0.30	8.54
SH40918	38.8	49.792	1.03	39.83	15.7	8	0.36	9.96
SH40921	55.17	64.36	1.61	56.78	2.1	15	0.36	7.59
SH41054	54.45	60.96	2.08	56.53	2.8	12	1.08	4.43
SH41056	54.78	61.87	1.88	56.66	2.3	12	0.88	5.21
SH41059	52.25	63.45	2.64	54.89	3.9	12	1.64	8.56
SH41303	45.84	63.174	1.84	47.68	0.2	19	0.24	15.49

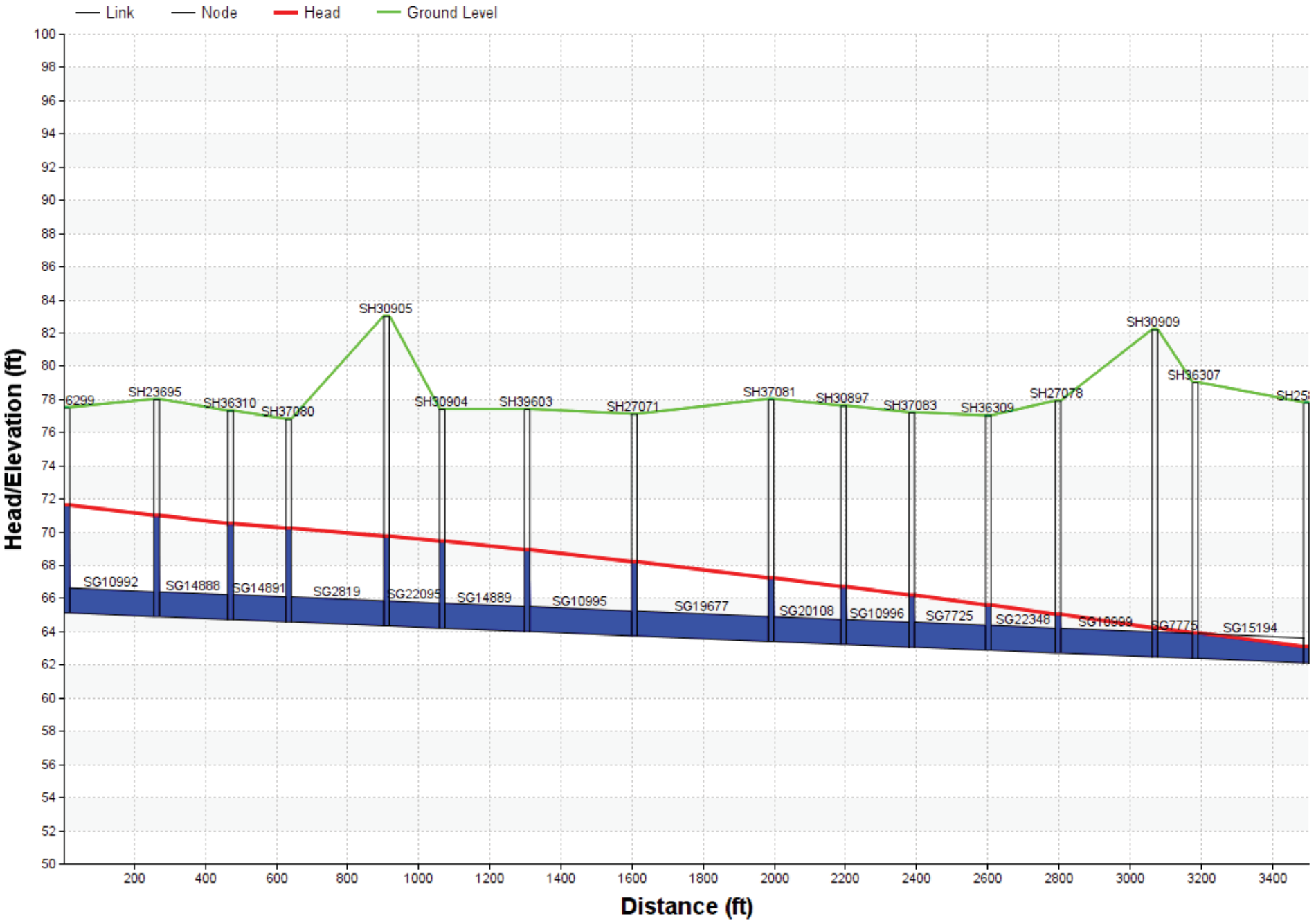
Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH41477	68.33	76	1.01	69.34	1.5	10	0.18	6.66
SH41693	54.97	63.35	1.56	56.53	2.2	15	0.31	6.82
SH41699	70.13	85.85	1.17	71.30	0.7	12	0.17	14.55
SH41794	34.79	46.056	2.50	37.29	24.0	8	1.83	8.77
SH41835	29.8	35.51	0.86	30.66	0.2	10	0.03	4.85
SH41872	64.3	78.609	1.40	65.70	24.0	6	0.90	12.91
SH42030	141.66	155.13	7.00	148.66	6.6	12	6.00	6.47
SH42104	77.63	90.03	1.91	79.54	24.0	12	0.91	10.49
SH574211	136.404	148.3	2.91	139.32	11.9	12	1.91	8.99
SH579897	59.642	69	2.86	62.51	1.5	21	1.11	6.49
SH605605	24.55	36.48	3.70	28.25	0.1	42	0.20	8.23
SH605612	24.02	36.61	4.22	28.24	0.1	49	0.17	8.37
SH659134	42.51	48	2.35	44.86	24.0	13	1.28	3.14
SH659146	42.46	46	2.36	44.82	24.0	12	1.36	1.18
SH684743	104.941	113	2.91	107.86	24.0	8	2.25	5.15
SH694104	168.798	181	2.20	171.00	1.7	12	1.20	10.01
SH914518	66.37	73	0.92	67.29	1.4	10	0.09	5.71
SH948359	52.045	58.25	1.63	53.68	23.6	10	0.80	4.58
SH978864	44.55	56.25	0.70	45.25	0.9		0.03	11.01
199	Surcharging Manholes							

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. HGLE	Surcharge Time (hrs.)	Total Flood Volume (Mgal)	Total Flood Time (hrs)	Max. Flood Rate (gpm)
SH31019	139.72	144.4	144.4	4.5	0.002	0.69	66
SH38609	145	154	154	2.6	0	0.27	40
2	Flooding Manholes						

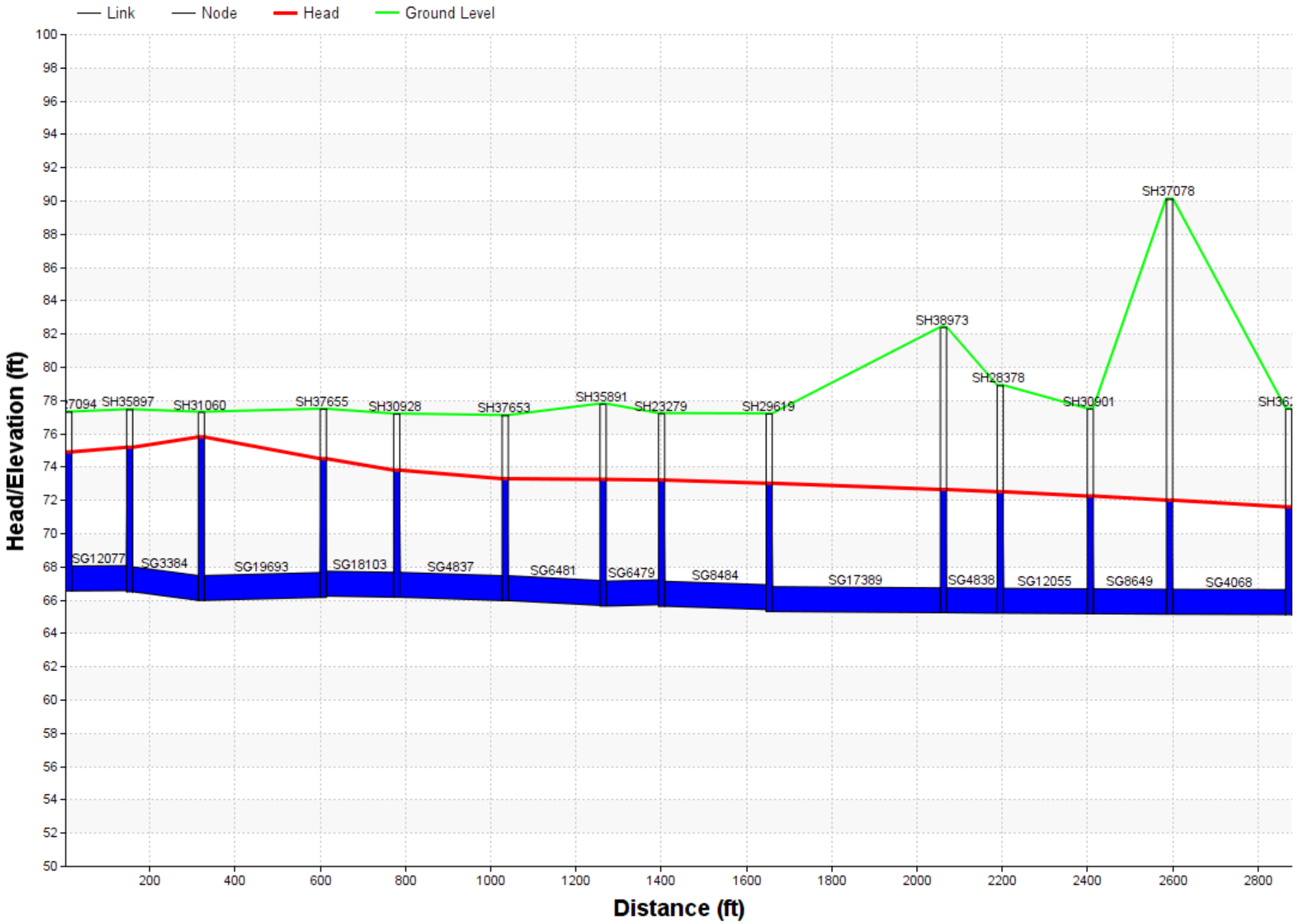
Facility ID	Pump Station	Location	Wet Well Invert (ft)	Max. Depth (ft)	Max. HGLE	Max. Inflow Rate (gpm)	Total Inflow (Mgal)	Total Surcharge Time (hrs)	Max.Surcharge Height Above Crown (ft)	Min. Depth Below Rim (ft)
SN42613	PS-023	MOORE SCHOOL	130.00	5.78	135.78	301	0.108	15	0.99	7.01
SN42615	PS-042	HILLSGATE CTR	55.81	3.60	59.41	296	0.021	15	0.61	9.61
SN42609	PS-043	MEGINNIS ARM	75.00	8.03	83.03	3141	2.342	4	0.28	18.97
SN42606	PS-049	OKEEHEEPKEE RD	141.94	8.51	150.45	375	0.172	13	1.48	4.44
SN42649	PS-065	STATE OFFICE COMPLEX	34.01	8.21	42.22	468	0.84	13	1.95	16.05
SN42573	PS-066	PARK 20 WEST	69.76	7.09	76.85	2	0.004	24	7.09	3.61
SN42626	PS-106	Countryside at Benjamins Run	98.68	6.40	105.08	334	0.037	9	1.28	11.24
SN42576	PS-113	GILCHRIST/TIMBERLANE	156.00	5.42	161.42	360	0.094	13	0.39	13.03
SN42596	PS-118	Centre Court	105.07	3.54	108.61	2	0.004	24	2.87	20.33
SN42598	PS-122	1420 Oven Park Dr	132.63	4.50	137.13	108	0.007	7	0.62	10.33
SN42629	PS-123	FSU	39.10	8.50	47.60	2677	2.191	0	0.29	15.48
SN42585	PS-128	Sleepy Hollow	127.00	6.54	133.54	1047	0.269	24	5.54	17.15
SN42645	PS-149	SPRINGHILL RD	16.22	12.00	28.22	23459	23.483	0	0.42	12.13
SN42622	PS-152	TEAM TOYOTA	38.18	5.54	43.72	1144	0.263	10	1.04	16.96
SN642336	PS-155	Bannerman Rd	205.28	5.80	211.08	68	0.169	24	5.80	5.80
SN778393	PS-156	LAKESHORE	96.91	6.03	102.94	936	0.339	24	3.60	6.97
SN846584	PS-166	MORNINGSIDE BAPTIST CHURCH	45.75	8.50	54.25	655	0.012	5	0.94	20.15
17	Surcharging Wet Wells									

Appendix D: 2035 Model Capacity Analysis

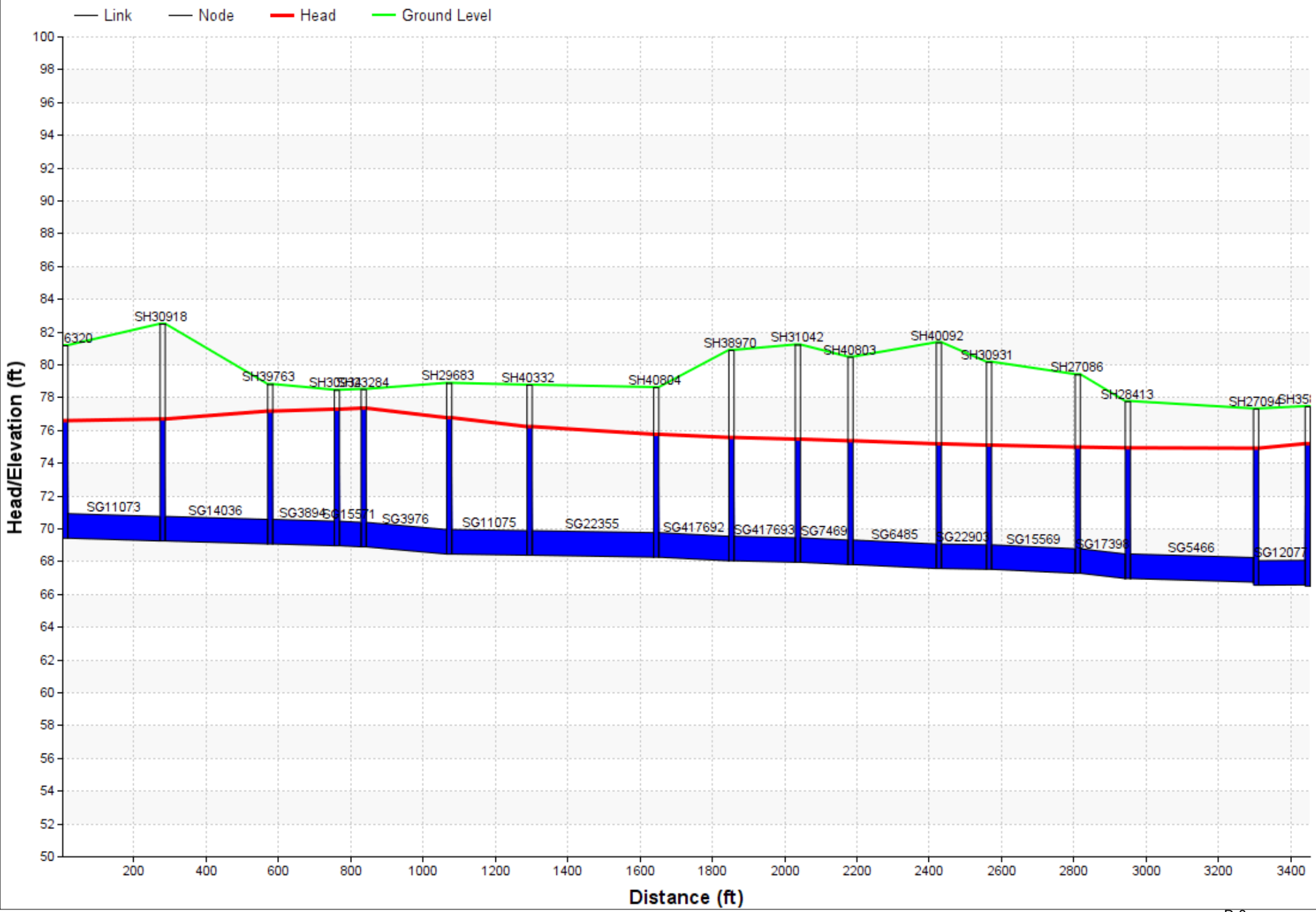
2035 Max. WetWx HGL Profile 1 - Keohone to McLaughlin (18")



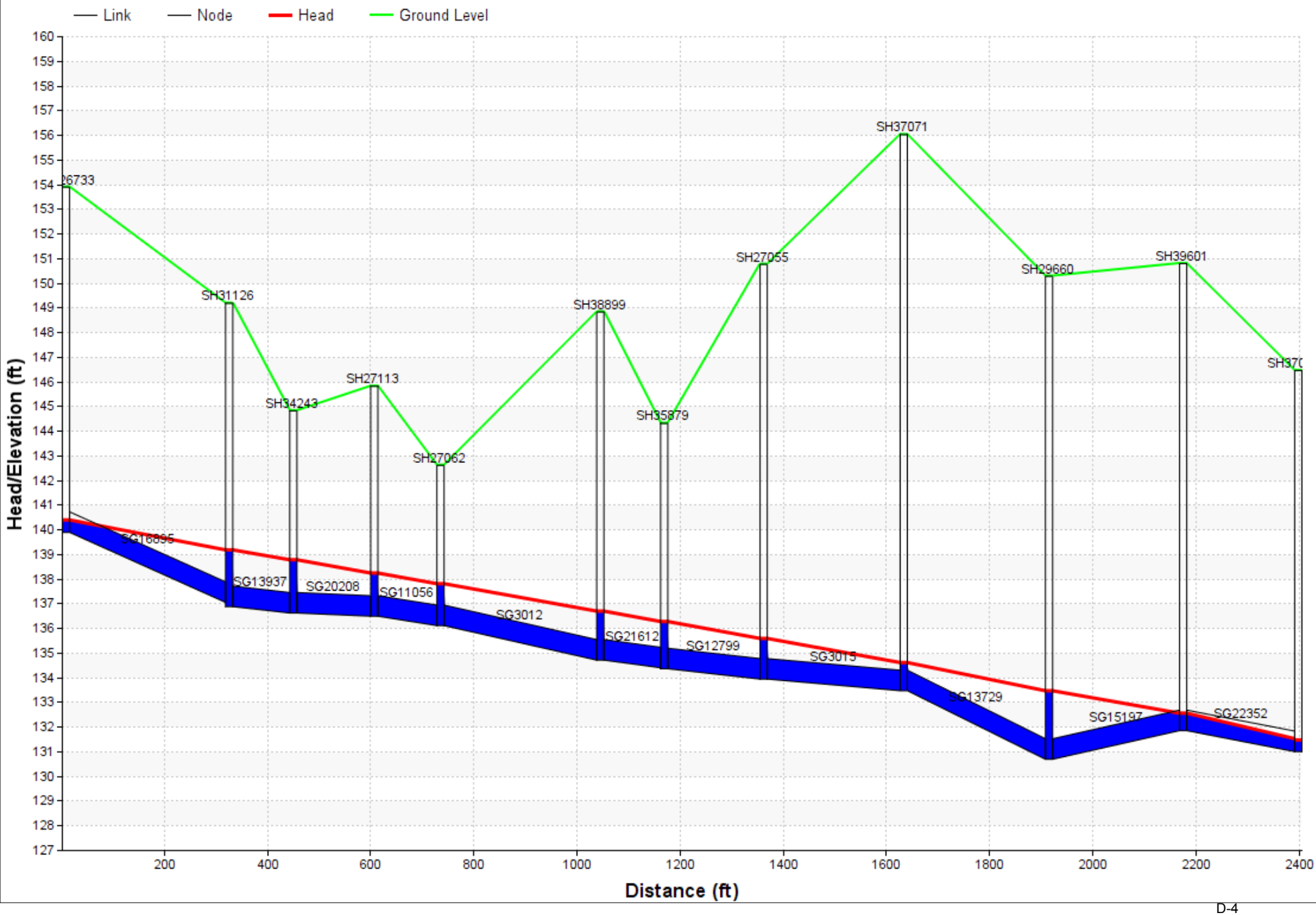
2035 Max. WetWx HGL Profile 2 - Keohone to Bayshore (18")



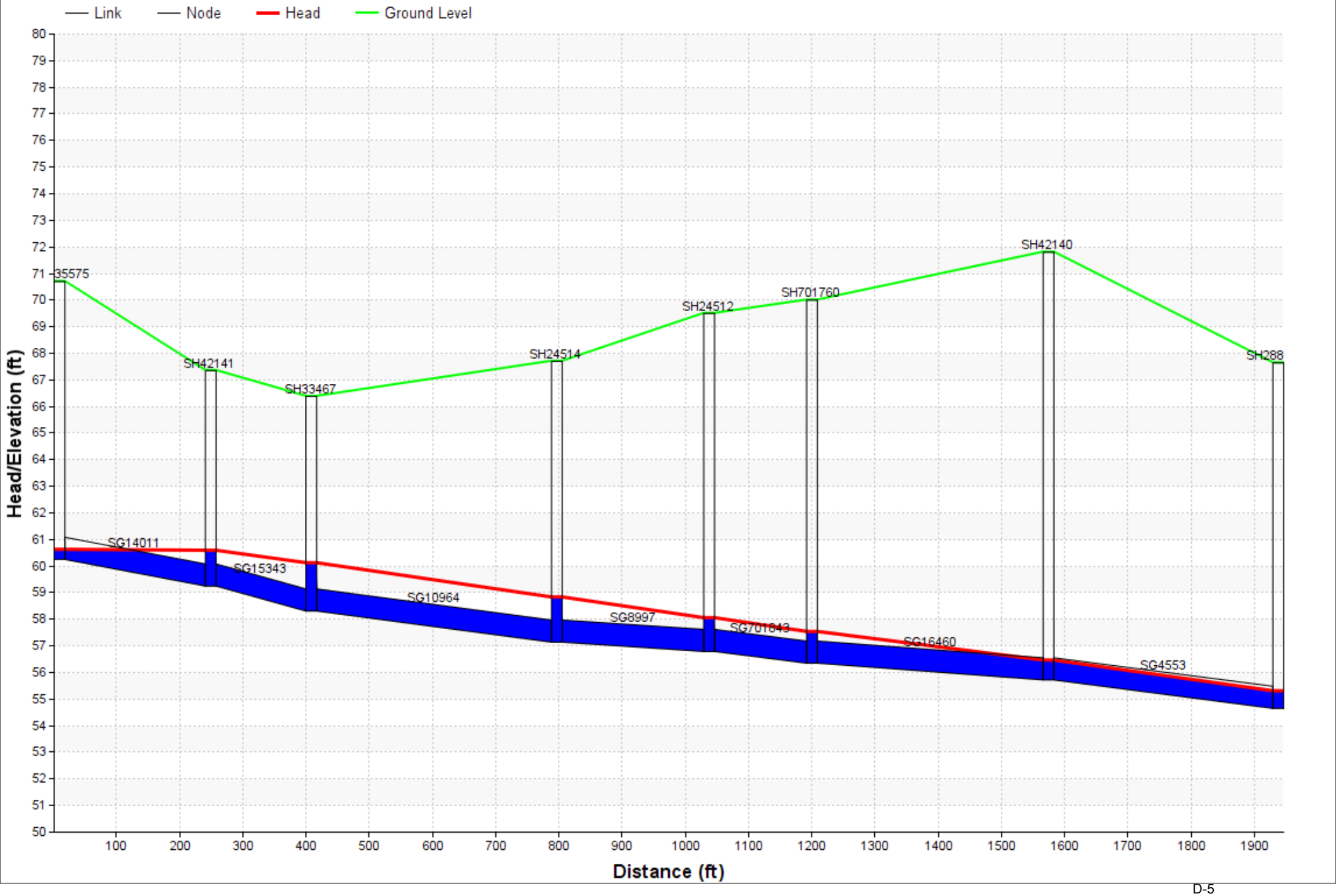
2035 Max. WetWx HGL Profile 3 - Bantry Bay to Bayshore (18")



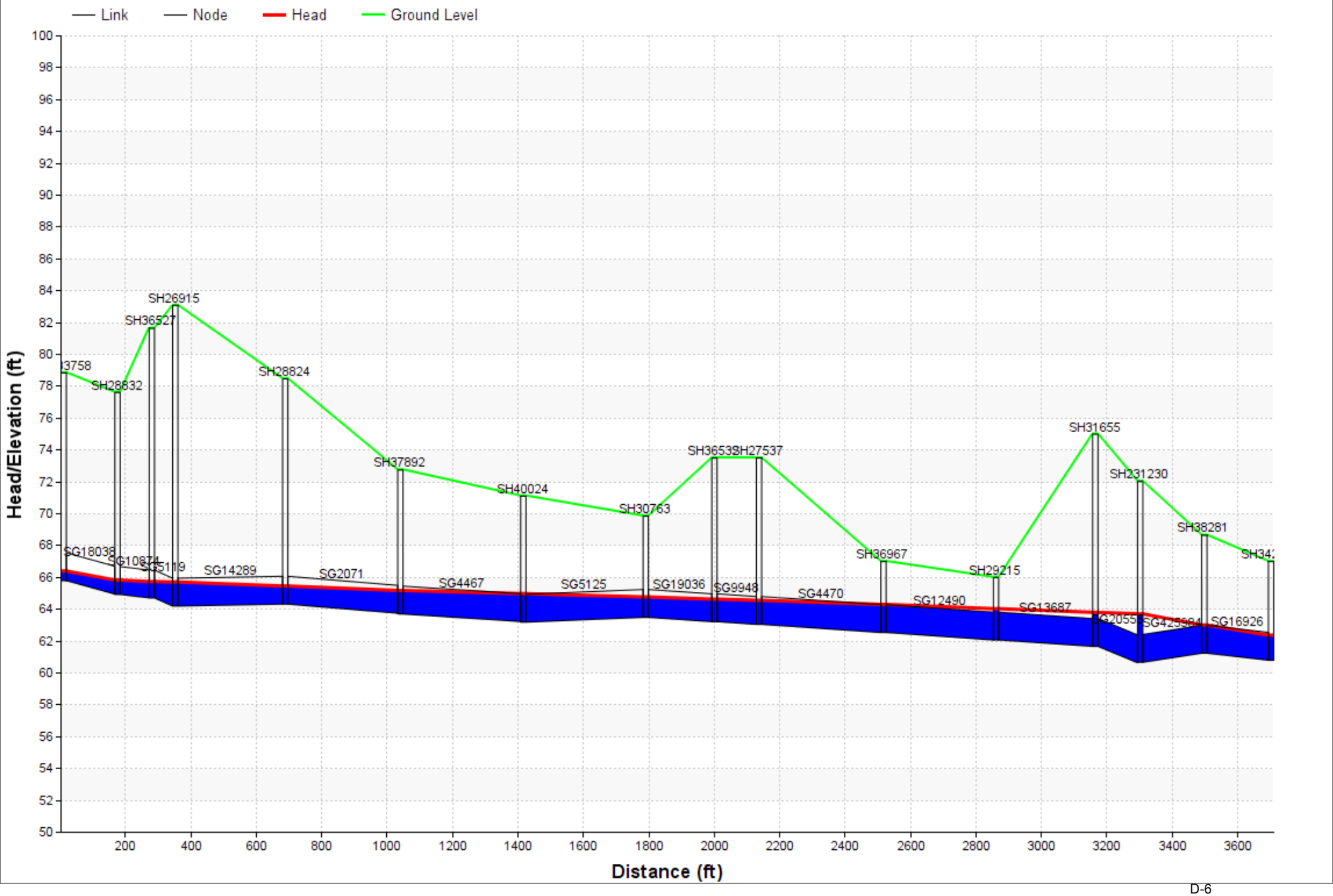
2035 Max. WetWx HGL Profile 4 - Kilmartin (10")



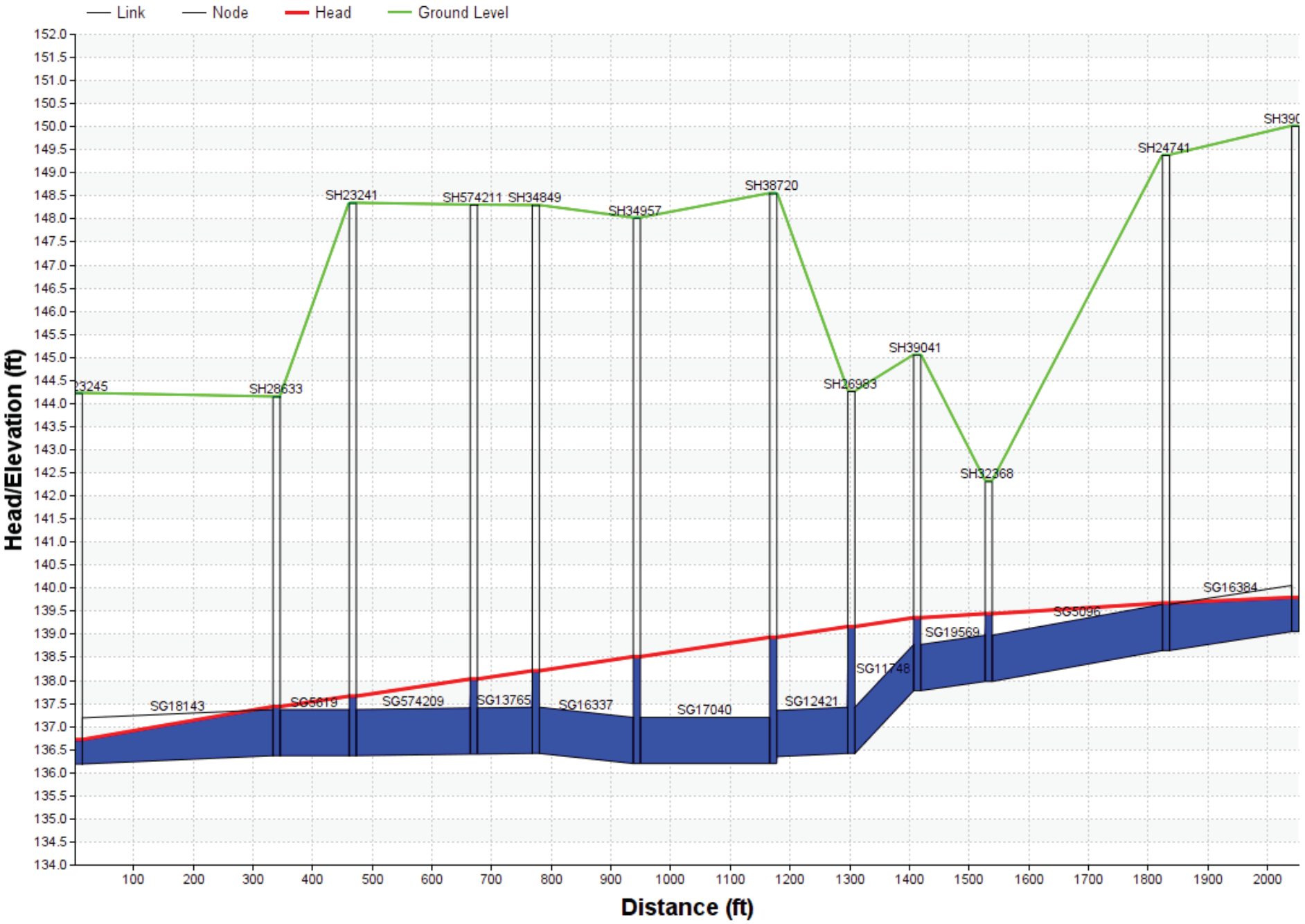
2035 Max. WetWx HGL Profile 5 - Buck Lake East of Fredrick (10")



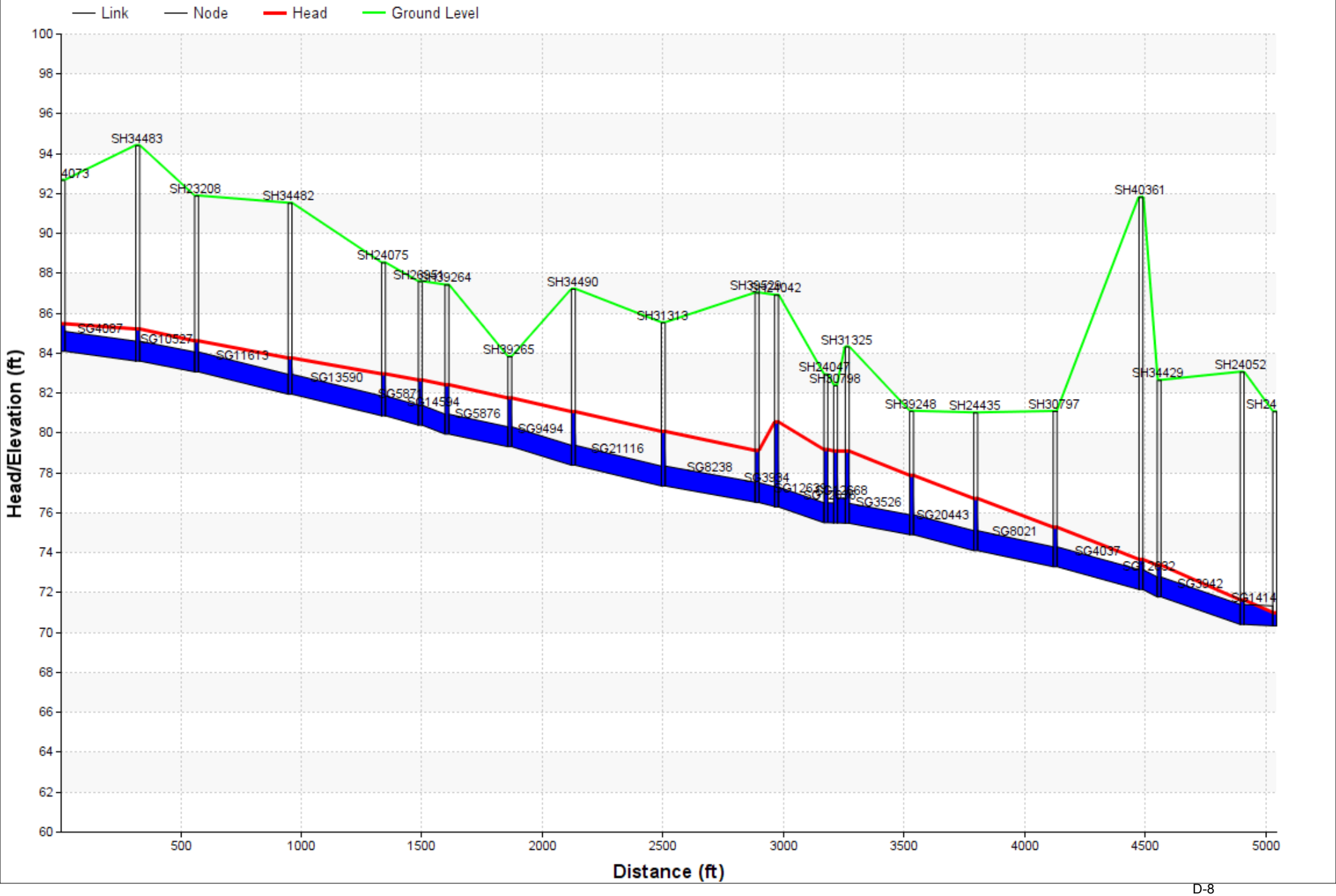
2035 Max. WetWx HGL Profile 6 - Centerville to Blair Stone (21")



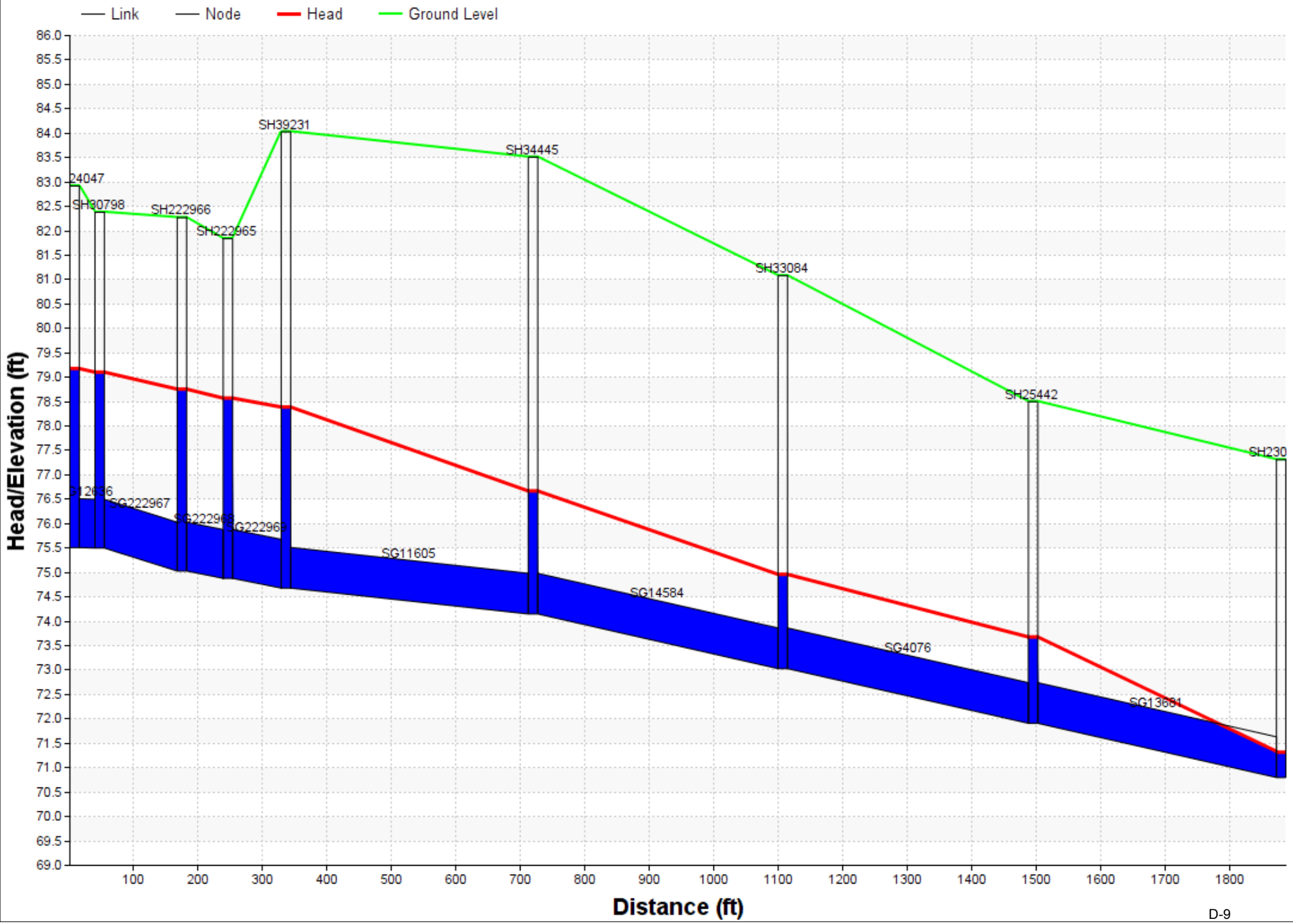
2035 Max. WetWx HGL Profile 7 - West of Meridian (12")



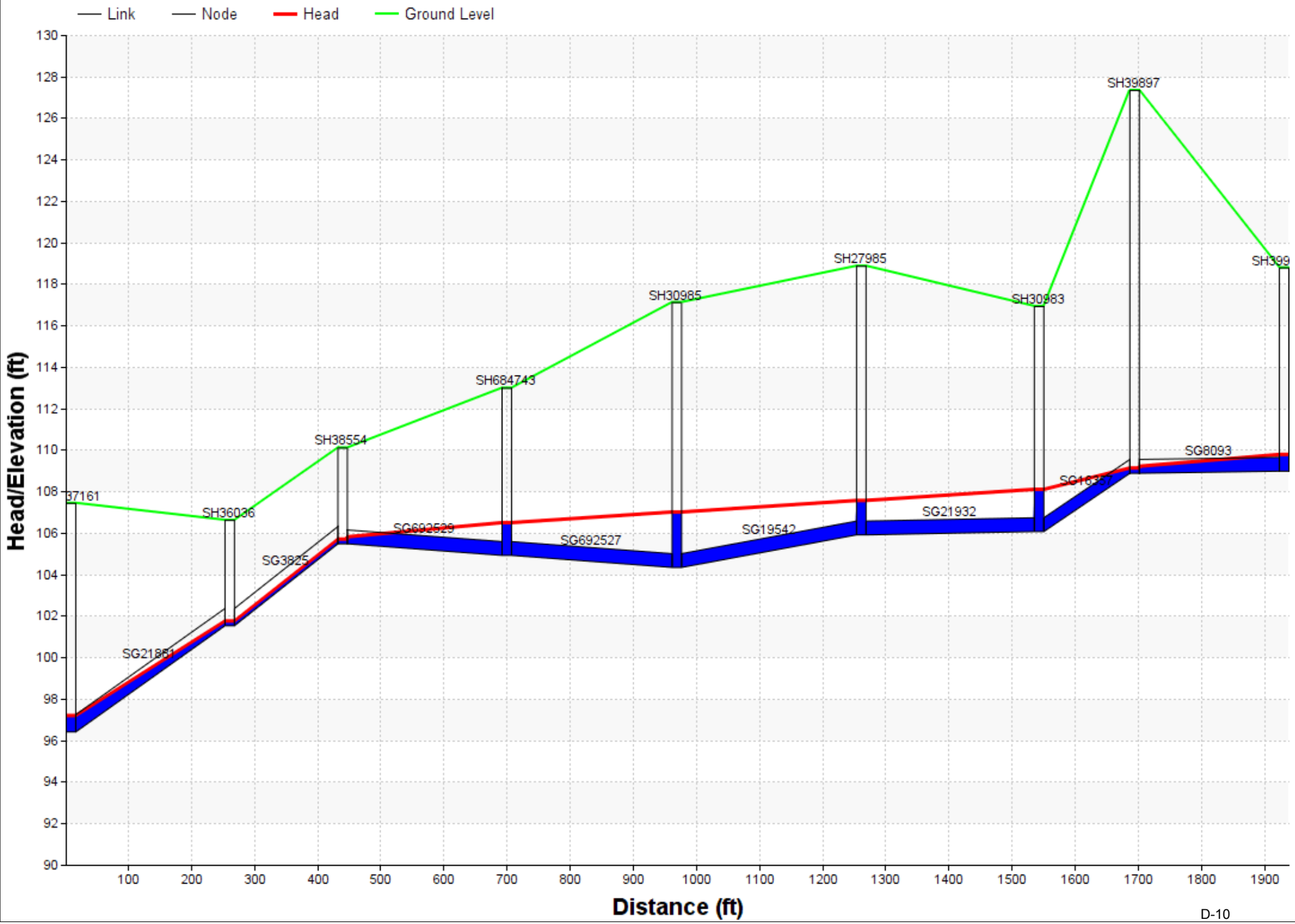
2035 Max. WetWx HGL Profile 8 - Park Avenue/ Victory Garden Area (12")



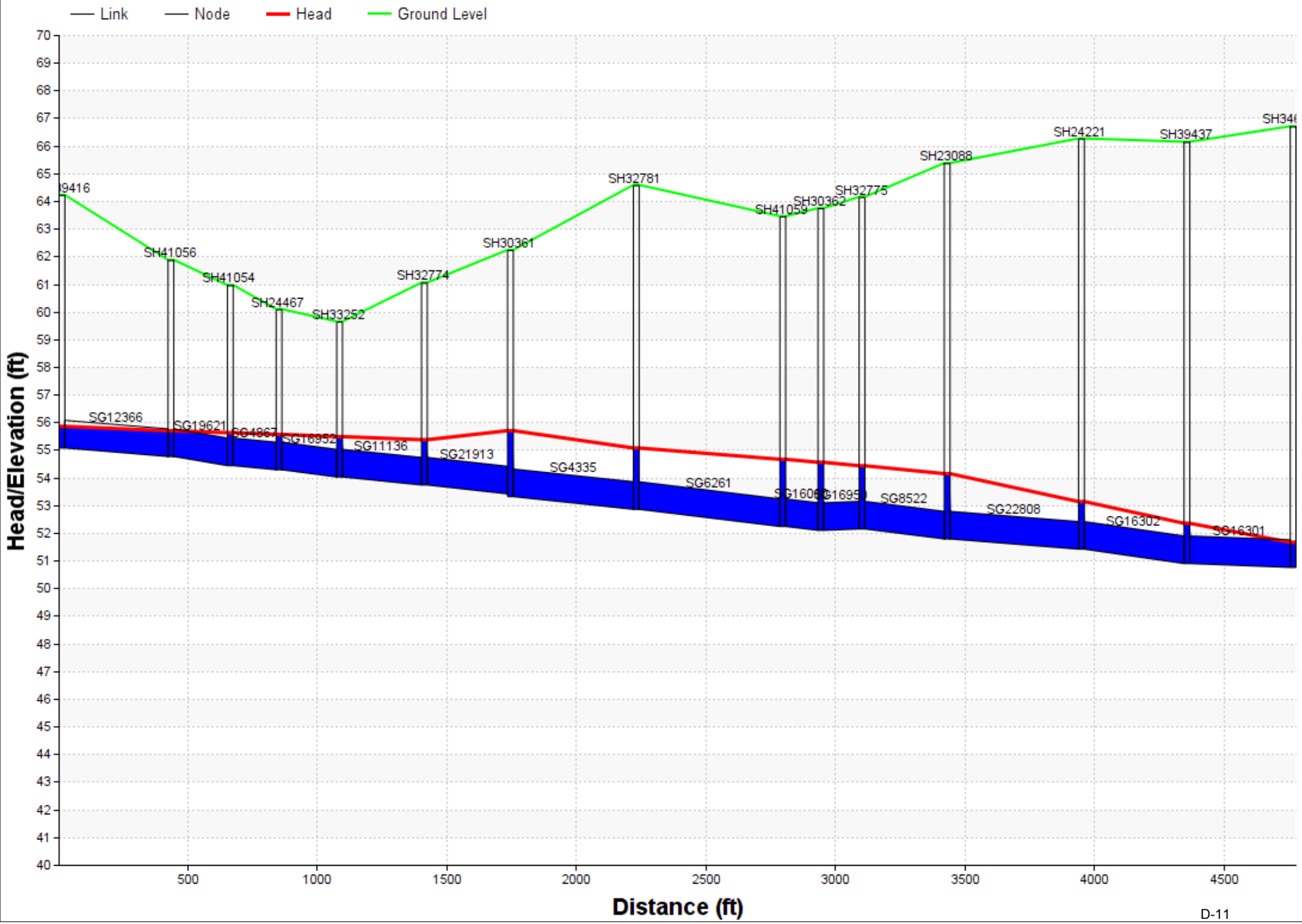
2035 Max. WetWx HGL Profile 9 - Victory Garden Lane (10" & 12")



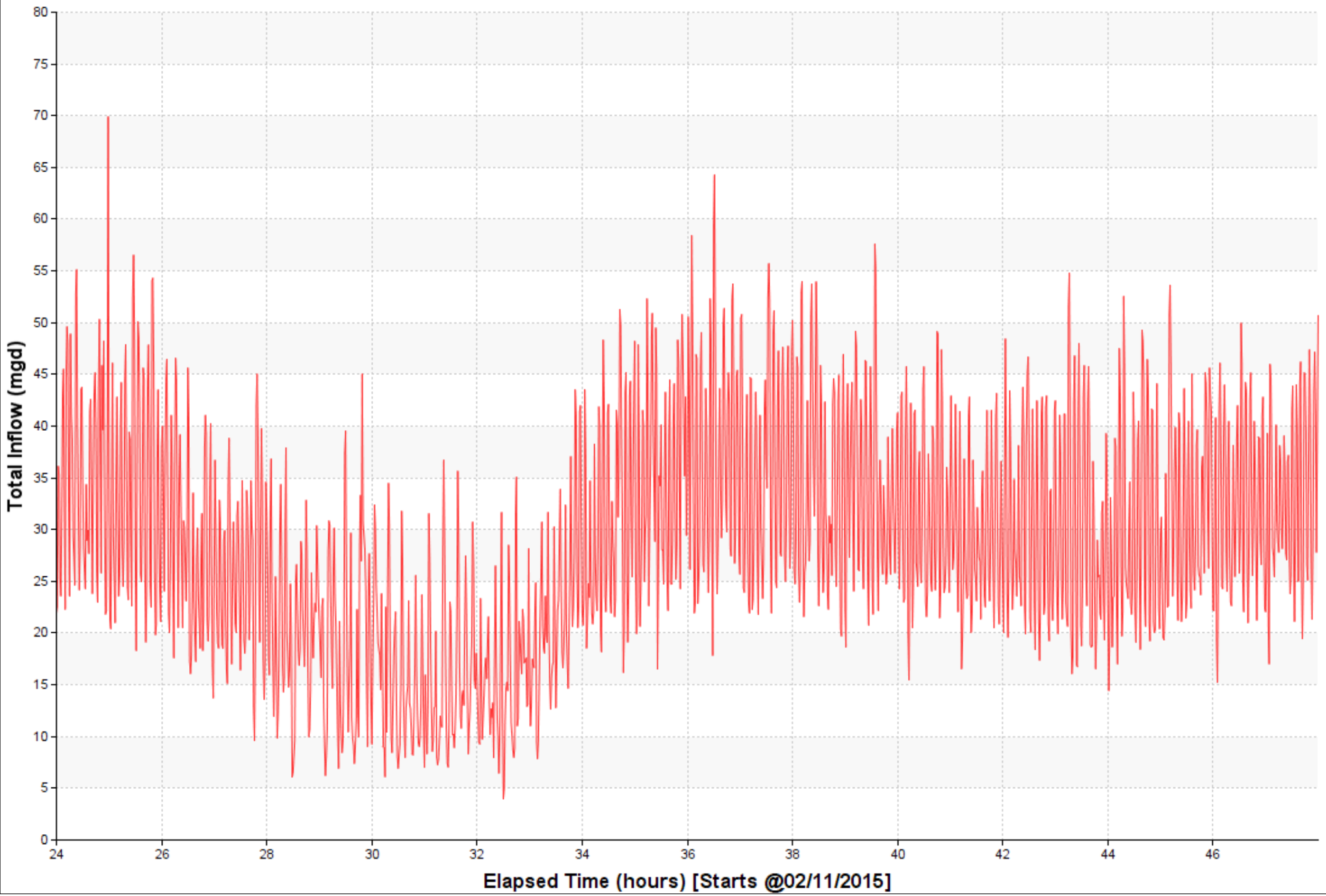
2035 Max. WetWx HGL Profile 10 - Huntington Woods (8")



2035 Max. WetWx HGL Profile 11 - Appleyard (12")



TPSWRF Inflow (2035 Dry Wx Model)



		MGD			
Object	**Variable**	**Minimum Value**	**Maximum Value**	**Average Value**	**Standard Deviation**
System	Total Inflow (mgd)	13.763	36.185	28.244	6.885
Outfall TPS	Total Inflow (mgd)	3.993	69.966	28.81	11.132
			Model Continuity Error:	0.623%	
		Average TPSWRF Model Inflow:		**28.81**	**MGD**
	Total Est. 2035 MSP Update Average Daily Flow:			**28.57**	**MGD**
	Running Pumps:	111	at 108 Pump Stations		
	Surcharging Manholes:	69			
	Flooding Manholes:	0			
	Surcharging Wet Wells:	31			
	Flooding Wet Wells:	0			

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
BOBBINMILL2-P1		215.9	0.052	239	3.98	46
BOBBINMILL3-P1		380.2	0.102	269	4.48	64
BOBBINMILL-P1		79.9	0.009	111	1.86	19
BUCKLAKE2-P1		605.0	0.201	332	5.53	63
BUCKLAKE-P1		293.1	0.097	331	5.52	92
HUNTINGTON2-P1		728.0	0.261	359	5.99	155
HUNTINGTON-P1	New Pump	926.8	0.721	778	12.96	60
KILLEARNACRES2-P1		119.8	0.038	316	5.26	67
KILLEARNACRESP1		132.0	0.042	317	5.28	74
LAKEMUNSON2-P1		79.9	0.021	258	4.30	39
LAKEMUNSON3-P1		119.8	0.035	291	4.85	64
LAKEMUNSON-P1		383.3	0.161	421	7.02	93
LAKESHORE1-P1		104.1	0.033	313	5.22	58
LAKESHORE2-P1		1054.8	0.316	299	4.99	57
NEWPS-P1	Sembler (CCSE)	1568.7	0.608	388	6.46	141
PS106P1	Countryside at Benjamins Run	208.7	0.044	208	3.47	22
PS107P1	Swift Creek Middle School	186.1	0.016	83	1.38	31
PS110P1	PECAN GROVE	329.3	0.01	31	0.52	38
PS113P1	GILCHRIST/TIMBERLANE	199.0	0.016	81	1.35	11
PS115P1	FOREST MEADOWS	659.0	0.007	11	0.18	30
PS117P1	Airport	445.5	0.026	59	0.98	38
PS118P1	Centre Court	816.5	0.312	372	6.19	776
PS119P1	Olson Road	218.9	0.016	72	1.21	20
PS11P1	SHORELINE DR	376.3	0.035	92	1.54	42
PS120P1	Crawfordville Trace	228.5	0.237	1026	17.11	204
PS120P2	Crawfordville Trace	123.4	0.002	16	0.27	1
PS121P1	Piney Z	293.6	0.038	128	2.13	72
PS122P1		66.2	0.003	39	0.66	2
PS123P1	FSU	1403.1	1.195	851	14.19	110
PS124-P1		268.9	0.193	710	11.83	168
PS125P1	Hampshire	299.9	0.015	49	0.81	15
PS126P1	Schoolhouse Rd./Southwood	465.0	0.02	43	0.71	33
PS127P1	Silver Ridge	350.1	0.082	235	3.92	181
PS12P1	LAKE BRADFORD RD	12287.1	6.746	543	9.05	258
PS132P1	Airport Commerce	274.6	0.055	195	3.24	140
PS133P1	Golden Pheasant south	364.3	0.044	114	1.90	71
PS134P1	Golden Pheasant north	290.5	0.011	38	0.63	20
PS137P1	Commerce Industrial park	899.9	0.157	174	2.91	62
PS138P1	South Wood Unit 17	160.7	0.034	209	3.49	55
PS139P1	Wolf Creek Subdivion	161.0	0.018	107	1.79	25
PS140P1	Summer Chase	374.8	0.014	38	0.63	25
PS141P1	Buck Head Phase III	178.6	0.012	66	1.10	12
PS142P1	Shelfer Rd	2719.8	0.489	176	2.94	255
PS143P1	Wood Briar	306.7	0.027	86	1.44	24
PS147P1		274.5	0.024	83	1.39	67
PS148P1		127.8	0.004	27	0.46	8
PS149P1	SPRINGHILL RD	5193.9	6.868	1327	22.12	19
PS149P2	SPRINGHILL RD	5416.4	0.228	42	0.70	8
PS150P1		402.5	0.053	131	2.18	44
PS151P1		185.2	0.014	76	1.26	25
PS152P1	TEAM TOYOTA	595.8	0.149	249	4.16	31
PS153P1		394.1	0.006	15	0.25	6
PS154P1		224.1	0.002	7	0.12	3
PS155-P1		1422.7	0.261	177	2.95	37
PS157P1	CACTUS DR	715.5	0.301	416	6.93	157
PS158P1	PARKHILL	550.7	0.012	20	0.34	12
PS162P1	New Pump	302.6	0.001	4	0.06	2
PS163P1		442.6	0.001	2	0.04	3
PS165P1		661.5	0.045	65	1.09	103

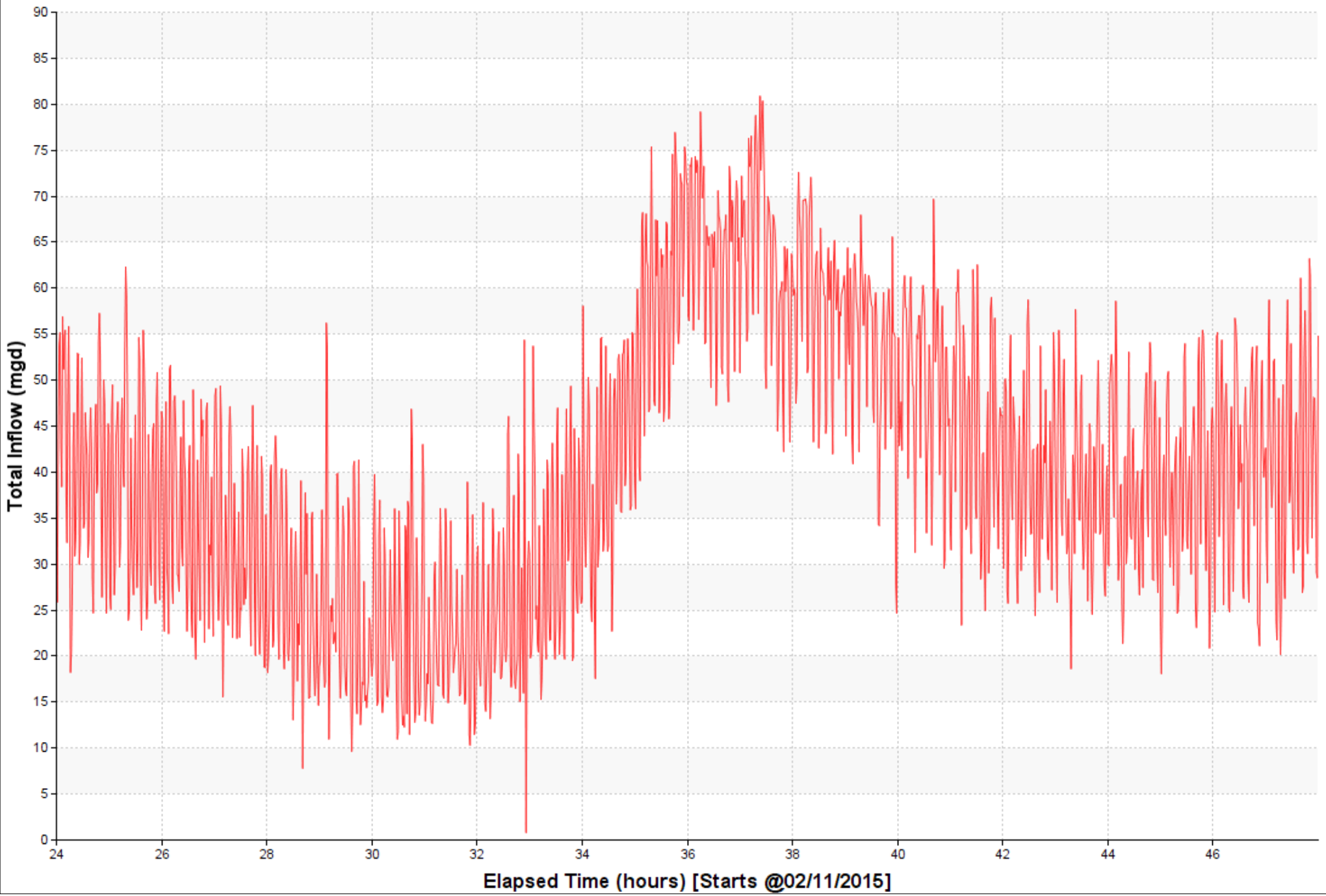
Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
PS167P1		955.6	0.266	276	4.60	338
PS168P1		534.0	0.024	44	0.73	20
PS170_P1		762.0	0.118	153	2.54	60
PS171_P1		74.7	0.105	1440	24.00	0
PS171_P2		74.7	0.105	1440	24.00	0
PS175P1		166.6	0.009	53	0.89	10
PS176P1		451.7	0.011	24	0.39	10
PS1P2	Pepper Dr	939.7	0.4	426	7.09	163
PS21P1	CHATEAU LAFAYETTE	371.7	0.017	45	0.75	31
PS22P1	RIGGINS RD	3041.6	2.858	939	15.64	113
PS23P1	MOORE SCHOOL	492.8	0.079	158	2.63	62
PS25P1	SUMMERBROOKE/WAXWING	202.5	0.157	768	12.81	116
PS33P1	MT. SINAI RD.	624.8	0.252	403	6.72	119
PS36P1	TALQUIN INN	6144.9	5.109	832	13.86	240
PS42P1	HILLSGATE CTR	217.8	0.008	37	0.62	7
PS43P1	MEGINNIS ARM	2645.2	1.229	463	7.71	91
PS45P1	JACKSON TRADING POST	929.7	0.01	10	0.17	10
PS46P1	MACON ROAD	113.6	0.002	19	0.31	8
PS47P1		637.4	0.529	817	13.62	295
PS49P1	OKEEHEEPKEE RD	326.6	0.016	49	0.82	9
PS56P1	CASCADE	374.1	0.015	38	0.64	67
PS5P1	MILLSTREAM	222.9	0.007	30	0.50	10
PS62P1	Cypress Cove	143.3	0.005	34	0.57	9
PS65P1	STATE OFFICE COMPLEX	3342.8	1.285	384	6.39	104
PS66P1	PARK 20 WEST	639.5	0.009	15	0.24	20
PS6P1	TIMBERLANE RD	786.8	0.234	297	4.95	48
PS73P1	MUNICIPAL CODE	1089.8	0.103	92	1.53	10
PS74P1	WEEMS ROAD	3633.9	3.748	1030	17.17	20
PS76P1	COMMONWEALTH	1661.3	0.398	236	3.93	191
PS78P2		327.5	0.025	75	1.25	1221
PS7P1	BUCKHEAD	304.7	0.04	126	2.10	141
PS83P1	WOOD BROOK	372.5	0.023	59	0.99	36
PS84P1	MCLAUGHLIN RD	3433.6	3.276	952	15.86	36
PS89P1	MOORE POND #2	178.3	0.077	432	7.20	105
PS92P1	BUCK LAKE RD SCHOOL	1259.9	0.419	326	5.43	123
PS94P1	SUMMERBROOKE	964.1	0.329	340	5.66	88
PS96P1	TIMBERLANE SCHOOL RD	156.5	0.014	87	1.45	28
PS97P1	MACLAY RD	292.9	0.048	160	2.67	115
PS99P1		743.2	0.244	325	5.41	44
PSCCNW-P1	New Pump	2307.9	0.574	249	4.14	97
ROSEHILL-P1	New Pump	115.8	0.037	317	5.29	65
TALQUIN2-P1		2546.2	1.105	434	7.23	153
TALQUIN3-P1		307.9	0.101	329	5.48	99
TALQUIN4-P1		512.1	0.203	396	6.60	117
TALQUIN-P1		1296.7	0.501	386	6.44	144
WOODVILLE2-P1		288.2	0.025	88	1.47	20
WOODVILLE3-P1		79.9	0.002	25	0.42	9
WOODVILLE4-P1		403.9	0.058	143	2.38	29
WOODVILLE5-P1		100.1	0.029	288	4.80	104
WOODVILLE6-P1		816.0	0.181	222	3.71	65
WOODVILLE7-P1		79.9	0.002	25	0.42	9
WOODVILLE-P1		79.9	0.007	84	1.40	29
111	Pumps Running			Less than 2 hrs:	46	
					Greater than 90 starts:	35

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
JCT-1132	89.7	100	3.32	93.02	24.0	8	2.65	6.99
JCT-1196	79.31	99.7	1.09	80.40	0.1	10	0.25	19.30
SH231230	60.67	72.03	1.90	62.57	10.8	21	0.15	9.46
SH23279	65.64	77.22	1.62	67.26	0.6	19	0.03	9.96
SH23416	43.04	59.12	0.86	43.90	0.0	8	0.19	15.22
SH23737	46.24	52.26	1.41	47.65	24.0	10	0.58	4.61
SH24493	42.58	48.21	1.84	44.42	24.0	8	1.17	3.79
SH24512	56.79	69.5	1.42	58.21	0.5	10	0.59	11.29
SH24514	57.14	67.7	1.78	58.92	3.7	10	0.94	8.79
SH25561	48.86	54.71	1.92	50.78	24.0	12	0.92	3.93
SH25708	39.56	43.85	1.21	40.77	24.0	10	0.38	3.08
SH27055	133.95	150.77	1.01	134.96	3.4	10	0.18	15.81
SH27231	46.01	65.45	3.49	49.50	24.0	10	2.66	15.95
SH27535	78.07	85.42	1.33	79.40	24.0	12	0.33	6.02
SH27810	42.34	56.86	3.27	45.61	24.0	36	0.27	11.26
SH27985	105.93	118.88	1.53	107.46	6.4	8	0.86	11.42
SH28378	65.22	78.9	1.73	66.95	2.1	18	0.23	11.96
SH28538	67.82	85.05	1.32	69.14	7.5	10	0.49	15.91
SH29619	65.32	77.2	1.84	67.16	2.0	19	0.22	10.04
SH29660	130.7	150.29	2.62	133.32	24.0	10	1.79	16.97
SH30284	128.43	136.31	2.48	130.91	24.0	8	1.81	5.40
SH30756	78.29	84.04	1.11	79.40	19.4	12	0.11	4.64
SH30901	65.19	77.5	1.67	66.86	1.8	18	0.17	10.64
SH30983	106.09	116.94	1.80	107.89	6.7	8	1.13	9.05
SH30985	104.36	117.13	2.61	106.97	24.0	8	1.95	10.16
SH31126	136.89	149.19	1.13	138.02	2.3	12	0.13	11.17
SH31284	76.78	86.33	2.60	79.38	24.0	12	1.60	6.95
SH31668	74.42	88.32	3.44	77.86	24.0	24	1.44	10.46
SH31954	41.5	62	2.30	43.80	17.1	8	1.64	18.20
SH32723	71.65	76.307	1.61	73.26	19.2	18	0.11	3.05
SH32733	63.59	75.69	0.85	64.44	24.0	9	0.12	11.25
SH33232	47.05	55.24	3.73	50.78	24.0	12	2.73	4.46
SH33467	58.31	66.38	2.21	60.52	1.2	10	1.38	5.86
SH34157	43.12	49.32	1.32	44.44	24.0	12	0.32	4.88
SH34243	136.63	144.83	1.01	137.64	5.9	10	0.18	7.19
SH34532	71.03	80.53	6.52	77.55	24.0	15	5.27	2.98
SH34669	38.22	49.76	1.45	39.67	24.0	8	0.79	10.09
SH35879	134.37	144.32	1.15	135.52	3.9	10	0.28	8.80
SH35891	65.65	77.79	1.67	67.32	1.3	18	0.13	10.48
SH36299	65.14	77.5	1.54	66.68	0.6	18	0.04	10.82
SH36544	76.96	86.71	2.43	79.39	24.0	12	1.43	7.33
SH37078	65.16	90.11	1.63	66.79	1.5	18	0.13	23.32
SH37183	103.43	116.81	0.99	104.42	24.0	8	0.33	12.39
SH37274	75.9	83.47	3.46	79.36	24.0	12	2.46	4.12
SH38621	125.08	142.97	1.09	126.17	0.5	12	0.06	16.80
SH38899	134.72	148.84	1.17	135.89	3.8	10	0.34	12.95
SH38973	65.25	82.4	1.75	67.00	2.2	18	0.25	15.41
SH39080	76.13	83.78	3.23	79.36	24.0	12	2.23	4.42
SH39313	71.52	80.45	8.93	80.45	24.0	15	7.68	0.00
SH39319	75.79	82.53	1.10	76.89	24.0	12	0.10	5.64
SH39362	44.47	56.32	1.28	45.75	21.0	8	0.61	10.57
SH39721	42.19	66	1.50	43.69	3.5	12	0.50	22.31
SH39905	109	118.8	0.71	109.71	0.6	8	0.04	9.09
SH40025	77.26	87.51	2.13	79.39	24.0	12	1.13	8.12
SH40423	35.97	48.08	2.38	38.35	0.6	10	1.55	9.73
SH40732	69.34	80.08	1.23	70.57	12.7	12	0.23	9.51
SH40918	38.8	49.792	0.87	39.67	11.6	8	0.21	10.12
SH41872	64.3	78.609	1.01	65.31	24.0	6	0.51	13.30
SH42104	77.63	90.03	1.76	79.39	24.0	12	0.76	10.64

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH42141	59.25	67.35	1.88	61.13	0.1	10	1.05	6.22
SH42285	36	46.56	4.36	40.36	3.0	10	3.52	6.21
SH42497	40.71	55.93	3.15	43.86	18.7	35	0.20	12.07
SH659134	42.51	48	1.90	44.41	24.0	13	0.83	3.59
SH659146	42.46	46	1.95	44.41	24.0	12	0.95	1.59
SH684743	104.941	113	1.56	106.51	24.0	8	0.90	6.50
SH701760	56.35	70	1.38	57.73	1.9	10	0.54	12.27
SH931552	71.81	81.06	9.25	81.06	24.0	11	8.35	0.00
SH948359	52.045	58.25	1.542	53.587	21.595	10	0.708	4.663
SH978864	44.55	56.25	0.798	45.348	17.332	8	0.132	10.902
69	Surcharging Manholes							

Facility ID	Pump Station	Location	Wet Well Invert (ft)	Max. Depth (ft)	Max. HGLE	Max. Inflow Rate (gpm)	Total Inflow (Mgal)	Total Surcharge Time (hrs)	Max.Surcharge Height Above Crown (ft)	Min. Depth Below Rim (ft)
BOBBINMILL2-PS			89.00	4.01	93.01	62	0.132	24	2.84	10.99
BOBBINMILL-PS			91.00	4.00	95.00	8	0.02	24	4.00	11.00
BUCKLAKE-PS			57.00	4.02	61.02	132	0.201	24	4.02	10.98
HUNTINGTON2-PS			89.00	4.04	93.04	290	0.574	24	4.04	10.96
KILLEARNACRES2-PS			68.00	4.01	72.01	33	0.083	24	4.01	10.99
KILLEARNACRES-PS			105.00	4.01	109.01	37	0.091	24	4.01	10.99
LAKEMUNSON2-PS			19.00	4.01	23.01	20	0.043	24	4.01	10.99
LAKEMUNSON3-PS			15.00	4.01	19.01	34	0.072	24	4.01	10.99
LAKESHORE1-PS			87.00	4.01	91.01	30	0.072	24	4.01	10.99
NEWPS		Sembler (CCSE)	53.00	4.02	57.02	599	1.271	24	4.02	10.98
ROSEHILL-PS			152.00	4.01	156.01	32	0.08	24	4.01	10.99
SN42573	PS-066	PARK 20 WEST	69.76	7.10	76.86	9	0.022	24	7.10	3.60
SN42576	PS-113	GILCHRIST/TIMBERLANE	156.00	5.38	161.38	263	0.031	13	0.35	13.07
SN42596	PS-118	Centre Court	105.07	3.60	108.67	309	0.651	24	2.93	20.27
SN42598	PS-122	1420 Oven Park Dr	132.63	4.50	137.13	213	0.006	5	0.62	10.33
SN42606	PS-049	OKEEHEEPKEE RD	141.94	8.50	150.44	337	0.031	13	1.47	4.45
SN42609	PS-043	MEGINNIS ARM	75.00	8.02	83.02	3281	3.411	0	0.02	18.98
SN42613	PS-023	MOORE SCHOOL	130.00	5.79	135.79	318	0.093	13	1.00	7.01
SN42615	PS-042	HILLSGATE CTR	55.81	3.60	59.41	319	0.018	14	0.61	9.61
SN42622	PS-152	TEAM TOYOTA	38.18	5.51	43.69	1094	0.355	9	1.01	16.99
SN42626	PS-106	Countryside at Benjamins Run	98.68	6.51	105.19	675	0.088	9	1.40	11.12
SN42649	PS-065	STATE OFFICE COMPLEX	34.01	8.22	42.23	1294	2.623	13	1.97	16.03
SN642336	PS-155	Bannerman Rd	205.28	5.81	211.09	227	0.565	24	5.81	5.79
TALQUIN2-PS			97.00	4.04	101.04	993	2.488	24	4.04	10.96
TALQUIN3-PS			103.00	4.02	107.02	91	0.229	24	4.02	10.98
TALQUIN4-PS			41.00	4.03	45.03	223	0.422	24	4.03	10.97
TALQUIN-PS			193.00	4.05	197.05	629	1.105	24	4.05	10.96
WOODVILLE3-PS			19.00	3.00	22.00	2	0.004	24	3.00	12.00
WOODVILLE5-PS			10.00	3.01	13.01	28	0.06	24	3.01	11.99
WOODVILLE7-PS			9.00	3.00	12.00	2	0.004	24	3.00	12.00
WOODVILLE-PS			5.00	3.00	8.00	7	0.014	24	3.00	12.00
31	Surcharging Wet Wells								Flooding Wet Wells:	0

TPSWRF Inflow (2035 Wet Wx Model)



		MGD			
Object	**Variable**	**Minimum Value**	**Maximum Value**	**Average Value**	**Standard Deviation**
System	Total Inflow (mgd)	20.405	69.7	39.763	13.48
Outfall TPS	Total Inflow (mgd)	0.738	80.91	40.471	15.532
			Model Continuity Error:	0.235%	
	Average 2035 Wet Weather TPSWRF Inflow:			**40.47**	**MGD**
	Running Pumps:	119	at 108 Pump Stations		
	Surcharging Manholes:	253			
	Flooding Manholes:	0			
	Surcharging Wet Wells:	34			
	Flooding Wet Wells:	0			

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
BOBBINMILL2-P1		216	0.051	238	3.97	46
BOBBINMILL3-P1		380	0.103	272	4.53	64
BOBBINMILL-P1		80	0.009	111	1.85	19
BUCKLAKE2-P1		605	0.2	331	5.51	63
BUCKLAKE-P1		293	0.096	328	5.47	92
HUNTINGTON2-P1		728	0.262	359	5.99	155
HUNTINGTON-P1	New Pump	927	0.72	777	12.96	60
KILLEARNACRES2-P1		120	0.038	313	5.22	68
KILLEARNACRESP1		132	0.041	314	5.24	74
LAKEMUNSON2-P1		80	0.021	257	4.29	39
LAKEMUNSON3-P1		120	0.035	291	4.85	64
LAKEMUNSON-P1		383	0.163	424	7.07	94
LAKESHORE1-P1		104	0.033	313	5.22	58
LAKESHORE2-P1		1055	0.459	435	7.25	67
NEWPS-P1	Sembler (CCSE)	1569	0.605	386	6.43	140
PS106P1	Countryside at Benjamins Run	206	0.044	212	3.54	23
PS107P1	Swift Creek Middle School	180	0.016	85	1.42	31
PS110P1	PECAN GROVE	328	0.01	30	0.51	38
PS113P1	GILCHRIST/TIMBERLANE	199	0.024	119	1.98	16
PS115P1	FOREST MEADOWS	636	0.009	14	0.23	39
PS117P1	Airport	449	0.026	58	0.97	38
PS118P1	Centre Court	670	0.312	433	7.22	739
PS119P1	Olson Road	220	0.018	79	1.31	22
PS11P1	SHORELINE DR	374	0.045	120	2.00	53
PS120P1	Crawfordville Trace	223	0.234	1031	17.19	202
PS120P2	Crawfordville Trace	123	0.004	34	0.57	1
PS121P1	Piney Z	289	0.039	132	2.20	71
PS122P1		66	0.003	39	0.65	2
PS123P1	FSU	1409	1.519	1077	17.96	77
PS123P2	FSU	1310	0.095	72	1.21	5
PS124-P1		261	0.193	721	12.02	166
PS125P1	Hampshire	296	0.017	56	0.94	17
PS126P1	Schoolhouse Rd./Southwood	454	0.021	44	0.73	34
PS127P1	Silver Ridge	350	0.111	317	5.29	219
PS12P1	LAKE BRADFORD RD	12176	9.505	772	12.87	256
PS132P1	Airport Commerce	264	0.055	202	3.36	140
PS133P1	Golden Pheasant south	526	0.053	98	1.63	87
PS134P1	Golden Pheasant north	275	0.011	37	0.62	19
PS137P1	Commerce Industrial park	900	0.13	144	2.41	54
PS138P1	South Wood Unit 17	155	0.034	213	3.55	55
PS139P1	Wolf Creek Subdivion	156	0.018	111	1.85	25
PS140P1	Summer Chase	365	0.014	38	0.64	25
PS141P1	Buck Head Phase III	176	0.012	67	1.11	12
PS142P1	Shelfer Rd	2524	0.466	177	2.94	247
PS143P1	Wood Briar	303	0.026	87	1.44	24
PS147P1		258	0.024	84	1.41	67
PS148P1		127	0.004	27	0.46	8
PS149P1	SPRINGHILL RD	5227	7.466	1436	23.93	1
PS149P2	SPRINGHILL RD	5426	3.151	581	9.68	34
PS149P3	SPRINGHILL RD	5428	0.934	172	2.87	2
PS149P4		5428	0.312	57	0.96	2
PS150P1		404	0.052	130	2.17	44
PS151P1		177	0.014	79	1.31	25
PS152P1	TEAM TOYOTA	583	0.285	486	8.10	42
PS153P1		386	0.006	15	0.25	6
PS154P1		221	0.002	7	0.12	3
PS155-P1		1444	0.26	177	2.94	37
PS157P1	CACTUS DR	702	0.352	494	8.23	167
PS158P1	PARKHILL	453	0.013	27	0.44	13

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
PS162P1	New Pump	302	0.001	4	0.06	2
PS163P1		438	0.001	2	0.04	3
PS165P1		635	0.045	68	1.13	103
PS167P1		933	0.265	283	4.71	339
PS168P1		488	0.026	51	0.85	20
PS170_P1		750	0.125	163	2.72	63
PS171_P1		76	0.106	1440	24.00	0
PS171_P2		76	0.106	1440	24.00	0
PS175P1		164	0.009	53	0.89	10
PS176P1		311	0.011	30	0.50	10
PS1P2	Pepper Dr	941	0.517	549	9.15	164
PS21P1	CHATEAU LAFAYETTE	360	0.02	54	0.91	35
PS22P1	RIGGINS RD	2887	3.54	1212	20.21	47
PS22P2	RIGGINS RD	2539	0.717	281	4.69	23
PS22P3	RIGGINS RD	2196	0.058	26	0.44	4
PS23P1	MOORE SCHOOL	482	0.079	160	2.67	64
PS25P1	SUMMERBROOKE/WAXWING	201	0.159	786	13.10	114
PS33P1	MT. SINAI RD.	625	0.283	452	7.54	124
PS36P1	TALQUIN INN	6061	6.569	1081	18.01	164
PS36P2	TALQUIN INN	4405	0.079	18	0.30	5
PS42P1	HILLSGATE CTR	215	0.014	66	1.10	12
PS43P1	MEGINNIS ARM	2667	1.892	708	11.81	100
PS45P1	JACKSON TRADING POST	695	0.016	22	0.37	17
PS46P1	MACON ROAD	113	0.002	19	0.31	8
PS47P1		595	0.556	911	15.18	256
PS49P1	OKEEHEEPKEE RD	321	0.016	49	0.82	9
PS56P1	CASCADE	342	0.015	40	0.67	69
PS5P1	MILLSTREAM	223	0.009	42	0.70	14
PS62P1	Cypress Cove	142	0.01	72	1.21	18
PS65P1	STATE OFFICE COMPLEX	3232	1.278	393	6.55	102
PS66P1	PARK 20 WEST	640	0.01	15	0.25	20
PS6P1	TIMBERLANE RD	787	0.378	481	8.02	62
PS73P1	MUNICIPAL CODE	1023	0.183	177	2.95	15
PS74P1	WEEMS ROAD	3480	4.265	1216	20.27	11
PS74P2	WEEMS ROAD	3192	0.831	260	4.34	3
PS76P1	COMMONWEALTH	1651	0.446	265	4.41	212
PS78P2		310	0.056	172	2.86	3144
PS7P1	BUCKHEAD	294	0.042	138	2.29	149
PS83P1	WOOD BROOK	354	0.028	76	1.27	44
PS84P1	MCLAUGHLIN RD	3098	3.735	1180	19.66	21
PS84P2	MCLAUGHLIN RD	2152	0.372	173	2.89	2
PS89P1	MOORE POND #2	178	0.08	448	7.47	106
PS92P1	BUCK LAKE RD SCHOOL	1159	0.551	458	7.63	142
PS94P1	SUMMERBROOKE	955	0.455	474	7.89	103
PS96P1	TIMBERLANE SCHOOL RD	149	0.026	167	2.78	48
PS97P1	MACLAY RD	288	0.131	447	7.44	216
PS99P1		705	0.294	411	6.86	53
PSCCNW-P1	New Pump	2308	0.865	375	6.24	122
ROSEHILL-P1	New Pump	116	0.037	316	5.26	65
TALQUIN2-P1		2546	1.104	434	7.23	154
TALQUIN3-P1		308	0.101	329	5.48	99
TALQUIN4-P1		512	0.202	395	6.58	117
TALQUIN-P1		1297	0.5	386	6.43	145
WOODVILLE2-P1		288	0.025	88	1.47	20
WOODVILLE3-P1		80	0.002	25	0.42	9
WOODVILLE4-P1		404	0.057	142	2.37	29
WOODVILLE5-P1		100	0.029	289	4.81	105
WOODVILLE6-P1		816	0.18	220	3.67	64
WOODVILLE7-P1		80	0.002	25	0.42	9

Pump ID	Description	Q_{avg} (gpm)	Total Pumped (MGal)	Total Run Time (min.)	Total Run Time (hrs.)	Pump Starts per 24 Hours
WOODVILLE-P1		80	0.007	84	1.40	29
119	Pumps Running			Less than 2 hrs:	48	
					Greater than 90 starts:	34

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
JCT-1132	89.7	100	3.31	93.01	24.0	8	2.65	6.99
JCT-1196	79.31	99.7	1.74	81.05	0.1	10	0.91	18.65
SH1047548	89.39	100.68	1.52	90.91	0.6	18	0.02	9.77
SH1047552	89.69	99.98	1.88	91.57	1.7	18	0.38	8.42
SH222965	74.88	81.84	4.28	79.16	6.3	12	3.28	2.68
SH222966	75.03	82.27	4.25	79.28	3.8	12	3.25	2.99
SH23088	51.8	65.37	3.59	55.39	2.7	12	2.59	9.98
SH231230	60.67	72.03	3.05	63.72	17.1	21	1.30	8.31
SH23208	83.07	91.88	2.03	85.10	0.5	12	1.03	6.78
SH23241	136.37	148.34	1.16	137.53	3.0	12	0.16	10.81
SH23279	65.64	77.22	10.22	75.86	11.3	19	8.63	1.37
SH23284	68.9	78.5	9.60	78.50	3.9	18	8.10	0.00
SH23416	43.04	59.12	6.56	49.60	0.1	8	5.89	9.53
SH23695	64.91	78	7.90	72.81	11.0	18	6.40	5.19
SH23737	46.24	52.26	1.62	47.86	24.0	10	0.79	4.40
SH24036	75.92	86.82	4.21	80.13	1.4	12	3.21	6.69
SH24042	76.3	86.91	6.43	82.73	1.3	12	5.41	4.18
SH24047	75.51	82.92	4.48	79.99	1.8	12	3.48	2.93
SH24052	70.41	83.05	1.62	72.03	1.8	12	0.62	11.02
SH24073	84.1	92.67	1.43	85.53	0.1	16	0.12	7.14
SH24075	80.87	88.53	2.53	83.40	0.8	12	1.53	5.13
SH24182	43.23	56.84	1.03	44.26	0.3	12	0.03	12.58
SH24221	51.43	66.26	2.57	54.00	2.0	12	1.57	12.26
SH24431	73.08	91.69	1.42	74.50	0.2	12	0.42	17.19
SH24435	74.11	81.01	3.17	77.28	1.6	12	2.17	3.73
SH24467	54.3	60.09	2.55	56.85	0.8	12	1.55	3.24
SH24480	39.11	49.093	0.92	40.03	5.9	8	0.25	9.06
SH24493	42.58	48.21	2.68	45.26	24.0	8	2.02	2.95
SH24512	56.79	69.5	1.52	58.31	0.8	10	0.69	11.19
SH24514	57.14	67.7	1.86	59.00	4.0	10	1.03	8.70
SH24726	112.42	129.993	1.35	113.77	3.6	12	0.35	16.23
SH24802	66.87	76.83	2.06	68.93	2.6	21	0.31	7.91
SH25344	60.64	72.881	3.10	63.74	15.8	24	1.07	9.14
SH25428	51.87	62.33	2.23	54.10	5.7	12	1.23	8.23
SH25442	71.91	78.5	2.08	73.99	1.0	10	1.25	4.51
SH25561	48.86	54.71	2.05	50.91	24.0	12	1.05	3.80
SH25568	52.18	64.051	3.93	56.11	4.1	8	3.27	7.94
SH25704	52.04	62.45	2.79	54.83	3.7	12	1.79	7.62
SH25708	39.56	43.85	1.52	41.08	24.0	10	0.69	2.77
SH25816	135.75	161.89	0.96	136.71	0.7	10	0.13	25.18
SH26214	57.22	64.4	2.23	59.45	1.6	20	0.57	4.95
SH26295	73.85	80.6	0.84	74.69	0.4	10	0.01	5.91
SH26864	104.83	117.53	1.47	106.30	2.6	12	0.47	11.23
SH26951	80.4	87.59	2.67	83.07	1.0	12	1.67	4.52
SH26983	136.42	144.26	2.40	138.82	10.2	12	1.40	5.44
SH27055	133.95	150.77	1.89	135.84	6.1	10	1.06	14.93
SH27062	136.12	142.62	1.70	137.82	2.1	10	0.87	4.80
SH27071	63.75	77.1	5.02	68.77	8.8	18	3.52	8.33
SH27078	62.72	77.9	2.48	65.20	2.5	18	0.98	12.70
SH27083	72.66	81.4	2.94	75.60	0.8	10	2.11	5.80
SH27086	67.29	79.4	9.45	76.74	8.0	18	7.95	2.66
SH27094	66.56	77.31	10.75	77.31	3.3	38	7.60	0.00
SH27095	68.74	78	9.26	78.00	3.1	10	8.43	0.00
SH27113	136.5	145.823	1.75	138.25	2.0	10	0.92	7.57
SH27231	46.01	65.45	3.50	49.51	24.0	10	2.67	15.94
SH27535	78.07	85.42	1.55	79.62	24.0	12	0.55	5.80
SH27627	46.25	64.56	1.72	47.97	0.0	18	0.22	16.59
SH27810	42.34	56.86	3.68	46.02	24.0	36	0.68	10.84
SH27985	105.93	118.88	1.66	107.59	10.1	8	1.00	11.29
SH28378	65.22	78.9	8.66	73.88	13.4	18	7.16	5.02

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH28412	70.795	80.605	9.81	80.61	2.2	12	8.81	0.00
SH28413	66.97	77.76	10.79	77.76	9.0	18	9.29	0.00
SH28538	67.82	85.05	1.33	69.15	7.2	10	0.50	15.90
SH28923	46.89	64.393	4.73	51.62	0.0	10	3.89	12.78
SH29215	62.07	66	1.97	64.04	2.0	21	0.22	1.96
SH29486	70.01	90.16	2.23	72.24	7.0	12	1.23	17.92
SH29496	76.99	81.51	2.11	79.10	0.1	10	1.27	2.41
SH29605	63.02	78.38	2.22	65.24	9.4	12	1.22	13.15
SH29619	65.32	77.2	9.98	75.30	13.8	19	8.36	1.90
SH29660	130.7	150.29	2.83	133.53	24.0	10	2.00	16.76
SH29670	74.27	77.98	3.71	77.98	0.7	12	2.71	0.00
SH29672	71.11	80.97	6.46	77.57	2.4	12	5.46	3.40
SH29683	68.46	78.87	10.41	78.87	4.6	18	8.91	0.00
SH29692	72.63	82.83	3.79	76.42	0.6	12	2.83	6.41
SH29765	143.9	159.718	0.76	144.66	1.3	8	0.09	15.06
SH29883	141.49	154.76	1.07	142.56	2.5	12	0.07	12.20
SH30202	76.58	81.31	1.90	78.48	0.3	10	1.06	2.83
SH30284	128.43	136.31	2.54	130.97	24.0	8	1.87	5.34
SH30304	46.56	63.88	1.66	48.22	0.0	18	0.16	15.66
SH30307	57.38	66.07	2.10	59.48	3.1	12	1.10	6.59
SH30313	46.21	62.47	1.67	47.88	0.0	18	0.17	14.59
SH30361	53.33	62.23	4.48	57.81	1.5	13	3.38	4.43
SH30362	52.11	63.74	3.83	55.94	2.5	12	2.83	7.80
SH30412	39.26	49.31	0.77	40.03	2.7	8	0.10	9.28
SH30470	55.72	63.99	1.58	57.30	0.1	19	0.00	6.69
SH30603	82.47	93.01	1.35	83.82	2.0	15	0.10	9.19
SH30756	78.29	84.04	1.34	79.63	20.8	12	0.34	4.41
SH30797	73.3	81.08	2.41	75.71	0.6	12	1.41	5.37
SH30798	75.5	82.38	4.17	79.67	1.2	15	2.92	2.71
SH30897	63.24	77.6	3.55	66.79	6.7	18	2.05	10.81
SH30901	65.19	77.5	8.07	73.26	12.3	18	6.57	4.24
SH30904	64.22	77.4	6.83	71.05	10.1	18	5.33	6.35
SH30905	64.36	83.01	7.21	71.57	10.2	18	5.71	11.44
SH30909	62.49	82.19	1.79	64.28	1.2	18	0.29	17.92
SH30913	70.67	81.68	6.77	77.44	2.1	19	5.16	4.24
SH30914	71.74	84.11	6.24	77.98	1.9	12	5.24	6.13
SH30918	69.26	82.48	12.60	81.86	3.4	18	11.10	0.62
SH30926	70.602	79.842	9.24	79.84	2.4	12	8.24	0.00
SH30928	66.18	77.19	11.01	77.19	10.4	18	9.51	0.00
SH30931	67.53	80.16	9.78	77.31	7.2	18	8.28	2.85
SH30934	68.97	78.45	9.48	78.45	3.4	19	7.87	0.00
SH30983	106.09	116.94	2.04	108.13	10.5	8	1.37	8.81
SH30985	104.36	117.13	2.68	107.04	24.0	8	2.01	10.10
SH31041	71.9	80.42	4.71	76.61	1.6	18	3.22	3.82
SH31042	67.96	81.21	9.49	77.45	5.0	18	7.99	3.76
SH31051	71.86	79.88	4.91	76.77	1.7	15	3.66	3.11
SH31053	73.27	85.59	4.69	77.96	0.8	10	3.86	7.63
SH31060	65.99	77.3	11.31	77.30	4.4	37	8.21	0.00
SH31063	71.511	87.311	7.41	78.92	1.7	12	6.41	8.40
SH31126	136.89	149.19	2.31	139.20	4.7	12	1.30	10.00
SH31284	76.78	86.33	2.75	79.53	24.0	12	1.75	6.80
SH31313	77.35	85.53	4.23	81.58	1.5	12	3.23	3.95
SH31314	77.22	82.01	1.96	79.18	0.0	10	1.13	2.83
SH31325	75.48	84.32	3.98	79.46	1.2	15	2.73	4.86
SH31482	37.7	43	0.94	38.64	0.7	10	0.11	4.36
SH31655	61.67	75	2.14	63.81	3.1	21	0.39	11.19
SH31668	74.42	88.32	3.44	77.86	24.0	24	1.44	10.46
SH31833	58.43	64.2	3.28	61.71	2.0	18	1.78	2.49
SH31875	57.08	64.25	2.05	59.13	1.4	20	0.39	5.12
SH31954	41.5	62	15.34	56.84	17.1	8	14.68	5.16

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH32250	63.33	85.159	1.99	65.32	1.9	12	0.99	19.84
SH32274	73.14	79.59	2.26	75.40	0.2	10	1.42	4.20
SH32354	81.65	101.33	1.87	83.52	0.0	18	0.37	17.81
SH32368	137.98	142.31	1.13	139.11	1.3	12	0.13	3.20
SH32723	71.65	76.307	1.89	73.54	20.2	18	0.39	2.77
SH32733	63.59	75.69	0.88	64.47	24.0	9	0.15	11.22
SH32741	53.07	58.46	1.62	54.69	0.0	10	0.79	3.77
SH32774	53.75	61.05	3.70	57.45	1.3	12	2.70	3.60
SH32775	52.16	64.15	3.71	55.87	2.2	12	2.71	8.28
SH32781	52.87	64.58	5.37	58.24	1.9	12	4.37	6.34
SH33084	73.03	81.08	2.66	75.69	1.6	10	1.83	5.39
SH33193	71.9	76.815	1.68	73.58	3.8	18	0.18	3.24
SH33232	47.05	55.24	3.86	50.91	24.0	12	2.86	4.33
SH33252	54.04	59.645	2.59	56.63	1.1	12	1.59	3.02
SH33467	58.31	66.38	2.26	60.57	1.4	10	1.42	5.81
SH33700	45.97	63.065	1.81	47.78	4.4	10	0.97	15.29
SH34157	43.12	49.32	3.41	46.53	24.0	12	2.41	2.79
SH34243	136.63	144.83	2.16	138.79	7.7	10	1.33	6.04
SH34429	71.79	82.64	2.06	73.85	1.0	12	1.06	8.79
SH34445	74.15	83.51	3.18	77.33	1.9	10	2.35	6.18
SH34469	76.04	86.74	4.32	80.36	1.2	12	3.32	6.38
SH34482	81.95	91.52	2.31	84.26	0.7	12	1.31	7.26
SH34483	83.61	94.41	1.85	85.46	0.6	12	0.85	8.95
SH34490	78.39	87.21	3.64	82.03	1.3	12	2.64	5.18
SH34532	71.03	80.53	6.70	77.73	24.0	15	5.45	2.80
SH34669	38.22	49.76	1.81	40.03	24.0	8	1.14	9.73
SH34849	136.42	148.29	1.58	138.00	4.5	12	0.58	10.29
SH34957	136.2	148.02	2.06	138.26	16.7	12	1.06	9.76
SH35108	144.35	159.164	1.18	145.53	1.4	11	0.22	13.63
SH35393	37.1	43	1.10	38.20	2.1	10	0.27	4.80
SH35879	134.37	144.32	2.24	136.61	6.6	10	1.37	7.71
SH35891	65.65	77.79	10.11	75.76	11.9	18	8.57	2.04
SH35897	66.51	77.45	10.94	77.45	9.9	19	9.37	0.00
SH36174	57.99	63.7	2.75	60.74	1.9	18	1.25	2.96
SH36299	65.14	77.5	7.66	72.80	11.2	18	6.16	4.70
SH36309	62.89	77.01	2.84	65.73	3.4	18	1.34	11.28
SH36310	64.74	77.3	7.90	72.64	10.7	18	6.40	4.66
SH36320	69.43	81.17	9.10	78.53	2.8	24	7.10	2.64
SH36326	70.11	81.01	9.40	79.51	2.6	12	8.40	1.50
SH36544	76.96	86.71	2.59	79.55	24.0	12	1.59	7.16
SH36649	59.33	70.35	2.85	62.18	1.2	21	1.10	8.17
SH36653	59.83	68.5	2.38	62.21	0.9	21	0.63	6.29
SH36728	39.3	44	1.11	40.41	0.4	13	0.06	3.59
SH36958	65.28	81.23	1.83	67.11	1.7	21	0.08	14.12
SH36961	78.56	86.11	1.11	79.67	2.0	12	0.11	6.44
SH36967	62.54	67	1.77	64.31	0.5	21	0.02	2.69
SH37071	133.48	156.03	1.28	134.76	2.2	10	0.45	21.27
SH37078	65.16	90.11	7.55	72.71	11.8	18	6.05	17.40
SH37080	64.6	76.8	7.74	72.34	10.6	18	6.24	4.46
SH37081	63.41	78.01	3.89	67.30	7.6	18	2.39	10.71
SH37083	63.08	77.2	3.24	66.32	5.8	18	1.74	10.88
SH37183	103.43	116.81	1.71	105.14	24.0	8	1.04	11.67
SH37274	75.9	83.47	3.52	79.42	24.0	12	2.52	4.06
SH37653	65.98	77.1	9.95	75.93	10.8	18	8.45	1.17
SH37655	66.17	77.48	11.31	77.48	10.4	19	9.73	0.00
SH37661	70.978	81.868	10.89	81.87	2.1	12	9.89	0.00
SH37663	69.86	80.98	7.63	77.49	2.4	24	5.63	3.49
SH37664	69.69	81.12	8.30	77.99	3.7	12	7.30	3.13
SH38281	61.24	68.65	1.77	63.01	0.9	21	0.02	5.64
SH38416	73.14	80.47	1.99	75.13	0.2	10	1.15	5.34

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH38420	73.42	83.326	2.64	76.06	0.9	15	1.39	7.27
SH38621	125.08	142.97	1.12	126.20	2.8	12	0.10	16.77
SH38720	136.2	148.55	2.43	138.63	11.4	14	1.28	9.93
SH38779	48.72	55.21	0.94	49.66	6.0	8	0.27	5.55
SH38899	134.72	148.84	2.13	136.85	6.4	10	1.30	11.99
SH38959	63.3	77.42	4.14	67.44	2.0	12	3.14	9.98
SH38970	68.05	80.88	8.96	77.01	4.9	18	7.46	3.87
SH38972	92.9	99	0.83	93.73	0.5	8	0.16	5.27
SH38973	65.25	82.4	8.97	74.22	13.8	18	7.47	8.18
SH39041	137.78	145.05	1.21	138.99	1.8	12	0.21	6.06
SH39080	76.13	83.78	3.32	79.45	24.0	12	2.32	4.34
SH39203	71.59	96.45	1.62	73.21	0.8	12	0.62	23.24
SH39231	74.68	84.03	4.29	78.97	9.0	12	3.29	5.06
SH39248	74.91	81.09	3.44	78.35	1.2	12	2.44	2.74
SH39264	79.95	87.42	2.85	82.80	1.1	12	1.85	4.62
SH39265	79.32	83.82	2.70	82.02	1.1	12	1.70	1.80
SH39313	71.52	80.45	8.93	80.45	24.0	15	7.68	0.00
SH39319	75.79	82.53	1.32	77.11	24.0	12	0.32	5.42
SH39348	49.17	61.5	1.71	50.88	1.9	18	0.21	10.62
SH39362	44.47	56.32	1.62	46.09	21.0	8	0.95	10.23
SH39437	50.91	66.14	1.92	52.83	2.7	12	0.92	13.31
SH39482	66.81	76.38	2.05	68.86	1.0	24	0.05	7.52
SH39529	76.52	87.02	4.19	80.71	1.0	12	3.17	6.31
SH39554	105.52	119.75	1.49	107.01	2.2	12	0.49	12.74
SH39603	64.02	77.4	6.07	70.09	9.5	18	4.57	7.31
SH39606	73.05	81.17	3.23	76.28	1.1	15	1.98	4.89
SH39653	50.71	63.82	3.18	53.89	2.8	36	0.18	9.93
SH39721	42.19	66	4.74	46.93	3.1	12	3.74	19.07
SH39752	72.12	87.85	6.01	78.13	1.7	12	5.01	9.72
SH39763	69.08	78.8	9.72	78.80	3.6	18	8.22	0.00
SH39905	109	118.8	0.82	109.82	2.4	8	0.15	8.98
SH40024	63.19	71.11	1.79	64.98	0.2	21	0.00	6.13
SH40025	77.26	87.51	2.31	79.57	24.0	12	1.31	7.94
SH400538	75.86	87.22	4.41	80.27	1.6	12	3.41	6.95
SH400539	75.63	86.83	4.73	80.36	2.2	12	3.73	6.48
SH40092	67.58	81.35	9.90	77.48	7.1	18	8.40	3.87
SH40100	71.89	85.44	5.58	77.47	1.7	10	4.75	7.97
SH40137	104.2	117.29	1.49	105.69	3.2	12	0.49	11.60
SH40332	68.39	78.76	10.37	78.76	4.6	18	8.87	0.00
SH40361	72.16	91.81	1.97	74.13	0.4	12	0.97	17.68
SH40423	35.97	48.08	7.05	43.02	0.1	10	6.22	5.06
SH40586	43	57.82	1.09	44.09	3.6	12	0.09	13.73
SH40732	69.34	80.08	1.74	71.08	16.9	12	0.74	9.00
SH40803	67.82	80.468	9.74	77.56	6.1	18	8.24	2.91
SH40804	68.27	78.61	8.68	76.95	4.5	18	7.18	1.66
SH40918	38.8	49.792	1.23	40.03	18.2	8	0.57	9.76
SH40921	55.17	64.36	1.95	57.12	3.7	15	0.70	7.24
SH41054	54.45	60.96	2.43	56.88	0.7	12	1.43	4.08
SH41059	52.25	63.45	3.80	56.05	2.4	12	2.80	7.41
SH41166	38.3	43	0.84	39.14	0.0	10	0.01	3.86
SH41303	45.84	63.174	1.96	47.80	1.0	19	0.36	15.38
SH41477	68.33	76	1.02	69.35	2.4	10	0.19	6.65
SH41693	54.97	63.35	1.83	56.80	3.9	15	0.58	6.55
SH41699	70.13	85.85	1.66	71.79	2.5	12	0.66	14.06
SH41809	40.17	57.86	1.14	41.31	1.0	10	0.31	16.55
SH41872	64.3	78.609	1.40	65.70	24.0	6	0.90	12.91
SH42104	77.63	90.03	1.96	79.59	24.0	12	0.96	10.44
SH42141	59.25	67.35	1.92	61.17	0.4	10	1.09	6.18
SH42285	36	46.56	6.89	42.89	1.0	10	6.06	3.67
SH42497	40.71	55.93	3.42	44.13	18.7	35	0.47	11.80

Manhole ID	Invert El. (ft.)	Rim El. (ft.)	Max. Flow Depth (ft.)	Max. HGLE	Surcharge Time (hrs.)	Pipe dia. (in.)	Max. Depth Above Pipe Crown (ft.)	Min. Depth Below Rim (ft.)
SH574211	136.404	148.3	1.45	137.85	4.0	12	0.45	10.45
SH579897	59.642	69	2.55	62.19	1.0	21	0.80	6.81
SH605605	24.55	36.48	3.70	28.25	0.2	42	0.20	8.23
SH605612	24.02	36.61	4.22	28.24	0.2	49	0.17	8.37
SH659134	42.51	48	2.65	45.16	24.0	13	1.58	2.84
SH659146	42.46	46	2.50	44.96	24.0	12	1.50	1.04
SH684743	104.941	113	1.58	106.52	24.0	8	0.92	6.48
SH701760	56.35	70	1.42	57.77	2.1	10	0.59	12.23
SH764957	49.18	62.5	1.59	50.77	0.9	18	0.09	11.73
SH914518	66.37	73	1.04	67.41	2.2	10	0.21	5.59
SH931552	71.81	81.06	9.25	81.06	24.0	11	8.35	0.00
SH948359	52.045	58.25	2.11	54.16	24.0	10	1.28	4.09
SH978864	44.55	56.25	0.96	45.51	17.3	8	0.29	10.74
253	Surcharged Manholes							

Facility ID	Pump Station	Location	Wet Well Invert (ft)	Max. Depth (ft)	Max. HGLE	Max. Inflow Rate (gpm)	Total Inflow (Mgal)	Total Surcharge Time (hrs)	Max.Surcharge Height Above Crown (ft)	Min. Depth Below Rim (ft)
BOBBINMILL2-PS			89.00	4.01	93.01	62	0.13	24	2.84	10.99
BOBBINMILL-PS			91.00	4.00	95.00	8	0.019	24	4.00	11.00
BUCKLAKE-PS			57.00	4.03	61.03	132	0.185	24	4.03	10.97
HUNTINGTON2-PS			89.00	4.04	93.04	290	0.54	24	4.04	10.96
KILLEARNACRES2-PS			68.00	4.01	72.01	33	0.082	24	4.01	10.99
KILLEARNACRES-PS			105.00	4.01	109.01	37	0.091	24	4.01	10.99
LAKEMUNSON2-PS			19.00	4.01	23.01	20	0.043	24	4.01	11.00
LAKEMUNSON3-PS			15.00	4.01	19.01	34	0.072	24	4.01	10.99
LAKESHORE1-PS			87.00	4.01	91.01	30	0.068	24	4.01	10.99
NEWPS		Sembler (CCSE)	53.00	4.03	57.03	599	1.271	24	4.03	10.97
ROSEHILL-PS			152.00	4.01	156.01	32	0.08	24	4.01	10.99
SN42573	PS-066	PARK 20 WEST	69.76	7.10	76.86	9	0.021	24	7.10	3.60
SN42576	PS-113	GILCHRIST/TIMBERLANE	156.00	5.39	161.39	287	0.341	14	0.35	13.06
SN42596	PS-118	Centre Court	105.07	3.82	108.89	309	0.653	24	3.15	20.05
SN42598	PS-122	1420 Oven Park Dr	132.63	4.90	137.53	514	0.007	5	1.03	9.93
SN42606	PS-049	OKEEHEEPKEE RD	141.94	8.50	150.44	339	0.472	13	1.46	4.45
SN42609	PS-043	MEGINNIS ARM	75.00	8.08	83.08	3597	3.248	0	0.08	18.92
SN42613	PS-023	MOORE SCHOOL	130.00	5.79	135.79	314	0.173	15	0.99	7.01
SN42615	PS-042	HILLSGATE CTR	55.81	3.60	59.41	328	0.015	15	0.61	9.61
SN42622	PS-152	TEAM TOYOTA	38.18	5.55	43.73	1079	0.559	9	1.05	16.95
SN42626	PS-106	Countryside at Benjamins Run	98.68	6.44	105.12	726	0.075	9	1.32	11.19
SN42629	PS-123	FSU	39.10	8.51	47.61	2828	3.089	1	0.30	15.47
SN42645	PS-149	SPRINGHILL RD	16.22	12.00	28.22	23527	23.835	0	0.42	12.13
SN42646	PS-127	Silver Ridge	18.92	6.52	25.44	572	0.289	1	0.85	16.06
SN42649	PS-065	STATE OFFICE COMPLEX	34.01	8.22	42.24	1302	2.682	13	1.97	16.03
SN642336	PS-155	Bannerman Rd	205.28	5.81	211.09	227	0.563	24	5.81	5.79
TALQUIN2-PS			97.00	4.03	101.03	993	2.424	24	4.03	10.97
TALQUIN3-PS			103.00	4.02	107.02	91	0.223	24	4.02	10.98
TALQUIN4-PS			41.00	4.02	45.02	223	0.402	24	4.02	10.98
TALQUIN-PS			193.00	4.04	197.04	629	1.028	24	4.04	10.96
WOODVILLE3-PS			19.00	3.00	22.00	2	0.004	24	3.00	12.00
WOODVILLE5-PS			10.00	3.01	13.01	28	0.06	24	3.01	11.99
WOODVILLE7-PS			9.00	3.00	12.00	2	0.004	24	3.00	12.00
WOODVILLE-PS			5.00	3.00	8.00	7	0.014	24	3.00	12.00
34	Surcharging Wet Wells									

Pipe ID	Length (ft)	Diameter (in)	Max. Velocity (fps)	Avg. Velocity (fps)
CDT-225	2,310.3	10	7.0	2.8
CDT-253	1,002.7	6	6.7	3.3
CDT-273	698.1	8	6.7	3.2
CDT-321	1,703.8	10	6.7	1.7
CDT-323	3,232.5	10	6.8	5.1
CDT-381	411.1	4	9.3	3.2
CDT-431	3,246.1	6	9.8	3.4
CDT-445	4,119.3	8	7.7	2.6
CDT-491	13,483.4	10	6.9	3.2
CDT-497	2,863.8	10	8.4	3.4
CDT-5000	58.5	48	16.2	8.4
CDT-647	209.5	12	9.8	2.7
CDT-747	274.3	8	7.0	1.5
SP1053804	2.5	8	10.8	2.5
SP1053805	1.9	8	10.0	2.5
SP1053806	0.5	8	9.0	2.5
SP1053807	2.8	8	7.6	2.5
SP1053808	2.2	4	25.0	9.9
SP1053817	4.9	8	50.1	0.4
SP1053819	1.4	8	286.5	2.8
SP1053829	4.3	8	10.5	2.5
SP1053831	2.1	8	11.0	2.5
SP1056410	3.9	4	8.7	0.2
SP1057548	2.4	4	7.9	0.1
SP1057554	3.1	4	9.6	0.1
SP1057558	3.6	4	9.3	0.1
SP1057559	2.6	4	7.6	0.1
SP1062171	0.9	4	10.2	0.2
SP1062172	1.3	4	8.8	0.2
SP1070163	2.9	4	11.2	1.1
SP1070164	4.3	4	18.0	1.2
SP1070165	1.8	4	11.5	0.4
SP1070167	1.1	4	15.3	1.2
SP1070171	2.3	4	13.3	1.1
SP1070176	5.0	4	19.1	1.2
SP1070177	2.8	6	7.6	0.5
SP1070178	19.1	6	6.6	0.5
SP1070214	4.7	6	6.6	0.5
SP1070216	18.9	6	7.1	0.4
SP1070223	0.9	4	11.2	1.2
SP1072093	2.5	4	19.1	1.2
SP1078665	1.9	8	11.1	2.5
SP1078672	4.9	8	104.6	1.2
SP1078675	4.2	8	245.3	2.2
SP1078676	5.1	8	187.2	2.1
SP1078682	2.0	4	26.8	9.9
SP1078685	12.2	4	23.3	9.9
SP1078926	1,981.3	24	8.1	2.1
SP1078928	51.4	24	19.7	0.3
SP219871	0.3	4	11.3	3.4
SP219872	203.2	4	9.5	3.4
SP219873	240.8	4	10.4	3.4
SP219885	32.6	4	12.5	3.4
SP219892	5.9	4	16.9	4.6
SP224350	3.6	4	9.2	0.6
SP225459	1.8	4	10.1	7.7

Pipe ID	Length (ft)	Diameter (in)	Max. Velocity (fps)	Avg. Velocity (fps)
SP225461	0.9	4	12.1	7.7
SP225462	0.6	4	10.9	7.6
SP226078	2.4	4	8.1	3.0
SP228009	1.1	6	7.9	0.6
SP228012	0.3	6	6.6	0.7
SP228014	0.3	6	7.1	0.8
SP228017	26.1	6	8.5	1.0
SP389597	1,457.7	10	12.9	4.2
SP389608	2.4	10	12.9	3.0
SP427973	267.8	24	6.8	2.2
SP427975	26.6	24	7.5	2.3
SP428104	297.3	24	9.3	4.4
SP428105	7.0	24	7.8	2.3
SP429207	4.5	20	7.0	3.1
SP430070	226.1	24	7.2	2.3
SP434673	0.8	8	6.7	4.0
SP434682	0.4	6	7.8	0.7
SP434711	64.9	4	14.8	3.4
SP434717	2.3	20	7.0	3.1
SP43758	4.7	6	7.3	2.7
SP43806	964.0	14	14.4	2.2
SP43811	1,642.0	14	9.5	2.4
SP43839	1.3	36	26.4	**10.2**
SP43851	1,110.3	12	8.6	1.5
SP43853	36.2	14	8.8	2.1
SP43854	997.9	14	9.0	2.1
SP43856	615.1	6	7.4	2.9
SP43857	12.1	6	9.7	0.3
SP43869	175.4	24	6.8	2.2
SP43873	1.2	4	11.0	5.1
SP43876	3,778.5	30	7.1	2.4
SP43878	626.0	8	6.6	0.2
SP43913	3.3	6	9.4	2.7
SP43915	2.2	6	16.9	1.0
SP43917	88.5	6	9.8	4.8
SP43930	1,304.9	8	7.3	1.6
SP43944	0.3	8	8.6	8.1
SP43947	0.2	8	17.5	9.3
SP43949	1,439.5	16	9.5	5.1
SP43964	606.8	36	8.6	6.1
SP43986	6.1	30	8.9	3.7
SP43991	677.8	30	12.5	3.9
SP44032	257.8	6	9.1	4.1
SP44058	155.0	12	8.0	4.1
SP44069	4.8	36	30.1	**11.6**
SP44073	141.5	36	7.4	3.1
SP44087	0.5	6	9.2	0.2
SP44089	0.3	6	10.5	0.2
SP44090	0.3	6	11.6	0.2
SP44093	1.3	6	6.6	2.5
SP44108	809.1	14	9.0	2.1
SP44109	1,006.1	14	7.1	5.7
SP44110	2.9	14	10.7	3.9
SP44116	295.2	24	7.1	2.1
SP44120	37.6	12	65.9	1.9
SP44132	143.8	4	38.9	8.0

Pipe ID	Length (ft)	Diameter (in)	Max. Velocity (fps)	Avg. Velocity (fps)
SP44133	25.0	30	7.0	2.4
SP44135	382.9	12	12.3	8.7
SP44170	0.3	8	11.3	8.7
SP44177	960.1	12	11.6	8.6
SP44189	3.1	30	10.1	3.9
SP44196	1,252.4	8	8.1	1.1
SP44202	18.0	20	7.0	3.1
SP44243	6.7	8	6.8	2.4
SP44262	82.9	6	15.9	0.9
SP44274	20.7	12	7.9	4.1
SP44281	488.2	8	6.9	1.2
SP44282	1,155.9	30	11.3	3.1
SP44332	14.2	11	6.6	2.4
SP44340	34.9	6	7.3	5.9
SP44343	70.4	20	7.2	3.6
SP44361	34.3	8	15.1	10.5
SP44387	0.5	6	7.9	0.2
SP44403	52.8	14	44.1	1.4
SP44409	1,060.6	14	8.5	6.5
SP44424	2,734.9	24	8.9	2.1
SP44427	4,067.5	24	7.9	2.2
SP44437	2.9	6	7.0	5.9
SP44442	3.7	4	21.9	7.6
SP44460	11.4	24	9.5	4.4
SP44464	7.7	8	8.7	2.6
SP44466	11.3	30	12.1	3.9
SP44468	3,830.2	30	11.2	3.1
SP44469	5.9	30	9.0	3.1
SP44480	14.4	14	8.6	2.1
SP44487	5.1	24	7.5	2.1
SP44490	863.3	12	6.6	0.9
SP44495	148.0	18	11.4	6.0
SP44496	5.9	4	39.0	8.1
SP44516	1,668.0	30	12.8	4.0
SP44530	400.2	14	8.2	6.3
SP44533	2,060.1	42	12.5	10.6
SP44541	1,270.9	24	8.5	2.1
SP44542	720.1	24	6.9	2.1
SP44545	997.5	14	14.3	2.2
SP44554	1,485.1	30	7.3	2.5
SP44559	8.0	6	15.4	0.9
SP44568	363.7	36	7.1	3.1
SP44592	4.0	6	14.6	2.8
SP44603	3.8	6	6.9	3.5
SP44609	768.6	18	11.4	6.1
SP44610	14.8	16	10.3	7.0
SP44626	120.4	30	8.9	3.9
SP44631	58.3	6	7.1	0.4
SP44632	28.5	12	13.2	8.6
SP44633	292.2	6	7.2	6.0
SP44637	1.9	4	7.0	3.1
SP44648	5.1	12	8.1	2.6
SP44672	471.7	42	15.7	11.7
SP44675	42.1	42	12.5	9.4
SP44677	14.7	24	6.9	2.1
SP44683	436.1	12	19.9	1.2

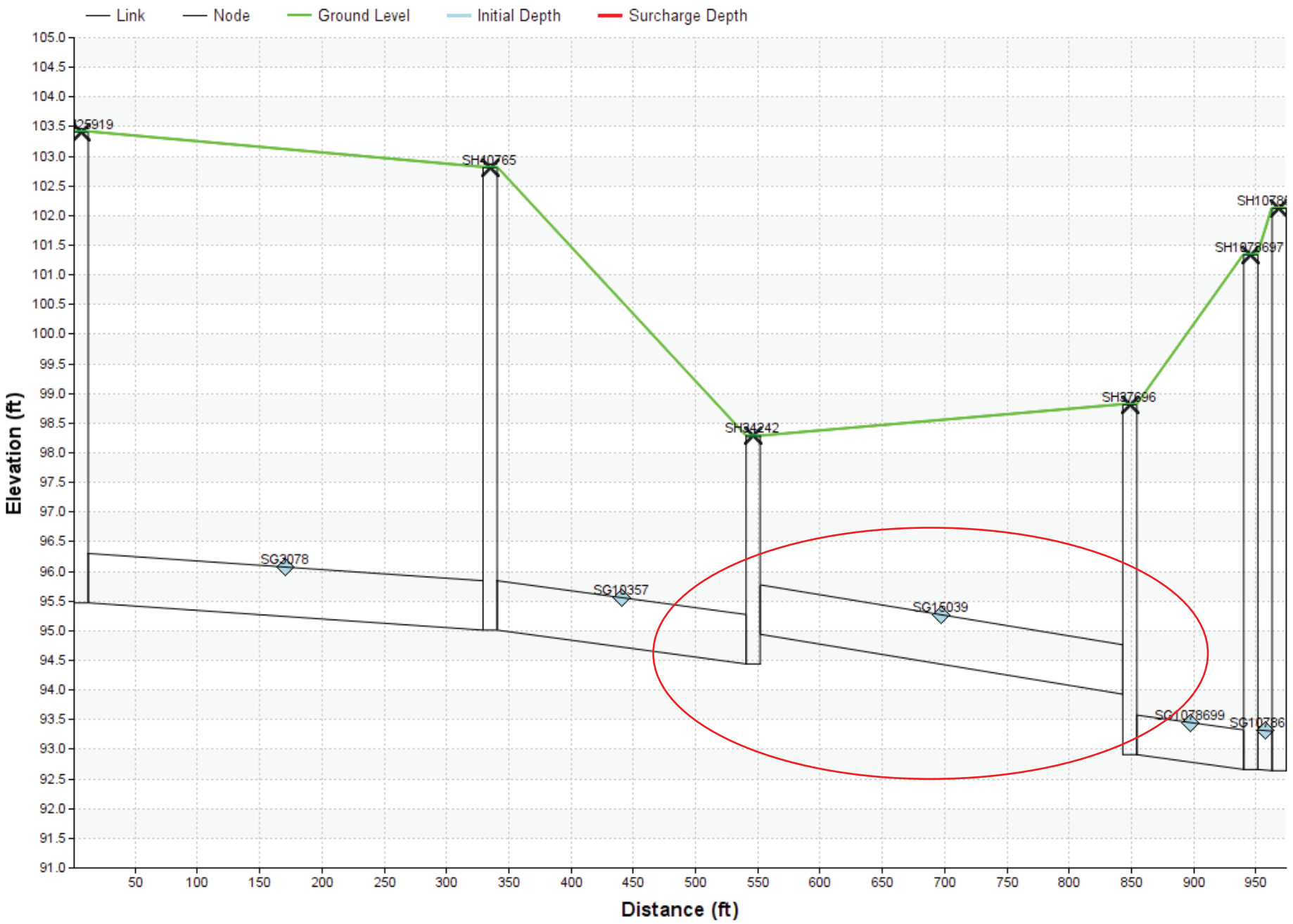
Pipe ID	Length (ft)	Diameter (in)	Max. Velocity (fps)	Avg. Velocity (fps)
SP44686	1.7	4	23.3	7.8
SP44688	1.5	4	22.3	7.6
SP44689	3.2	4	32.4	7.8
SP44690	3,380.3	24	7.5	2.4
SP44691	1,061.0	24	6.9	2.3
SP44703	1,522.7	30	11.4	4.3
SP44710	0.6	6	13.5	0.9
SP44724	0.2	8	11.1	8.7
SP44726	1,009.4	16	9.9	6.9
SP44727	0.1	8	10.4	8.7
SP44739	105.6	36	21.5	9.3
SP44747	6.2	30	10.6	3.6
SP44748	1,431.5	30	10.7	3.7
SP44749	289.9	30	10.8	3.7
SP44752	1,192.6	30	10.5	3.7
SP44760	1,558.2	6	8.6	0.3
SP44762	3.7	6	7.4	1.7
SP44767	3.3	36	24.7	8.5
SP44770	488.7	24	8.3	6.3
SP44775	1,185.9	30	7.3	2.5
SP44776	3.3	12	12.5	7.0
SP44780	50.3	42	6.9	3.7
SP44786	3.8	4	9.8	2.8
SP44790	0.2	8	8.6	8.3
SP44798	144.6	6	7.1	5.9
SP44808	489.9	12	11.9	8.6
SP44809	917.2	6	7.2	6.0
SP44813	229.0	6	9.4	1.1
SP44835	11.5	6	6.9	2.0
SP44844	0.7	6	8.1	5.4
SP44845	6.9	4	10.9	5.2
SP44850	585.1	12	8.0	4.8
SP44856	1.0	6	9.5	4.5
SP44857	4.3	4	9.5	3.3
SP44863	4.7	6	7.7	2.1
SP44868	2.0	4	10.3	3.1
SP44870	41.5	4	8.2	3.9
SP44877	9.6	8	9.1	0.9
SP44878	414.8	8	10.2	0.7
SP44880	241.4	8	8.8	5.7
SP44882	2.1	8	7.9	2.4
SP490379	1.3	10	8.1	1.3
SP490381	7.3	10	9.1	6.4
SP490382	2.3	10	9.6	1.3
SP490383	1,604.4	10	9.6	5.4
SP495437	1.4	4	9.2	6.3
SP495446	1.3	4	8.9	0.5
SP495458	2.2	4	8.3	0.5
SP495463	2.1	4	8.9	0.6
SP525339	4.0	6	7.6	4.8
SP525341	472.5	6	8.2	4.4
SP525343	7.7	14	8.3	2.1
SP525345	967.5	14	9.0	2.1
SP532917	2.7	4	10.0	3.5
SP533063	2.7	4	6.9	3.6
SP534523	28.1	6	8.7	5.1

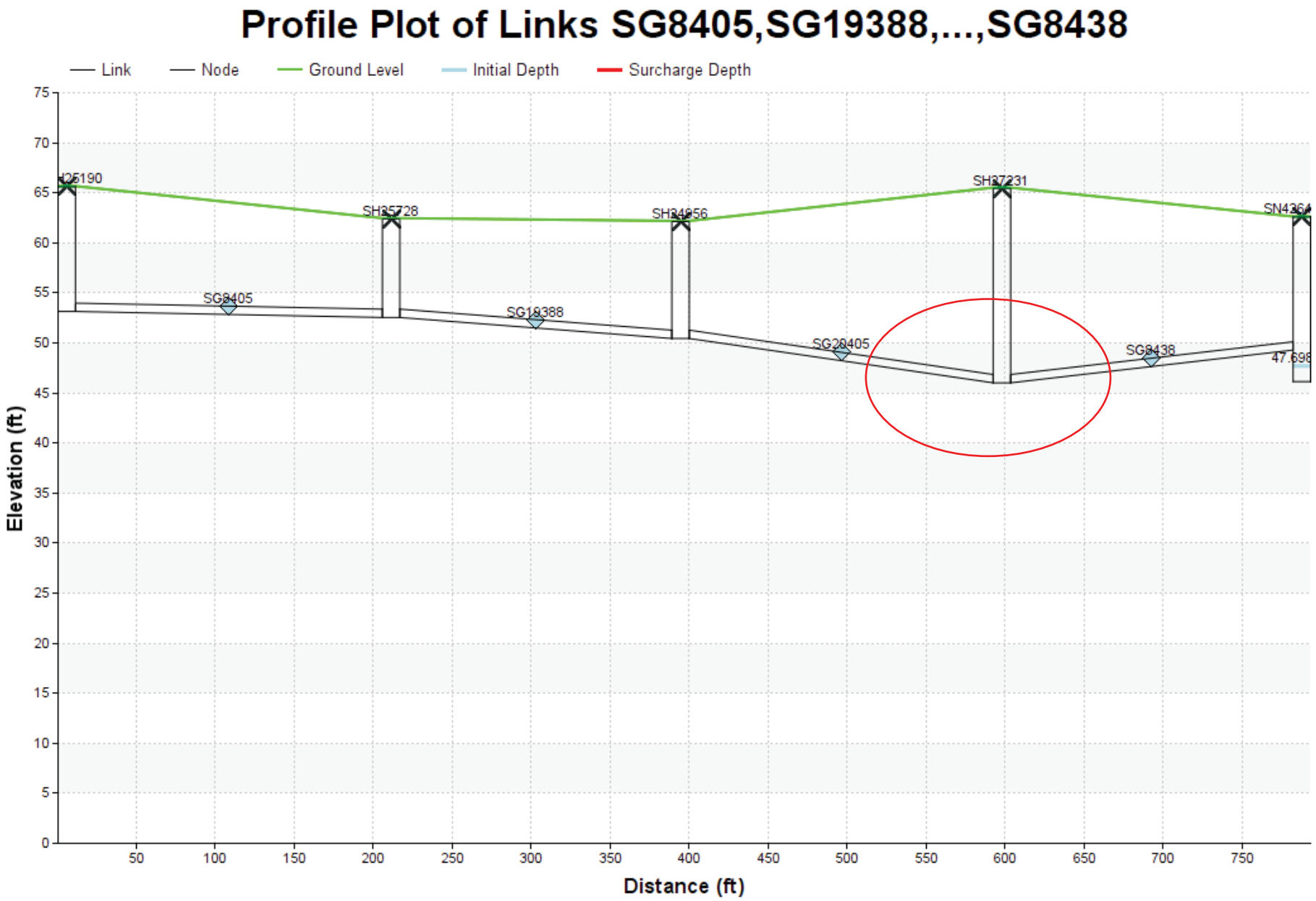
Pipe ID	Length (ft)	Diameter (in)	Max. Velocity (fps)	Avg. Velocity (fps)
SP535164	16.8	12	7.9	4.1
SP543369	2.5	10	12.3	4.1
SP543438	17.1	10	11.8	4.1
SP543769	1.2	8	19.6	7.4
SP543876	0.9	8	19.8	6.8
SP543880	1.3	10	10.9	4.1
SP543930	2.5	8	18.7	6.6
SP553821	2.3	4	12.3	3.6
SP553825	2.6	4	10.7	0.4
SP553833	3.3	4	8.4	0.4
SP562596	1,718.1	30	10.8	3.7
SP565202	1.6	6	7.7	2.3
SP565207	8.1	6	9.5	2.3
SP565213	17.6	6	7.3	2.3
SP581618	6.5	6	8.8	2.3
SP581628	2.1	6	8.2	2.3
SP605644	6.5	20	7.8	5.3
SP605648	6.3	20	9.3	5.3
SP605664	2.7	20	12.0	5.3
SP605668	2.7	20	6.9	5.5
SP605672	2.5	20	16.1	5.2
SP610745	2.4	10	9.6	4.3
SP610759	1,582.6	10	7.2	2.0
SP610772	605.3	10	7.2	2.0
SP610790	955.4	10	7.2	2.0
SP610803	431.6	10	7.8	2.0
SP610979	1,061.3	10	12.2	2.7
SP611003	459.6	10	6.8	3.5
SP611017	7.5	10	10.0	3.7
SP611032	679.2	10	9.6	6.4
SP611103	2,064.1	10	7.2	3.1
SP611153	1,031.1	10	9.2	3.2
SP611167	899.9	10	8.1	2.3
SP611181	14.4	10	7.3	2.1
SP611213	1,802.1	10	9.9	2.1
SP611228	2.4	14	24.7	1.0
SP611236	50.8	10	16.0	1.9
SP611247	3.1	10	24.4	1.9
SP636099	11.8	6	9.7	1.6
SP642469	1.2	10	11.4	4.4
SP642472	1.3	10	9.2	4.3
SP642473	4.7	10	9.3	4.3
SP642495	1.4	10	10.6	4.5
SP642819	1.3	6	14.2	5.8
SP642831	1.3	6	12.7	5.7
SP654210	7.7	4	22.7	0.0
SP662055	4.9	24	9.8	3.7
SP662061	3.2	24	6.8	2.1
SP662062	3.3	24	7.3	2.1
SP662068	2.4	24	13.8	3.6
SP662073	2.3	24	9.8	3.7
SP662096	26.7	30	6.9	2.4
SP662097	39.1	30	7.1	2.4
SP663426	3.0	6	8.7	2.5
SP663432	0.6	6	13.8	2.6
SP663521	0.4	6	11.3	5.9

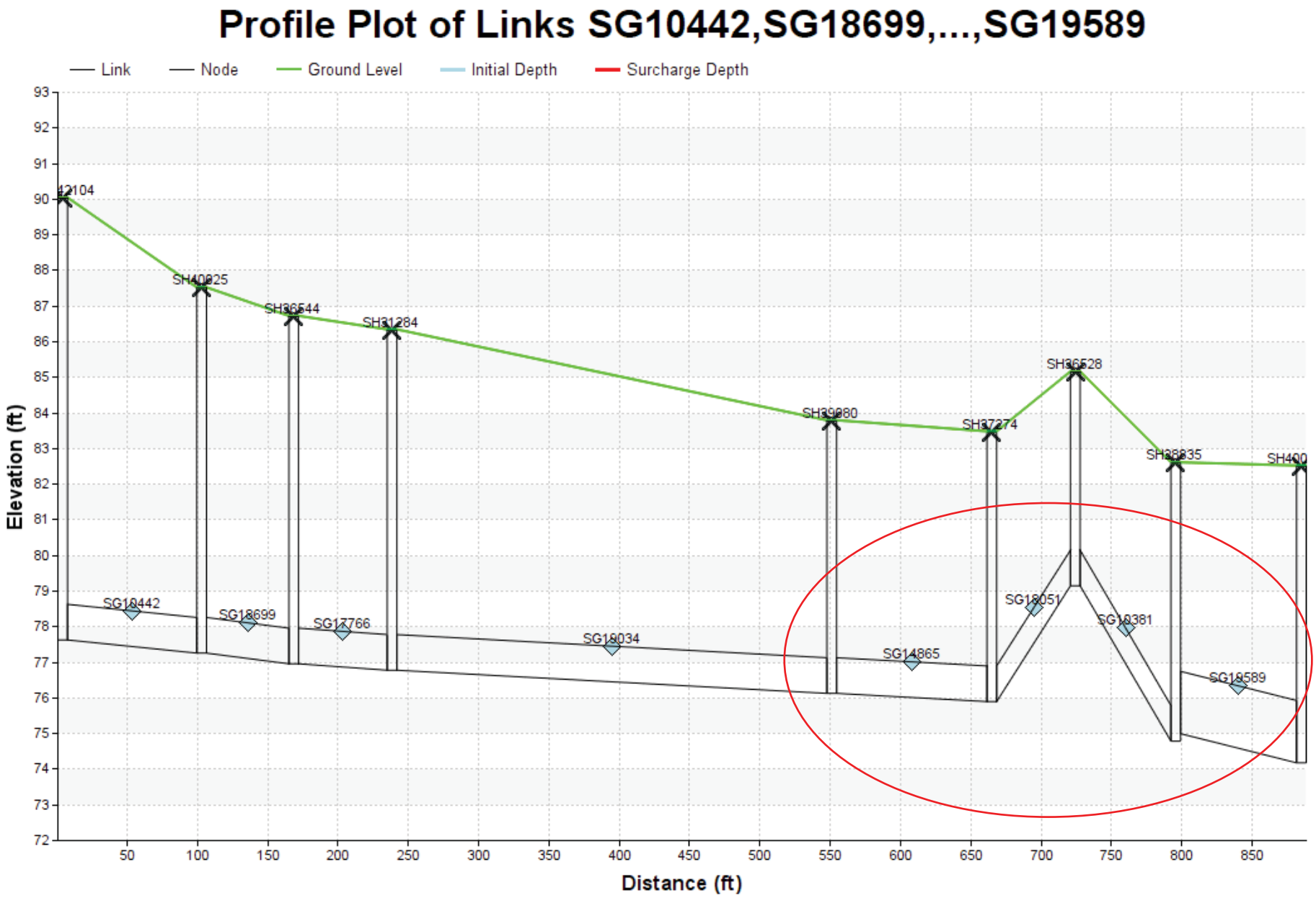
Pipe ID	Length (ft)	Diameter (in)	Max. Velocity (fps)	Avg. Velocity (fps)
SP663523	1.0	6	9.2	5.9
SP665304	33.6	12	9.3	3.1
SP674282	7.8	8	7.3	0.5
SP809453	10.0	24	7.8	2.1
SP809616	11.3	24	8.5	2.1
SP809627	21.3	24	8.9	2.1
SP812931	20.7	18	11.4	6.0
SP812936	0.5	18	11.4	5.9
SP812954	21.7	18	11.4	6.0
SP812958	37.6	18	11.5	6.1
SP812962	2.8	18	11.5	6.0
SP812988	5.6	24	9.6	3.6
SP812989	11.4	24	12.9	4.7
SP812997	18.7	18	7.5	2.2
SP812998	16.0	18	11.6	4.5
SP835594	2.8	6	13.5	2.2
SP835595	1.4	6	13.5	2.5
SP835624	3.0	10	8.4	1.4
SP835629	21.8	10	12.5	1.8
SP835633	360.1	10	13.2	1.8
SP835638	2.3	10	14.9	1.9
SP837944	5.5	8	11.7	1.1
SP837945	168.6	8	10.0	0.6
SP838579	2.4	10	10.8	1.6
SP839614	105.6	36	6.5	3.1
SP839618	461.8	36	7.0	3.1
SP839632	9.5	36	6.8	3.1
SP839633	7.3	36	6.6	3.1
SP839661	405.4	36	7.2	3.1
SP839673	480.9	36	7.2	3.1
SP839684	479.2	36	7.2	3.1
SP839688	239.6	36	7.3	3.1
SP839706	281.3	36	7.6	3.1
SP839712	727.8	36	7.7	3.1
SP839713	21.3	36	13.0	3.5
SP926409	4.8	6	10.1	0.3
SP938181	1.3	8	8.5	1.4
SP938182	2.3	8	8.5	1.3
SP940978	2.4	8	7.1	1.3
319	Force Mains		Average ≤ 6.5:	282
			Average > 6.5:	37
			Average > 10:	5

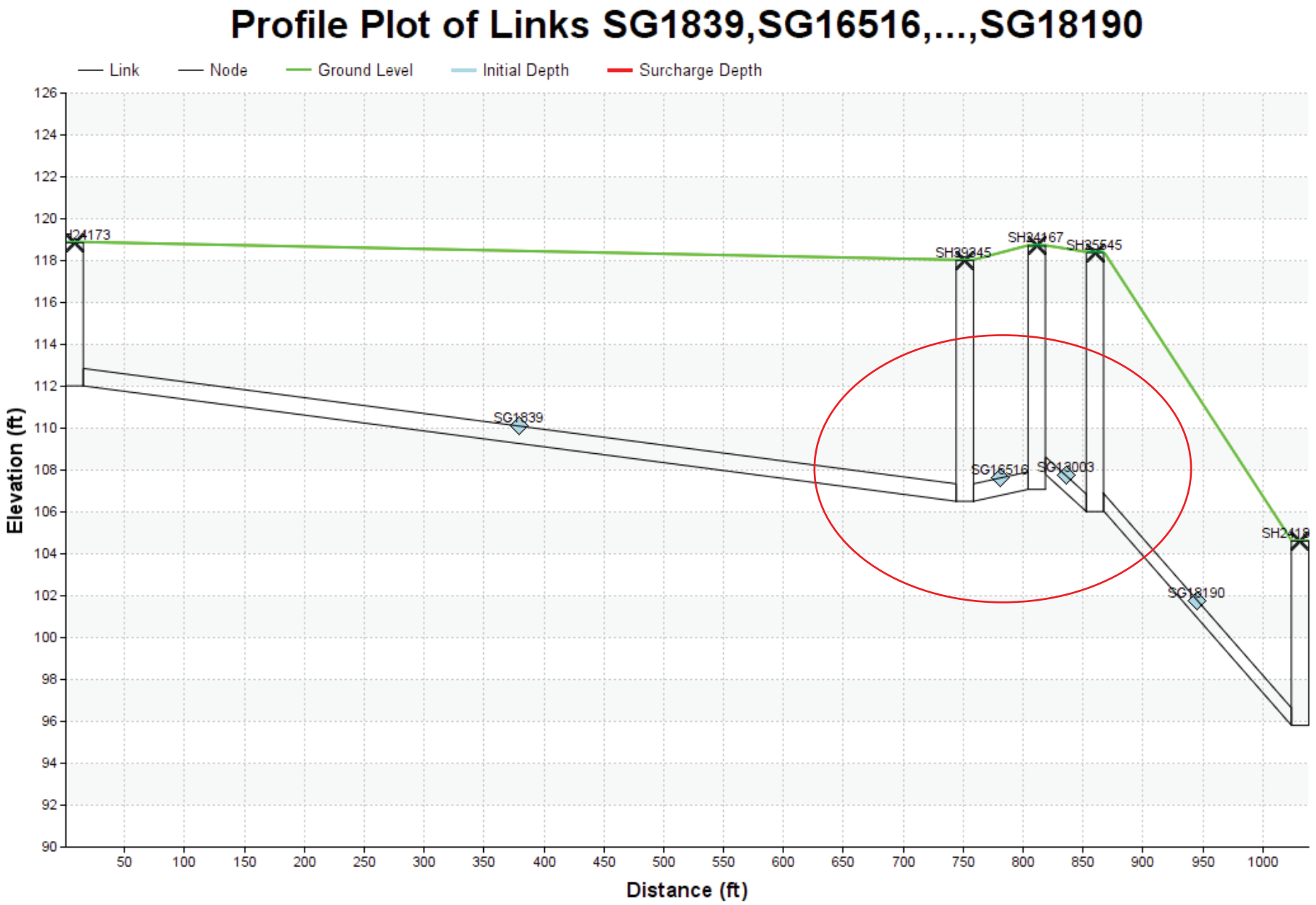
Appendix E: 2035 Miscellaneous Gravity System Profiles

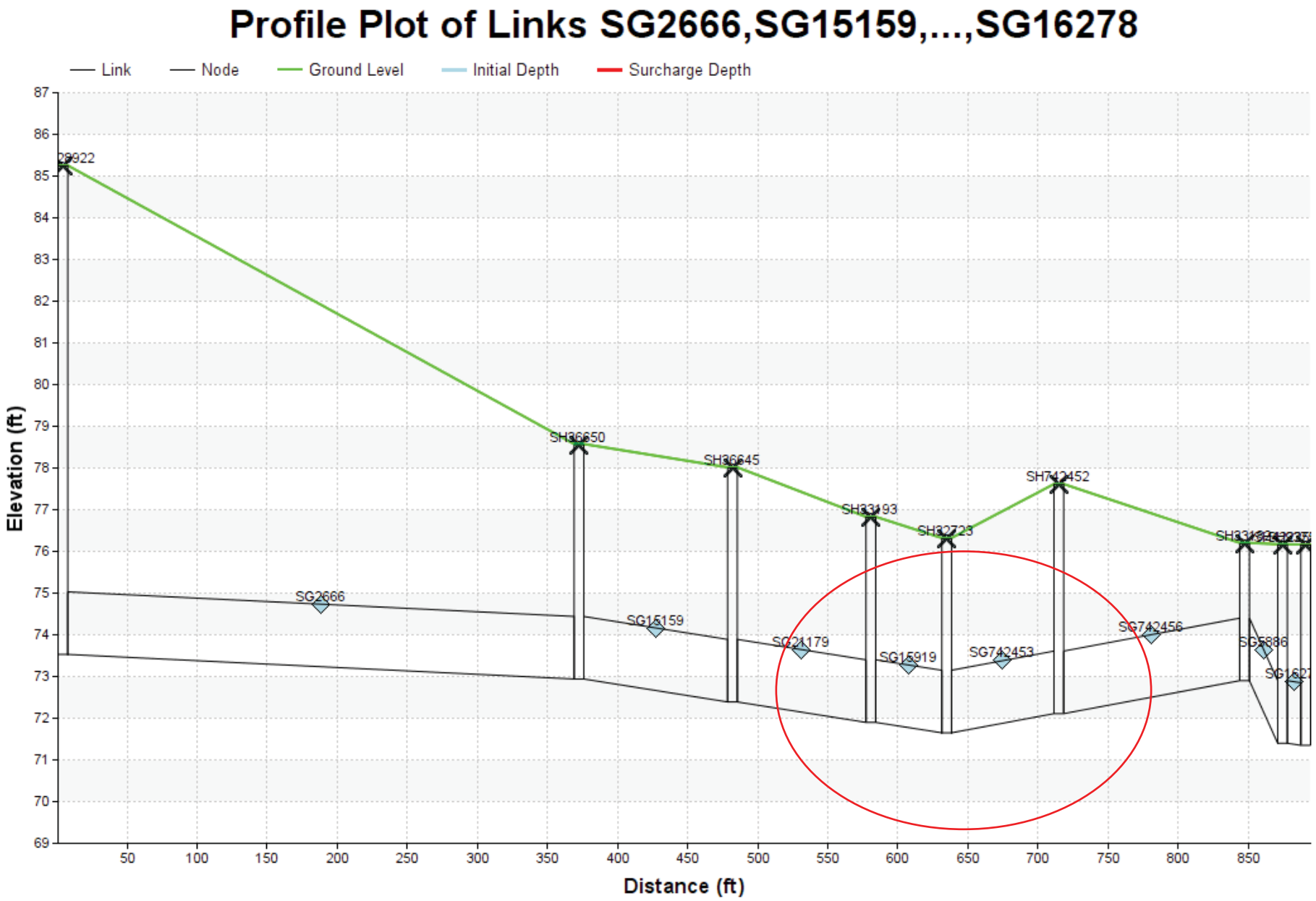
Profile Plot of Links SG3078,SG10357,...,SG1078698

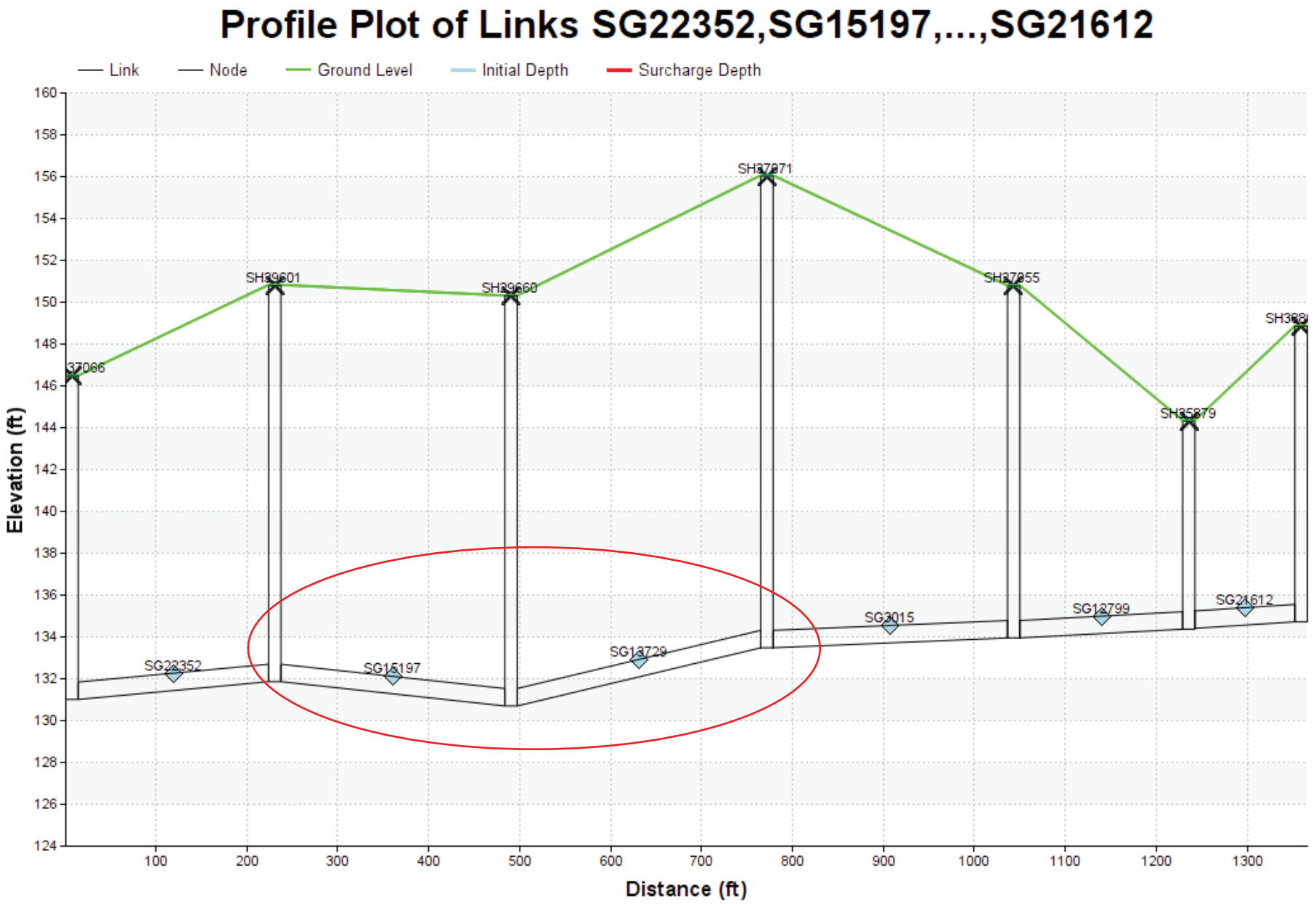



Profile Plot of Links SG8405,SG19388,...,SG8438
Link
Node
Ground Level
Initial Depth
Surcharge Depth
Elevation (ft)
Distance (ft)
SH37231
SG8405
SG19388
SG20405
SG8438
47.696

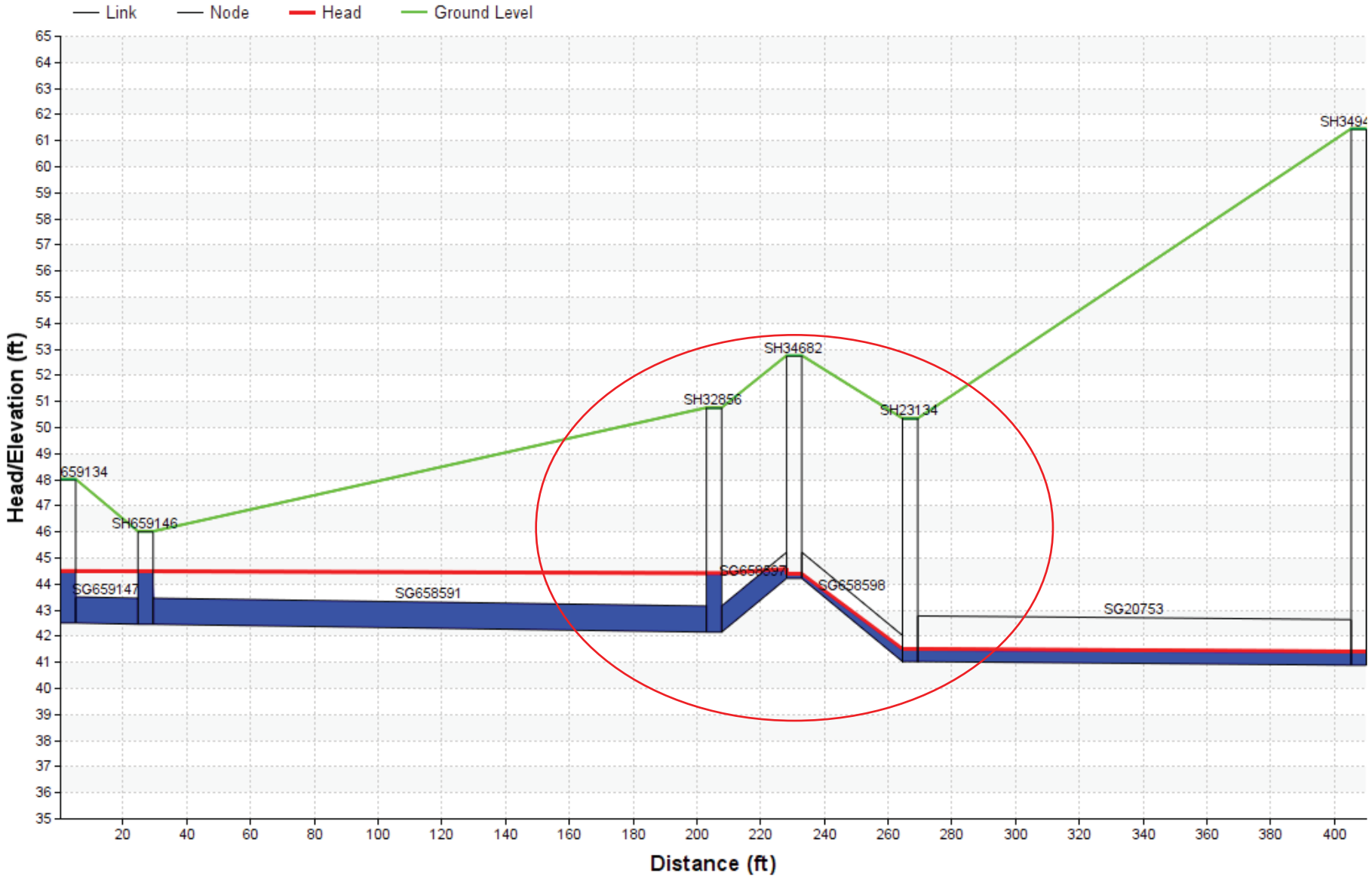

Profile Plot of Links SG10442,SG18699,...,SG19589
Link
Node
Ground Level
Initial Depth
Surcharge Depth
Elevation (ft)
Distance (ft)
SG10442
SG18699
SG17766
SG18034
SG14865
SG18051
SG18381
SG18589

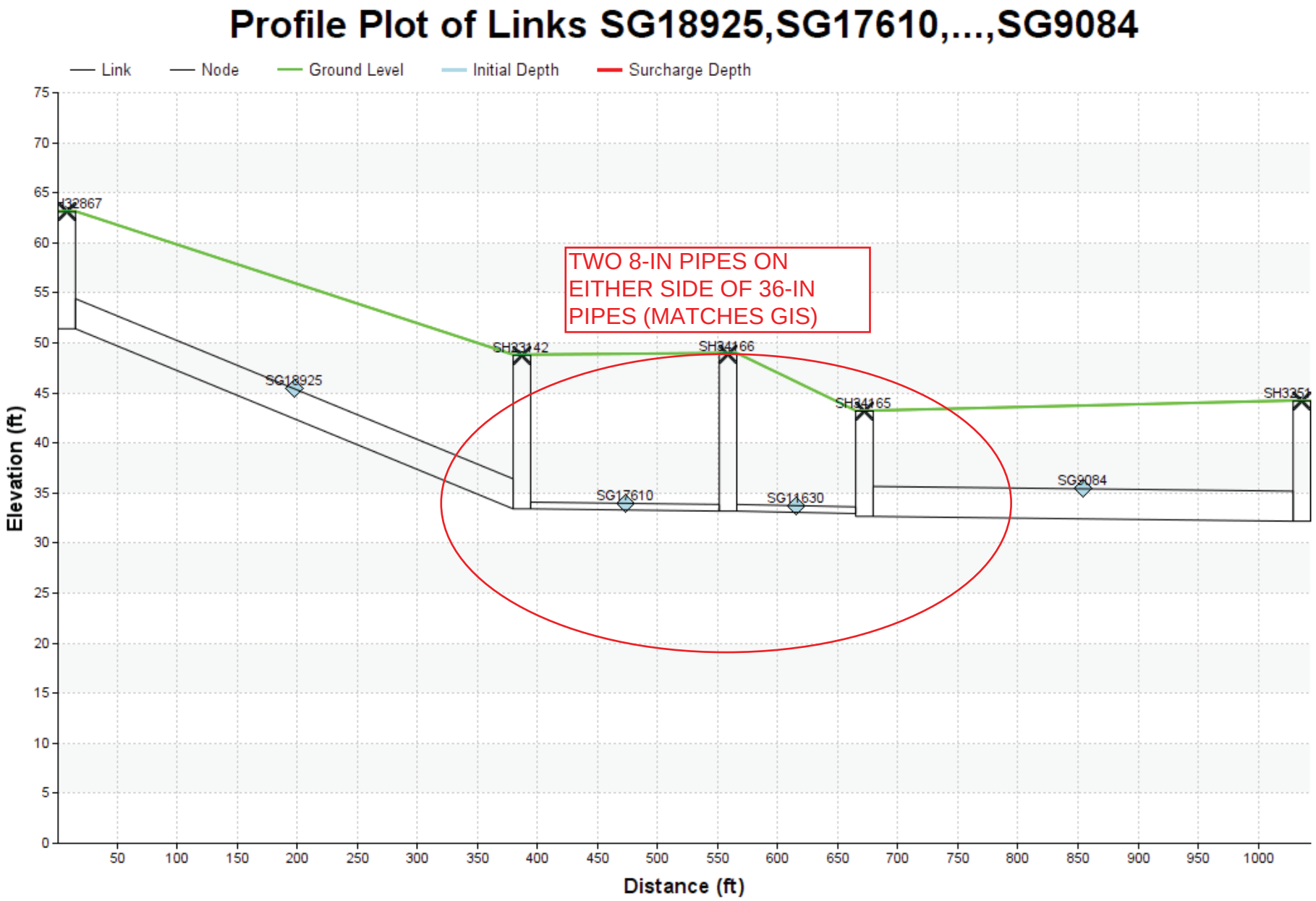

Profile Plot of Links SG1839,SG16516,...,SG18190
Link
Node
Ground Level
Initial Depth
Surcharge Depth
Elevation (ft)
Distance (ft)
SG1839
SG16516
SG13003
SG18190

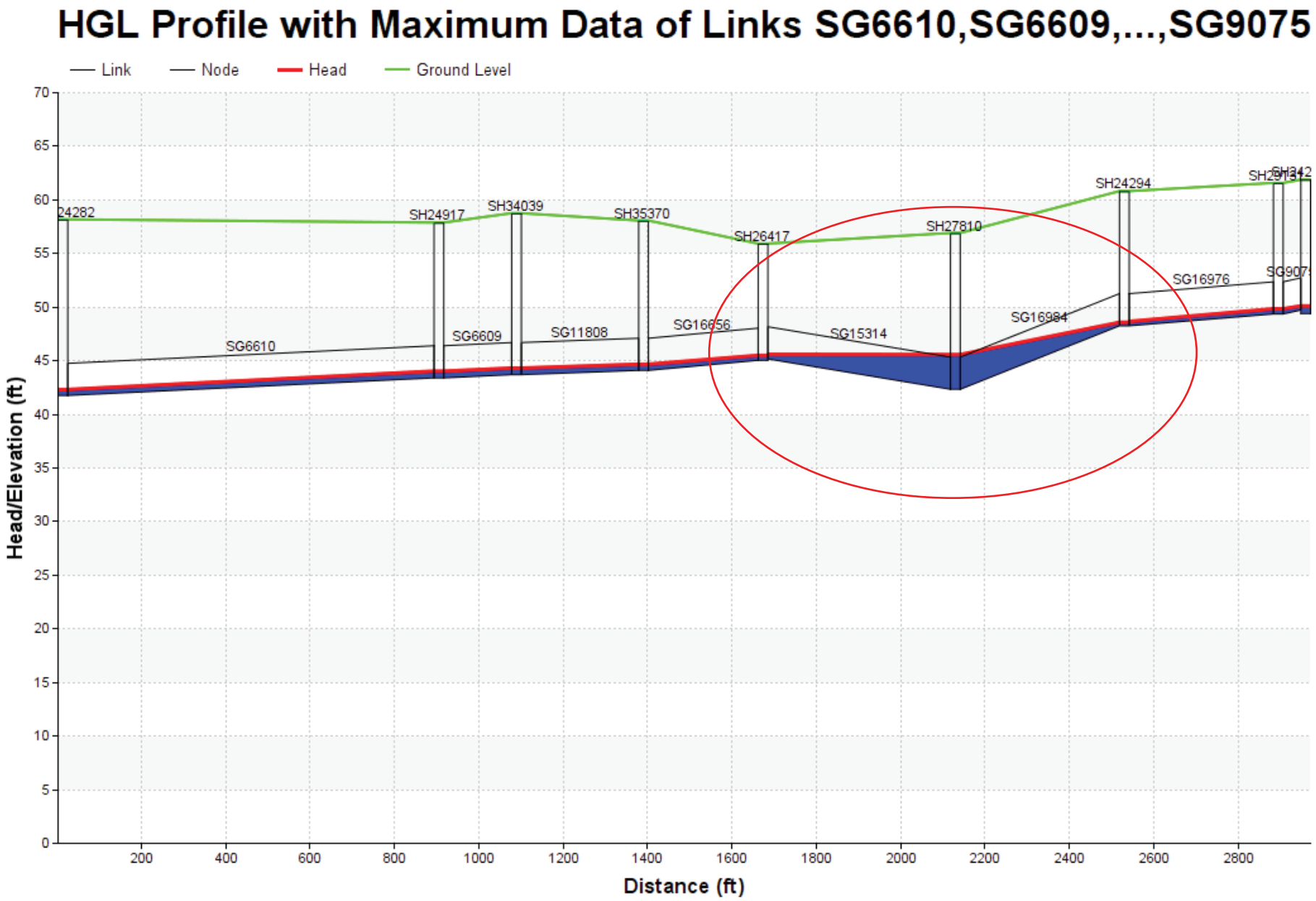

Profile Plot of Links SG2666,SG15159,...,SG16278
Link
Node
Ground Level
Initial Depth
Surcharge Depth
Elevation (ft)
Distance (ft)
SH36650
SH36645
SH33193
SH32723
SH742452
SG2666
SG15159
SG21179
SG15919
SG742453
SG742456
SG5886


Profile Plot of Links SG22352,SG15197,...,SG21612
Link
Node
Ground Level
Initial Depth
Surcharge Depth
Elevation (ft)
Distance (ft)
SH37066
SH39601
SH39660
SH37871
SH37855
SH35879
SG22352
SG15197
SG13729
SG3015
SG12799
SG21612

HGL Profile with Maximum Data of Links SG659147,SG658591,...,SG20753




Profile Plot of Links SG18925,SG17610,...,SG9084
Link
Node
Ground Level
Initial Depth
Surcharge Depth
TWO 8-IN PIPES ON EITHER SIDE OF 36-IN PIPES (MATCHES GIS)
SG18925
SG17610
SG14630
SG9084
Elevation (ft)
Distance (ft)


HGL Profile with Maximum Data of Links SG6610,SG6609,...,SG9075
Link
Node
Head
Ground Level
Head/Elevation (ft)
Distance (ft)
SH24282
SH24917
SH34039
SH35370
SH26417
SH27810
SH24294
SG6610
SG6609
SG11808
SG16656
SG15314
SG16984
SG16976
0
5
10
15
20
25
30
35
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55
60
65
70
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800

HGL Profile with Maximum Data of Links SG3825,SG692529,...,SG5068

