2012 Water Distribution System Master Plan

prepared for

City of Bossier City
Bossier City, Louisiana

August 2012

Project No. 63601

prepared by

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Bossier City, Louisiana

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INDEX AND CERTIFICATION

2012 Water Distribution System Master Plan
City of Bossier City, Louisiana

Project 63601

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Certification

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Justin Haydel, P.E.

Date: _____

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LIST OF ABBREVIATIONS

AWWA – American Water Works Association
BAFB – Barksdale Air Force Base
CBB – Cypress Black Bayou
CIP – capital improvements plan
EPA – Environmental Protection Agency
EPS – extended period simulation
fps – feet per second
gpcd – gallons per capita day
gpm – gallons per minute
gpmd – gallons per meter day
GIS – geographic information system
HSPS – high service pump station
HSP – high service pump
ISO – insurance services office
MG – million gallons
MGD – million gallons per day
psi – pounds per square inch
SCADA – system control and data acquisition
WMP – water master plan
WTP – water treatment plant
VFD – variable frequency drive

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1.0 EXECUTIVE SUMMARY

1.1 EXISTING WATER DISTRIBUTION SYSTEM

The City's WTP capacity is currently being expanded from 25.0 million gallons per day (MGD) to about 50.0 MGD and plans are to have full treatment capacity available later this year. The WTP has a total treated water storage capacity of approximately 4.5 million gallons (MG) located in two clearwells. Clearwell No. 1 includes 3.0 MG of on-site storage capacity supplies water to High Service Pump Station (HSPS) No. 1. Clearwell No. 3 includes 1.5 MG of on-site storage capacity supplies water to HSPS No. 3.

HSPS No. 1 draws water directly from Clearwell No. 1 for distribution to the City's customers and is equipped with six (6) vertical turbine pumps. The total rated capacity of HSPS No. 1 is 28.0 MGD and the firm capacity is 21.6 MGD with the largest pump out of service. HSPS No. 3 draws water directly from Clearwell No. 3 for distribution to the City's customers and is equipped with five (5) vertical turbine pumps. The total rated capacity of HSPS No. 3 is 25.9 MGD and the firm capacity is 19.4 MGD with the largest pump out of service.

Distribution system storage in Bossier City provides equalizing, fire suppression flow, and emergency storage volumes. Four elevated tanks serve the City's customers and include the 2.0 MG Benton Tower, 2.0 MG Northeast Tower, 1.5 MG Airline Tower, and the 2.0 MG 71 South Tower.

Bossier City's water distribution system includes a network of pipes ranging between 2 inches and 30 inches in diameter. The modeled pipe network is approximately 342 miles in total length. The predominant pipe materials, as modeled, include cast iron (CIP), ductile iron (DIP), and PVC at approximately 17 percent, 27 percent, and 54 percent respectively; this equates to approximately 59 miles of CIP, 93 miles of DIP, and 185 miles of PVC pipe.

1.2 POPULATION AND WATER DEMAND PROJECTIONS

The population projection selected for use in this WMP is based on a growth rate of 700 people per year for the entire service area and includes the City's existing wholesale customers. This projection is conservative for planning purposes and best represents recent population growth from 2000 thru 2010 as confirmed by City. The 2012 WMP population projections are listed below:

- Year 2010 population was 61,315 and serves as the baseline (data from US Census);
- Year 2022 population of 69,300;

- Year 2032 population of 76,300; and
- Year 2050 population of 88,900.

The historical per capita average day water use in 2000, 2010, and 2011 is respectively 171 gallons per capita day (gpcd), 197 gpcd, and 225 gpcd and includes wholesale customers. The per capita average in 2011 without wholesale customers is approximately 209 gpcd. The increase in per capita use is representative of dry years or periods. A per capita use of 209 gpcd represents the largest historical dry period known to date and is one component used in future years to project demand.

Nonrevenue water is currently a high percentage of the use at 23 percent; nonrevenue water should decrease as the City continues annual water auditing, small mains replacement program, universal metering, and meter replacement program. The nonrevenue portion is determined as the percentage increase in the average annual WTP production over the annual average day sales.

The demand projections applied in the hydraulic model include a 2022 maximum day demand of 34.1 MGD and a 2050 maximum day demand of 41.9 MGD. The potential exists for an additional wholesale customer in the future; BAFB could purchase water from the City. For planning purposes, the anticipated water demand used in this report for BAFB, or another wholesale customer, is 4.0 MGD beginning in 2020 and is included in the maximum day demand projections.

1.3 MODEL DEVELOPMENT AND CALIBRATION

Data pertinent to the water distribution system was provided by the City in shapefiles and an ArcGIS 9.0 Geodatabase which was used to construct the hydraulic model. The geodatabase includes a dataset that encompasses all relevant information for nodes, pipes, valves, tanks, booster pumps, and reservoirs feature classes which are imported into the hydraulic model. The nodal feature class in the geodatabase houses water demand information and includes existing metered water demands and future projected water demands. Existing metered sales data for each customer is fixed to a parcel GIS layer (this process is also referred to as Geocoding) to link customers to the closest node in the hydraulic model. The projected water demands for the City's current customers are also allocated to the hydraulic model by Geocoding for the year 2022 and 2050 model scenarios.

Nine data loggers were strategically placed in the distribution system to record pressure during the data monitoring and field testing period. Fire hydrant testing was conducted at 23 locations to stimulate hydraulic stress in the distribution system and the test results are used to calibrate the hydraulic model.

Model calibration is performed by adjusting the Hazen-Williams C-value that is assigned to each pipe segment to match the field testing data collected from each fire hydrant test and the data logger pressure information.

Diurnal curves are developed from information collected by the City's SCADA system during the data monitoring and field testing period. The diurnal evaluation results for each day include the equalization storage, minimum hour, and peak hour factors. The hydraulic model incorporates the minimum hour factor of 0.59 and the peak hour factor of 1.62; the equalization amount used in the storage analysis is 13 percent. Model scenarios for the current year, 2022, and 2050 planning periods are evaluated for the following demand conditions to determine the distribution system's capabilities, need, and location for additional supply, piping, storage, and pump stations:

- Maximum day;
- Peak hour;
- Minimum hour plus storage replenishment;
- Maximum day plus fire flow requirements as determined by the Insurance Services Office (ISO); and
- Extended period simulation for water age.

1.4 HYDRAULIC ANALYSIS AND RECOMMENDATIONS

1.4.1 Pumping

Between years 2022 and 2050, HSPS No. 1 should incrementally replace two of the existing small pumps with two large pumps for the projected maximum day and peak hour demand conditions and HSPS No. 3 should replace one of the existing small pumps with one large pump for redundancy to the pumping system as a whole. These improvements are driven by the maximum day demand of 41.9 MGD. Additionally, it is recommended to provide variable speed control on one large pump and one small pump in each HSPS to provide WTP operators more operational flexibility. Variable speed pump control, or variable frequency drives (VFDs), continually adjust the pump drive shaft rotational speed in order to maintain pressure and pressure and flow requirements. VFDs would be used to maintain a constant pump head under varying rates of flow and system demand.

1.4.2 Storage

Equalization and emergency storage are required for the operation of a distribution system. Equalizing demands are demands greater than the 24-hour average daily demand that result in depletion of system storage. The distribution system must be capable of replenishing equalization storage within the same

24-hour period of the maximum day demand. Emergency storage refers to water needed for fire flow and system failures. Available emergency storage is typically considered as the bottom portion of elevated storage tanks. Based on the maximum day demand of 34.1 MGD, the City currently has a storage surplus of 2.4 MG for equalization and emergency volumes through the year 2022.

1.4.3 Available Fire Flow

Fire flow contours for the existing distribution system under maximum day demand conditions are found in Figure 6.6. The available fire flow for the existing system under the maximum day demand condition ranges between 250 gpm and 6,000 gpm; the areas representing the low end of the fire flow range (less than 1,200 gpm) is a small amount with respect to the entire distribution system. The low end fire flow areas include dead end 4-inch diameter pipes; removing the locations connected to 4-inch dead end pipes from the analysis provides a better indication of the systems ability to deliver fire flow requirements. In doing so, the low-end range for available fire flow is between 900 gpm to 1,200 gpm. This range is generally sufficient for residential and some light commercial areas. The high-end range of available fire flow, greater than 1,200 gpm, represents the remainder of the system and is sufficient for all customer types including residential, light- and heavy-commercial, and industrial use areas.

1.4.4 Water Age

The distribution system locations resulting in the highest water age under average day demand conditions include the vicinity just north and east of the Northeast Tower in the area bound by Landau Land and Stockwell Road, and also in the area south and east of the 71 South Tower. The average water age in these areas ranges from 3.8 days to 4.4 days. The average age over the entire distribution system based on average day demand conditions is approximately 1.2 days (27 hours).

The distribution system locations resulting in the highest water age under average day demand conditions include a smaller area of the vicinities described above for the average day demand water age contours. The average water age in these areas ranges from 2.0 days to 2.8 days. The average age over the entire distribution system based on maximum day demand conditions is approximately 0.7 days (16 hours).

1.4.5 Critical Water Mains

The pipe segments identified as critical mains are those carrying greater than one third of the total system demand under maximum day conditions and not directly connected to HSPS discharge (i.e. yard piping). These pipe segments are removed from the model to determine the effect on the system of losing the main to unforeseeable conditions such as a break.

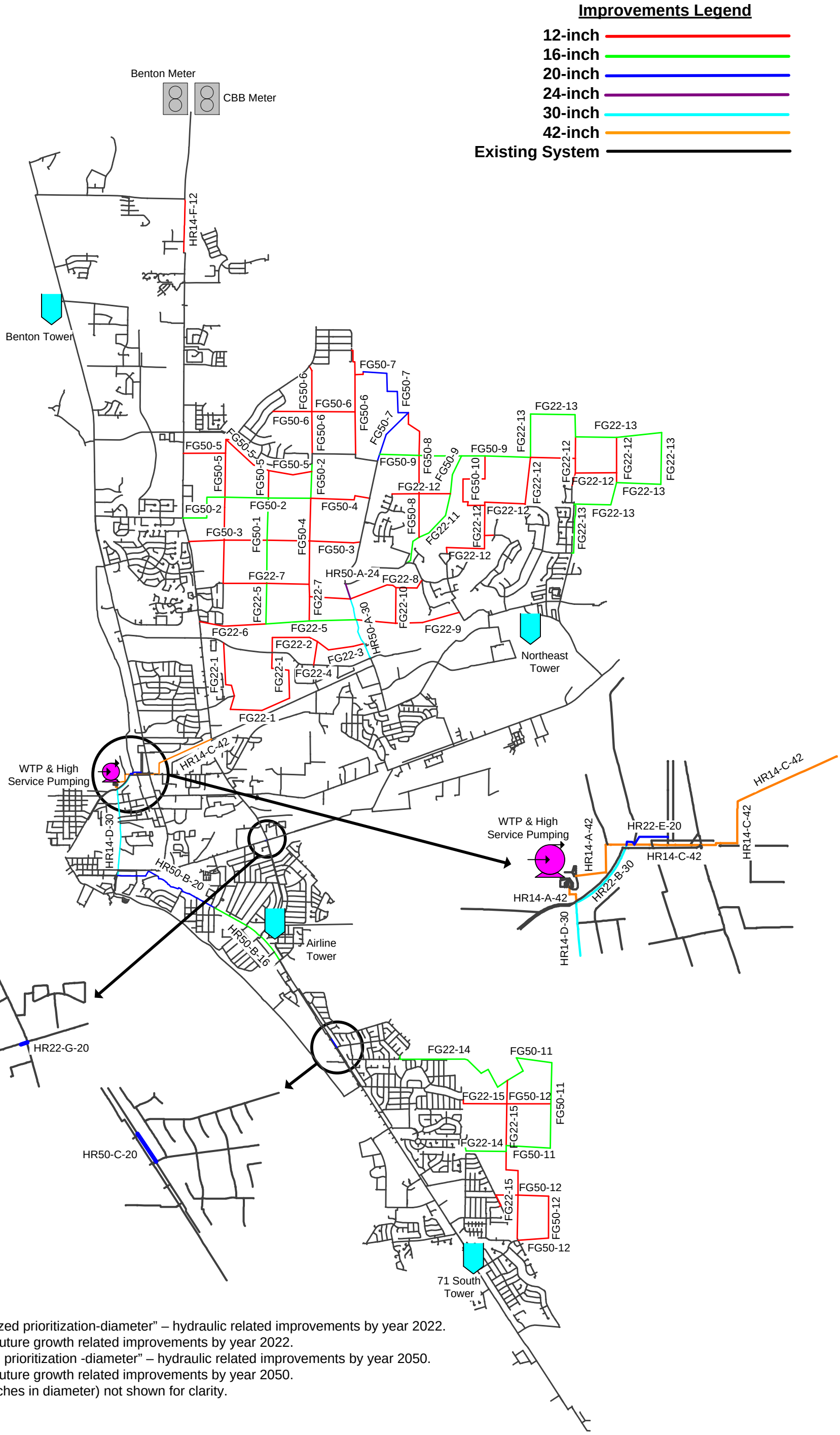
The most critical pipes in the distribution system are located near the WTP HSPS in the 20-inch water main along Shed road between Hamilton Road and Field Street. The pipes identified as critical mains convey greater than one third of the total system flow which is approximately 5,500 gpm (8.0 MGD). Removing any one of the large capacity critical mains from service can increase HSPS discharge pressure between 14 psi and 30 psi; these water mains generally extend east from the WTP and, under normal conditions (no critical main breaks), convey approximately between 11.1 to 15.3 MGD under the maximum day demand condition at a HSPS discharge pressure of approximately 93 psi. If any one of the critical mains break or loose service there can be a resulting loss in capacity between 4.0 MGD and 8.7 MGD in the distribution system.

1.4.6 Transmission and Water Mains

The need for transmission and water main improvements is driven by increased hydraulic capacity, reliability, and redundancy. The recommended improvements are shown in Figure 1.1 and are color coded with unique labels that correspond to specific items in the capital improvements plan by improvement year. The labeling also represents prioritization for implementation of the hydraulic related ("HR") improvements; future growth ("FG") improvements do not include prioritization and they should be implemented based on necessity and by virtue of where growth actually occurs. A description of the labeling scheme shown in Figure 1.1 is listed below:

- "HR14-alphabetized prioritization-diameter" – hydraulic related improvements for implementation by year 2022;
- "HR22-alphabetized prioritization-diameter" – hydraulic related improvements for the year 2022 distribution system; this includes improvements needed for reliability and redundancy;
- "FG22-number" – future growth related improvements for the year 2022 distribution system;
- "HR50-alphabetized prioritization -diameter" – hydraulic related improvements for the year 2050 distribution system; this includes improvements needed for reliability and redundancy;
- "FG50-number" – future growth related improvements for the year 2050 distribution system; and
- "SM" – small mains replacement program to be implemented throughout the planning period or as funds become available.

The small mains, pipes less than or equal to 4-inches in diameter, eligible for replacement should first be evaluated by City Staff to determine if they are part of the main water distribution system or just service lines to dead end pipes.



Notes:

1. “HR14/22-alphabetized prioritization-diameter” – hydraulic related improvements by year 2022.
2. “FG22-diameter” – future growth related improvements by year 2022.
3. “HR50-alphabetized prioritization -diameter” – hydraulic related improvements by year 2050.
4. “FG50-diameter” – future growth related improvements by year 2050.
5. Small mains (< 4-inches in diameter) not shown for clarity.

NOT TO SCALE

Figure 1.1

City of Bossier City, Louisiana

Distribution System Improvements Summary

When the mix of residential and commercial land use is determined for future growth areas as shown in Figure 1.2, the hydraulic model should be revaluated to determine branching line sizes from the water main improvements. The developer's portion of the cost for water transmission in these future growths areas is typically determined by the City on a project by project basis.

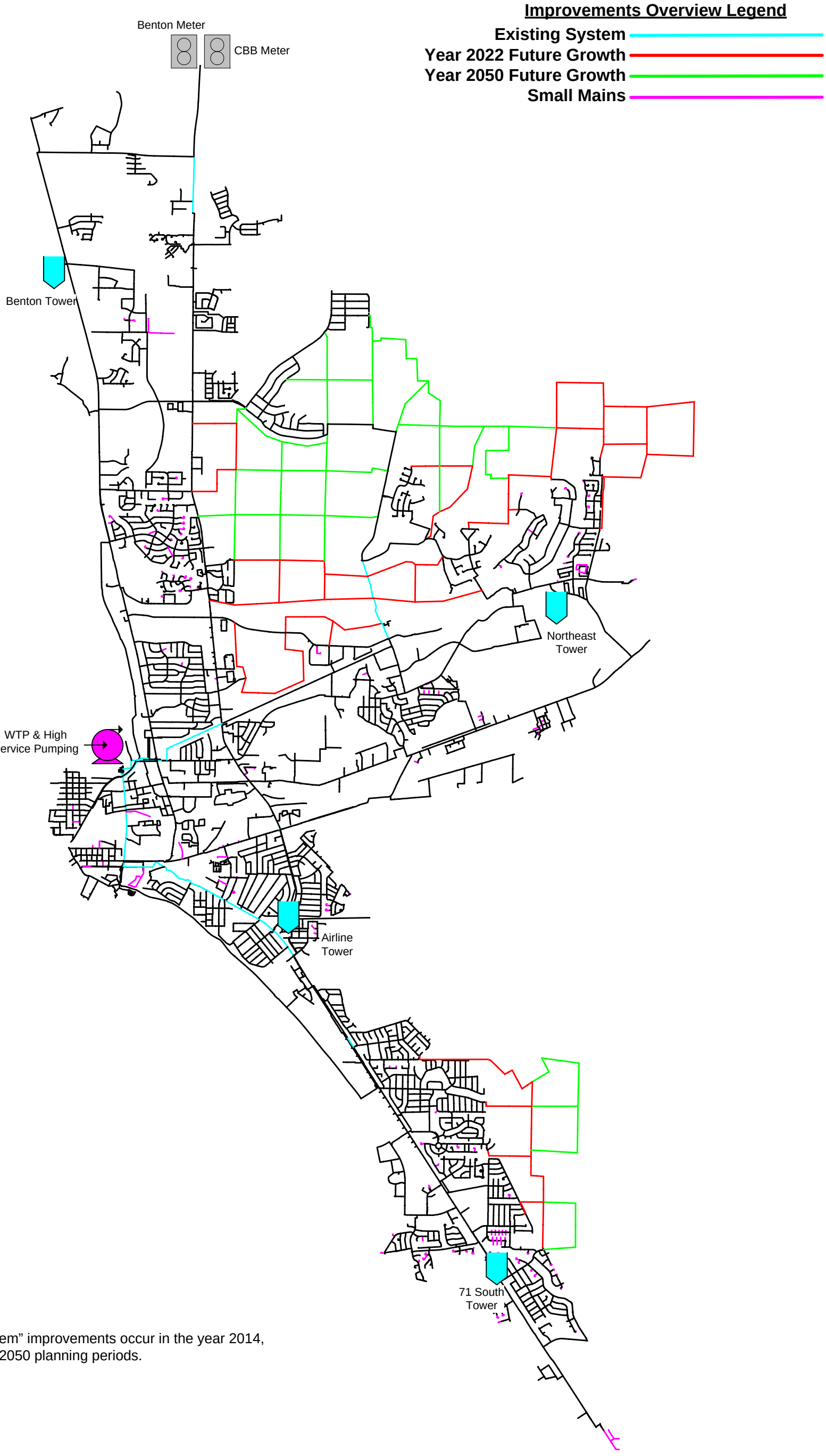
1.4.7 Other Recommendations

The City should consider conducting a water audit using the concepts and philosophies outlined in AWWA M36 to develop baseline metrics that will assist the City in understanding the nonrevenue water amount. This type of water audit defines nonrevenue water in the form of real losses and apparent losses for which costs can be assigned. Apparent losses represent water that is supplied, but not paid for and are valued at the prevailing retail rate; this represents revenues that can be recovered. Real losses represent water that has been extracted, treated, energized, and successfully delivered to customers and is valued at the variable cost to produce water; this represents potential savings in operating costs for power, maintenance, and treatment. Developing the baseline metrics for the water audit prior to the city wide execution of the meter replacement program can help determine the true value of the program with respect to apparent losses before and after the programs implementation.

On-going hydraulic modeling efforts should continue as improvements are phased in to determine final design level details for hydraulic related improvements. Other benefits of on-going hydraulic modeling include final sizing or sizing options for branching water mains from the future growth improvements; Contractors almost always request the available fire flow capacity for branching water mains as well.

1.5 OPINIONS OF PROBABLE COST

Costs opinions are itemized by type, existing system or future growth, and by planning year. Costs for the existing system include an alphabetized priority ranking. There is no prioritization for future growth-related improvements, as they should be implemented based on necessity by virtue of where actual growth and development is occurring beyond the City's existing distribution system. The small mains, pipes less than or equal to 4-inches in diameter, eligible for replacement should first be evaluated by City Staff to determine if they are part of the main water distribution system or just service lines to dead end pipes.



Notes:
1. The “existing system” improvements occur in the year 2014, year 2022, and year 2050 planning periods.

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Figure 1.2

City of Bossier City, Louisiana

Distribution System Improvements by Planning Period

The opinions of probable cost for the recommended existing system improvements and for future growth are listed in Table 1.1. Each improvement has a unique naming scheme that corresponds to Figure 1.1. The total opinion of probable cost for the capital improvements by planning period is listed below:

- Year 2014 improvements for hydraulics and reliability total $8.7 million;
- Year 2022 improvements for hydraulics and reliability total $0.9 million;
- Year 2022 improvements for future growth total $14.2 million;
- Year 2050 improvements for hydraulics and reliability total $8.0 million;
- Year 2050 improvements for future growth total $12.9 million;
- Small mains replacement total $13.4 million; and
- All improvements listed above total **$58.1 million.**

* * * * *

Table 1.1
City of Bossier City, LA
Opinions of Probable Cost for Capital Improvements

Year 2014 and Year 2022 Improvements for Hydraulics and Reliability					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
HR14-A-42	WTP Transmission Mains (HSPS Discharge)	LF	42	1,620	$1,237
HR22-B-30	Old Benton Rd. Crosstie	LF	30	1,270	$349
HR14-C-42	42-inch Water Main Extension from HR22-B-30	LF	42	5,920	$4,672
HR14-D-30	Hamilton Rd. Extension from HR22-B-30	LF	30	5,340	$2,287
HR22-E-20	Shed Rd. Parallel Extension from HR22-B-30	LF	20	800	$472
HR14-F-12	Airline Dr. Extension	LF	12	2,630	$498
HR22-G-20[1]	BAFB Extension	LF	20	150	$71
			Subtotal:		**$9,587**
Year 2022 Improvements for Future Growth[2, 3]					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
FG22-1	Future Growth	LF	12	12,020	$1,053
FG22-2	Future Growth	LF	12	3,770	$466
FG22-3	Future Growth	LF	12	3,100	$418
FG22-4	Future Growth	LF	12	1,460	$302
FG22-5	Future Growth	LF	16	8,080	$982
FG22-6	Future Growth	LF	12	4,110	$490
FG22-7	Future Growth	LF	12	7,570	$736
FG22-8	Future Growth	LF	12	7,480	$730
FG22-9	Future Growth	LF	12	6,460	$657
FG22-10	Future Growth	LF	12	2,200	$354
FG22-11	Future Growth	LF	16	5,500	$731
FG22-12	Future Growth	LF	12	26,550	$2,087
FG22-13	Future Growth	LF	16	24,920	$2,616
FG22-14	Future Growth	LF	16	11,190	$1,283
FG22-15	Future Growth	LF	12	15,320	$1,288
			Subtotal:		**$14,193**
Year 2050 Improvements for Hydraulics and Reliability					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
HR50-A-30	Swan Lake Road Improvements	LF	30	4,420	$1,849
HR50-A-24	Swan Lake Road Improvements	LF	24	980	$280
HR50-B-20[1]	Barksdale Blvd. from HR22-D-30 to Gilbert Dr.	LF	20	7,030	$1,942
HR50-B-16[1]	Barksdale Blvd. from HR50-B-20 to Beverly St.	LF	16	5,180	$1,744
HR50-C-20	Barksdale Blvd. from Holiday Pl. to Bellaire Blvd.	LF	20	630	$231
Large Pump[4]	Two in HSPS No. 1 and One in HSPS No. 3.	Each	--	3	$1,906
			Subtotal:		**$7,951**
Year 2050 Improvements for Future Growth[2, 3]					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
FG50-1	Future Growth	LF	16	5,260	$708
FG50-2	Future Growth	LF	16	11,330	$1,297
FG50-3	Future Growth	LF	12	10,590	$951
FG50-4	Future Growth	LF	12	9,150	$849
FG50-5	Future Growth	LF	12	14,460	$1,227
FG50-6	Future Growth	LF	12	17,810	$1,465
FG50-7	Future Growth	LF	20	8,710	$1,475
FG50-8	Future Growth	LF	12	8,060	$771
FG50-9	Future Growth	LF	16	11,780	$1,341
FG50-10	Future Growth	LF	12	5,800	$610
FG50-11	Future Growth	LF	16	12,240	$1,385
FG50-12	Future Growth	LF	12	9,070	$843
			Subtotal:		**$12,922**
Existing System Small Mains Replacement[5]					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
--	Small mains less than or equal to 4-inches	LF		47,290	$13,436
			Subtotal:		**$13,436**
			Sum Total:		**$58,089**

Notes:
1. This improvement is highly dependent on a single BAFB metering location as modeled. If multiple connections, or metering locations, to the City's distribution system are allowed, then this improvement should be confirmed for necessity.
2. Future growth improvements do not include prioritization and they should be implemented based on necessity and by virtue of where growth actually occurs.
3. When the mix of residential and commercial land use is determined in future development areas, the hydraulic model should be revaluated to determine branching line sizes from the water main improvements shown in Figure 6.14.
4. Each new large pump shall replace an existing small pump.
5. The small diameter pipes eligible for replacement should first be evaluated to determine if they are part of the main water distribution system or just service lines to dead end pipes. Therefore, replacing all 4-inch dead end service lines is not required and should be evaluated on actual fire hydrant location basis.

2.0 INTRODUCTION

2.1 PURPOSE

As part of a continuing and evolving planning process for the City of Bossier City, hereinafter called City, this report provides the results of the evaluation of the City's water distribution system using a hydraulic model. The newly constructed and calibrated hydraulic model assists in the master planning efforts for the distribution system improvements needed to meet current and future demands. Distribution system improvements are prioritized by the current year, year 2022, and year 2050 planning periods. The capital improvements plan (CIP) is developed through year 2022. As improvements are scheduled for engineering and construction, final design-level modeling should be conducted to confirm proposed operating conditions and design criteria with the hydraulic model and/or system testing.

2.2 SCOPE

The major water master plan (WMP) tasks include the following:

- Construct GIS-based hydraulic model from GIS files and perform the following tasks:
  - Distribute existing demands based on physical address;
  - Add future demand alternatives for the City service area; and
  - Run and setup the model based on existing facilities and demands.
- Prepare customer and water demand projections through year 2050;
- Distribute demand scenarios for the current year, year 2022, and year 2050 planning periods to the model;
- Perform three days of field testing based on the testing plan developed at the project initiation meeting;
- Complete the storage analysis and perform the following tasks:
  - Compile field test and SCADA data into diurnal format for the existing water distribution system;
  - Use diurnal data to develop peak and minimum hour factors and the diurnal pattern for extended period simulation (EPS) runs in the model;
  - Determine the equalization storage factor and minimum storage required for current and future years and when deficiencies will occur based on the water demand projection;
- Calibrate and verify model accuracy from field testing metrics;
- Perform hydraulic analysis for the current year, year 2022, and year 2050 planning periods under the maximum day, maximum day plus available fire flow, peak hour on the maximum day, and minimum hour plus tank replenishment on the maximum day water demand conditions:

  - Determine the improvements required to meet the projected water demands for each planning period; and
  - Prepare system map of the proposed improvements for year 2022 (CIP) and year 2050.
- Perform EPS scenario with the model to evaluate water age and storage capacity for the current year distribution system under the average day and maximum day demand conditions; and
- Prepare opinion of probable costs and implementation schedule for improvements resulting from the hydraulic analyses in this WMP.

* * * * *

3.0 EXISTING WATER DISTRIBUTION SYSTEM

The existing distribution system includes the water treatment plant (WTP) clearwells and two high service pump stations, pipelines, storage tanks, and two wholesale customers and are discussed below and shown in Figure 3.1; this figure is intended to provide a general depiction of the City's water system. Additionally, this figure also identifies the SCADA information used during field testing.

3.1 PRODUCTION AND PUMPING

The City's WTP capacity is currently being expanded from 25.0 million gallons per day (MGD) to 50.0 MGD and plans are to have full treatment capacity available later this year. The WTP has a total treated water storage capacity of approximately 4.5 million gallons (MG) located in two clearwells. Clearwell No. 1 includes 3.0 MG of on-site storage capacity supplies water to High Service Pump Station (HSPS) No. 1. Clearwell No. 3 includes 1.5 MG of on-site storage capacity supplies water to HSPS No. 3. Specific pump station information is included in Tables 3.1, 3.2, 3.3, and 3.4

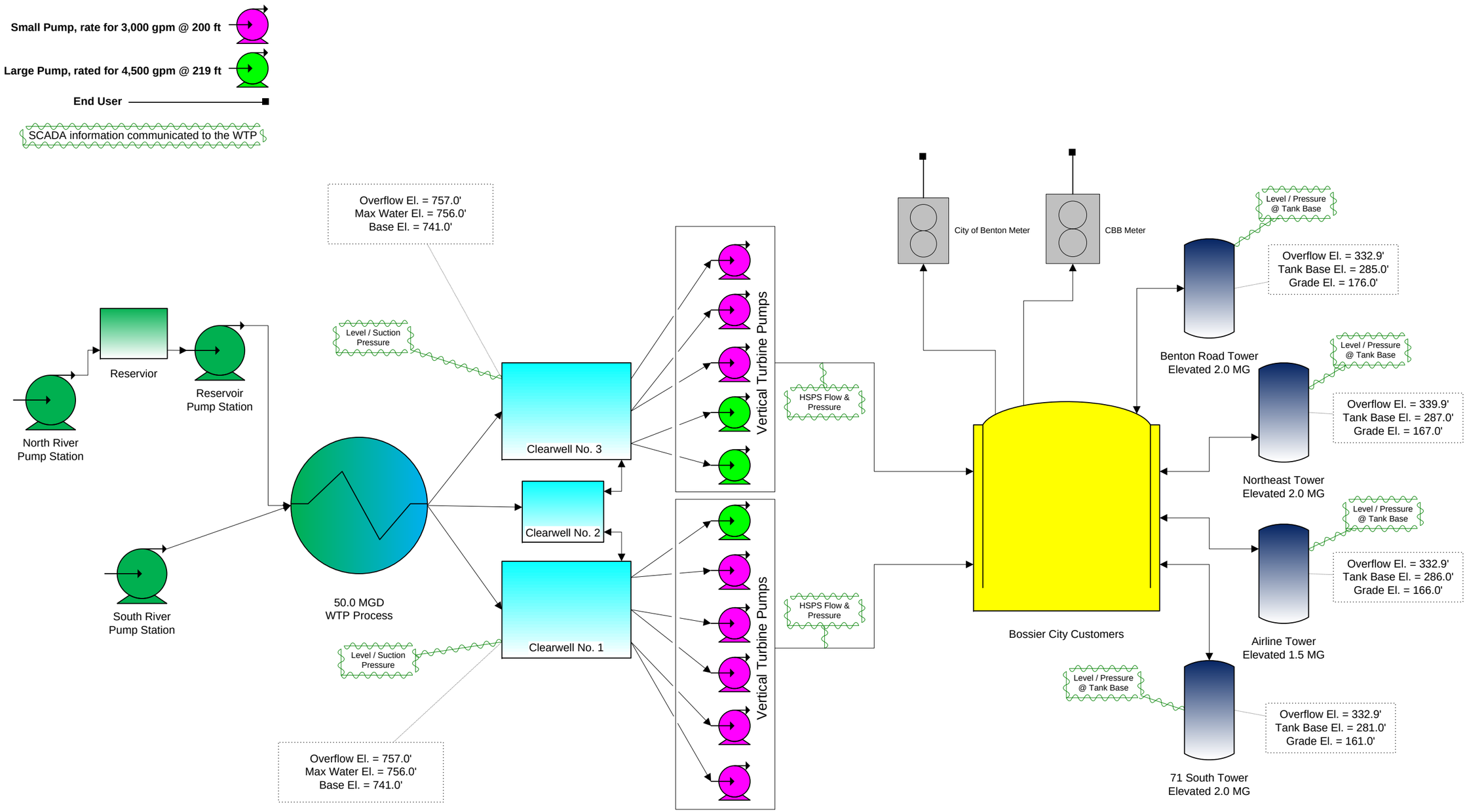
HSPS No. 1 draws water directly from Clearwell No. 1 for distribution to the City's customers through a 30-inch common discharge header and is equipped with six (6) vertical turbine pumps. The total rated capacity of HSPS No. 1 is 28.0 MGD and the firm capacity is 21.6 MGD with the largest pump out of service, which is High Service Pump (HSP) No. 5414.

HSPS No. 3 draws water directly from Clearwell No. 3 for distribution to the City's customers through a common discharge header of increasing size and is equipped with five (5) vertical turbine pumps. The total rated capacity of HSPS No. 3 is 25.9 MGD and the firm capacity is 19.4 MGD with the largest pump out of service, which can be either HSP No. 5434 or HSP No. 5435.

The total rated capacity for WTP high service pumping is 53.9 MGD. There are no open slots available in either HSPS for future pump addition. Pump curve data and other information for each HSP are listed in Tables 3.1, 3.2, 3.3, and 3.4. Copies of each HSP curve and as-built drawings of each HSPS are located in Appendix A.

3.2 DISTRIBUTION SYSTEM STORAGE

Distribution system storage in Bossier City provides equalizing, fire suppression flow, and emergency storage volumes. Four elevated tanks serve the City's customers and include the 2.0 MG Benton Tower, 2.0 MG Northeast Tower, 1.5 MG Airline Tower, and the 2.0 MG 71 South Tower.



Notes:
1. SCADA information listed in this figure only represents what was collected during field testing for preparation of this report.
2. Total potable water storage at the WTP is approximately 4.5 MG amongst all three (3) clearwells.

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Figure 3.1

City of Bossier City, Louisiana

Existing Supply & Distribution System Connectivity &

Table 3.1
City of Bossier City, LA
HSPS No. 1: Pump Curve Characteristics

High Service Pump No.	Shutoff Head (ft)	Rated Duty Point		High Flow @ Low Head		Efficiency @ Duty Point (percent)	Discharge Elevation[2] (ft)
		Flow (gpm)	Head (ft)	Flow (gpm)	Head (ft)		
5411	Note 1	3,000	200	Note 1	Note 1	Note 1	179.0
5412	Note 1	3,000	200	Note 1	Note 1	Note 1	179.0
5413	Note 1	3,000	200	Note 1	Note 1	Note 1	179.0
5414	350	4,500	219	6,400	130	82.0	179.0
5415	Note 1	3,000	200	Note 1	Note 1	Note 1	179.0
5416	Note 1	3,000	200	Note 1	Note 1	Note 1	179.0

Notes:

1. Certified factory tested pump curves are not available; therefore, these cells are not populated with any information.
2. Elevation not shown on HSPS No. 3 drawings in Appendix A; elevation listed is shown on pump manufacturer's drawing in Appendix A.

Table 3.2
City of Bossier City, LA
HSPS No. 1: Additional Pump Information

High Service Pump	Year Manufactured	Pump Manufacturer	Model Number	Number of Stages	Horsepower (Hp)	Speed (rpm)	Driver Type
5411	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant
5412	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant
5413	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant
5414	2009	Fairbanks Morse	7100AW	2	350	1,785	Constant
5415	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant
5416	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant

Table 3.3
City of Bossier City, LA
HSPS No. 3: Pump Curve Characteristics

High Service Pump No.	Shutoff Head (ft)	Rated Duty Point		High Flow @ Low Head		Efficiency @ Duty Point (percent)	Discharge Elevation[2] (ft)
		Flow (gpm)	Head (ft)	Flow (gpm)	Head (ft)		
5431	Note 1	3,000	200	Note 1	Note 1	Note 1	178.0
5432	Note 1	3,000	200	Note 1	Note 1	Note 1	178.0
5433	Note 1	3,000	200	Note 1	Note 1	Note 1	178.0
5434	350	4,500	219	6,400	130	82.0	178.0
5435	350	4,500	219	6,400	130	82.0	178.0

Notes:

1. Certified factory tested pump curves are not available; therefore, these cells are not populated with any information.
2. Elevation listed is shown on HSPS No. 3 drawings in Appendix A; elevation shown on pump manufacturer's drawing in Appendix A indicates 178.4 ft.

Table 3.4
City of Bossier City, LA
HSPS No. 3: Additional Pump Information

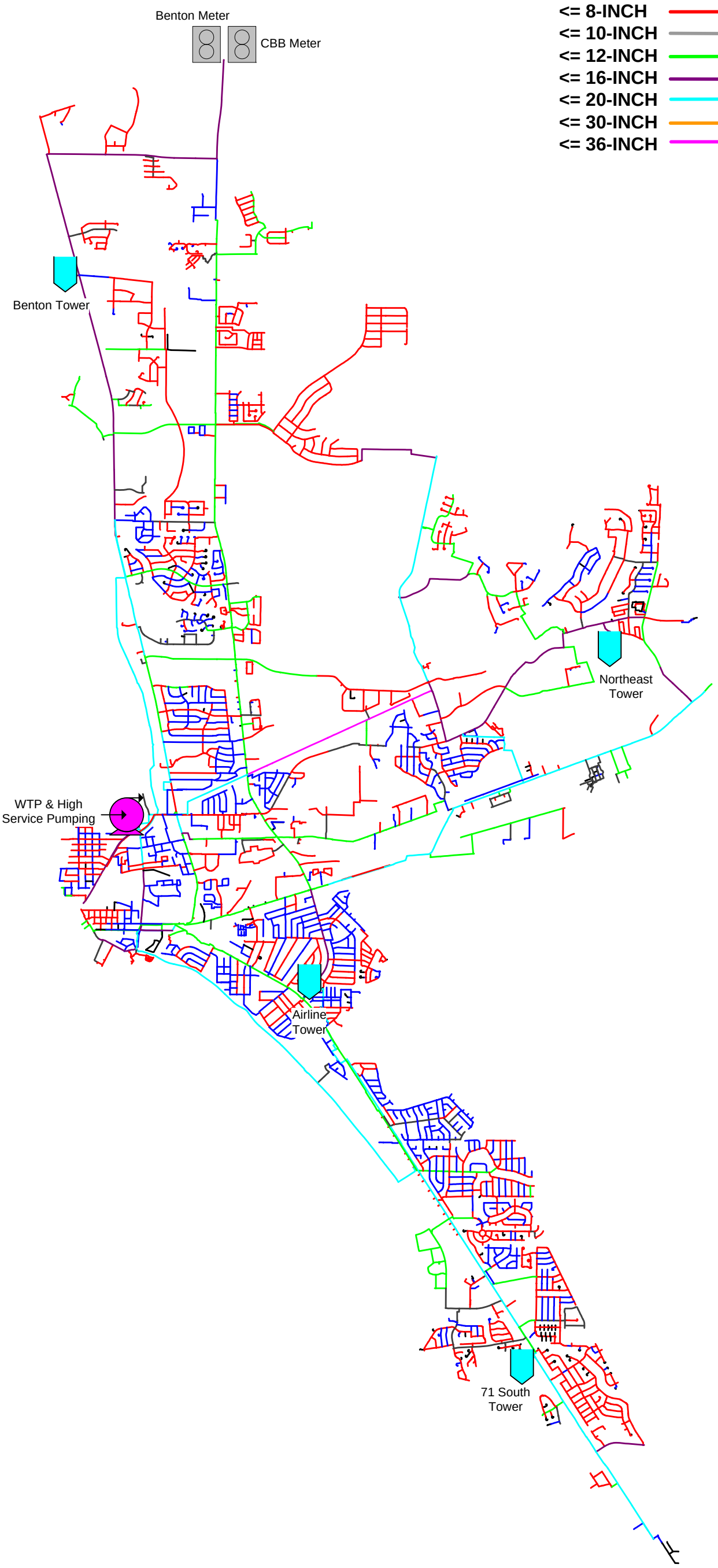
High Service Pump	Year Manufactured	Pump Manufacturer	Model Number	Number of Stages	Horsepower (Hp)	Speed (rpm)	Driver Type
5431	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant
5432	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant
5433	1997	Layne/Verti-Line	18 AWM	5	200	1,180	Constant
5434	2009	Fairbanks Morse	7100AW	2	350	1,785	Constant
5435	2009	Fairbanks Morse	7100AW	2	350	1,785	Constant

The City owns and maintains all tanks. Each tank shares an overflow elevation of 332.9 ft with the exception of the Northeast Tower which is set at 339.9 ft. The Benton and Northeast towers have a 16-inch inlet/outlet transfer pipe and the Airline and 71 South towers have a 20-inch inlet/outlet transfer pipe. The capacity, grade elevation, tank base elevation, and overflow elevation for each tower are shown in Figure 3.1.

3.3 DISTRIBUTION SYSTEM PIPING

Bossier City's water distribution system includes a network of pipes ranging between 2 inches and 30 inches in diameter. For the purposes of this report and hydraulic model, only pipes greater than or equal to 4 inches in diameter are discussed and evaluated. The mix of pipe diameters included in the hydraulic model is shown in Figure 3.2. Approximately 67 percent of the pipes modeled consist of 6-inch and 8-inch diameter pipes which equates to just over 228 miles of pipe; the largest water main in the model is the recently installed 36-inch diameter pipe between Airline and Swan Lake Road. The modeled pipe network is approximately 342 miles in total length. The predominant pipe materials, as modeled, include cast iron (CIP), ductile iron (DIP), and PVC at approximately 17 percent, 27 percent, and 54 percent respectively; this equates to approximately 59 miles of CIP, 93 miles of DIP, and 185 miles of PVC pipe.

* * * * *



PIPE LEGEND

- <= 4-INCH
- <= 6-INCH
- <= 8-INCH
- <= 10-INCH
- <= 12-INCH
- <= 16-INCH
- <= 20-INCH
- <= 30-INCH
- <= 36-INCH

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2137 A Quail Run Drive, Suite A
Baton Rouge, Louisiana 70808

Burns & McDonnell
SINCE 1898

Figure 3.2

City of Bossier City, Louisiana

Existing Distribution System Piping (as modeled)

4.0 POPULATION AND WATER DEMAND PROJECTIONS

This section of the report discusses the population projections, customer usage by customer class, customer projections, and water demand projections for Bossier City. Reporting intervals for the population, customer, and water demand projections listed the years 2022, 2032, and 2050. The year 2032 is only reported to illustrate a 20-year forecast. Water demand projections for years 2022 and 2050 are the only future planning periods evaluated in the hydraulic model; the existing system demands are also evaluated in the hydraulic model.

4.1 POPULATION PROJECTION

Historical population data and the population projections are shown in Figure 4.1. The population projection selected for use in this WMP is based on a growth rate of 700 people per year for the entire service area and includes the City's existing wholesale customers. This projection is conservative for planning purposes and best represents recent population growth from 2000 thru 2010 as confirmed by City. Other population projections that were considered, but not selected, based on different growth rates, are also shown in Figure 4.1. The population projections from the 2002 WMP track closely with the projections selected for use in this WMP. The 2012 WMP population projections are listed below:

- Year 2010 population was 61,315 and serves as the baseline (data from US Census);
- Year 2022 population of 69,300;
- Year 2032 population of 76,300; and
- Year 2050 population of 88,900.

4.2 CUSTOMER USAGE

The historical per capita average day water use in 2000, 2010, and 2011 is respectively 171 gallons per capita day (gpcd), 197 gpcd, and 225 gpcd and includes wholesale customers; this information, along with population, customer meter counts, sales data, nonrevenue water, average day demands, and maximum day demands, is also listed in Table 4.1. The per capita average in 2011 without wholesale customers is approximately 209 gpcd.

The increase in per capita use is representative of dry years or periods. A per capita use of 209 gpcd represents the largest historical dry period known to date and is used in future years to project demand in this WMP. Nonrevenue water is currently a high percentage of the use at 23 percent; nonrevenue water should decrease as the City continues annual water auditing, small mains replacement program, and conservation efforts. The nonrevenue portion is determined as the percentage increase in the average annual WTP production over the annual average day sales.

Figure 4.1
City of Bossier City, LA
Population Projections

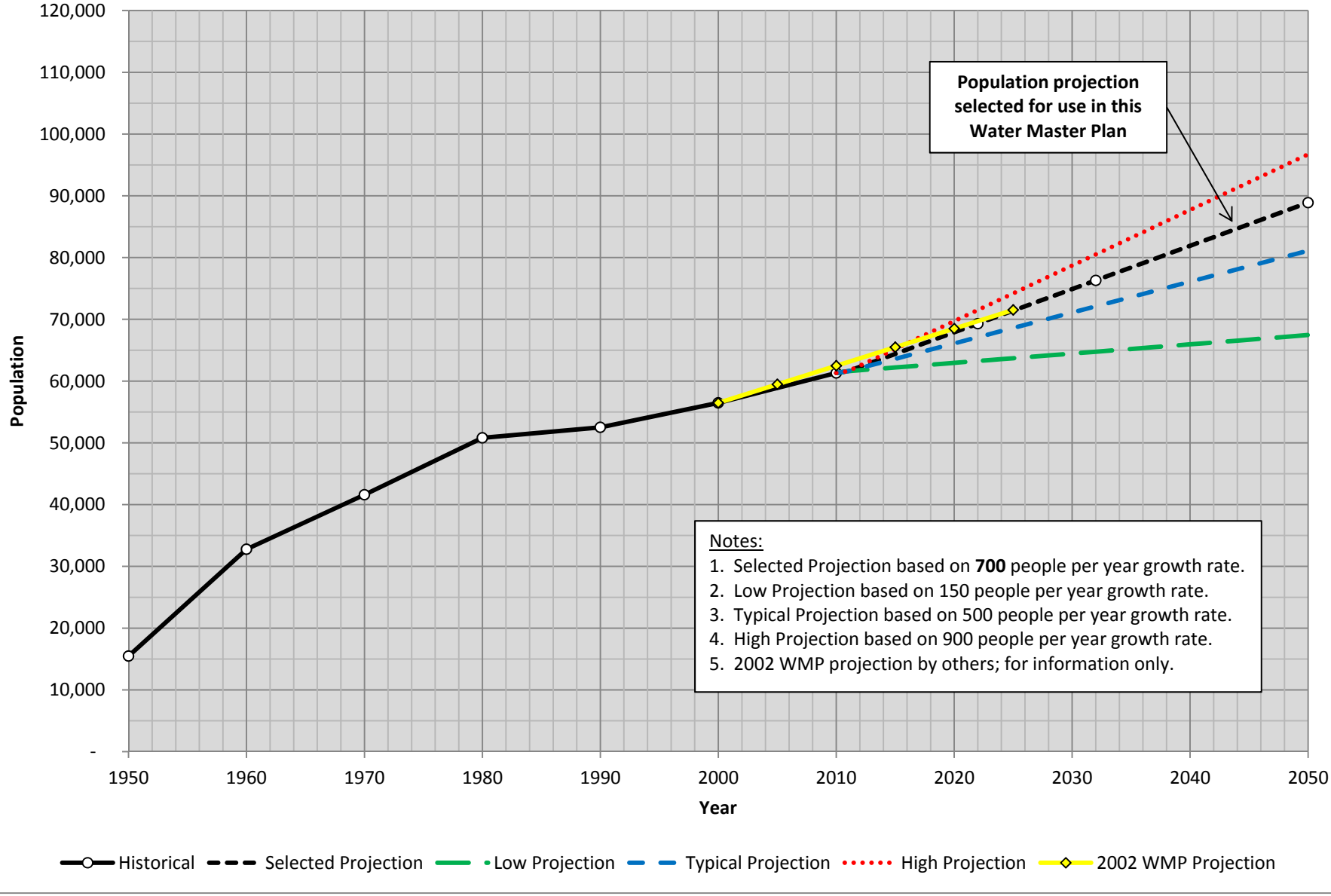


Table 4.1
City of Bossier City, Louisiana
Historical Customer Use Information

Year	Population	Customers (meters)	Average Day Sales (MGD)							Nonrevenue Water[1] (%)	Gallons per Meter Day (gpmd)	Gallons per Capita Day[2,3] (gpcd)	Average WTP Production (MGD)	Max Day Demand (MGD)	Max Day to Average Day Ratio
			Commercial	Residential	Commercial/ Residential	Housing Authority	Benton	CBB	Total						
1995	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	7.3	15.3	2.09
1996													6.9	12.5	1.82
1997													8.4	14.7	1.76
1998													10.2	16.0	1.57
1999													9.4	19.7	2.09
2000	56,461											171	9.7	21.0	2.17
2001	Not Available											Not Available	9.5	16.0	1.68
2002													9.5	16.0	1.68
2003													10.5	16.2	1.55
2004		22,635					0.47	0.26	9.09	14.6%	470.5		10.7	18.1	1.70
2005		23,414					0.61	0.30	11.64	6.7%	532.6		12.5	23.0	1.85
2006		24,167					0.54	0.32	11.32	14.7%	549.1		13.3	24.3	1.83
2007		24,795					0.50	0.30	9.12	26.9%	502.9		12.5	19.6	1.58
2008		23,483					0.49	0.30	9.62	19.5%	508.9		12.0	20.9	1.75
2009		23,798					0.50	0.27	8.09	27.2%	467.3		11.1	19.7	1.77
2010	61,315	24,250					0.59	0.33	9.97	17.5%	498.1	197	12.1	19.6	1.62
2011	61,603	24,802	4.26	5.31	0.02	0.08	0.65	0.34	10.66	23.0%	558.4	225	13.9	24.0	1.74

Notes:
1. Nonrevenue water considers the average day demand (average WTP production) and the average day sales in it's calculation.
2. Values for 2000 thru 2011 include wholesale customers.
3. Value for 2011 is 204 gpcd without wholesale customers.

Dry weather water use for each customer class is listed in Table 4.2 and is used in the customer and water demand projections in Section 4.4 of this Chapter. The adder for dry year water use is zero based on recent data; in 2011 the City experienced the driest year on record in recent history, therefore, the total dry year water use only takes the nonrevenue amount into account.

Table 4.2
Dry Year Water Use

Customer Class	2011 Water Use (gpmd)	Meter Count	Dry Year Water Use Adder (gpmd)	Dry Year Water Use (gpmd)	Nonrevenue Amount (gpmd)	Total Dry Year Water Use (gpmd)
Commercial	1,921	2,218	0	1,921	640	2,561
Residential	235	22,558	0	235	78	314
Commercial/Residential	686	23	0	686	229	914
Housing Authority	80,762	1	0	80,762	26,921	107,683
Benton	652,677	1	0	652,677	217,559	870,236
CBB	341,745	1	0	341,745	113,915	455,660

Notes:
1. Dry Year Water Use Adder is zero because 2011 was determined to be the max dry year in recent history.
2. Water Loss amount is 25 percent of the future dry year use; 2011 water loss was 23.0 percent.

Dry weather gpmd values assure future water treatment and supply capacities are met and are fiscally reasonable; this means the values are conservative enough to meet extended dry periods but not so high that they cover a severe drought that would otherwise dramatically increase the City's investment in the water system for facilities that are rarely or never used. Moderately conservative water use values combined with additional water conservation measures can be manipulated to meet demands during extended dry periods.

4.3 CUSTOMER PROJECTION

The population projections are used to distribute customer projections and water use in years 2022, 2032, and 2050. The conversion process described in the paragraphs below is used to develop the number and class of future customers through the year 2050.

The customer class percentages and dry year water use, which includes nonrevenue water, are listed in Table 4.3 and used to determine a total dry year average day demand of 14.2 MGD based on the 2011 population and total meter count. The 2011 population of 61,603 people and 24,802 existing meters results in a density of 2.7 people per meter and is also listed in Table 4.3.

Table 4.3
2011 Water Use Data

Customer Class	Meter Count	Meter Class Percentage	Dry Year Water Use[1] (gpmd)	Avg Day Demand (MGD)
Commercial	2,218	8.9%	2,561	5.7
Residential	22,558	91.0%	314	7.1
Commercial/Residential	23	0.09%	914	0.02
Housing Authority	1	0.004%	107,683	0.11
Benton	1	0.004%	870,236	0.87
CBB	1	0.004%	455,660	0.46
Total	**24,802**	**100.0%**		**14.2**
Average gpmd[2]	**--**	**--**	**573**	**--**
2011 Population[3] = 61,603			**People/Meter[4] = 2.7**	

Notes:
1. Dry year water includes 25 percent water loss.
2. The average gpmd is based on the total average day demand and total meter count.
3. Population based on linear extrapolation of historical data from 2000 and 2010.
4. People/Meter value is based on the population and residential meter count.

The people per meter value of 2.7 are used with the population projections to project meter counts for all customer classes in 2022, 2032, and 2050. Since populations for the Commercial/Residential and Housing Authority customer classes may not be associated with full time occupancy like the residential customer class, the total meter count listed in Table 4.4 are calculated as the meter count divided by the meter class percentage for residential. This is a conservative approach, as the residential portion accounts for 91 percent of all customer classes.

Table 4.4
Customer Projections

Year	Population	Density (ppl/meter)	Residential Meter Count	Residential Meter Class Percentage	Total Meter Count[1]
2022	69,303	2.7	25,378	91.0%	27,902
2032	76,303	2.7	27,941	91.0%	30,720
2050	88,903	2.7	32,555	91.0%	35,793

Notes:
1. Total meter count projections represent all customer classes.

Water demand projections are based on the water usage discussed in Section 4.2 and the customer projections discussed in this section above. Water usage by customer class and the average day demand projections for 2022, 2032, and 2050 are summarized in Table 4.5.

Table 4.5

Water Demand Projection for Existing Customers Only

Water Usage Summary			2022		2032		2050	
Customer Class	**Dry Year Water Use (gpmd)**	**Meter Class Percentage**	**Meter Count**	**Avg Day Demand (MGD)**	**Meter Count**	**Avg Day Demand (MGD)**	**Meter Count**	**Avg Day Demand (MGD)**
Commercial	2,561	8.9%	2,495	6.4	2,747	7.0	3,201	8.2
Residential	314	91.0%	25,378	8.0	27,941	8.8	32,555	10.2
Commercial/Residential	914	0.09%	26	0.02	28	0.03	33	0.03
Housing Authority	107,683	0.004%	1.1	0.12	1.2	0.13	1.4	0.16
Benton[1]	870,236	0.004%	1	0.87	1	0.87	1	0.87
CBB[1]	455,660	0.004%	1	0.46	1	0.46	1	0.46
		Totals:	27,902	15.8	30,720	17.3	35,793	19.9

Notes:

1. Benton and CBB meters and water use are used in the values for year 2011; future growth for these wholesale customers, as it relates to water demand projections, is considered as part of the growth in the residential and commercial customer classes.

4.4 WATER DEMAND PROJECTION

The water demand projection is listed in Table 4.6 and includes existing customers and potential customers in the future. The demand projections listed in Table 4.6 are applied in the hydraulic model and include a 2022 maximum day demand of 34.1 MGD and a 2050 maximum day demand of 41.9 MGD. Figure 4.2 illustrates the water demand projection selected for use in this WMP; other water demand projections are shown that reflect different population growths and is intended for alternative schedules for implementation of improvements

4.5 ADDITIONAL WATER DEMANDS

The potential exists for an additional wholesale customer in the future; BAFB could purchase water from the City. For planning purposes, the anticipated water demand used in this report for BAFB, or another wholesale customer, is 4.0 MGD beginning in 2020 and is included in the maximum day demand projections listed in Table 4.6.

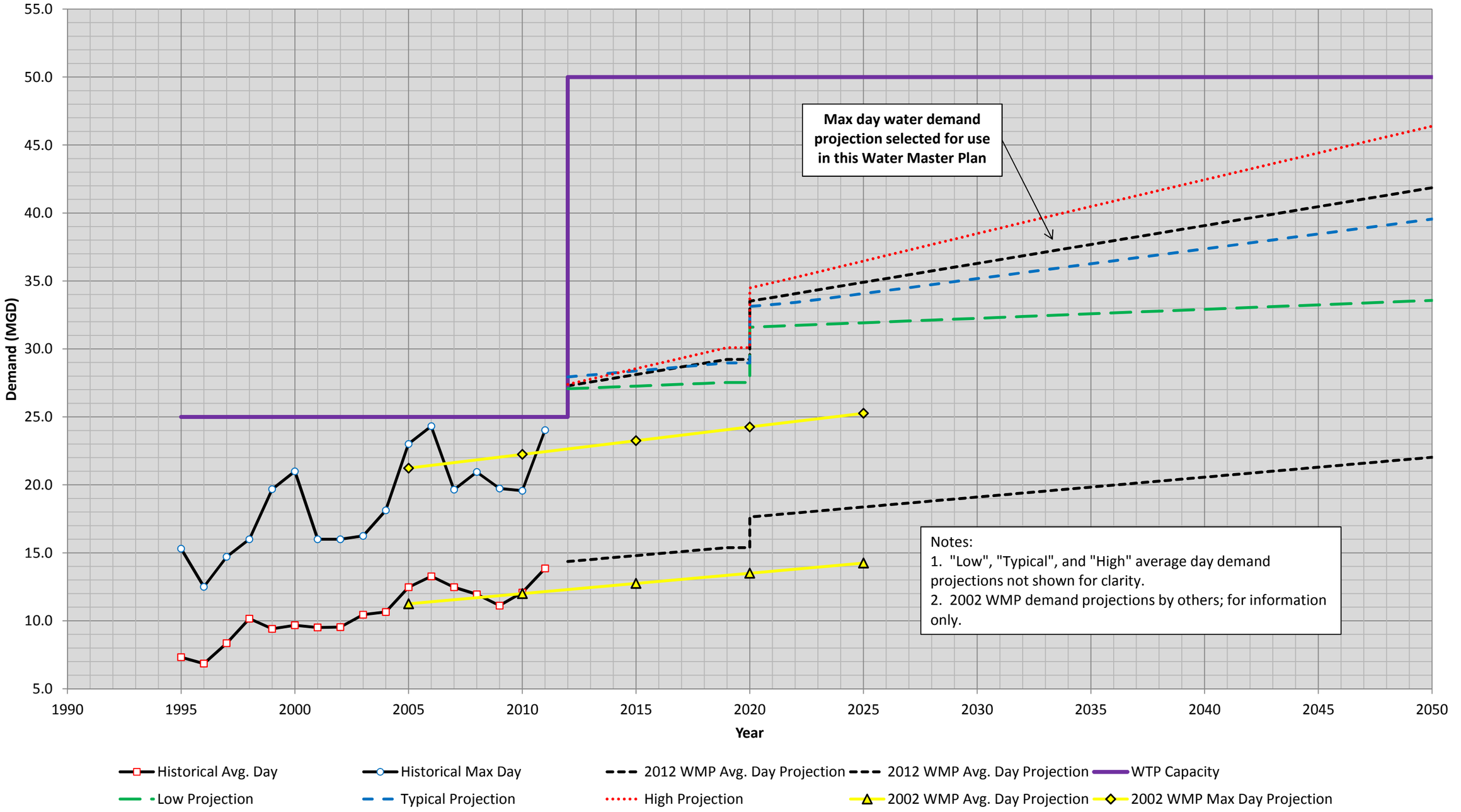
Table 4.6
City of Bossier City, LA
Water Demand Projection

Year	Average Day Demand (MGD)[1]								Max Day[2] (MGD)
	Com	Res	Com/Res	H. Auth	Benton	CBB	BAFB[3]	Total	
2011	**5.68**	**7.08**	**0.02**	**0.11**	**0.87**	**0.46**	**0.00**	**14.2**	**24.0**
2012	5.75	7.16	0.02	0.11	0.87	0.46	0.00	14.4	27.3
2013	5.81	7.24	0.02	0.11	0.87	0.46	0.00	14.5	27.6
2014	5.87	7.32	0.02	0.11	0.87	0.46	0.00	14.7	27.8
2015	5.94	7.40	0.02	0.11	0.87	0.46	0.00	14.8	28.1
2016	6.00	7.48	0.02	0.11	0.87	0.46	0.00	14.9	28.4
2017	6.07	7.56	0.02	0.12	0.87	0.46	0.00	15.1	28.7
2018	6.13	7.64	0.02	0.12	0.87	0.46	0.00	15.2	29.0
2019	6.20	7.72	0.02	0.12	0.87	0.46	0.00	15.4	29.2
2020	6.26	7.80	0.02	0.12	0.87	0.46	2.11	17.6	33.5
2021	6.33	7.88	0.02	0.12	0.87	0.46	2.11	17.8	33.8
2022	**6.39**	**7.96**	**0.02**	**0.12**	**0.87**	**0.46**	**2.11**	**17.9**	**34.1**
2023	6.46	8.04	0.02	0.12	0.87	0.46	2.11	18.1	34.3
2024	6.52	8.12	0.02	0.12	0.87	0.46	2.11	18.2	34.6
2025	6.58	8.20	0.02	0.12	0.87	0.46	2.11	18.4	34.9
2026	6.65	8.28	0.02	0.13	0.87	0.46	2.11	18.5	35.2
2027	6.71	8.36	0.02	0.13	0.87	0.46	2.11	18.7	35.5
2028	6.78	8.44	0.03	0.13	0.87	0.46	2.11	18.8	35.7
2029	6.84	8.52	0.03	0.13	0.87	0.46	2.11	19.0	36.0
2030	6.91	8.60	0.03	0.13	0.87	0.46	2.11	19.1	36.3
2031	6.97	8.69	0.03	0.13	0.87	0.46	2.11	19.2	36.6
2032	**7.04**	**8.77**	**0.03**	**0.13**	**0.87**	**0.46**	**2.11**	**19.4**	**36.8**
2050	**8.20**	**10.21**	**0.03**	**0.16**	**0.87**	**0.46**	**2.11**	**22.0**	**41.9**

Notes:

1. Average day demand includes 25 percent nonrevenue water beginning in 2011.
2. Water demand projections for Benton and CBB are included in the population growth of 700 people per year, in lieu of their respective max contract amounts for the max day demand.
3. Average day demand of 2.11 is calculated in order to result in a max day demand of 4.0 MGD by 2020, for planning purposes, if BAFB elects to purchase water from the City in the future.

Figure 4.2
City of Bossier City, LA
Water Demand Projections



4.6 LARGE WATER USERS

The 2011 customer billing accounts, provided by the City, is evaluated to identify large water users so they can be applied individually to the nearest node in the model that best represents the customers' metering location.

Large water users are defined as those customers using greater than 30 gpm on an annual average. Water demands for the large users apply the same maximum day, peak hour, and minimum hour ratios as the rest of the City's customers. The large water users and their respective water demand in 2011 are listed in Table 4.7.

Table 4.7
Large Water User Demands

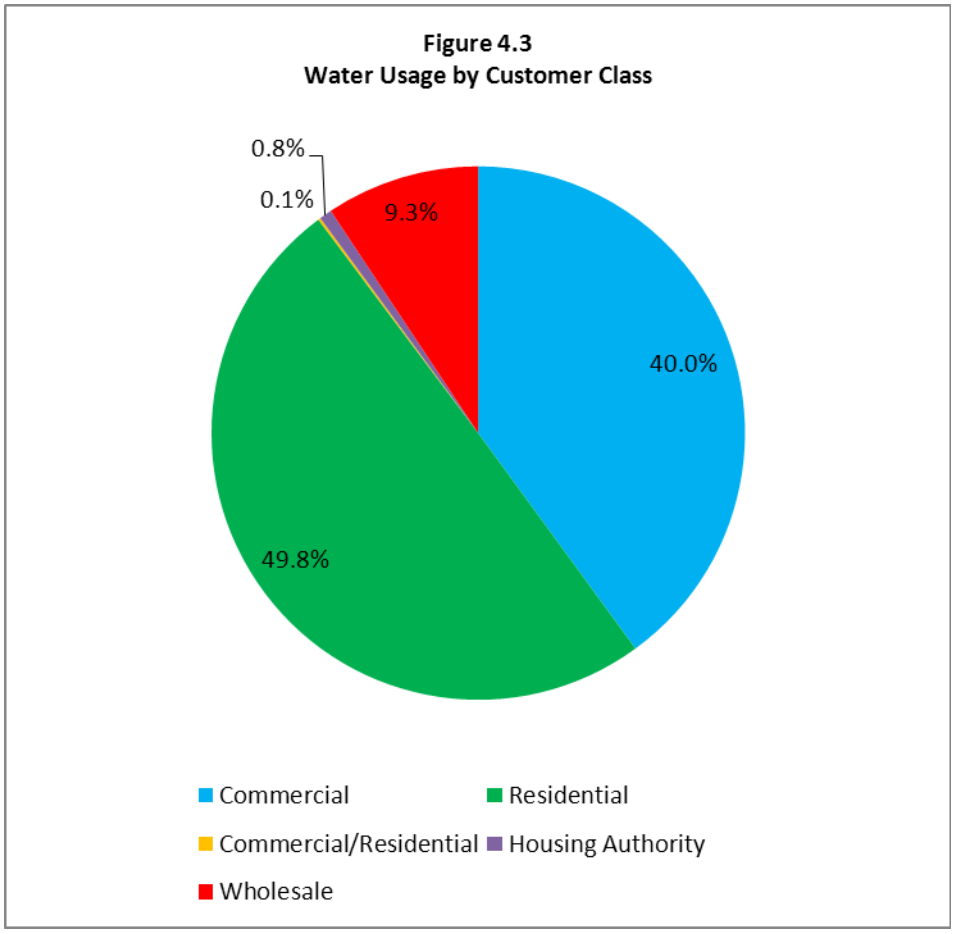
Customer	Average Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)	Min Hour Demand (gpm)
Town of Benton	453	861	1,395	508
CBB Water System	237	451	730	266
East 80 Utility Corp.	105	200	324	118
Harrah's Louisiana Downs	98	186	302	110
Horseshoe	75	142	230	84
Willis Knighton Bossier Health	73	139	225	82
Horseshoe	70	132	214	78
LRGP-DBA/Diamond Jacks	69	130	211	77
Bossier Housing Authority	56	107	173	63
Cypress Point Nursing & Rehab	42	80	129	47
Lexington Place Apts.	37	70	114	42
Reserve Apts.	36	69	112	41
Mission Village Apts. LP	35	66	107	39
AVR-Stockwell Landing LLC	30	58	94	34

4.7 GEOGRAPHIC INFORMATION SYSTEM DEMAND ALLOCATION

Customer usage and meter billing data was provided by the City and integrated into a GIS platform that is used to construct the model. The GIS platform allows the user to address-match the meter billing data against parcel and road centerline information in order to allocate the water demand accurately. This information is imported to an updated version of the water distribution system geo-database.

Each customer account with meter billing data is geo-coded and the GIS platform assigns customer usage to the nearest model node. Geo-coding establishes a connection between a customer's historical water use and the distribution system nodes in the model. The water demands of the large users listed in Table 4.7 are also geo-coded in the model for demand allocation. Figure 4.3 illustrates the mix of customer classes from the billing data and their respective water use amounts. Each customer class is based on customer billing data from January 2011 thru December 2011.

Figure 4.3
Water Usage by Customer Class



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5.0 MODEL DEVELOPMENT AND CALIBRATION

This section of the report discusses the field testing program, model development for the static and EPS analysis, model calibration, and the criteria for hydraulic analysis. The model is used to determine water system improvements for the existing year, 2022, and 2050 planning periods and evaluate water age in the distribution system with the EPS.

5.1 FIELD TESTING AND DATA COLLECTION

Field testing and data collection for model development and calibration consisted of compiling all available SCADA information from the water distribution system, installing 11 Telog® pressure recording devices across the distribution system and conducting fire hydrant flow tests.

Water system operating data was collected from the City's SCADA system from August 30 through September 1, 2011. Listed below is a brief description of data collected from the SCADA system:

- Clearwell No. 1 and No. 3 level;
- HSPS No. 1 and No. 3 suction pressure, discharge pressure, and total flowrate;
- Benton Tower level and grade pressure;
- Northeast Tower level and grade pressure;
- Airline Tower level and grade pressure; and
- 71 South Tower level and grade pressure.

Nine data loggers were strategically placed in the distribution system to record pressure during the monitoring period. The data loggers were positioned on fire hydrants located at or near pipelines ranging in sizes between 6 inches and 20 inches in diameter. The data logger locations are shown in Figure 5.1 and the pressure plots are included in Appendix B.

Fire hydrant testing was conducted at 23 locations in the distribution system and the results are also shown in Figure 5.1. Fire hydrant testing stimulates hydraulic stress to the distribution system and the test results are used to calibrate the hydraulic model. The procedure consisted of discharging water at a measured rate of flow from a hydrant, termed as the "flowing" hydrant, and observing the corresponding pressure drop in the system at another hydrant in the vicinity, termed as the "gauged" hydrant. From the pressure data obtained, the rate of flow discharged from the flowing hydrant can be calculated for any residual pressure. City staff was on hand to operate each fire hydrant while the Burns &

PIPE LEGEND

- <= 4-INCH
- <= 6-INCH
- <= 8-INCH
- <= 10-INCH
- <= 12-INCH
- <= 16-INCH
- <= 20-INCH
- <= 30-INCH

Fire Hydrant Test Location

Data Logger Location

Cattail Trail & Silkwood
920 gpm @ 42 psi

Benton Meter

CBB Meter

Lynch

Hackberry & Alder
1,060 gpm @ 50 psi

Tallgrass Circle
1,000 gpm @ 40 psi

Bayou Bend Drive
1,060 gpm @ 40 psi

Benton Tower

Dauphine Lane
1,030 gpm @ 40 psi

Hunter Hollow Drive
1,090 gpm @ 48 psi

Downs
1,030 gpm @ 48 psi

Crosscreek Dr.

Lakeside
1,130 gpm @ 55 psi

Norcross
1,130 gpm @ 50 psi

Greenacres

Stonebridge

Waverly
1,030 gpm @ 48 psi

Northeast Tower

Montgomery
1,130 gpm @ 50 psi

Hwy 80

WTP & High Service Pumping

Sullivan
1,190 gpm @ 52 psi

Kelly Street
1,220 gpm @ 55 psi

Pearl
1,090 gpm @ 40 psi

Bass Pro

Rugby Lane
1,000 gpm @ 38 psi

Monroe
1,220 gpm @ 52 psi

Winchester

Schex
750 gpm @ 20 psi

Martin Lane
1,210 gpm @ 50 psi

Airline Tower

McGregor
1,220 gpm @ 50 psi

Princeton
1,130 gpm @ 48 psi

Oleander
1,090 gpm @ 42 psi

Dennis

Community Center
1,060 gpm @ 48 psi

Beauregard
1,250 gpm @ 52 psi

71 South Tower

Notes:

1. Residual pressure measurements at flowing hydrants can error ± 2-4 psi or more; hence some of the hydrant flow measurements shown in this figure may have more flow at less pressure than others.

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Figure 5.1

City of Bossier City, Louisiana

Data Logger Locations & Field Testing Results

McDonnell/Manchac team collected the data. A summary of each fire hydrant test with the static pressure reading, residual pressure reading, and flow is included in Appendix B.

5.2 MODEL CONSTRUCTION

Data pertinent to the water distribution system was provided by the City in shapefiles and an ArcGIS 9.0 Geodatabase which was used to construct the hydraulic model. The geodatabase includes a dataset that encompasses all relevant information for nodes, pipes, valves, tanks, booster pumps, and reservoirs feature classes which are imported into the hydraulic model. The hydraulic model includes pipe segments greater than or equal to 4 inches in diameter; pipe segments less than 4 inches in diameter were included in the data provided by the City but are filtered out of the model construction in the skelotonization process.

The nodal feature class in the geodatabase houses water demand information and includes existing metered water demands and future projected water demands. Existing metered sales data for each customer is fixed to a parcel GIS layer (this process is also referred to as Geocoding) to link customers to the closest node in the hydraulic model. Any existing metered sales data that cannot be physically located is distributed evenly across the existing system model nodes to assure all demands are accounted for. The projected water demands for the City's current customers are also allocated to the hydraulic model by Geocoding for the year 2022 and 2050 model scenarios.

5.3 MODEL CALIBRATION

Model calibration is performed by adjusting the Hazen-Williams C-value that is assigned to each pipe segment to match the field testing data collected from each fire hydrant test and the data logger pressure information. C-values are adjusted in the model to achieve the actual field test conditions within 5 pounds per square inch (psi) up to a pressure of 80 psi; above 80 psi, the C-values are adjusted to achieve field conditions within 10 percent. Model calibration results are listed in Table 5.1. Model input data from the field testing includes the hydrant flows of each fire hydrant test; the model results are then compared to the residual pressures measured during field testing; this information is also included in Table 5.1.

The C-values assigned in the model represent the relative internal roughness and provide an indication of the degree of roughness within a pipe. Pipes with high C-values convey water with little frictional headloss, but C-values generally decrease with age. Pipes with low C-values can be indicative of partially closed valves in the distribution system, scaling, or other water quality issues. Pipes related to future

Table 5.1
City of Bossier City, LA
Model Calibration

Item	Date	Time	HSPS 01 (South) Suction Pressure (psi)	HSPS 01 (South) Discharge Pressure (psi)	HSPS 01 (South) Discharge Flow (gpm)	HSPS 03 (North) Suction Pressure (psi)	HSPS 03 (North) Discharge Pressure (psi)	HSPS 03 (North) Discharge Flow (gpm)	Benton Tower (psi)	Northeast Tower (psi)	Airline Tower (psi)	71 South Tower (psi)	Bass Pro 76156 J - 472 (psi)	Greenacres 76153 J - 1297 (psi)	Lynch 76151 J - 2046 (psi)	Dennis 76155 J - 2477 (psi)	Winchester 76161 J - 3002 (psi)	Crosscreek 76154 J - 3913 (psi)	Parkway HS 76160 J - 4127 (psi)	Hwy 80 76157 J - 4691 (psi)	Stonebridge 76158 J - 4923 (psi)	Junction & Flowrate (gpm)	Pressure @ Flowing Hydrant and Gage Hydrant (psi) Field	Pressure @ Flowing Hydrant and Gage Hydrant (psi) Model	GDF Ratio	Demand (gpm) w/o Fire Flow
Cattail Trail & Silkwood																						J-9934				
Field	8/30/2011	8:20	5	87	8,888	4	84	5,902	58.5	63.7	65.9	67.7	81	69	49	70	68	62	70	68	65	920	42	**49**	**2.39**	14,791
Model				87	8,707		84	5,863					**83**	**71**	**55**	**68**	**66**	**67**	**70**	**67**	**72**					
Tallgrass Circle																						J-4057				
Field	8/30/2011	8:42	5	77	4,791	4	75	6,111	58.2	63.6	65.7	67.7	73	65	48	70	67	60	70	67	64	1,000	40	**49**	**1.76**	10,902
Model				75	5,326		77	6,132					**74**	**67**	**59**	**68**	**65**	**64**	**69**	**66**	**70**					
Bayou Bend Drive																						J-4036				
Field	8/30/2011	9:05	5	79	4,791	4	76	6,111	58.1	63.6	65.7	67.7	74	66	56	69	67	63	70	67	65	1,060	40	**41**	**1.76**	10,902
Model				75	5,331		77	6,136					**74**	**67**	**59**	**68**	**65**	**64**	**69**	**66**	**69**					
Dauphine Lane																						J-1657				
Field	8/30/2011	9:25	5	80	4,791	4	77	5,902	58.0	63.6	65.5	67.6	75	67	56	69	67	63	70	68	67	1,030	40	**28**	**1.73**	10,694
Model				75	5,334		77	6,138					**75**	**68**	**60**	**68**	**65**	**65**	**69**	**67**	**70**					
Hackberry & Alder																						J-1934				
Field	8/30/2011	9:40	5	87	8,611	4	85	5,902	58.1	63.7	65.6	67.6	82	71	56	70	68	65	70	68	68	1060	50	**50**	**2.36**	14,611
Model				87	8,709		84	5,864					**83**	**71**	**58**	**68**	**65**	**67**	**69**	**67**	**71**					
Downs																						J-1448				
Field	8/30/2011	10:00	5	88	8,611	4	85	5,764	58.2	63.9	65.7	67.7	82	71	57	70	68	65	70	68	67	1,030	48	**57**	**2.32**	14,374
Model				86	8,768		83	5,910					**82**	**69**	**59**	**68**	**65**	**65**	**69**	**67**	**70**					
Norcross																						J-1				
Field	8/30/2011	10:30	5	79	8,749	4	77	5,659	58.4	63.9	65.7	67.8	74	68	64	70	67	65	70	68	67	1,130	50	**60**	**2.32**	14,409
Model				85	8,790		82	5,926					**82**	**68**	**59**	**68**	**65**	**65**	**69**	**67**	**70**					
Waverly																						J-992				
Field	8/30/2011	10:45	5	80	8,819	4	77	5,625	58.6	64.0	65.6	67.8	75	68	62	69	68	65	70	68	67	1,030	48	**48**	**2.33**	14,444
Model				85	8,809		82	5,941					**81**	**69**	**59**	**68**	**65**	**65**	**69**	**67**	**70**					
Montgomery																						J-2				
Field	8/30/2011	13:25	5	90	9,027	4	88	5,277	61.1	65.3	66.9	68.6	85	76	66	71	69	70	71	70	70	1,130	50	**49**	**2.31**	14,305
Model				85	8,798		82	5,935					**82**	**70**	**60**	**68**	**66**	**66**	**70**	**67**	**71**					
Lakeside																						J-4938				
Field	8/30/2011	13:50	5	90	5,208	4	87	5,416	61.6	65.6	67.2	68.7	84	73	65	71	69	68	71	70	70	1,130	55	**62**	**1.71**	10,624
Model				79	6,096		81	5,995					**78**	**71**	**62**	**69**	**66**	**68**	**70**	**68**	**72**					
Sullivan																						J-4				
Field	8/30/2011	14:08	5	89	5,208	4	87	5,416	61.7	65.7	67.3	68.8	84	73	65	71	69	68	71	70	69	1,190	52	**57**	**1.71**	10,624
Model				79	6,123		80	6,023					**78**	**70**	**62**	**68**	**66**	**66**	**70**	**67**	**71**					
Pearl																						J-3340				
Field	8/30/2011	14:30	5	80	5,208	4	77	5,694	61.9	65.8	67.3	69.0	75	68	66	71	69	67	71	69	69	1,090	40	**63**	**1.76**	10,902
Model				75	5,305		78	6,116					**75**	**68**	**61**	**68**	**66**	**65**	**70**	**66**	**70**					
Rugby Lane																						J-465				
Field	8/30/2011	14:48	5	80	5,208	4	77	5,902	62.0	65.8	67.2	69.0	76	69	66	71	69	67	71	70	69	1,000	38	**62**	**1.79**	11,110
Model				75	5,327		77	6,129					**74**	**68**	**61**	**68**	**65**	**66**	**70**	**67**	**70**					
Martin Lane																						J-5				
Field	8/30/2011	15:05	5	81	5,208	4	78	5,902	61.9	65.9	67.2	69.1	75	68	59	71	69	66	71	69	68	1,210	50	**56**	**1.79**	11,110
Model				74	5,368		77	6,152					**74**	**68**	**61**	**68**	**65**	**66**	**70**	**67**	**70**					
Kelly Street																						J-667				
Field	8/31/2011	9:55	5	81	9,097	4	79	5,833	60.3	65.1	66.1	68.1	80	69	54	69	67	63	69	67	66	1,220	55	**72**	**2.41**	14,930
Model				83	8,908		81	5,971					**78**	**70**	**60**	**68**	**65**	**66**	**70**	**67**	**71**					
Monroe																						J-358				
Field	8/31/2011	10:10	5	81	9,097	4	79	5,833	60.2	65.1	66.1	68.1	79	69	54	70	67	63	70	67	66	1,220	52	**63**	**2.41**	14,930
Model				85	8,776		83	5,900					**82**	**71**	**60**	**68**	**65**	**66**	**70**	**67**	**71**					
Princeton																						J-36				
Field	8/31/2011	10:26	5	82	9,027	4	79	5,868	60.2	65.1	66.1	68.1	81	69	49	69	67	63	70	66	66	1,130	48	**53**	**2.40**	14,895
Model				86	8,724		84	5,872					**83**	**71**	**60**	**68**	**65**	**67**	**70**	**67**	**72**					
Schex																						J-2942				
Field	8/31/2011	10:47	5	82	9,027	4	79	5,868	60.2	65.1	66.2	68.1	81	69	49	69	67	63	69	67	66	750	20	**55**	**2.40**	14,895
Model				87	8,710		84	5,863					**83**	**71**	**60**	**68**	**64**	**67**	**70**	**67**	**72**					
McGregor																						J-6				
Field	8/31/2011	11:07	5	83	8,958	4	80	5,902	60.5	65.2	66.2	68.1	81	69	49	69	67	64	70	67	66	1,220	50	**60**	**2.40**	14,860
Model				86	8,720		84	5,869					**83**	**71**	**60**	**68**	**62**	**67**	**70**	**67**	**71**					
Oleander																						J-2497				
Field	8/31/2011	11:32	5	83	8,958	4	80	5,902	60.8	65.3	66.3	68.2	82	71	61	68	67	65	70	68	67	1,090	42	**29**	**2.40**	14,860
Model				87	8,705		84	5,860					**83**	**71**	**60**	**68**	**66**	**67**	**70**	**68**	**72**					
Beauregard																						J-4444				
Field	8/31/2011	11:48	5	84	9,027	4	81	5,625	61.1	65.5	66.5	68.3	83	72	61	70	67	66	70	68	68	1,250	52	**66**	**2.36**	14,652
Model				87	8,689		84	5,849					**83**	**72**	**60**	**68**	**66**	**67**	**69**	**68**	**72**					
Community Center																						J-2179				
Field	8/31/2011	12:08	5	84	9,166	4	81	5,347	61.2	65.6	66.6	68.3	83	72	62	70	68	66	70	68	68	1,160	48	**64**	**2.34**	14,513
Model				87	8,685		84	5,846					**83**	**72**	**60**	**68**	**66**	**67**	**69**	**68**	**72**					
Hunter Hollow Drive																						J-7				
Field	8/31/2011	12:50	5	84	9,097	4	81	5,833	61.7	65.8	66.9	68.6	82	73	63	70	68	67	70	69	67	1,090	48	**48**	**2.41**	14,930
Model				86	8,758		83	5,901					**82**	**70**	**59**	**68**	**66**	**62**	**70**	**67**	**69**					

growth that stem from or within the existing distribution system are not calibrated; these pipes are assigned a C-value of 140 which is common for new PVC and ductile iron pipe.

5.4 HYDRAULIC ANALYSIS CRITERIA

Analyses of elevated storage in the City's distribution system and the WTP HSPS are conducted to determine their ability to meet equalization storage and projected water demands and identify deficiencies with respect to water supply, storage, pipeline capacity, pumping, pressure, and fire flow. The hydraulic analysis criteria used in the model and reported in this WMP include the following:

- Distribution system pressures are greater than 40 psi;
- Distribution system pressures are greater than 20 psi during fire flow analyses;
- HSPS have firm capacity capable of pumping the average demand on the maximum day at adequate pressure with the largest pump out of service;
- Storage can be completely replenished over a 24-hour period and equalization storage replenished over an 8-hour period at night;
- Transmission pipeline velocity is less than 5 feet per second (fps), and head loss is less than 6 feet per 1,000 feet. Additional deficiencies to inadequate pipeline velocities and head losses, such as insufficient fire flow or low pressure or additional growth, are typically required to justify pipe replacement; and
- Evaluation of total head loss compared to the length of pipe.

The modeling software used in this WMP is the Bentley WaterCAD V8 XM Edition. This program analyzes steady state flows and pressures for pipe distribution system. The pipe network modeled is based on a numbering system for each pipe segment and node. Information for each pipe includes length, start node, end node, Hazen Williams C-value, and pipe diameter. Information for each node includes ground elevation, water demand, demand factors, and x and y coordinates. Other feature classes for pumps, valves, tanks, and water supply sources are also included in the model.

Model scenarios for the current year, 2022, and 2050 planning periods are evaluated for the following steady-state demand conditions to determine the distribution system's capabilities, need, and location for additional supply, piping, storage, and pump stations:

- Maximum day;
- Peak hour;
- Minimum hour plus storage replenishment; and

- Maximum day plus fire flow requirements as determined by the Insurance Services Office (ISO).

The maximum day scenario tests whether the water supply has sufficient capacity and if the demands can be met throughout the system while maintaining adequate pressures. The peak hour scenario tests the adequacy of the storage facilities and distribution system to supply high rates of flow. The minimum hour scenario simulates the ability of the water distribution system to replenish tank storage overnight. The maximum day plus fire flow scenarios represent the performance of the water distribution system with a fire flow demand at a specific location on the maximum day.

5.5 DIURNAL EVALUATION

Diurnal curves represent changes in water demand over the course of a day, reflecting times when the City's customers are using more or less water than the average for that day. The average demand over the 24-hour period represents 100 percent. The diurnal curve determines the equalization storage factor, peak hour factor, minimum hour factor, as well as the diurnal pattern used for the EPS. Equalization storage refers to the amount of water stored in the City's elevated tanks for use during peak periods or periods where the system demand exceeds the system supply.

Diurnal curves are developed from information collected by the City's SCADA system during the field testing period from August 30 through September 1, 2011 (see Appendix C for calculations). The diurnal evaluation results of each day include the equalization storage, minimum hour, and peak hour factors are summarized in Table 5.2. The steady-state and EPS model simulations incorporate the minimum hour factor of 0.59 and the peak hour factor of 1.62 from the data collected on September 1, 2011 as shown in Figure 5.2 for conservative measure.

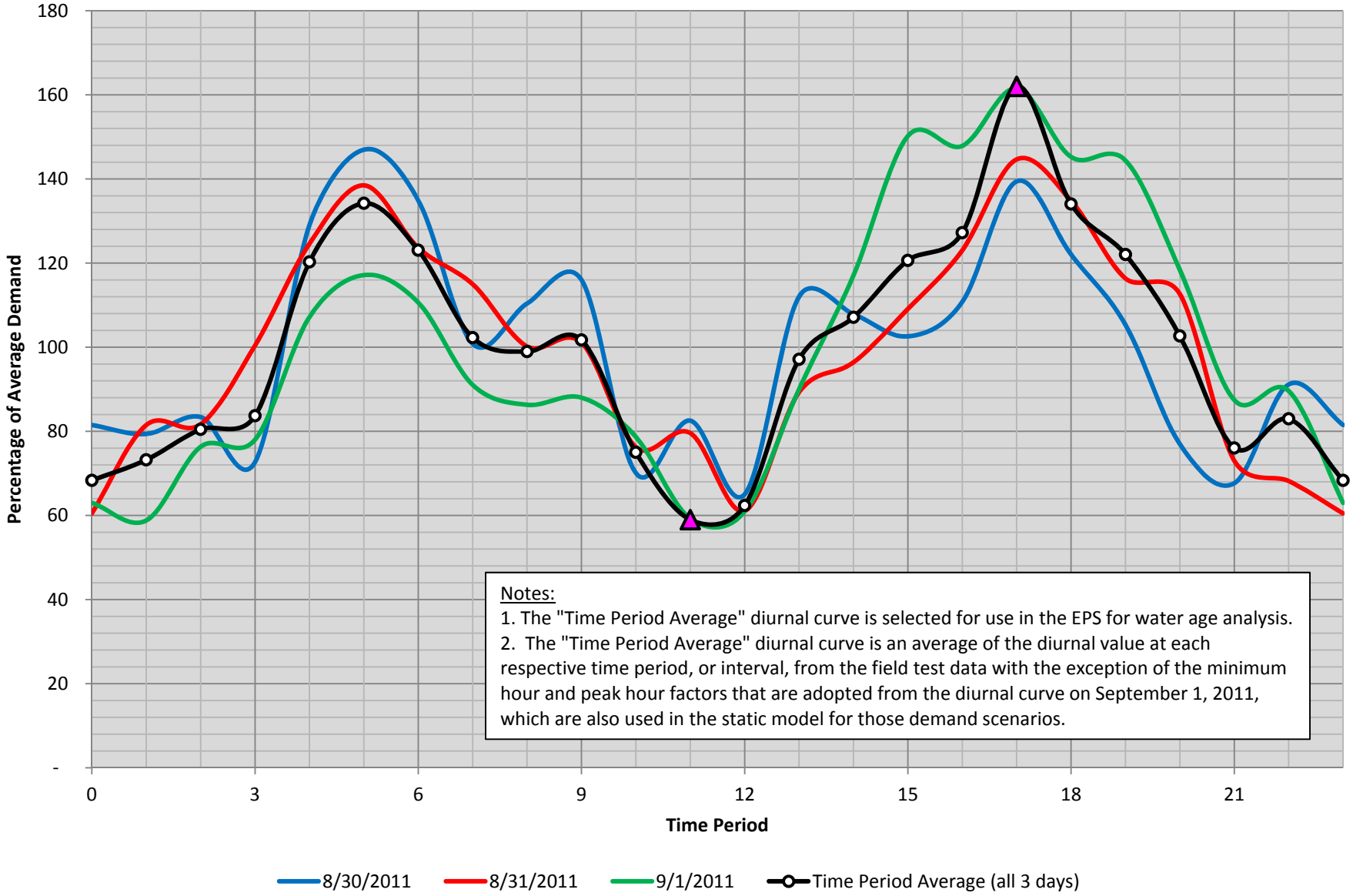
Table 5.2
Diurnal Evaluation Results

Date	Demand (MGD)	Equalization Storage (%)	Minimum Hour Factor	Peak Hour Factor
8/30/2011	17.9	9.9	0.65	1.47
8/31/2011	20.0	10.2	0.60	1.45
9/1/2011	23.2	12.9	**0.59**	**1.62**

5.6 FIRE DEMAND

Fire or emergency storage includes water that must be available at all times to fight the most severe fires as determined by the ISO, which defines fire demand and duration. Insurance companies use these

Figure 5.2
City of Bossier City, LA
Diurnal Curves



studies to set insurance rates for city residents. The volume needed for the fire flow demand of 3,500 gpm for three hours is 0.63 MG. A copy of the City's ISO report from 2009 is included in Appendix D.

5.7 EXTENDED PERIOD SIMULATION

An EPS analysis simulates tanks filling and draining, and pressures and flow rates changing throughout the system in response to varying demand conditions, imparted by the diurnal curve, and automatic control strategies that mimic actual field operations for the distribution system. EPS results are evaluated to determine whether the system has the ability to provide acceptable levels of service over a period of minutes, hours, or days. This analysis computes water age in the distribution system to evaluate residence time in tanks and assist in predicting areas in the distribution system with the greatest potential for low disinfectant residuals.

For the purposes of this report, the EPS is prepared for water quality modeling of a multi-hour period to evaluate water age based on a scenario for current average day demand and a scenario for the maximum day demand. The diurnal curve used in the EPS represents the data collected during field testing and is an average of the time period, or interval, value for each day (August 30, August 31, and September 1), with the exception of the minimum hour and peak hour values; the values for the these time periods are 0.59 and 1.62 respectively as listed in Table 5.2. The diurnal curve selected for use in the EPS is shown in Figure 5.2 and labeled "Time Period Average (all 3 days)".

5.8 FUTURE GROWTH AND DEMAND ALLOCATION

The demand allocation for future customers is based on a gpd/acre value. The existing system land area represents approximately 9,331 acres for a maximum day demand of 21.9 MGD without wholesale customers (Benton and CBB); this results in a density of 2,344 gpd/acre and is used in the demand allocation for future customers as listed in Table 5.3. In short, the total land requirement for the year 2050 growth is approximately 5,740 additional acres to support a maximum day demand of 35.3 MGD for Bossier City customers; additional max day water demands for Benton, CBB, and a potentially new wholesale customer such as BAFB would maintain their existing metering locations and bring the total year 2050 maximum day demand for all customers to 41.9 MGD as indicated in Table 4.6.

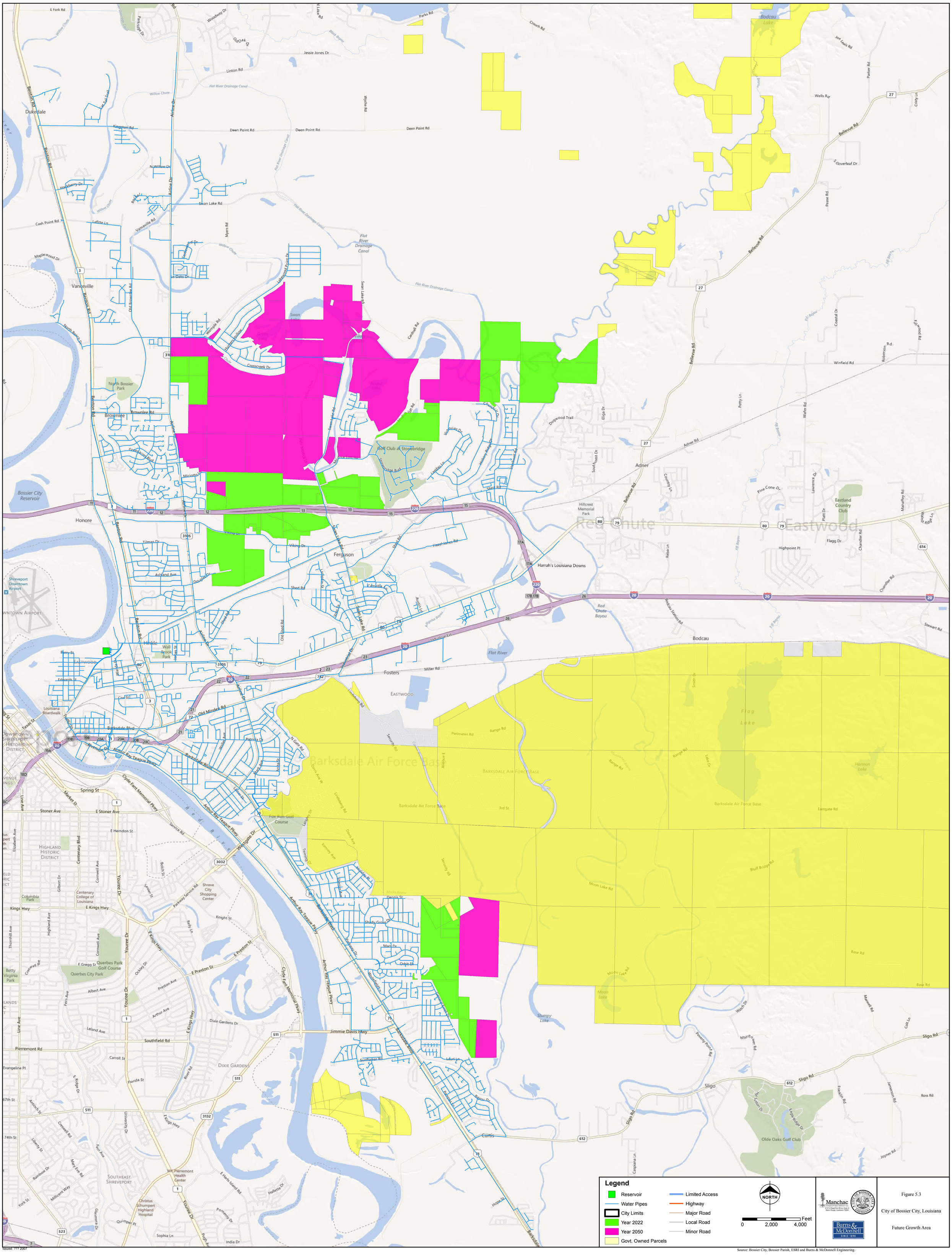
Table 5.3
Determination of Available Land for Future Growth

Item	Amount	Units
2011 Max Day Demand w/o Wholesale Customers[2]	21.9	MGD
Existing System Land (Area)[1]	9,331	Acres
Demand Allocation (demand density)	**2,344**	**gpd/acre**
Year 2050 Max Day Demand w/o Wholesale Customers[2]	35.3	MGD
Total Land Needed to Support Year 2050 Max Day Demand	15,074	Acres
Land Requirement for Future Growth	**5,743**	**Acres**

Notes:
1. This amount is determined as the total parcel area with existing water meter addresses.
2. This demand only includes residential, commercial, and residential/commercial, and the Housing Authority customer classes. Benton, CBB, and BAFB are not included in this demand because they are wholesale customers (existing/potential) identified as single, or multiple, metering locations; they are not associated with a land area and are responsible for handling, locating, and managing growth in their respective systems.

The demand allocation is further refined in Table 5.4 as it relates to the land requirement per planning and its anticipated location; this reflects the progressive growth strategy outlined by City staff. Approximately 17 percent of the future growth will occur south of I-20 and the remainder will occur north of I-20 as illustrated in Figure 5.3.

By year 2022, there is an additional land requirement of approximately 2,420 acres planned for future development which represents a water demand increase of 5.7 MGD; this is the difference between the year 2022 and year 2011 max day demands listed in Table 5.4. Similarly, the additional land requirement for future development from year 2022 to year 2050 is approximately 3,330 acres and represents a water demand increase of 7.8 MGD. Future growth in areas north and south of I-20 for years 2022 and 2050 are also included in Table 5.4.



issued: ??? 2007

Table 5.4
Progressive Growth Strategy

Planning Year	Max Day Demand[1] (MGD)	Demand Allocation (gpd/acre)	Total Land Requirement for Max Day Demand (acres)	Land Requirement per Planning Year (acres)	Growth North of I-20 (acres)	Growth South of I-20 (acres)
2011	21.9	2,344	9,331	0	NA	NA
2022	27.5	2,344	11,747	**2,416**	**1,993**	**423**
2050	35.3	2,344	15,074	**3,327**	**2,897**	**430**
			Totals	**5,743**	**4,890**	**853**

Notes:
1. See Note 2 in Table 5.3.
2. Government owned land is not considered developable land.

This approach for the demand allocation is conservative as it allows the City to adjust with any changes in the growth strategy; the water demands allocated in the hydraulic model for future growth are easily adaptable depending on where growth actually occurs.

5.9 WATER DEMAND MANAGEMENT

Bossier City's nonrevenue water amount averaged approximately 22 percent from 2006 to 2011, with a high of 27 percent in 2009 and a low of 15 percent in 2006. Comparable systems consider 10 to 15 percent acceptable by many utilities. Demand management, or wise use of water, is used to maximize efficiency which minimizes operating costs. Projections used in this study do not reflect any additional demand management activities or reductions in the nonrevenue water. Typical recommended demand management activities for systems serving over 10,000 people include the following (per EPA Guidelines for Conservation Planning):

- Universal metering – meter all water users to provide a complete account of use;
- Control water loses – perform leak detection surveys and associated repairs;
- Costing – institute an inverted water rate to encourage the water conservation. An inverted rate is a higher volume charge, usually 200 to 500 percent of the current volume charge for water use in excess of 110 to 125 percent of average winter use or average system winter use (whichever is higher);
- Distribute information and education material on water conservation with water bills, at schools, special city functions, etc.;
- Water-use audits – help customers realize how much water they use and where (AWWA M36);

- Retrofits – provide plumbing retrofits kits to decrease water use from showers, toilet flushing, and faucets;
- Pressure management – lower system pressure to decrease the amount of water people can use in comparable time periods and to reduce leakage;
- Xeriscape – plant water efficient trees, shrubs, flowers, and grass. Tall fescue, zoysia, loccul, and buffalo grasses use much less water and fewer chemicals than rye and blue grass varieties; and
- Pipeline replacement – replacement of old and small-diameter pipelines are key to controlling water loss and provide an opportunity to improve system efficiency and fire flow.

The impacts of additional demand management are not included in the demand analysis. Additional water use data should be collected for evaluation before selecting demand management measures. A 25 percent water loss is used in the demand projections.

* * * * *

6.0 HYDRAULIC ANALYSIS AND RECOMMENDATIONS

This section of the report discusses the model results and recommended improvements in the distribution system. The improvements are based on the demand projections outlined in Chapter 4 and the anticipated growth areas discussed in Chapter 5. The model results discussed in this chapter highlight high service pumping, the storage analysis, system pressure, distribution system piping, fire flow analysis, and the water age analysis.

6.1 HIGH SERVICE PUMPING

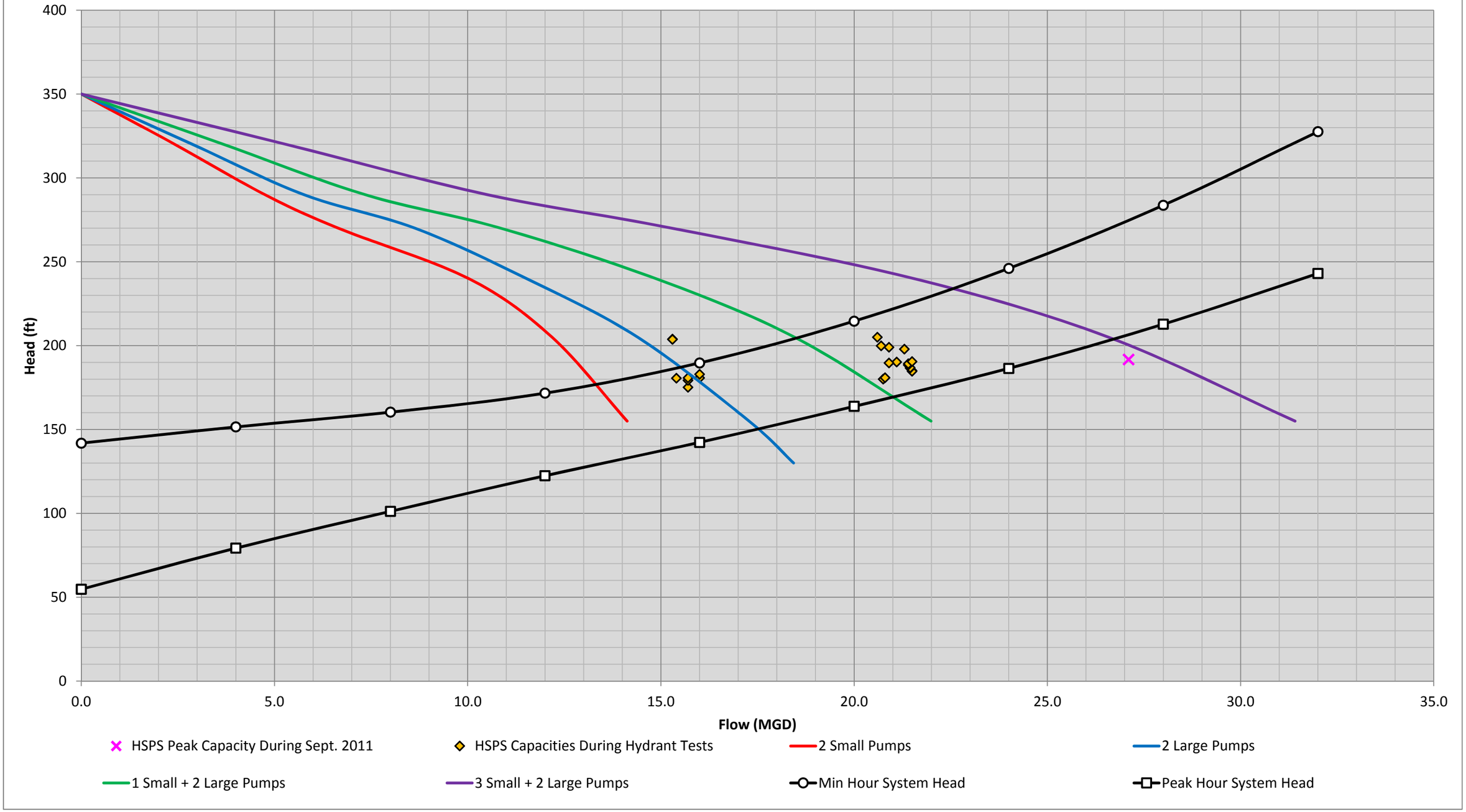
6.1.1 Existing System

The peak hour and minimum hour demands are selected for system head curve development because these conditions generate an active pump head range of the high service pump station. The minimum hour demand condition creates the greatest pump head requirement because it is the sole water supply source for the distribution system and hydraulic gradient in the elevated storage is at or near overflow elevations. The peak hour demand condition creates the lowest pump head requirement because water supply to the distribution system is delivered by a combination of high service pumping and elevated storage whose hydraulic gradient is at or near half capacity.

The data collection period occurred from August 30, 2011 to September 1, 2011; during this time high service pumping delivered a peak capacity of approximately 27.1 MGD at approximately 82 psi (189 ft of head) to the distribution system. Further review of the high service pumping data for the entire month of September 2011 validates the peak capacity indicated above. This operating point is illustrated in Figure 6.1 near the intersection of the peak hour system head curve and the high service pumping curve consisting of two large pumps (4,500 gpm each) and three small pumps (3,000 gpm each). The existing year system head curve at the WTP for the peak hour and minimum hour demand conditions is illustrated in Figure 6.1.

Varying combinations of the two pump sizes currently in use are also illustrated in Figure 6.1. There are four small pumps in HSPS No. 1 and three small pumps in HSPS No. 3, each with a rated capacity of 3,000 gpm (4.3 MGD) at 200 ft of pump head. There is one large pump in HSPS No. 1 and two large pumps in HSPS No. 3, each with a rated capacity of 4,500 gpm (6.5 MGD) at 219 ft of pump head. The pump combinations shown in the system head curves (existing, year 2022, and year 2050) are only shown for clarity and to identify the relationship with the system head curve. The pump combinations are not an indication or recommendation on HSPS operation; the current selection method for HSPS operation is

Figure 6.1
City of Bossier City, LA
Existing System Head Curves



triggered by demand and the required pressure needed to maintain predetermined levels in elevated storage and the verdict to bring pumps in-and out-of-service is made by WTP operators.

6.1.2 Year 2022 with Improvements

The year 2022 system head curve is shown in Figure 6.2. The peak hour system head curve does not extend below 16.0 MGD, as this is the minimum HSPS capacity required to maintain a minimum of 20 psi in the distribution system under peaking events. Elevated storage cannot be relied upon to supply water to the distribution system without a contribution from the HSPS. However, if the City is only required to deliver the maximum day demand to wholesale customers (Benton and CBB, or another future customer such BAFB) and not their respective peak hour demands, then the minimum system pressure increases to 38 psi in the distribution system at a HSPS flowrate of 16.0 MGD.

6.1.3 Year 2050 with Improvements

The year 2050 system head curve is shown in Figure 6.3. The peak hour system head curve does not extend below 24.0 MGD, as this is the minimum HSPS capacity required to maintain a minimum of 20 psi in the distribution system under peaking events; which is to say, elevated storage cannot be relied upon to supply water to the distribution system without a contribution from the HSPS. However, if the City is only required to deliver the maximum day demand to wholesale customers (Benton and CBB, or another future customer such BAFB) and not their respective peak hour demands, then the minimum system pressure increases to 37 psi in the distribution system at a HSPS flowrate of 24.0 MGD.

The year 2050 system lowers the system head requirements in comparison to the existing system and is representative of the hydraulic-related and growth-related transmission improvements. Under the minimum hour and peak hour curves, the decrease in the 2050 system head requirement averages 46 psi at comparable HSPS flowrates. A more detailed comparison of the existing system and the year 2050 system head requirements at similar flowrates is listed below in Table 6.1.

The shape of the existing large and small pump curves is sufficient to meet the projected water demands; however, the total amount of large pumps must increase. Between years 2022 and 2050, HSPS No. 1 should incrementally replace two of the existing small pumps with two large pumps for the projected maximum day and peak hour demand conditions and HSPS No. 3 should replace one of the existing small pumps with one large pump for redundancy to the pumping system as a whole. These improvements are driven by the maximum day demand of 41.9 MGD. Discharge piping and fittings internal to the pump station may have to be replaced as well.

Figure 6.2
City of Bossier City, LA
Year 2022 System Head Curves

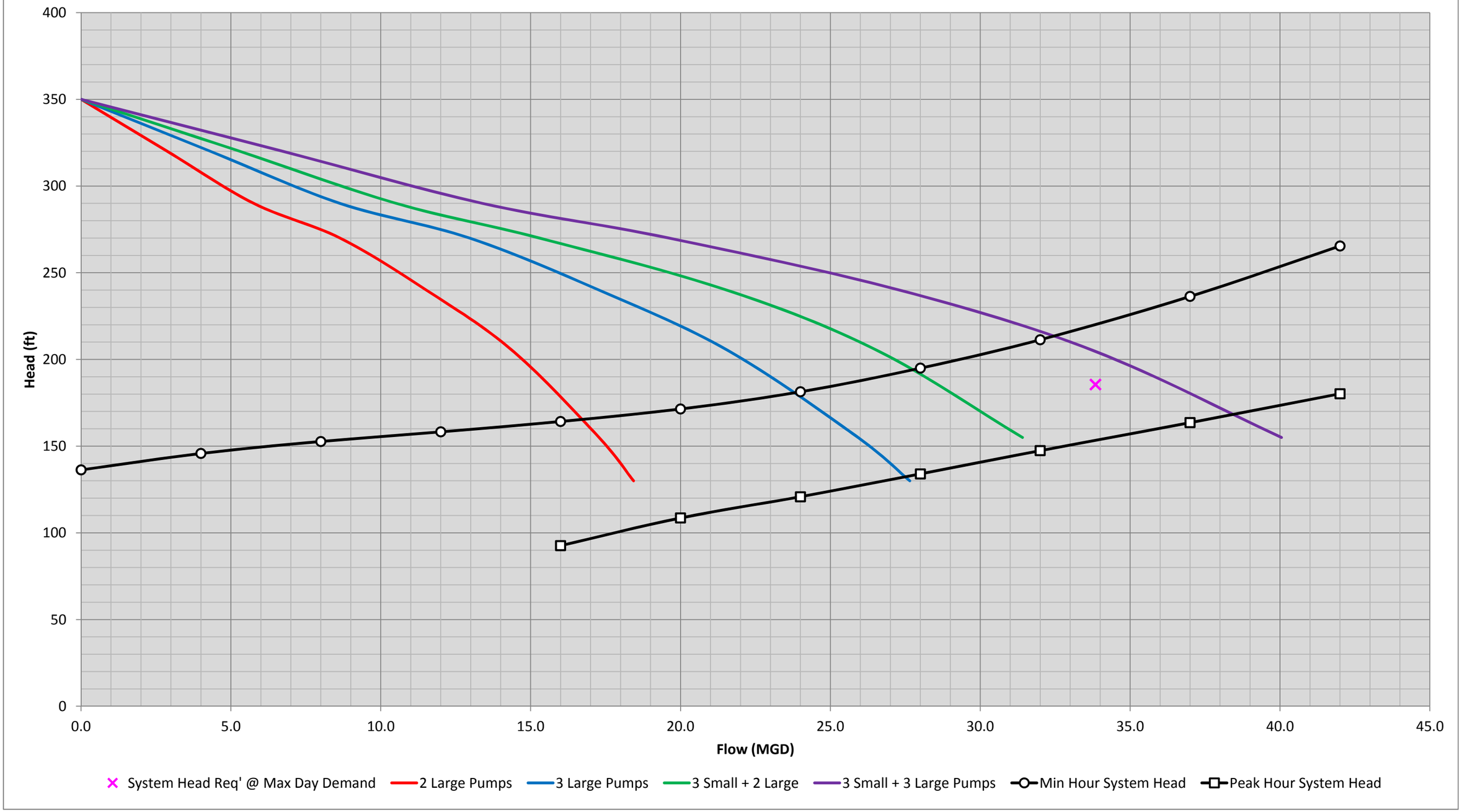


Figure 6.3
City of Bossier City, LA
Year 2050 System Head Curves

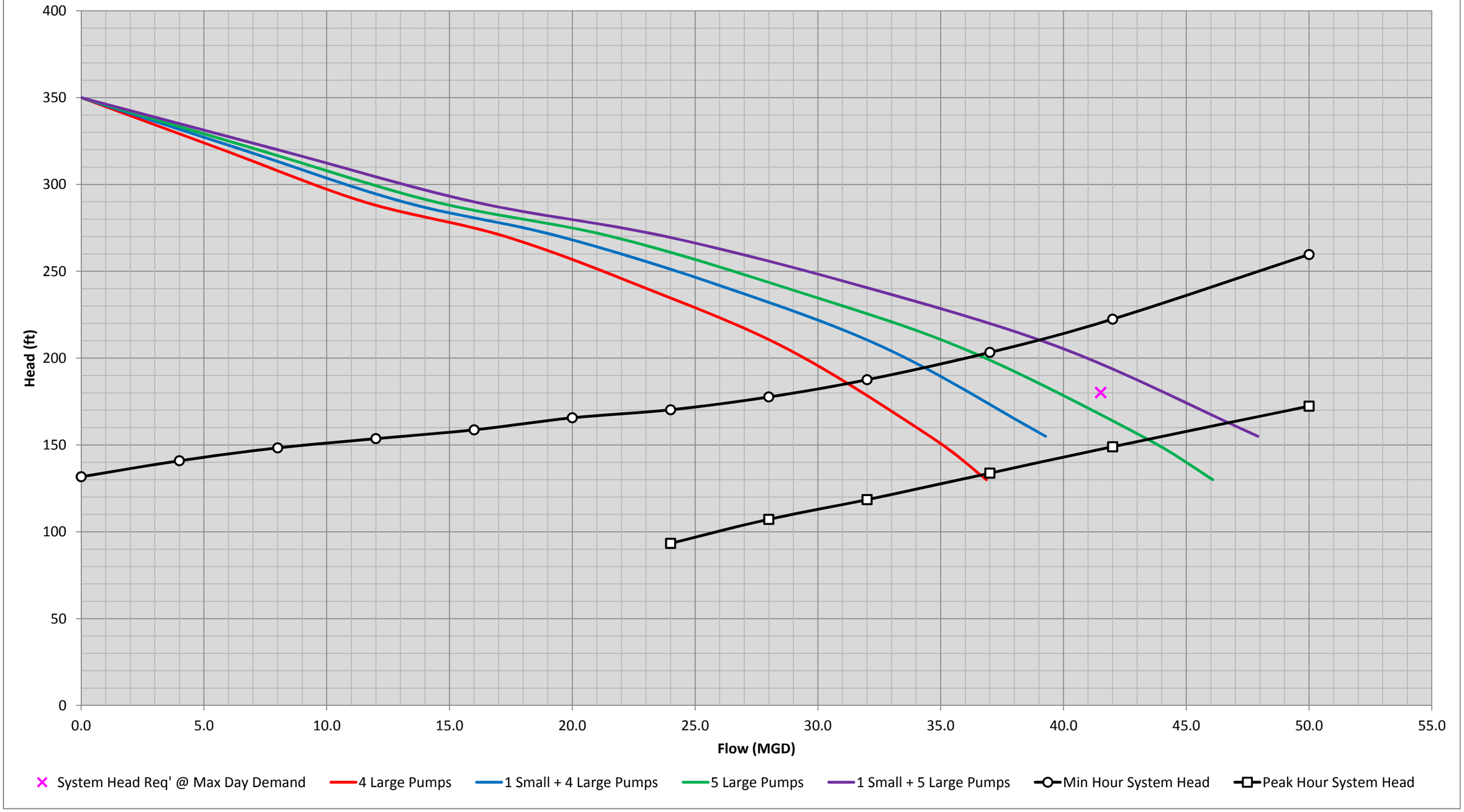


Table 6.1
Existing versus 2050 System Head Requirement (SHR)

Minimum Hour Curve				
HSPS Flowrate (MGD)	**Existing SHR (ft)**	**Year 2050 SHR (ft)**	**Difference (ft)**	**Difference (psi)**
24.0	246	170	76	33
28.0	284	178	106	46
32.0	328	188	140	61
Peak Hour Curve				
HSPS Flowrate (MGD)	**Existing SHR (ft)**	**Year 2050 SHR (ft)**	**Difference (ft)**	**Difference (psi)**
24.0	186	93	93	40
28.0	213	107	106	46
32.0	243	119	125	54

Additionally, it is recommended to provide variable speed control on one large pump and one small pump in each HSPS to provide WTP operators more operational flexibility. Variable speed pump control, or variable frequency drives (VFDs), continually adjust the pump drive shaft rotational speed in order to maintain pressure and pressure and flow requirements. VFDs would be used to maintain a constant pump head under varying rates of flow and system demand.

6.2 STORAGE ANALYSIS

Equalization and emergency storage are required for the operation of a distribution system. Equalizing demands are demands greater than the 24-hour average daily demand that result in depletion of system storage. Equalization storage is typically considered the upper halves of elevated storage tanks and the volume of ground storage that can be replenished over a 24-hour period. The distribution system must be capable of replenishing equalization storage within the same 24-hour period of the maximum day demand. Emergency storage refers to water needed for fire flow and system failures. The general requirement for emergency storage is a maximum of 3,500 gpm for three hours. Available emergency storage is typically considered as the bottom portion of elevated storage tanks.

The area above or below the 100 percent line on the diurnal curve is equivalent to the equalization storage volume. A storage factor is calculated to represent this volume and is determined as the ratio of equalizing volume to the 24-hour demand. The storage factor for the distribution system ranges from 9.9

to 12.9 percent. Multiplying a storage factor of 13.0 percent by the projected maximum day demand in the year 2022 is the required equalization storage volume and emergency storage needed for the City. Based on the maximum day demand of 34.1 MGD, the City currently has a storage surplus of 2.4 MG for equalization and emergency volumes through the year 2022 as listed in Table 6.2.

Table 6.2
Storage Analysis through Year 2022

Item	Amount
Fire or Emergency Demand (gpm)	3,500
Duration (hours)	3
Fire or Emergency Volume (MG)	0.63
Equalizing Factor (MG/MGD)	0.13
2022 Maximum Day Demand (MG)	34.1
Equalizing Volume (MG)	4.4
Total Storage Volume Required (MG)	5.1
Total Available Storage (MG)	7.5
Storage Surplus (MG)	**2.4**

There is some degree of ambiguity in evaluating the storage requirements for the year 2050 distribution system based on data from 2011, more specifically the equalizing storage volume. Additionally, the useful service life of the existing elevated towers may expire before the year 2050 planning horizon arrives and other towers may be replaced with different capacities. New large users or wholesale customers can also trigger additional storage requirements in the distribution system based on their contract provisions, water demand, and impact the equalization storage factor; ISO requirements could change as well. All of these factors should be considered when reviewing the storage analysis for the year 2050 listed in Table 6.3.

Based on the projected 2050 maximum day demand of 41.9 MGD, an equalizing storage factor of 13 percent for the distribution system, assuming the current total elevated storage capacity remains unchanged, and a fire flow volume requirement of 0.63 MG, there is a storage surplus of 1.4 MG. If the equalizing storage factor increases to 16.5 percent in the distribution system and all other conditions in Table 6.2 remain unchanged, the storage surplus is depleted. If the equalizing storage factor increases to 17 percent and all other conditions in Table 6.3 remain unchanged, then the analysis results in a storage deficit of 0.3 MG.

Table 6.3

Storage Analysis through Year 2050

Item	Amount
Fire or Emergency Demand (gpm)	3,500
Duration (hours)	3
Fire or Emergency Volume (MG)	0.63
Equalizing Factor (MG/MGD)	0.13
2050 Maximum Day Demand (MG)	41.9
Equalizing Volume (MG)	5.4
Total Storage Volume Required (MG)	6.1
Total Available Storage (MG)	7.5
Storage Surplus (MG)	**1.4**

6.3 EXISTING SYSTEM PRESSURE AND TOWER GRADIENTS

The pressures and tower gradients (model results) discussed in this section only apply to the existing system. The model results for the 2022 and 2050 scenarios are not reported in the same manner as shown in this section, as they are highly dependent on many variables such as system demand, where system demands actually occur, where future growth actually occurs, new wholesale customers, new large users, etc. The hydraulic analysis criteria discussed in Section 5.4 are used to identify distribution system improvements for the year 2022 and 2050 model scenarios.

6.3.1 Maximum Day Demand

One approach in characterizing system pressure is with respect to topography. There is little elevation drop from north to south or east to west in Bossier City; the model elevations range from 143.0 ft to 183.0 ft in the model. Additionally, one-fourth of the distribution system, with respect to water main topography, is at an elevation less than 165.0 ft at an average pressure of 63 psi, while the remainder is above elevation 165.0 ft at an average pressure of 69 psi under the current maximum day demand. Generally speaking, the higher elevations in the distribution system jog north and south of the Downtown area and near the WTP and have higher pressures due to their proximity to the HSPS. This is illustrated in Figure 6.4 and shows the pressure contours of the existing system under a maximum day demand of approximately 24.0 MGD. The tower levels are set at elevations at, or near, half full, that produce minimal drafting/filling rates to confirm that the maximum day demand in the system is supplied entirely by the WTP HSPS. The model results indicate sufficient capability of the high service pumping system to deliver the maximum day demand at sufficient pressure.

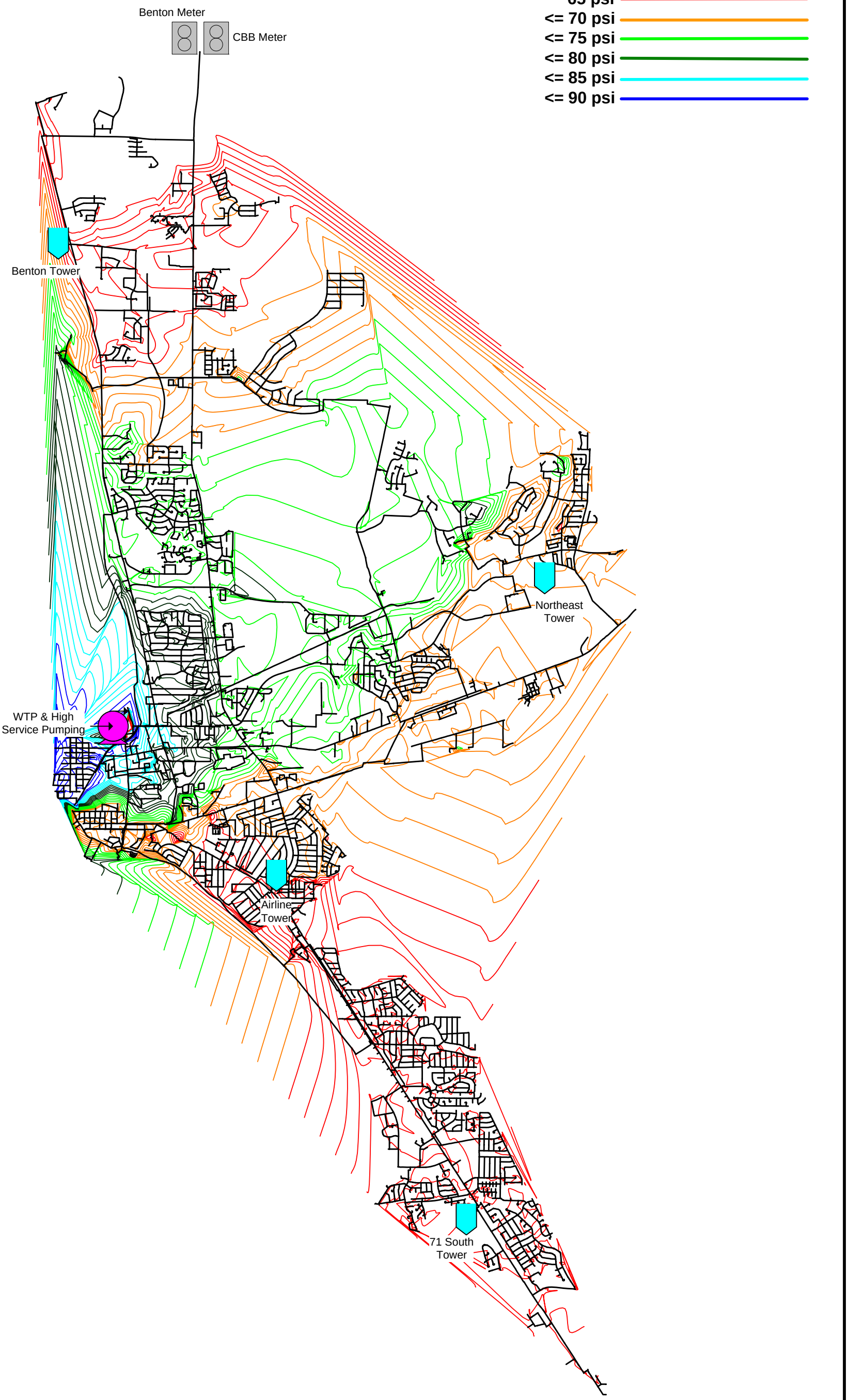


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Figure 6.4

City of Bossier City, Louisiana

Existing System Pressure Contours Under Maximum Day Demand

6.3.2 Minimum Hour Demand

System pressures are at their highest under the minimum hour demand of 14.0 MGD, ranging from 66 psi to 100 psi. The tower levels are set at, or near, full capacity to confirm tank replenishment. The limiting factor in setting a constant water level in all towers is the overflow elevation of the Northeast Tower which is set at 340.0', whereas the rest of the towers share an overflow elevation of 333.0 ft. Therefore, the water level elevation used for all towers under the minimum hour system demand is 332.5 ft. Results for the minimum hour scenario suggest some difficulty filling the South Tower; the results for the remainder of the towers indicate sufficient filling rates under minimum hour demands when at, or near, full capacity as indicated below:

- Benton Tower: 1,500 gpm;
- Northeast Tower: 2,600 gpm;
- Airline Tower: 1,800 gpm; and
- South Tower: 200 gpm.

A sensitivity analysis of the new 36-inch transmission main, just south of I-220 and between Airline Drive and Swan Lake Road, was conducted with the model to determine if this improvement had any effect on the system's capability to fill the South Tower. This stretch of transmission was set at its original 20-inch diameter in the model; however, the results showed minimal impact the South Tower with respect to filling rate. Review of the transmission capacity supplying the South Tower show adequately sized water mains with 10-inch, 12-inch, and 20-inch diameter looped connections. The capability to fill the South Tower under minimum hour demands is likely the result of it location with respect to the HSPS. A simple straight line approach to determine tower distance from a centrally located position at the WTP; the South Tower straight line distance is approximately 6.8 miles away. The South Tower distance is over a mile longer than the next most distant tower (Benton at 5.7 miles, Northeast at 5.2 miles, and Airline at 2.4 miles).

6.3.3 Peak Hour Demand

System pressures are at their lowest under the peak hour demand of 38.9 MGD, ranging from 40 psi to 88 psi and exhibit a similar contour pattern as that shown in Figure 6.4. Peak hour is evaluated at the same tower levels as the maximum day demand scenario to confirm that the towers at, or near, half capacity, can deliver equalizing demands without draining the tower. The model results for tower status under the peak hour demand condition is described below:

- Benton Tower: 65 percent full and drafting at 2,900 gpm; at the end of the peak hour, there is approximately 1.13 MG remaining in the tower. Full capacity is 2.0 MG;

- Northeast Tower: 71 percent full and drafting at 2,800 gpm; at the end of the peak hour, there is approximately 1.24 MG remaining in the tower. Full capacity is 2.0 MG;
- Airline Tower: 49 percent full and drafting at 1,300 gpm; at the end of the peak hour, there is approximately 0.65 MG remaining in the tower. Full capacity is 1.5 MG; and
- South Tower: 40 percent full and drafting at 1,900 gpm; at the end of the peak hour, there is approximately 0.69 MG remaining in the tower. Full capacity is 2.0 MG.

6.4 CRITICAL MAIN ANALYSIS

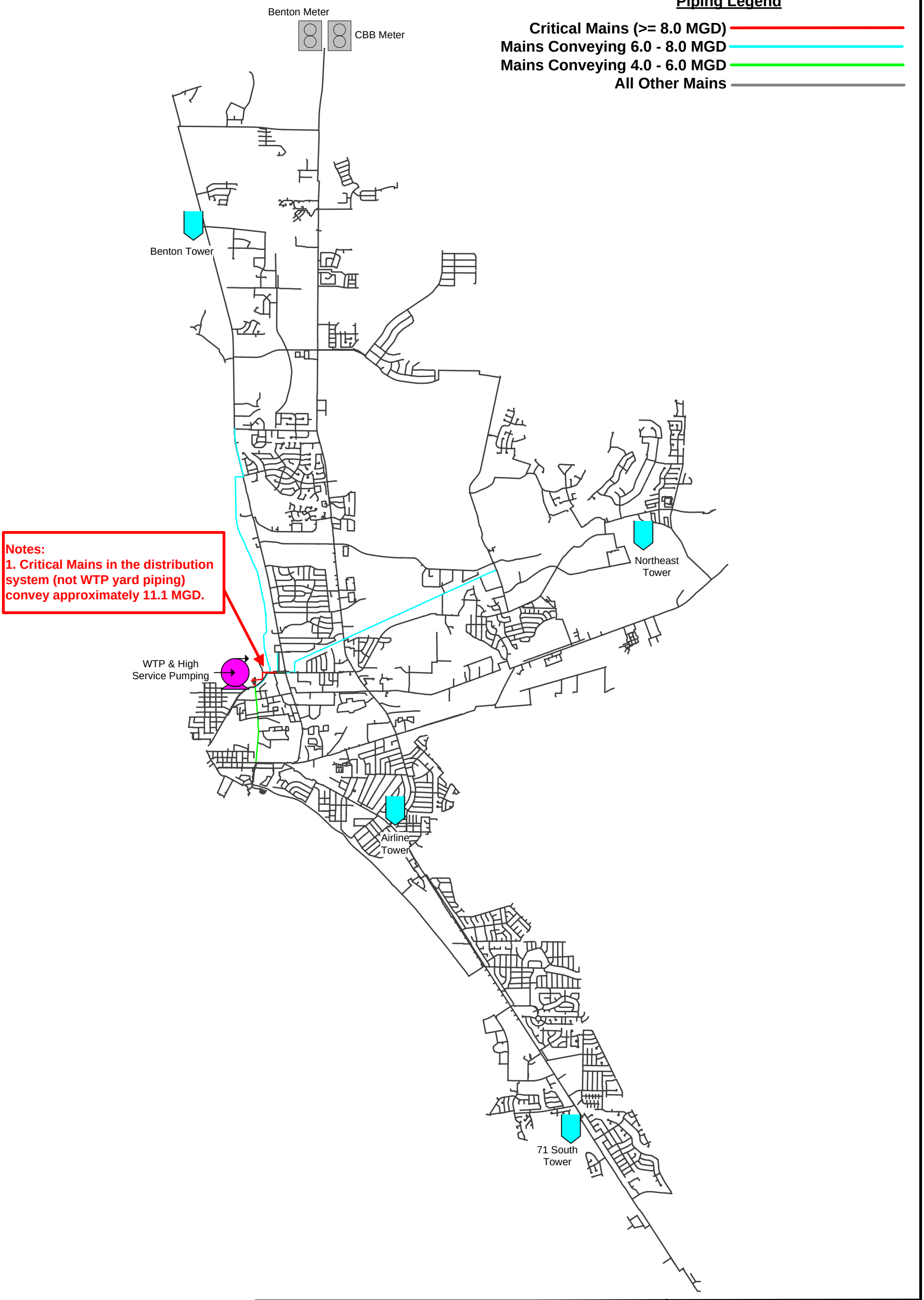
A sensitivity analysis was conducted with the model to evaluate critical main failure within the distribution system for the existing and year 2022 system. The pipe segments identified as critical mains are those carrying greater than one third of the total system demand under maximum day conditions and not directly connected to HSPS discharge (i.e. yard piping). These pipe segments are removed from the model to determine the effect on the system of losing the main to unforeseeable conditions such as a break. The sensitivity analysis addresses the following questions:

- Does zone pressure drop below 40 psi?
- What is the effect on the pump discharge pressure?
- What is the capacity lost compared to normal WTP HSPS discharge?
- What is the effect on elevated storage?

6.4.1 Existing System Critical Mains

The most critical pipes in the distribution system are located near the WTP HSPS in the 20-inch water main along Shed road between Hamilton Road and Field Street. The pipes identified as critical mains convey greater than one third of the total system flow which is approximately 5,500 gpm (8.0 MGD) and are shown in Figure 6.5. Removing any one of the large capacity critical mains from service can increase HSPS discharge pressure between 14 psi and 30 psi; these water mains generally extend east from the WTP and, under normal conditions (no critical main breaks), convey approximately between 11.1 to 15.3 MGD under the maximum day demand condition at a HSPS discharge pressure of approximately 93 psi. Other large capacity water mains, but not considered critical by definition, conveying 4.0 to 6.0 MGD and 6.0 to 8.0 MGD are also shown in Figure 6.5.

Elevated storage from the Benton and Northeast towers supply the system with the lost capacity from a critical main break; the remainder of the towers are relatively unaffected by a main break at this location. Model results indicate drafting rates of approximately 3,000 gpm in the Benton and Northeast towers if the main break occurs west of the 20-inch water main extending north toward Benton Tower. If a water



Piping Legend

- **Critical Mains (>= 8.0 MGD)**
- **Mains Conveying 6.0 - 8.0 MGD**
- **Mains Conveying 4.0 - 6.0 MGD**
- **All Other Mains**

Notes:
1. Critical Mains in the distribution system (not WTP yard piping) convey approximately 11.1 MGD.

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Figure 6.5

City of Bossier City, Louisiana

Existing System Critical Mains

main break occurs east of the same 20-inch water main, the model results indicate drafting rates of approximately 800 gpm in the Benton Tower and 2,100 gpm in the Northeast Tower under maximum day demand conditions.

As water levels drop in the elevated storage to a gradient less than 92 feet from each respective grade elevation, localized system pressures will drop below 40 psi and the low pressure areas will continue to expand. This gradient is well below the minimum storage elevation in each tower; therefore, all of the system storage would be depleted unless additional high service pumps are brought in service. The caveat with bringing additional pumps into service during main breaks is water main pressures can increase and result in even more main breaks. If any one of the critical mains break or lose service there can be a resulting loss in capacity between 4.0 MGD and 8.7 MGD in the distribution system.

6.4.2 Year 2022 Critical Mains

A critical main evaluation was performed for the 2022 system, under the maximum day demand condition of 34.1 MGD, to determine the pressure spike and lost capacity due to a main break with the proposed hydraulic-related and growth-related improvements. When the critical pipes are removed from the year 2022 system, the discharge pressure increase at the pumps is approximately 3 psi, from 79 psi to 82 psi. The resulting loss in capacity is approximately is between 0.3 MGD and 0.9 MGD. The increase in discharge pressure is manageable and the loss in capacity is much less than that observed in the existing system critical main evaluation. The proposed improvements and future piping in the distribution system will provide adequate system capacity in the event of a critical main break.

6.5 FIRE FLOW ANALYSIS

The hydraulic model is used to evaluate the available fire flow at all model nodes at a residual pressure of 20 psi while under maximum day demand conditions for the existing system, year 2022 system, and year 2050 system. A cap on the available fire flow is set at 6,000 gpm in the model scenario.

6.5.1 Existing System Available Fire Flow

Fire flow contours for the existing distribution system under maximum day demand conditions are found in Figure 6.6. The available fire flow ranges between 250 gpm and 6,000 gpm; the areas representing the low end of the fire flow range (less than 1,200 gpm) is a small amount with respect to the entire distribution system. The low end fire flow areas include dead end 4-inch diameter pipes; removing the locations connected to 4-inch dead end pipes from the analysis provides a better indication of the systems

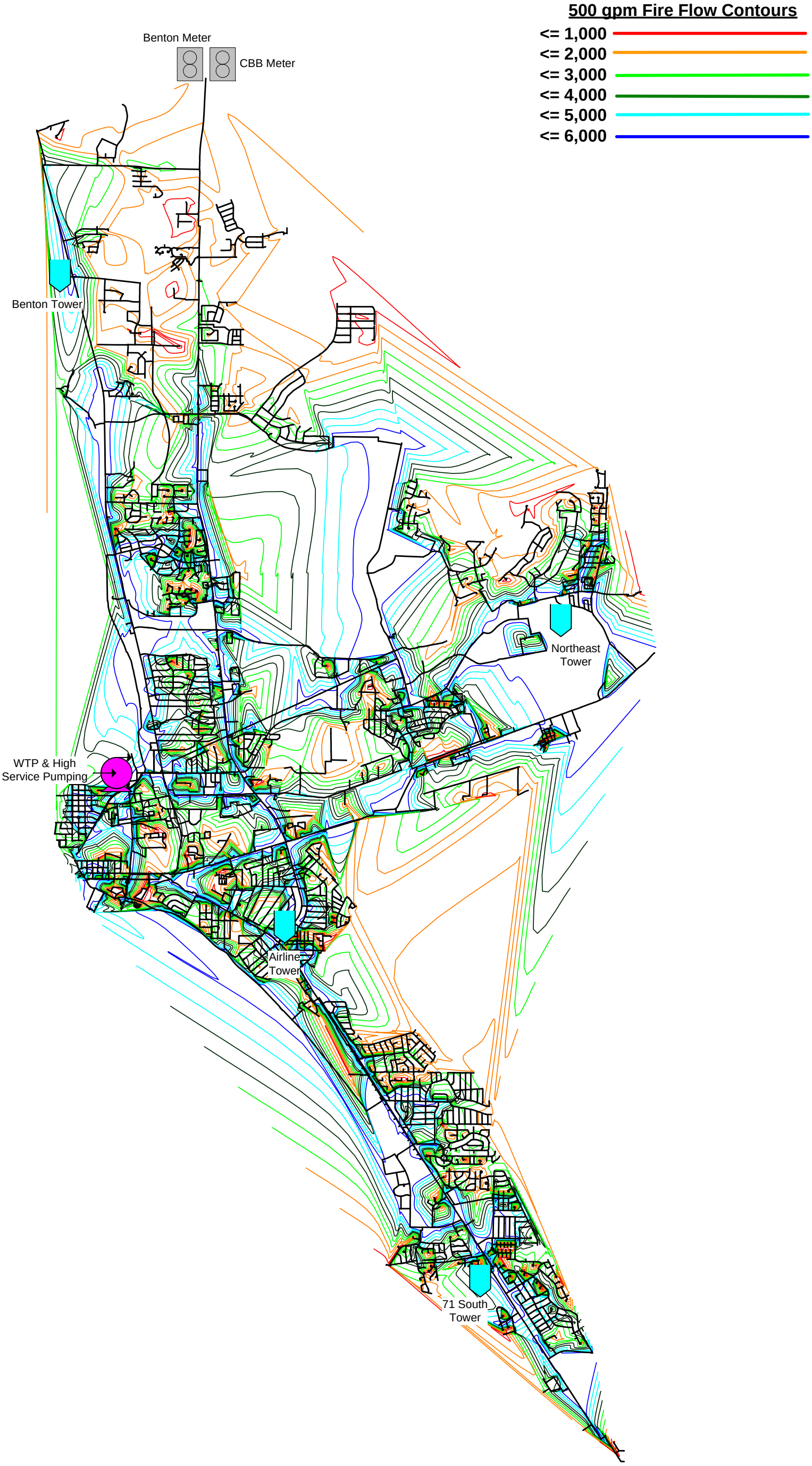

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Figure 6.6

City of Bossier City, Louisiana

Existing System
Fire Flow Contours

ability to deliver fire flow requirements. In doing so, the low-end range for available fire flow is between 900 gpm to 1,200 gpm.

A small mains replacement program should be implemented and continue through the planning period as needed or as funding becomes available. The small diameter pipes eligible for replacement should first be evaluated to determine if they are part of the main water distribution system or just service lines to dead end pipes. Water mains 4-inches and less in diameter are shown in Figure 6.7 and total approximately 9.0 miles in length (as modeled). The small mains should be replaced with a minimum 6-inch or 8-inch diameter pipe.

6.5.2 Year 2022 Available Fire Flow

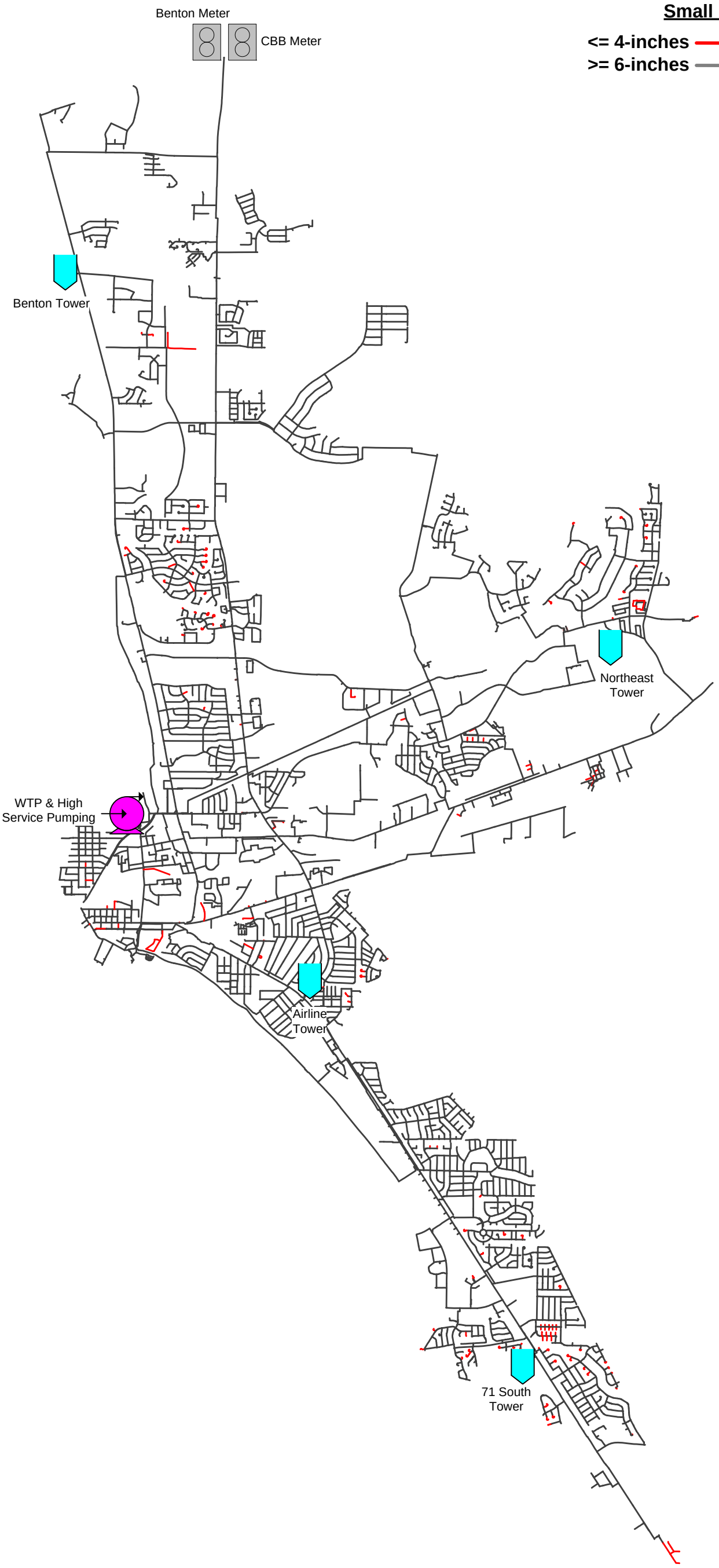
The available fire flow contours for the 2022 system with improvements are shown in Figure 6.8. All of the concentrated pockets of fire flow contours indicating less 1,000 gpm are all 4-inch diameter dead end mains. Fire flows will increase if these lines are replaced with a minimum diameter of 6 inches; conversely, all of these low fire flow pockets occur on relatively short 4-inch dead end mains that supply water to residential users that have fire hydrants located on or near larger diameter trunk lines in the near vicinity and not necessarily on the dead end. Therefore, replacing all 4-inch dead end service lines is not required and should be evaluated on actual fire hydrant location basis.

6.5.3 Year 2050 Available Fire Flow

The available fire flow contours for the 2050 system with improvements are shown in Figure 6.9 and exhibit similar concentrated pockets of low fire flow contours as the existing system and year 2022 system; these pockets indicate less 1,000 gpm and are all 4-inch diameter dead end mains. As such, the fire flows will increase if these lines are replaced with a minimum diameter of 6 inches; however replacing all 4-inch dead end service lines may not be required as indicated in the previous section.

6.6 WATER AGE ANALYSIS

In conjunction with the EPS analysis, the water quality analysis computes water age in the distribution system to evaluate residence time in tanks and assist in predicting areas in the distribution system with the greatest potential for water quality deteriorations. The existing system model is set up for an EPS analysis, as discussed in Section 5.7, to evaluate water age with a scenario based on the current average day demand and a scenario based on the current maximum day demand. The EPS must include a time period extensive enough to capture the longest travel time within the distribution system to reach equilibrium. The EPS duration spans a 14-day period in 1-hour increments. The average water age is



Small Mains

<= 4-inches

>= 6-inches

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Figure 6.7

City of Bossier City, Louisiana

Existing System
Small Mains

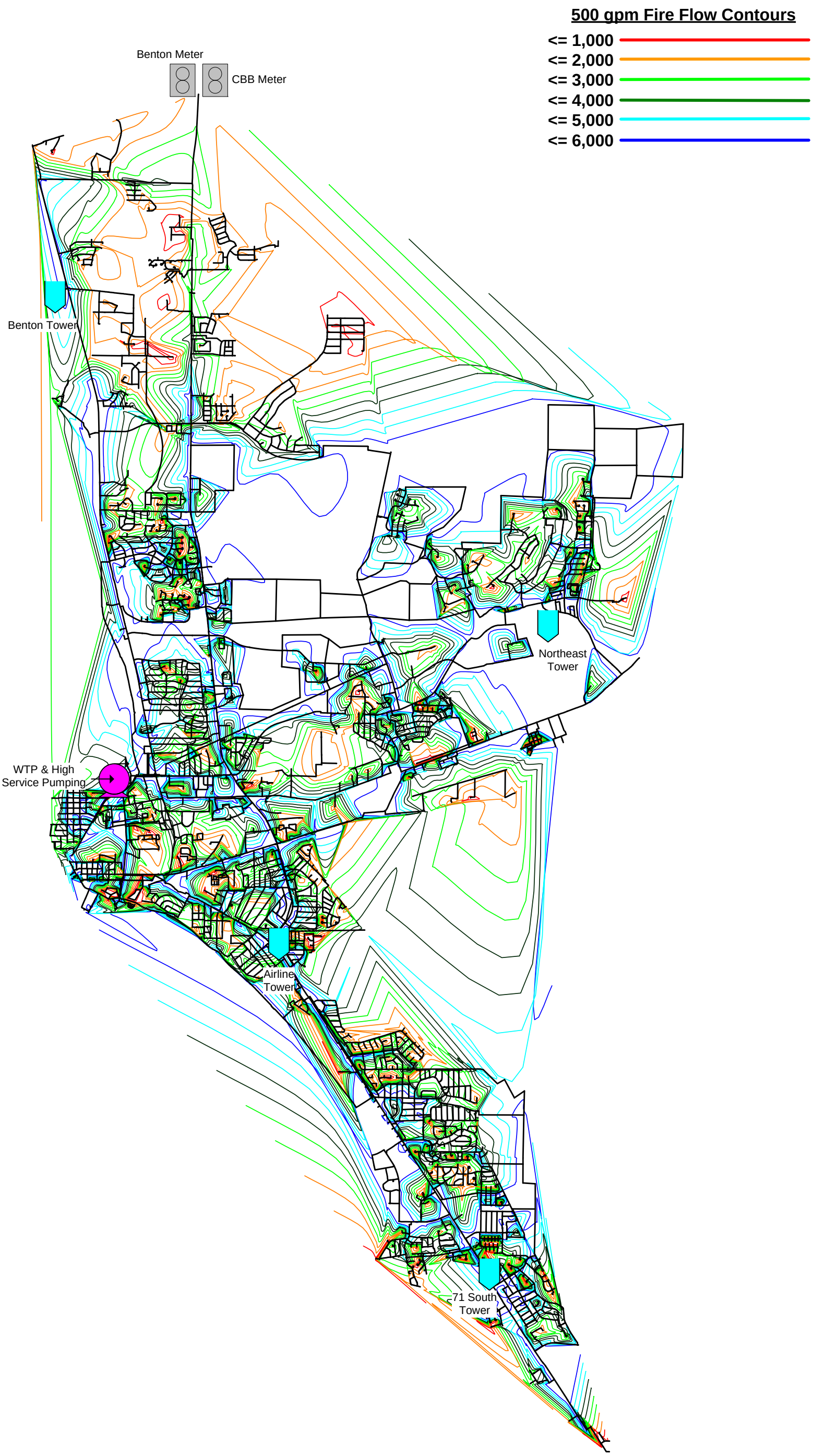

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Figure 6.8

City of Bossier City, Louisiana

Year 2022 System Fire Flow Contours

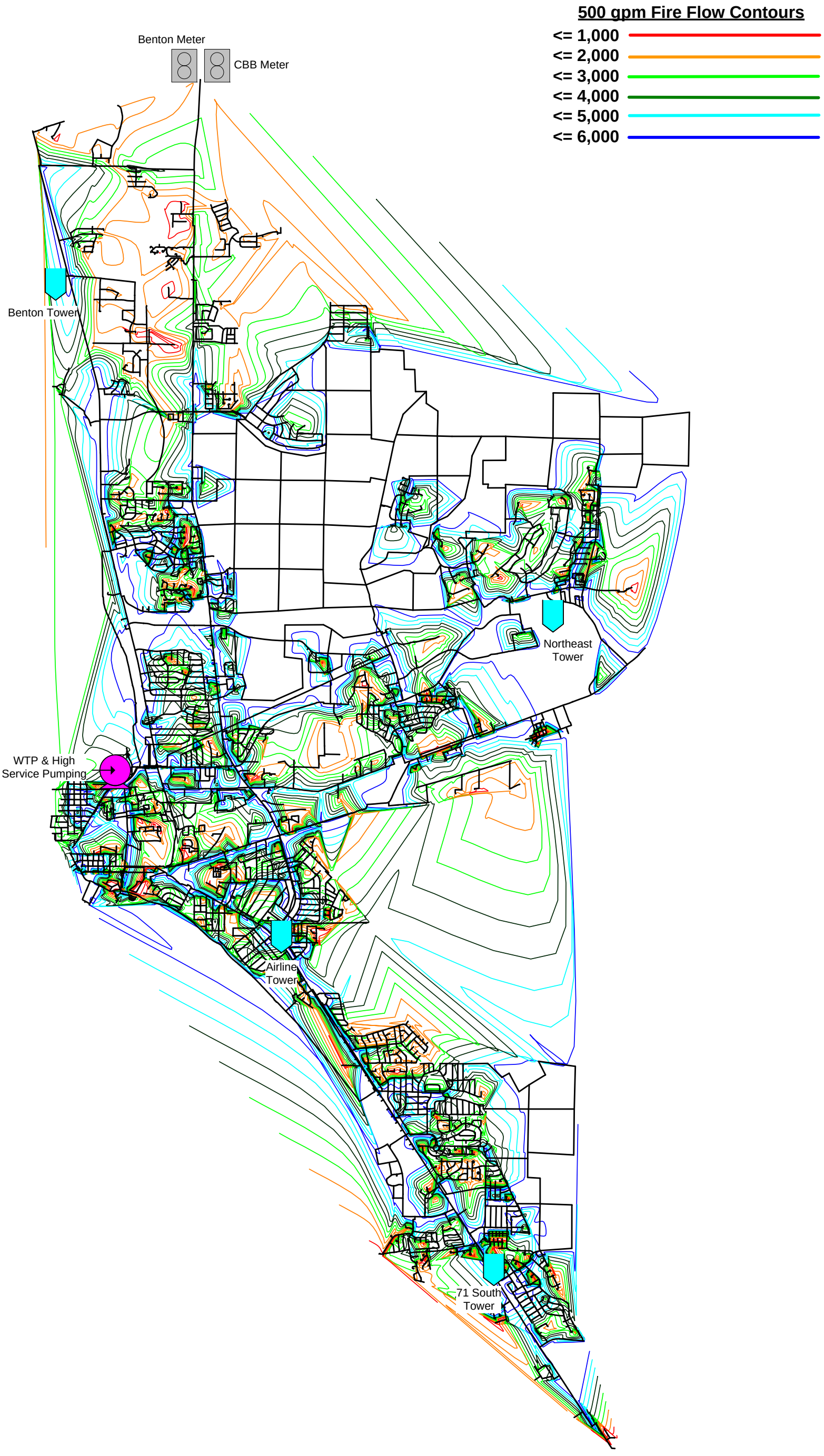

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Figure 6.9

City of Bossier City, Louisiana

Year 2050 System
Fire Flow Contours

determined with a weighted average of the water age for each model node based on the percent of demand for that node.

Water age contours based on the current average day demand of 14.2 MGD are shown in Figure 6.10. The distribution system locations resulting in the highest water age under average day demand conditions include the vicinity just north and east of the Northeast Tower in the area bound by Landau Land and Stockwell Road, and also in the area south and east of the 71 South Tower. The average water age in these areas ranges from 3.8 days to 4.4 days. The average age over the entire distribution system based on average day demand conditions is approximately 1.2 days (27 hours). The localized, or concentrated, contours with water age near 336 hours (red contours) shown in Figure 6.10 represent dead end mains with little or no demand. These dead end mains can represent water supply lines for future customers or no customers currently present; if the customer consumption/demand increases similar to the surrounding area, then the water age would decrease and be representative of those contours in the surrounding area.

The water age contours based on the current maximum day demand of 24.0 MGD are shown in Figure 6.11. The distribution system locations resulting in the highest water age under average day demand conditions include a smaller area of the vicinities described above for the average day demand water age contours. The average water age in these areas ranges from 2.0 days to 2.8 days. The average age over the entire distribution system based on maximum day demand conditions is approximately 0.7 days (16 hours).

6.7 TRANSMISSION HYDRAULICS

The transmission hydraulics (model results) discussed in this section only apply to the existing system. The model results for the 2022 and 2050 scenarios are not reported in the same manner. The hydraulic analysis criteria discussed in Section 5.4 are used to identify distribution system improvements for the year 2022 and 2050 model scenarios. The criteria related used to evaluate transmission hydraulics are listed below:

- Transmission pipeline velocity is less than 5 fps and head loss is less than 6 feet per 1,000 feet; and
- Evaluation of total head loss compared to the length of pipe.

The transmission hydraulics of the existing system under the maximum day demand of 24.0 MGD that do not meet hydraulic analysis criteria are shown in Figure 6.12. These water mains exhibit high velocities and head loss that can limit the ability to fill elevated storage at a higher rate and limit the ability to

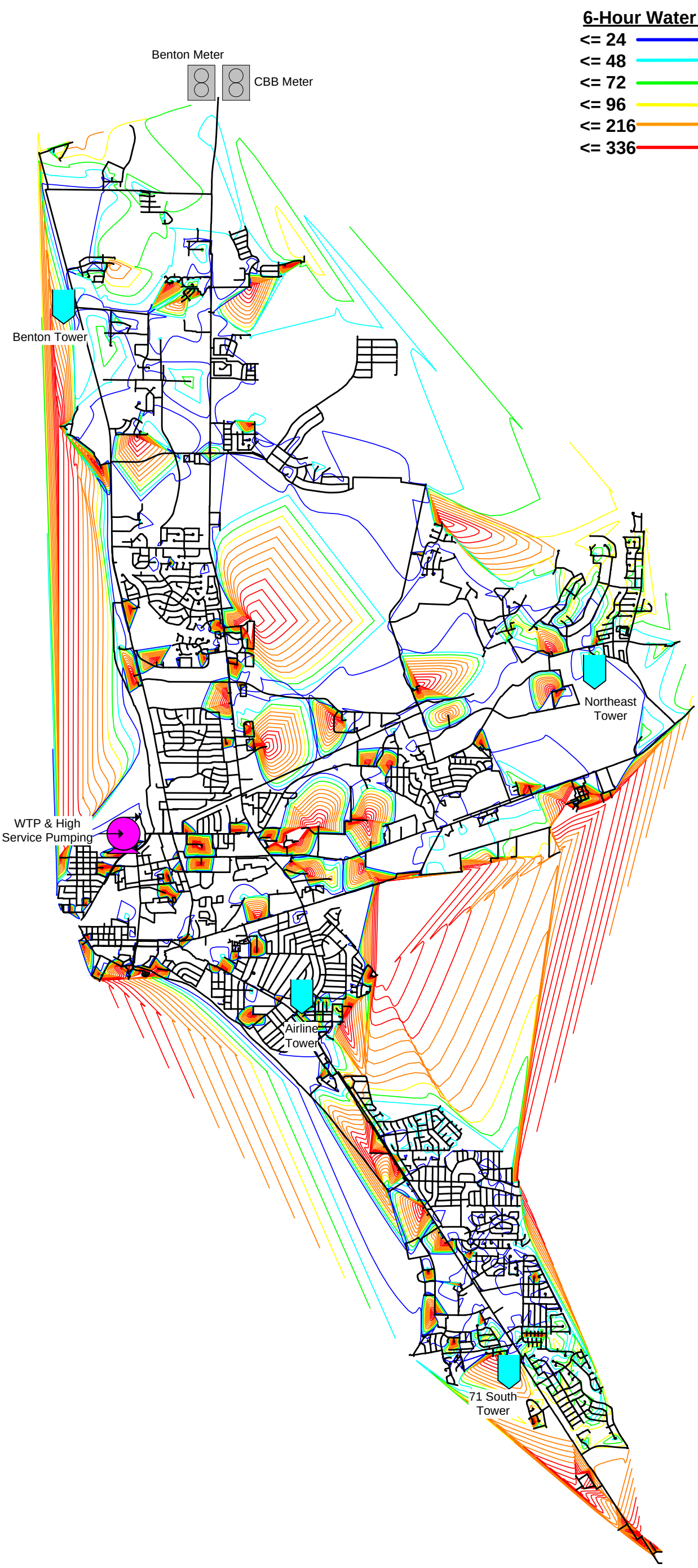

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Figure 6.10

City of Bossier City, Louisiana

Existing System
Average Day Demand
Water Age Contours

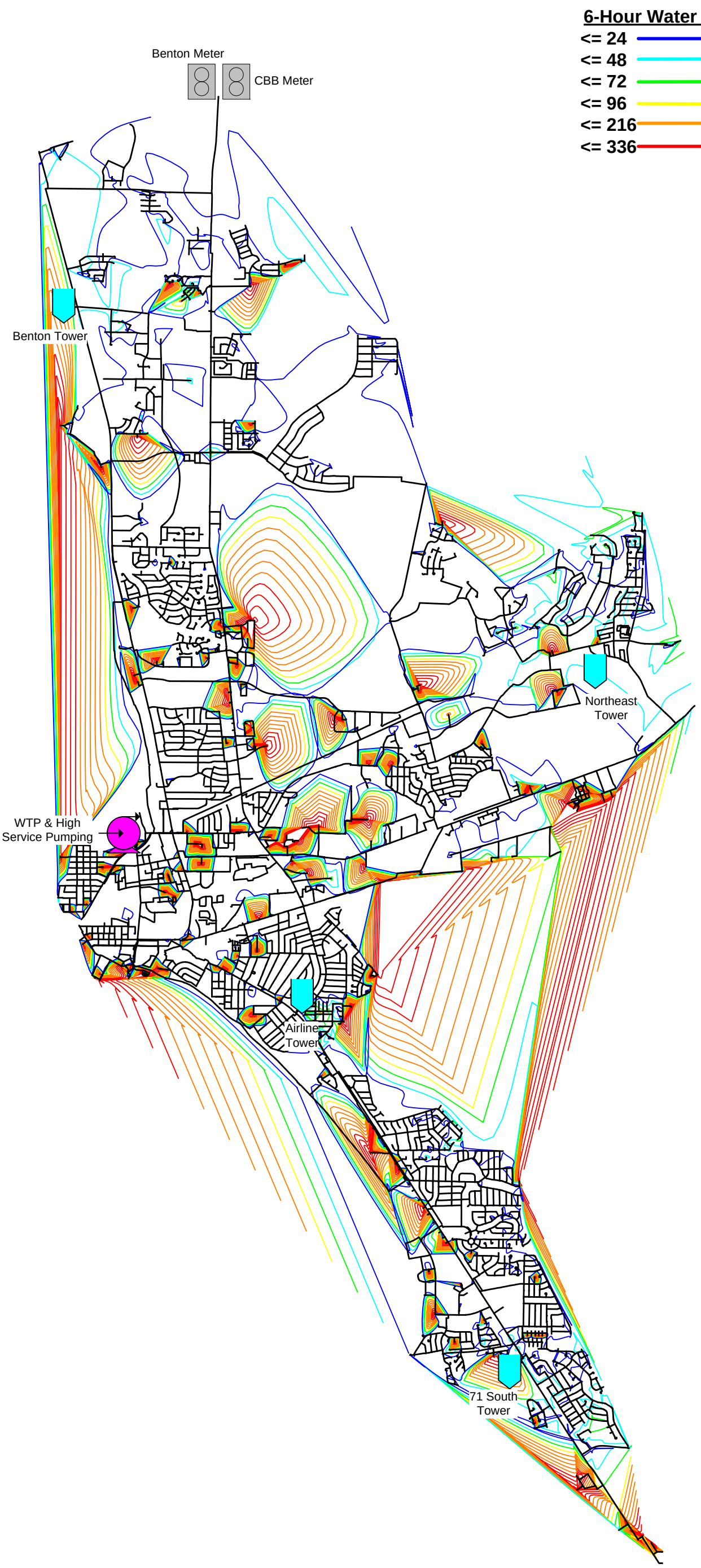

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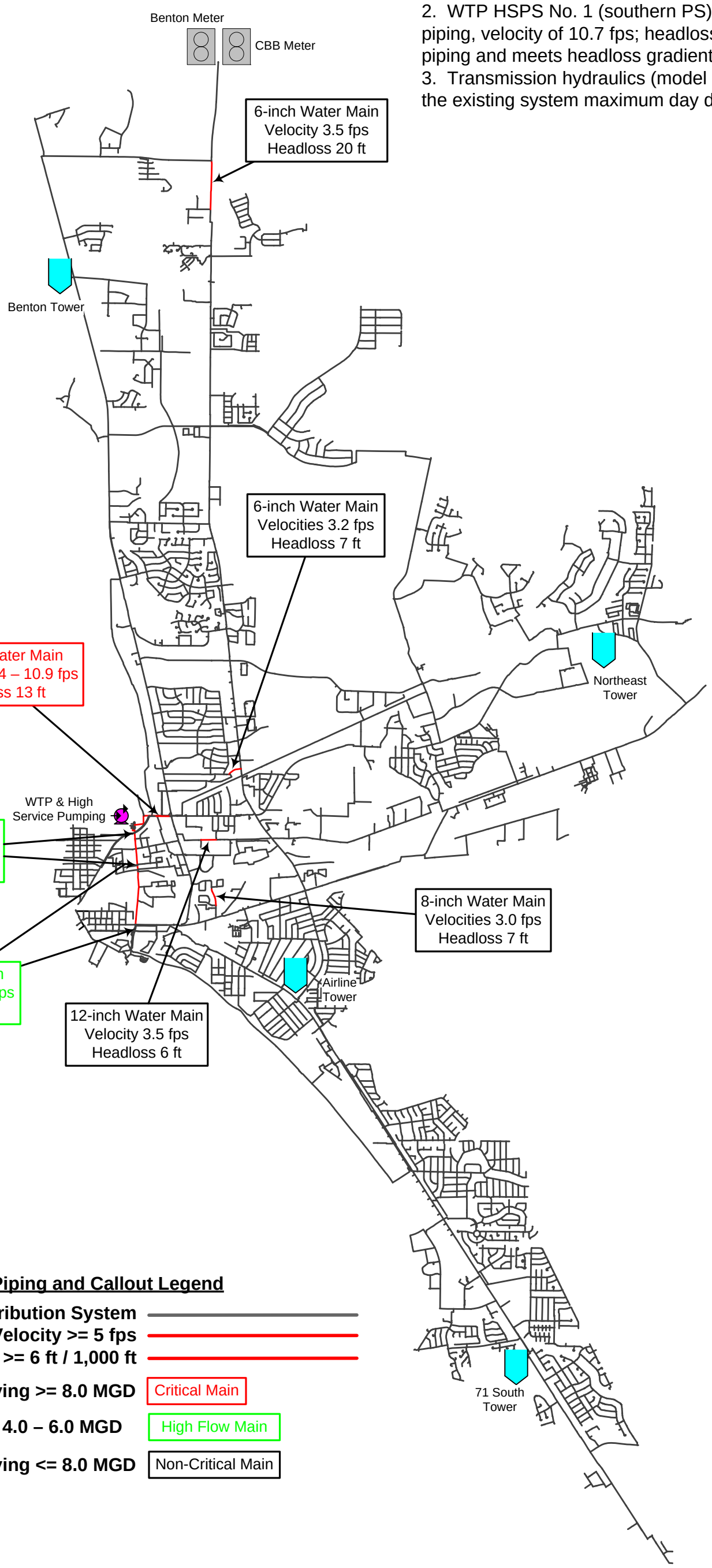
Figure 6.11

City of Bossier City, Louisiana

Existing System
Maximum Day Demand
Water Age Contours

Notes:
1. WTP HSPS No. 3 (northern PS): 20-inch discharge yard piping, velocity of 8.7 fps, and headloss of 19 ft.
2. WTP HSPS No. 1 (southern PS): 18-inch discharge yard piping, velocity of 10.7 fps; headloss is 9 ft over 350 ft of piping and meets headloss gradient criteria of < 6 ft / 1,000 ft.
3. Transmission hydraulics (model results) are based on the existing system maximum day demand of 24.0 MGD.



Piping and Callout Legend

Existing Distribution System
Velocity >= 5 fps
Headloss Gradient >= 6 ft / 1,000 ft
Carrying >= 8.0 MGD — Critical Main
Carrying 4.0 – 6.0 MGD — High Flow Main
Carrying <= 8.0 MGD — Non-Critical Main

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Figure 6.12

City of Bossier City, Louisiana

Existing System
Transmission Hydraulics

deliver water at a higher pressure to the City's customers under low pressure conditions such as the peak hour demand. Not all of these water mains need to be replaced or a parallel water main installed.

Implementing additional transmission capacity to every water main not meeting the criteria can improve hydraulics; however, this would be a costly capital improvement and they are not all required immediately. Additional transmission capacity should be implemented in some areas that are considered critical mains or convey a large amount of water as shown in Figure 6.5 (Existing System Critical Mains). More specifically, these areas include the following:

- WTP HSPS No. 1 discharge yard piping;
- WTP HSPS No. 3 discharge yard piping;
- 20-inch water main extending from HSPS No. 3 to the recently installed 36-inch water main at Airline Drive; and
- 18-inch and 16-inch water main extending from HSPS No. 1 south along Hamilton Road to I-20.

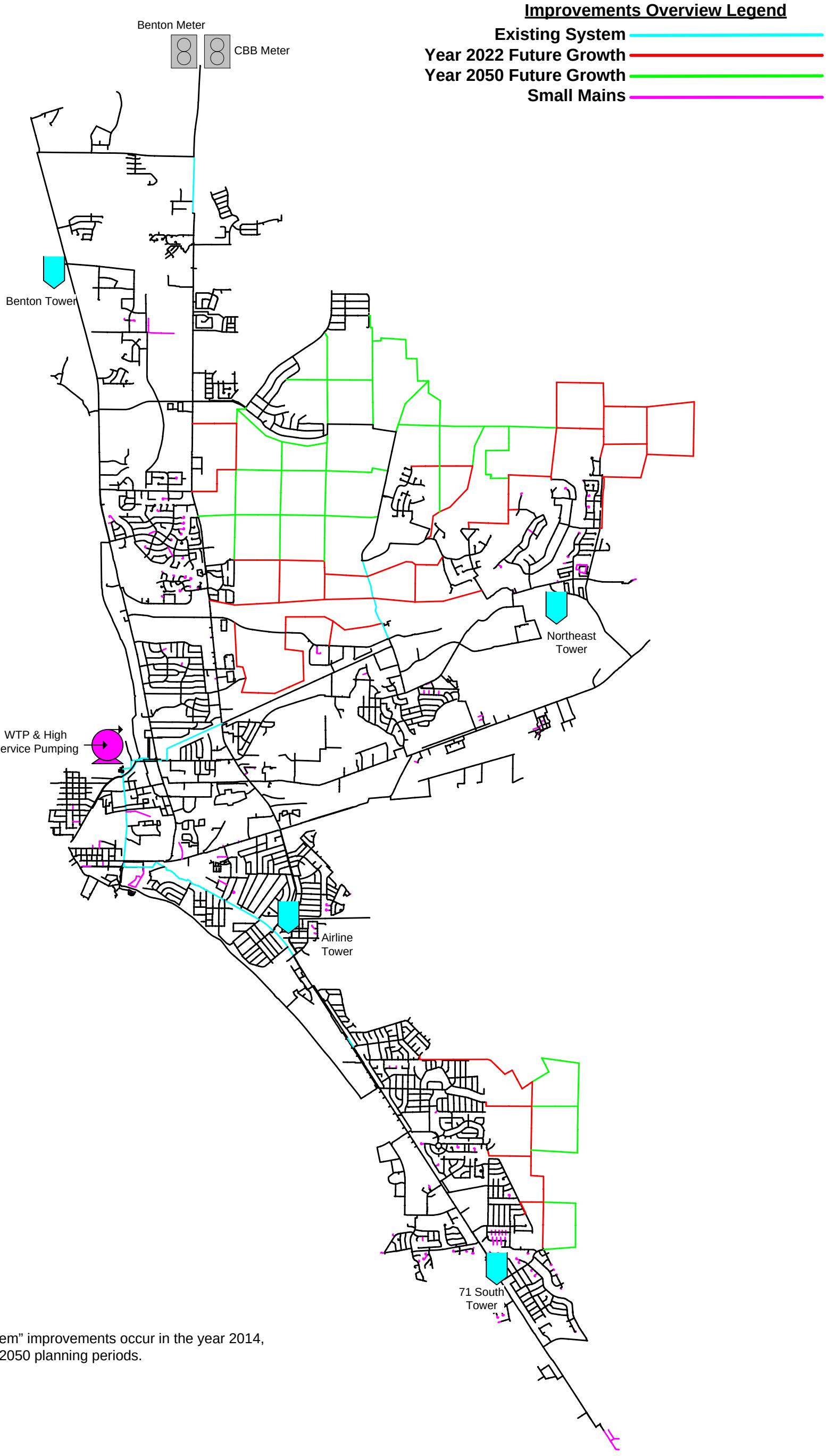
6.8 DISTRIBUTION SYSTEM IMPROVEMENTS

There are three types of improvements described herein, as shown in Figure 6.13, and include the following:

- Existing system improvements for enhanced hydraulics and increased system reliability;
- Improvements required for future growth and development planning; and
- Small mains replacement.

For clarity, the existing system improvements are evaluated in the hydraulic model as replacing existing water mains and maintaining original connection points to the adjoining distribution system. This approach allows the City to determine, on a case-by-case basis, if the existing line should be removed and replaced with the recommended size or left in service and paralleled with a new water main whose combined pipe area, with the existing water main, meets or exceeds the pipe capacity of the recommended water main.

The recommended improvements are shown in Figure 6.14 and are color coded with unique labels that correspond to specific items in the capital improvements plan by improvement year. The labeling also represents prioritization for implementation of the hydraulic related ("HR") improvements; future growth ("FG") improvements do not include prioritization and they should be implemented based on necessity and by virtue of where growth actually occurs. A description of the labeling scheme shown in Figure 6.13 is listed below:



Notes:
1. The “existing system” improvements occur in the year 2014, year 2022, and year 2050 planning periods.

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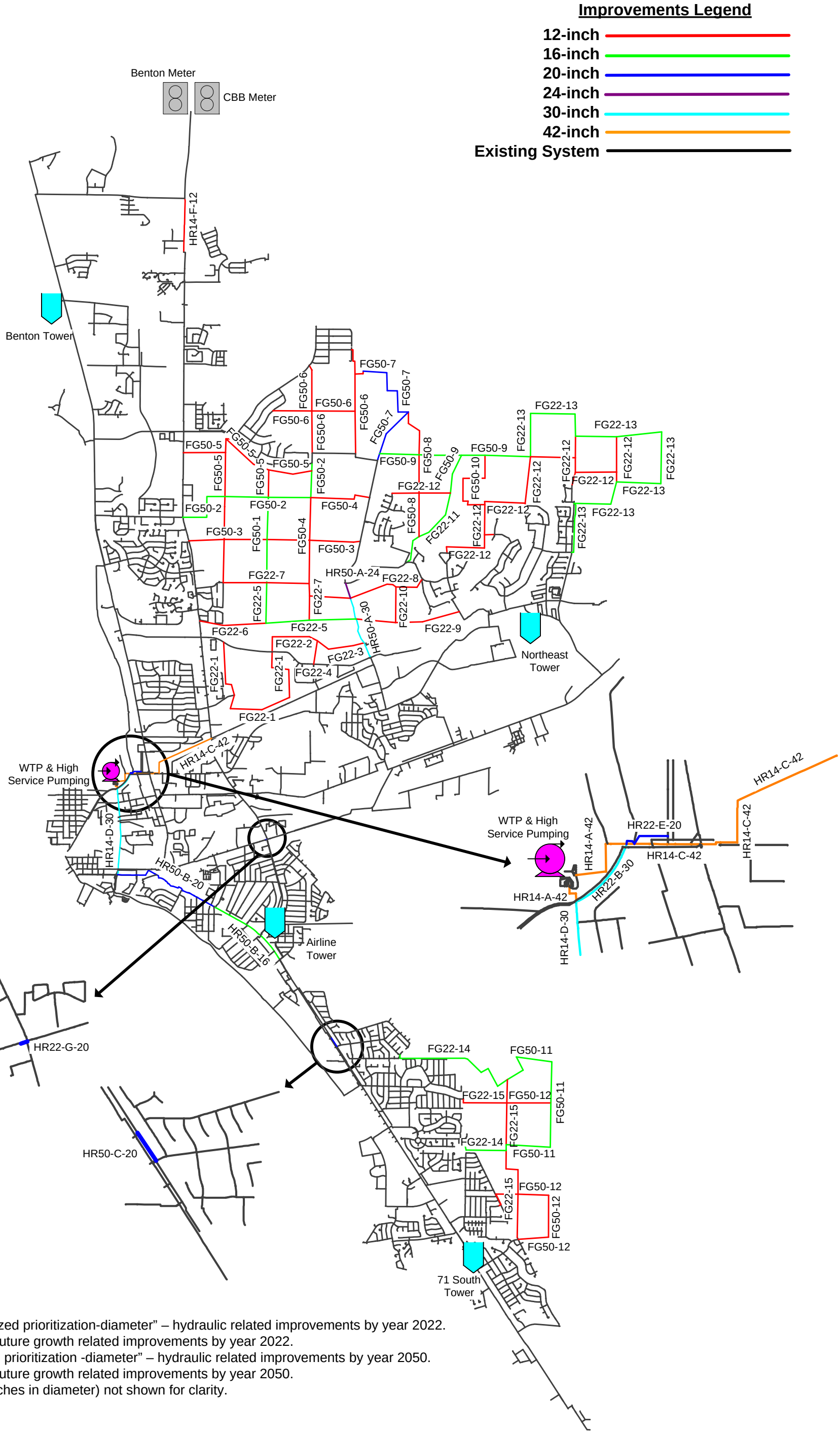
Figure 6.13

City of Bossier City, Louisiana

Distribution System Improvements Overview



Notes:

1. “HR14/22-alphabetized prioritization-diameter” – hydraulic related improvements by year 2022.
2. “FG22-diameter” – future growth related improvements by year 2022.
3. “HR50-alphabetized prioritization -diameter” – hydraulic related improvements by year 2050.
4. “FG50-diameter” – future growth related improvements by year 2050.
5. Small mains (< 4-inches in diameter) not shown for clarity.

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Figure 6.14

City of Bossier City, Louisiana

Capital Improvements Figure

- "HR14-alphabetized prioritization-diameter" – hydraulic related improvements for implementation by year 2022;
- "HR22-alphabetized prioritization-diameter" – hydraulic related improvements for the year 2022 distribution system; this includes improvements needed for reliability and redundancy;
- "FG22-number" – future growth related improvements for the year 2022 distribution system;
- "HR50-alphabetized prioritization -diameter" – hydraulic related improvements for the year 2050 distribution system; this includes improvements needed for reliability and redundancy;
- "FG50-number" – future growth related improvements for the year 2050 distribution system; and
- "SM" – small mains replacement program to be implemented throughout the planning period or as funds become available.

The small mains, pipes less than or equal to 4-inches in diameter, eligible for replacement should first be evaluated by City Staff to determine if they are part of the main water distribution system or just service lines to dead end pipes.

6.8.1 Year 2022 System Growth and Future Development

There is no pumping or storage improvements required by 2022 as indicated in the high service pumping evaluation and the storage analysis. The need for transmission and water main improvements is driven by increased hydraulic capacity, reliability, and redundancy; furthermore, the increase hydraulic capacity lowers the system head which is one factor in delaying the pump upgrades until demands increase between 2022 and 2050. The year 2022 transmission and water main improvements include the following:

- HR14-A-42: 42-inch WTP transmission mains from HSPS No. 1 and HSPS No. 3 to the Old Benton Road 30-inch crosstie transmission main (HR22-B-30):
    - Approximately 1,620 feet in total length;
    - Replace the existing 20-inch transmission main from HSPS No. 3 and replace the existing 18-inch transmission main from HSPS No. 1; and
    - These improvements are triggered by hydraulics; the model results indicate the a velocity of approximately 8.7 fps from HSPS No. 3 (existing 20-inch) and 10.7 fps from HSPS No. 1 (existing 18-inch) under the current, or year 2011, maximum day demand of 24.0 MGD. Connection provisions should be made for improvement HR22-B-30 as needed.
- HR22-B-30: Old Benton Road 30-inch crosstie between HSPS No. 1 and HSPS No. 3 discharge transmission:
    - Approximately 1,270 feet in total length;

  - Replace the existing 18-inch crosstie; and
  - This improvement is triggered by redundancy and reliability. The priority for this improvement can be pushed back unless its implementation can assist in the staging options for the implementation of the Improvement HR14-A-42; else this improvement can be implemented as maximum day demands approach between 34.0 MGD and 38.0 MGD.
- HR14-C-42: 42-inch water main extension from the Old Benton Road 30-inch crosstie (HR22-B-30, nearest HSPS No. 3) to the existing 36-inch water main beginning at Airline Drive:
  - Approximately 5,920 feet in total length;
  - Replace the existing 20-inch water main; and
  - This improvement is triggered by hydraulics; however, the entire stretch is not required until the maximum day demands approach between 23.0 MGD and 26.0 MGD. The immediate need for this improvement extends from Improvement HR14-A-42 to the existing 20-inch water main that heads south at the intersection of Benton Road and Shed Road (approximately 1,600 ft); this stretch of improvement HR14-C-42 should be implemented in the City's near term capital improvements. Connection provisions should be made for improvement HR22-E-20 as needed.
- HR14-D-30: Hamilton Road 30-inch water main from the Old Benton Road 30-inch crosstie (HR22-B-30, nearest HSPS No. 1) to the existing 20-inch and 16-inch water main connections just north of I-20:
  - Approximately 5,340 feet in total length;
  - Replace the existing 16-inch and 18-inch water mains; and
  - This improvement is triggered by hydraulics; model results indicate velocities between 5.7 fps and 7.2 fps in the existing 18-inch and 16-inch water mains and a headloss gradient exceeding 6 ft per 1,000 ft under the current maximum demand. More specifically, the hydraulic gradient drops approximately 17 ft over the existing 18-inch water main (from Old Benton Road to Green Street) and approximately 28 over the length of the existing 16-inch water main (from Green Street to Delhi Street). The entire improvement should be implemented in the City's near term capital improvements.
- HR22-E-20: Shed Road 20-inch water main extension from the Old Benton Road crosstie (HR22-B-30) to the existing 20-inch water mains (two) that are both west of Field Street:
  - Approximately 800 feet in total length;
  - This is a new parallel improvement; no replacement required; and

  - This improvement is triggered by redundancy and reliability. The priority for this improvement can be pushed back unless its implementation can assist in the staging options for the implementation of the improvements HR14-C-42 and HR22-B-30; else this improvement can be implemented based on the City's desire to limit critical mains near the WTP discharge of HSPS No. 3. Under normal system conditions, no water main breaks along this stretch of the existing 20-inch main or the proposed Improvement HR14-42-C, this improvement is not required for system hydraulics or triggered by system demands throughout this study period.

- HR14-F-12: Airline Drive 12-inch water main extension from North Willow Drive to Kingston Road:
  - Approximately 2,630 feet in total length;
  - Replace the existing 6-inch water main; and
  - This improvement is triggered by hydraulics; model results indicate a headloss gradient greater than 6 ft per 1,000 ft under the current maximum day demand, which results in approximately 26 ft of head loss over the length of this improvement. This improvement will improve the hydraulic conveyance and increase the water supply redundancy to the City's wholesale customers (Benton and CBB). Under the current wholesale customer combined peak hour demand of 2,800 gpm there is approximately 36 ft of headloss and by implementing this improvement in the City's near term capitol improvements plan, the headloss is reduced to approximately 5 over the length of this improvement.
- HR22-G-20: BAFB 20-inch extension from connection point to the distribution system to the existing 12-inch water mains (three in all) at the intersection of Airline Drive and Old Mindon Road:
  - Approximately 150 feet in total length;
  - Replace the existing 12-inch water main; and
  - This improvement is triggered by the addition of a potential wholesale customer, such as BAFB, and is highly dependent on a single metering location as modeled. If multiple connections, or metering locations, to the City's distribution system are allowed, then this improvement should be confirmed for necessity.

When the mix of residential and commercial land use is determined in future development areas, the hydraulic model should be revaluated to determine branching line sizes from the water main improvements shown in Figure 6.14. The developer's portion of the cost for water transmission in these future growths areas is typically determined by the City on a project by project basis.

6.8.2 Year 2050 System Growth and Future Development

At this time, there are no storage improvements required to meet the projected maximum day demand based on the current equalization storage factor, emergency storage requirement, and the combined existing elevated storage capacity. As maximum day demands approach the projected demand of 41.9 MGD in 2050, the storage analysis should be revaluated for confirmation.

Between years 2022 and 2050, HSPS No. 1 should incrementally replace two of the existing small pumps with two large pumps for the projected maximum day and peak hour demand conditions. Pumping improvements in HSPS No. 3 include replacing one of the existing small pumps with one large pump for redundancy to the pumping system as a whole. By the time and/or when system demands require pump upgrades, the impact to the distribution system should be minimal as the major hydraulic related transmission improvements in and around the WTP are scheduled for implementation by the Year 2022 and sized to convey up to 50.0 MGD.

The year 2050 water main improvements include the following:

- HR50-A-30 and HR50-A-24: Swan Lake Road 30-inch and 24-inch water main from existing 36-inch connection to the existing 20-inch connection at Modica Lott Road:
    - Approximately 4,420 feet of 30-inch and 980 feet of 24-inch in total length; and
    - Replace the existing 16-inch and 20-inch water mains.
- HR50-B-20: Barksdale Boulevard 20-inch water main from the Hamilton Road 30-inch water main (HR22-D-30) to Gilbert Drive. This improvement is highly dependent on a single BAFB metering location as modeled. If multiple connections, or metering locations, to the City's distribution system are allowed, then this improvement should be confirmed for necessity:
    - Approximately 7,030 feet in total length; and
    - Replace the existing 12-inch, 16-inch, and 18-inch water mains.
- HR50-B-16: Barksdale Boulevard 16-inch water main from Gilbert Drive (southern end of HR50-B-20) to the existing 20-inch water main on Beverly Street. This improvement is highly dependent on a single BAFB metering location as modeled. If multiple connections, or metering locations, to the City's distribution system are allowed, then this improvement should be confirmed for necessity:
    - Approximately 5,180 feet in total length; and
    - Replace the existing 12-inch water main.

- HR50-C-20: Barksdale Boulevard 20-inch water main extension to replace the existing 10-inch water main between Holiday Place and Bellaire Boulevard:
    - Approximately 630 feet in total length; and
    - Replace the existing 10-inch water main.

* * * * *

7.0 OPINIONS OF PROBABLE COST

Opinions of probable cost for the recommended improvements to the existing water distribution system and future growth in undeveloped areas for Bossier City are provided in this section of the report. Costs are itemized by type, existing system or future growth, and by planning year. Costs for the existing system include an alphabetized priority ranking. There is no prioritization for future growth-related improvements, as they should be implemented based on necessity by virtue of where actual growth and development is occurring beyond the City's existing distribution system.

7.1 COST ESTIMATING PROCEDURES

Typical project costs include construction costs, contingencies at 20 percent, land, right-of-way, and other costs. Other costs accounts for technical, professional, and special services that are required to execute the project. These include environmental, technical, and geotechnical studies; land and right-of-way appraisals and negotiations, design and resident engineering fees, construction material testing, legal fees, project insurance, land surveying and legal descriptions, project design surveying, operation and maintenance manuals, and personnel training. Land and right-of-way costs for each improvement are not included in the cost opinions.

These order-of-magnitude cost opinions prepared by Burns & McDonnell and Manchac relating to costs, quantities, demand or pricing (including, but not limited to, property costs, construction, operations or maintenance costs, and/or energy or commodity demand and pricing), are opinions based on Burns & McDonnell's and Manchac's experience, qualifications, judgment, and information from vendors and published sources such as Means. Neither Burns & McDonnell nor Manchac have no control over weather, cost and availability of labor, material and equipment, labor productivity, construction contractor's means and methods, unavoidable delays, construction contractor's method of pricing, demand or usage, population demographics, market conditions, changes in technology, government regulations and laws, and other economic or political factors affecting such opinions. The City of Bossier City acknowledges that actual results may vary significantly from the representations and opinions herein, and nothing herein shall be construed as a guarantee or warranty of conclusions, results, or cost opinions. Neither Burns & McDonnell nor Manchac make no guarantee or warranty (actual or implied) that actual rates, demand, pricing, costs, performance, schedules, quantities, technology, and related items will not vary from the opinions contained in the estimates, projections, results, or other statements or opinions prepared by Burns & McDonnell and Manchac.

7.2 WATER MAINS

Opinions of probable cost are based on construction and other cost allowances including contingency, engineering, surveying, legal, and other related costs. Component cost data information for the proposed improvements are based on historical projects in Bossier City and regionally. Table 7.1, shown below, provides typical water main construction items used in the cost development.

Table 7.1
Water Main Construction Items

Basic Water Main Components	Pavement Replacement	Miscellaneous	Other Potential Items
Pipe	Pavement Repair	Service Connects	Vaults
Valves	Curb and Gutter	Service Lines	Boring
Fittings	Driveway	Pressure Testing	Casing Pipe
Fire Hydrants	Traffic Control	Disinfection	Meter Relocation
Excavation		Seeding	Tree Removal
		Erosion Control	Rock Excavation
			Blowoff Assemblies

7.3 OPINION OF PROBABLE COST

The opinions of probable cost for the recommended existing system improvements and for future growth are listed in Table 7.2. Each improvement has a unique naming scheme that corresponds to Figure 6.14. The total opinion of probable cost for the capital improvements by planning period is listed below:

- Year 2014 improvements for hydraulics and reliability total $8.7 million;
- Year 2022 improvements for hydraulics and reliability total $0.9 million;
- Year 2022 improvements for future growth total $14.2 million;
- Year 2050 improvements for hydraulics and reliability total $8.0 million;
- Year 2050 improvements for future growth total $12.9 million;
- Small mains replacement total $13.4 million; and
- All improvements listed above total **$58.1 million.**

Small mains are considered anything less than or equal to 4-inches in diameter; Figure 6.8 identifies these water mains in the existing distribution system.

* * * * *

Table 7.2
City of Bossier City, LA
Opinions of Probable Cost for Capital Improvements

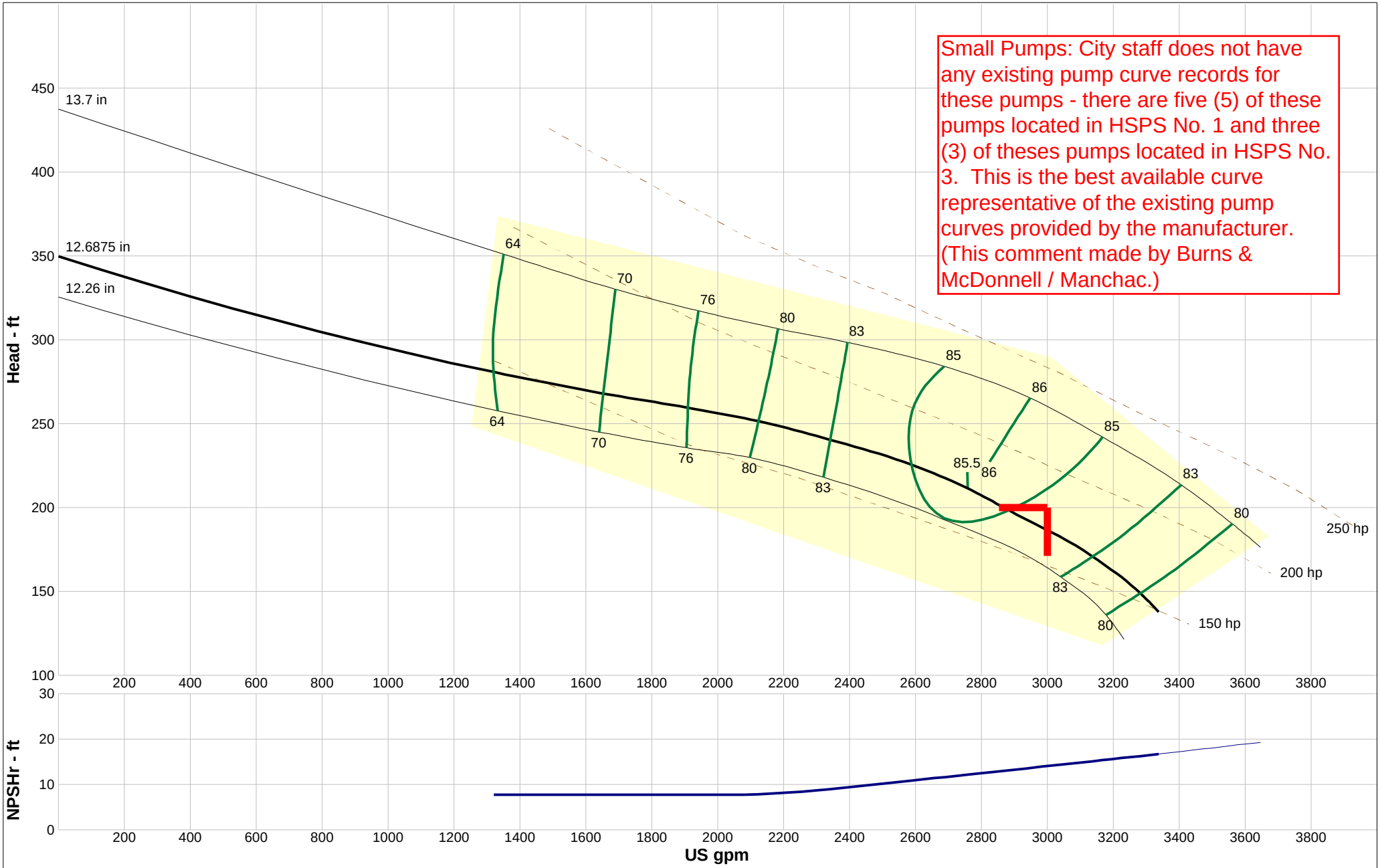
Year 2014 and Year 2022 Improvements for Hydraulics and Reliability					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
HR14-A-42	WTP Transmission Mains (HSPS Discharge)	LF	42	1,620	$1,237
HR22-B-30	Old Benton Rd. Crosstie	LF	30	1,270	$349
HR14-C-42	42-inch Water Main Extension from HR22-B-30	LF	42	5,920	$4,672
HR14-D-30	Hamilton Rd. Extension from HR22-B-30	LF	30	5,340	$2,287
HR22-E-20	Shed Rd. Parallel Extension from HR22-B-30	LF	20	800	$472
HR14-F-12	Airline Dr. Extension	LF	12	2,630	$498
HR22-G-20[1]	BAFB Extension	LF	20	150	$71
			Subtotal:		**$9,587**
Year 2022 Improvements for Future Growth[2, 3]					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
FG22-1	Future Growth	LF	12	12,020	$1,053
FG22-2	Future Growth	LF	12	3,770	$466
FG22-3	Future Growth	LF	12	3,100	$418
FG22-4	Future Growth	LF	12	1,460	$302
FG22-5	Future Growth	LF	16	8,080	$982
FG22-6	Future Growth	LF	12	4,110	$490
FG22-7	Future Growth	LF	12	7,570	$736
FG22-8	Future Growth	LF	12	7,480	$730
FG22-9	Future Growth	LF	12	6,460	$657
FG22-10	Future Growth	LF	12	2,200	$354
FG22-11	Future Growth	LF	16	5,500	$731
FG22-12	Future Growth	LF	12	26,550	$2,087
FG22-13	Future Growth	LF	16	24,920	$2,616
FG22-14	Future Growth	LF	16	11,190	$1,283
FG22-15	Future Growth	LF	12	15,320	$1,288
			Subtotal:		**$14,193**
Year 2050 Improvements for Hydraulics and Reliability					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
HR50-A-30	Swan Lake Road Improvements	LF	30	4,420	$1,849
HR50-A-24	Swan Lake Road Improvements	LF	24	980	$280
HR50-B-20[1]	Barksdale Blvd. from HR22-D-30 to Gilbert Dr.	LF	20	7,030	$1,942
HR50-B-16[1]	Barksdale Blvd. from HR50-B-20 to Beverly St.	LF	16	5,180	$1,744
HR50-C-20	Barksdale Blvd. from Holiday Pl. to Bellaire Blvd.	LF	20	630	$231
Large Pump[4]	Two in HSPS No. 1 and One in HSPS No. 3.	Each	--	3	$1,906
			Subtotal:		**$7,951**
Year 2050 Improvements for Future Growth[2, 3]					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
FG50-1	Future Growth	LF	16	5,260	$708
FG50-2	Future Growth	LF	16	11,330	$1,297
FG50-3	Future Growth	LF	12	10,590	$951
FG50-4	Future Growth	LF	12	9,150	$849
FG50-5	Future Growth	LF	12	14,460	$1,227
FG50-6	Future Growth	LF	12	17,810	$1,465
FG50-7	Future Growth	LF	20	8,710	$1,475
FG50-8	Future Growth	LF	12	8,060	$771
FG50-9	Future Growth	LF	16	11,780	$1,341
FG50-10	Future Growth	LF	12	5,800	$610
FG50-11	Future Growth	LF	16	12,240	$1,385
FG50-12	Future Growth	LF	12	9,070	$843
			Subtotal:		**$12,922**
Existing System Small Mains Replacement[5]					
Improvement Label	Description	Unit	Pipe		
			Diameter (in)	Quantity	Cost ($1000)
--	Small mains less than or equal to 4-inches	LF		47,290	$13,436
			Subtotal:		**$13,436**
			Sum Total:		**$58,089**

Notes:
1. This improvement is highly dependent on a single BAFB metering location as modeled. If multiple connections, or metering locations, to the City's distribution system are allowed, then this improvement should be confirmed for necessity.
2. Future growth improvements do not include prioritization and they should be implemented based on necessity and by virtue of where growth actually occurs.
3. When the mix of residential and commercial land use is determined in future development areas, the hydraulic model should be revaluated to determine branching line sizes from the water main improvements shown in Figure 6.14.
4. Each new large pump shall replace an existing small pump.
5. The small diameter pipes eligible for replacement should first be evaluated to determine if they are part of the main water distribution system or just service lines to dead end pipes. Therefore, replacing all 4-inch dead end service lines is not required and should be evaluated on actual fire hydrant location basis.

APPENDICES

APPENDIX A:

WATER TREATMENT PLANT HIGH SERVICE PUMP CURVES



12 or 14 inch discharge. 17-1/4 inch bell suction

Company: Bossier City, LA
Name: HSPS Curves 18GM
2/1/2012

Layne/Verti-Line
Catalog: Layne-Vertiline.60, Vers 1
Vertical Turbine - 1200
Design Point: 3000 US gpm, 200 ft

Size: 18GM 5 stage
Speed: 1180 rpm
Dia: 12.6875 in

Layne/Verti-Line
Pentair

Large Pumps: There is one (1) of these pumps located in HSPS No. 1 and two (2) of theses pumps located in HSPS No. 3. (This comment made by Burns & McDonnell / Manchac.)

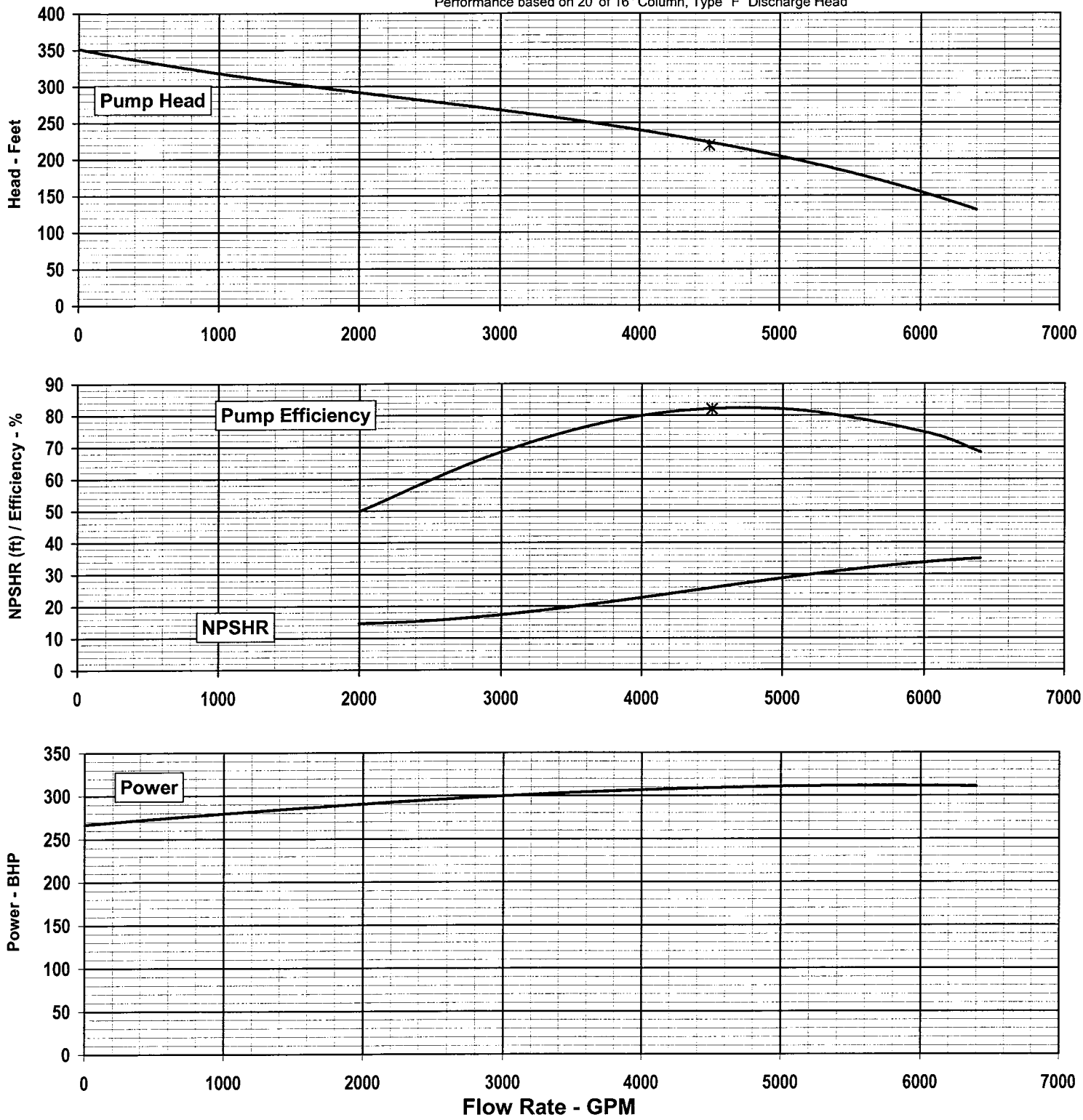
Fairbanks Morse
Pentair Water

19A SUBMITTAL CURVE

CURVE NO.:	064335C
REV. 0	2 STAGES
PROJECT NO.:	064335

SPEED	IMPELLER	DIAMETER	SPHERE	GUARANTEED VALUES		
1785	STD	13.50	1.25"	FLOW	HEAD	PUMP EFF
BY	DRIVER	DATE		4500	219	82
KMB	350	9/29/2009		-----	230	80
THIS CURVE IS BASED ON THE ACTUAL TEST PERFORMANCE OF A SIMILAR PUMP. ONLY THE INDICATED POINT(S) IS GUARANTEED.				-----	150	70
				-----	-----	-----

Performance based on 20' of 16" Column, Type "F" Discharge Head

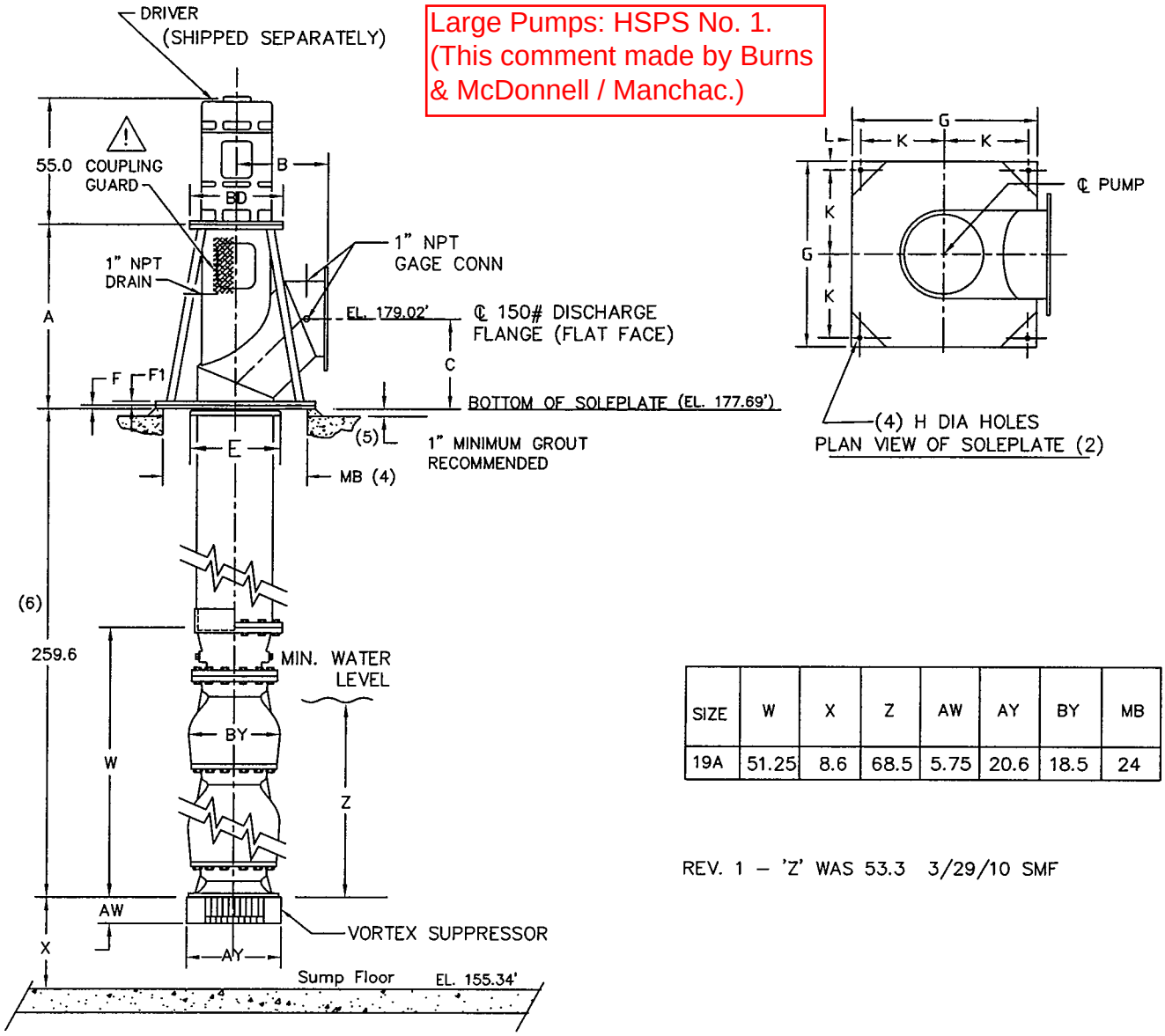


⚠ WARNING

DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.

DISCHARGE HEAD DIMENSIONS														
DISCH SIZE	COL SIZE	A MTR BASE DIA (BD) 12	16½	20	24½	B	C	E	F	F1	G	H	K	L
16	16	--	52	--	--	20	16	19½	1½	1	36	1	16	2

Large Pumps: HSPS No. 1.
(This comment made by Burns & McDonnell / Manchac.)



SIZE	W	X	Z	AW	AY	BY	MB
19A	51.25	8.6	68.5	5.75	20.6	18.5	24

REV. 1 – 'Z' WAS 53.3 3/29/10 SMF

**SEE PERFORMANCE CURVE FOR CONDITIONS

1. THIS DRAWING NOT FOR CONSTRUCTION OR INSTALLATION UNLESS CERTIFIED. DIMENSIONS SHOWN ARE TYPICAL AND MAY VARY DUE TO VARIOUS TOLERANCES.
2. SOLEPLATE MUST BE SUPPORTED ON ALL 4 SIDES AND GROUTED IN PLACE.
3. MINIMUM SUBMERGENCE REQUIRED AT MAXIMUM FLOW.
4. MINIMUM DIAMETER REQUIRED TO REMOVE BOWL ASSEMBLY
5. DETAIL SHOWN FOR ILLUSTRATION ONLY AND IS NOT INTENDED TO REPRESENT THE ACTUAL INSTALLATION.
6. CUSTOMER TO VERIFY OR ADVISE OVERALL LENGTH PRIOR TO OR AT RELEASE.

CUSTOMER: PARSON & SANDERSON, INC.					P.O.: 09-53070	
JOB NAME: BOSSIER CITY WATER TREATMENT PLANT					SERVICE: HSP-5414	
PUMP SIZE & MODEL: 19A 7100AW	STAGES: 2	GPM: **	TDH: **	RPM: **	ROT: CCW	
MOTOR: U.S. MOTORS	HP: 350	FRAME: 447VP	PHASE: 3	HERTZ: 60	VOLTS: 460	ENCL: WP-I
CERTIFIED FOR: PROJECT #064370	CERTIFIED BY: LJB			DATE: 12/09		

Fairbanks Morse
PENTAIR PUMP GROUP

SETTING PLAN
MODEL 7100 PUMP
TYPE"F"SURFACE HEAD
WITH SOLEPLATE
16" FLANGED DISCHARGE

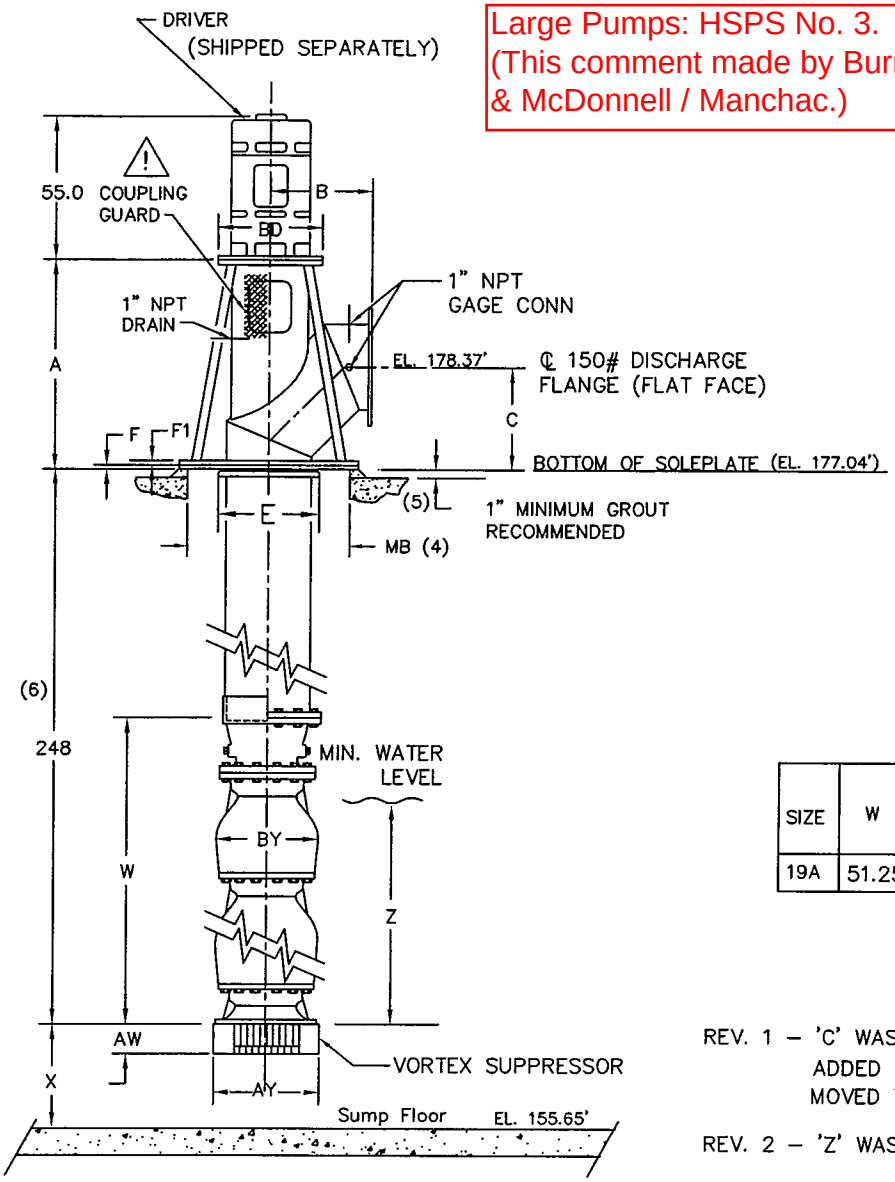
DWG. NO. 064370SP REV 1

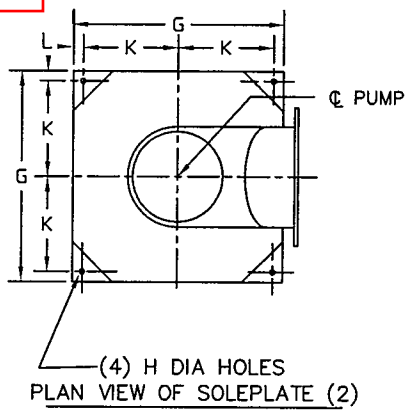
⚠ WARNING

DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.

DISCHARGE HEAD DIMENSIONS														
DISCH SIZE	COL SIZE	A MTR BASE DIA (BD) 12	16½	20	24½	B	C	E	F	F1	G	H	K	L
16	16	--	52	--	--	20	16	19½	1½	1	36	1	16	2

Large Pumps: HSPS No. 3.
(This comment made by Burns & McDonnell / Manchac.)





SIZE	W	X	Z	AW	AY	BY	MB
19A	51.25	8.6	68.5	5.75	20.6	18.5	24

REV. 1 – 'C' WAS 21; 248 WAS 246.88; 178.37 WAS 178.04; ADDED SOLEPLATE AND FLOOR ELEV, PUMP HSP-5414 MOVED TO DRAWING 064370SP. 12/16/09 LJB

REV. 2 – 'Z' WAS 53.3 3/29/10 SMF

**SEE PERFORMANCE CURVE FOR CONDITIONS

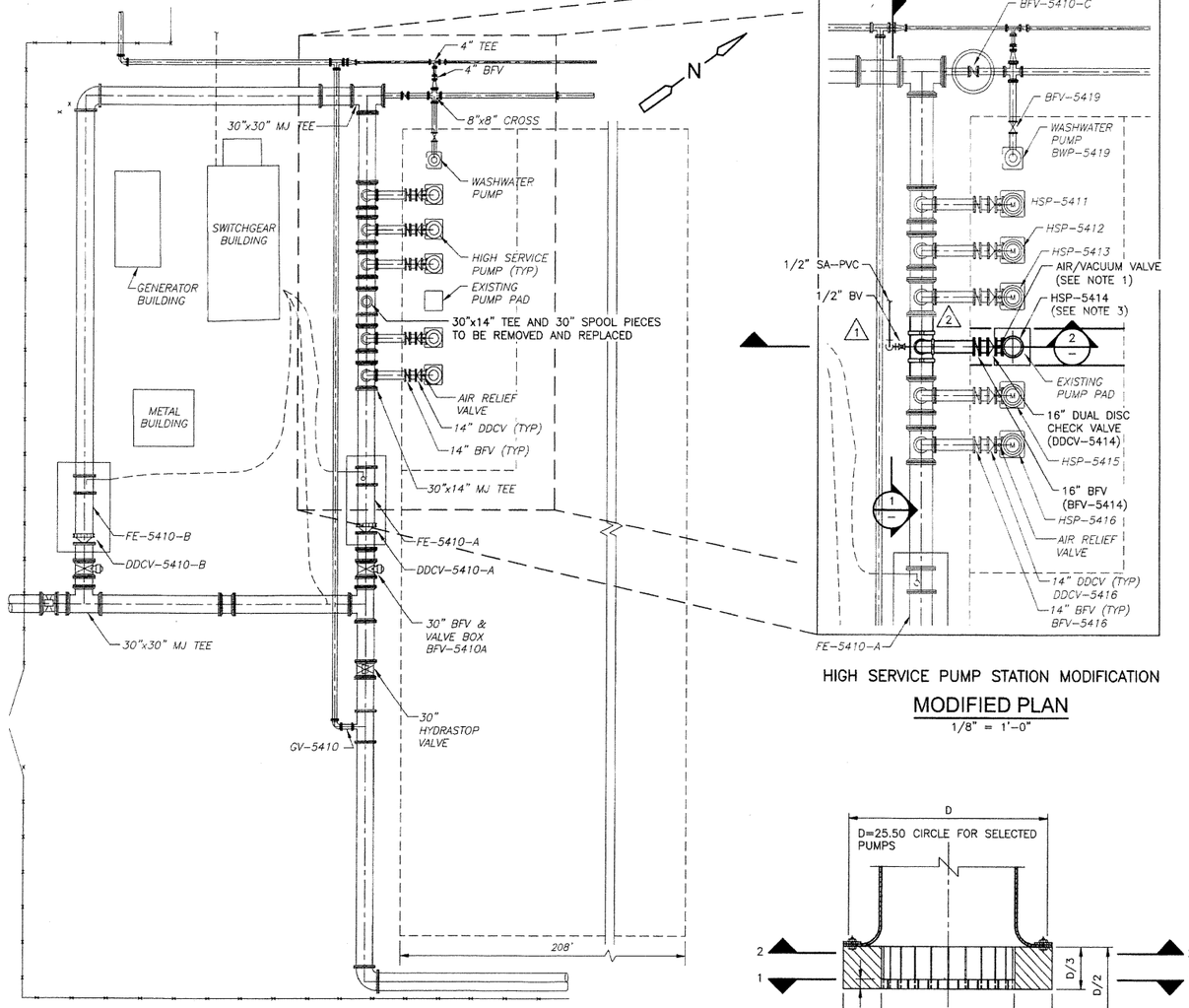
1. THIS DRAWING NOT FOR CONSTRUCTION OR INSTALLATION UNLESS CERTIFIED. DIMENSIONS SHOWN ARE TYPICAL AND MAY VARY DUE TO VARIOUS TOLERANCES.
2. SOLEPLATE MUST BE SUPPORTED ON ALL 4 SIDES AND GROUTED IN PLACE.
3. MINIMUM SUBMERGENCE REQUIRED AT MAXIMUM FLOW.
4. MINIMUM DIAMETER REQUIRED TO REMOVE BOWL ASSEMBLY
5. DETAIL SHOWN FOR ILLUSTRATION ONLY AND IS NOT INTENDED TO REPRESENT THE ACTUAL INSTALLATION.
6. CUSTOMER TO VERIFY OR ADVISE OVERALL LENGTH PRIOR TO OR AT RELEASE.

CUSTOMER: PARSON & SANDERSON, INC.					P.O.: 09-53070	
JOB NAME: BOSSIER CITY WATER TREATMENT PLANT				SERVICE: HSP-5434 & 5435		
PUMP SIZE & MODEL: 19A 7100AW	STAGES: 2	GPM: **	TDH: **	RPM: **	ROT: CCW	
MOTOR: U.S. MOTORS	HP: 350	FRAME: 447VP	PHASE: 3	HERTZ: 60	VOLTS: 460	ENCL: WP-I
CERTIFIED FOR: PROJECT #064335	CERTIFIED BY: LJB			DATE: 10/09		

Fairbanks Morse
PENTAIR PUMP GROUP

SETTING PLAN
MODEL 7100 PUMP
TYPE "F" SURFACE HEAD
WITH SOLEPLATE
16" FLANGED DISCHARGE

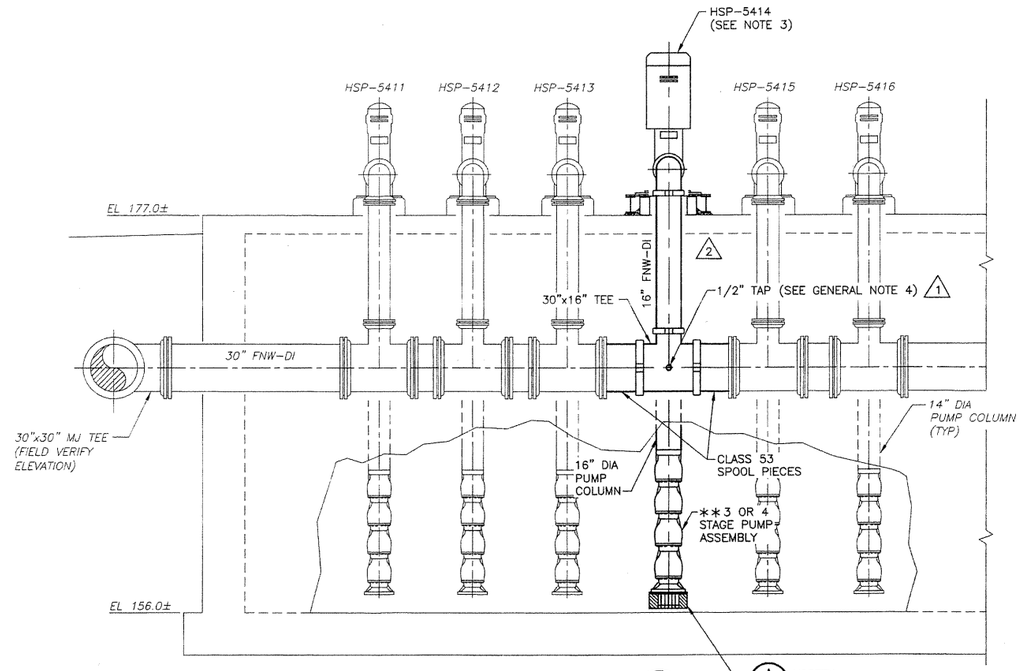
DWG. NO. 064335SP REV 2



HIGH SERVICE PUMP STATION MODIFICATION

MODIFIED PLAN

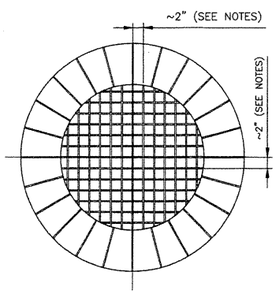
1/8" = 1'-0"



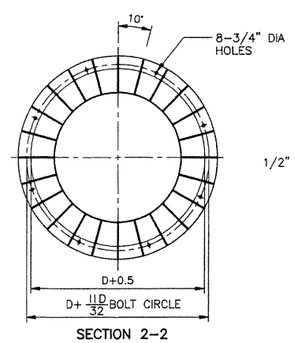
** WILL BE DETERMINED BASED ON PUMP MANUFACTUER SELECTED AND APPROVED.

SECTION 1

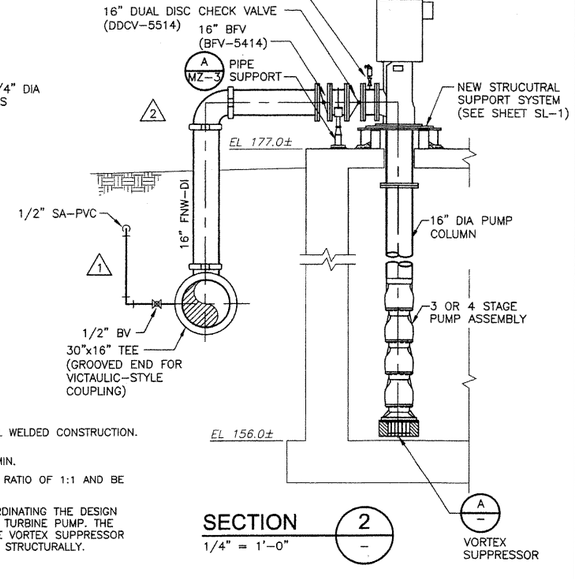
1/4" = 1'-0"



SECTION 1-1



SECTION 2-2



SECTION 2

1/4" = 1'-0"

VORTEX SUPPRESSOR DETAIL A

NTS

CONFORMED CONTRACT DOCUMENTS

CLEARWELL NO. 1 (CW-5301)

EXISTING PLAN

3/32" = 1'-0"

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD ROUTE VENT LINE OFF SLAB.
2. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS.
3. DIMENSIONS OF PUMP MOTOR VARY BY MANUFACTURER AND IS SHOWN FOR ILLUSTRATION PURPOSES ONLY.
4. CONTRACTOR TO FIELD ROUTE 1/2" SA-SS TO FINISHED WATER BLEND STRUCTURE SHOWN ON SHEET MF-1.
2. 5. PROVIDE 304 STAINLESS STEEL FASTENERS FOR BURIED VICTAULIC-STYLE COUPLINGS.

NOTES:

1. VORTEX SUPPRESSOR SHALL BE FABRICATED OF 316 SST, ALL WELDED CONSTRUCTION.
2. PERIMETER PLATES AND VANE THICKNESSES SHALL BE 1/4" MIN.
3. BOTTOM GRATING SHALL HAVE A DEPTH TO SPACING ASPECT RATIO OF 1:1 AND BE A MIN OF 75% OPEN AREA.
4. THE PUMP MANUFACTURER SHALL BE RESPONSIBLE FOR COORDINATING THE DESIGN AND SIZING OF THE VORTEX SUPPRESSOR WITH THE VERTICAL TURBINE PUMP. THE PUMP MANUFACTURER SHALL VERIFY THAT THE DESIGN OF THE VORTEX SUPPRESSOR IS ADEQUATE IN ALL ASPECTS, INCLUDING HYDRAULICALLY AND STRUCTURALLY.

REV. NO.	DATE	DRWN	CHKD	REMARKS
	09-23-09	BTP	RG	ISSUED AS BID (CONFORMED)
2	07-15-09	BTP	RG	REVISED PER ADDENDUM NO. 2
1	07-06-09	BTP	RG	REVISED PER ADDENDUM NO. 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NO. 22157-64978
FILE NAME: MCW-L-01
DESIGNED BY: A. WOOTEN
DRAWN BY: B. TAL PLACIDO
SHEET CHK'D BY: R. GERLACH
CROSS CHK'D BY: L. REYNOLDS
APPROVED BY: J. HAYDEL
DATE: JUNE 2009

STATE OF LOUISIANA
JUSTIN S. HAYDEL JR.
REG. No. 25321
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
6/10

CDM Camp Dresser & McKee Inc.
consulting engineering construction operations

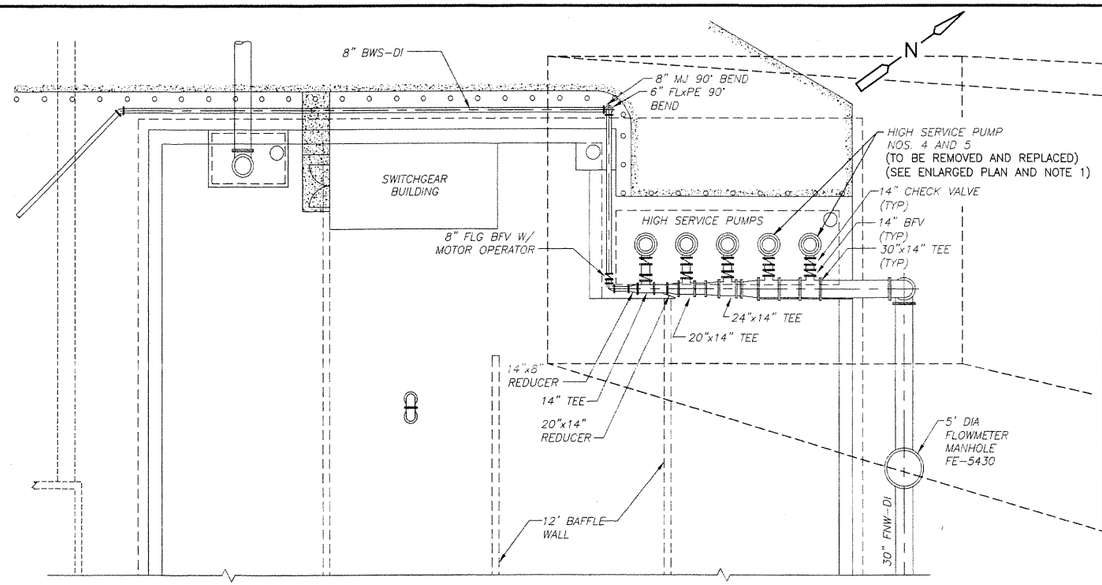
In Association With:
- Aillet, Fenner, Jolly & McClelland, Inc.
- Forte & Tablada, Inc.
- Shread-Kuyrkendall & Associates, Inc.
- Edward E. Peek, Architect, PLLC

CITY OF BOSSIER CITY LOUISIANA

BOSSIER CITY
WATER TREATMENT PLANT
EXPANSION AND REHABILITATION

HIGH SERVICE PUMP STATION NO. 1 MODIFICATIONS PLANS, SECTIONS, AND DETAIL

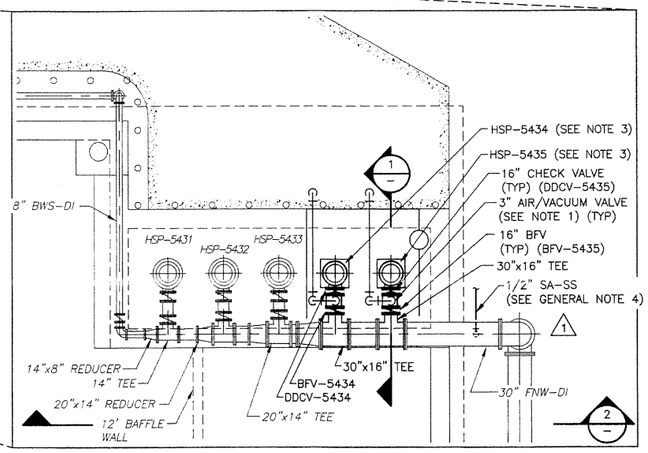
SHEET NO.
ML-1
213 OF 630



CLEARWELL NO. 3 (CW-5303)

EXISTING PLAN

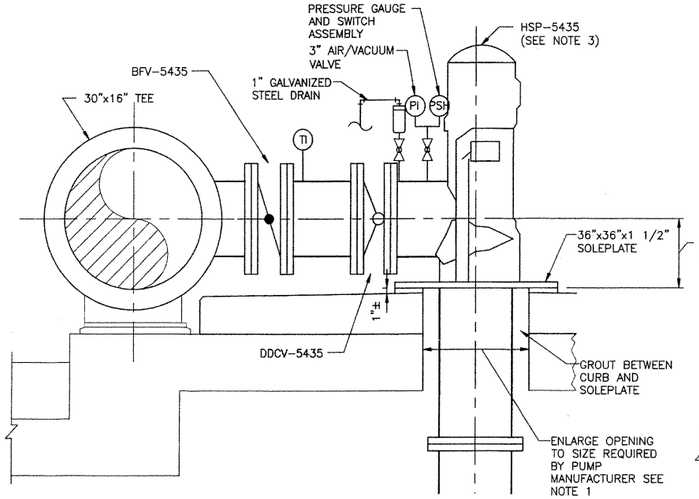
3/32" = 1'-0"



HIGH SERVICE PUMP STATION NO. 3

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD ROUTE VENT LINES OFF SLAB.
2. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS.
3. DIMENSIONS OF PUMP MOTOR VARY BY MANUFACTURER AND IS SHOWN FOR ILLUSTRATION PURPOSES ONLY.
4. (1) CONTRACTOR TO FIELD ROUTE 1/2" SA-SS TO FINISHED WATER BLEND STRUCTURE SHOWN ON SHEET MF-1.

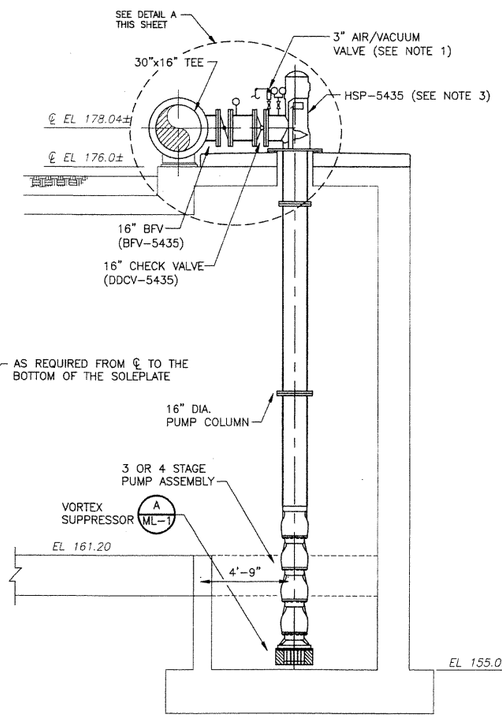


ENLARGED PUMP CONNECTION

DETAIL A

3/4" = 1'-0"

NOTE:
1. DEMOLISH EXISTING PUMP CURB. ENLARGE OPENING TO THE SIZE RECOMMENDED BY THE PUMP MANUFACTURER AND CONSTRUCT NEW CURB PER DETAILS SHOWN ON SHEET SL-2.



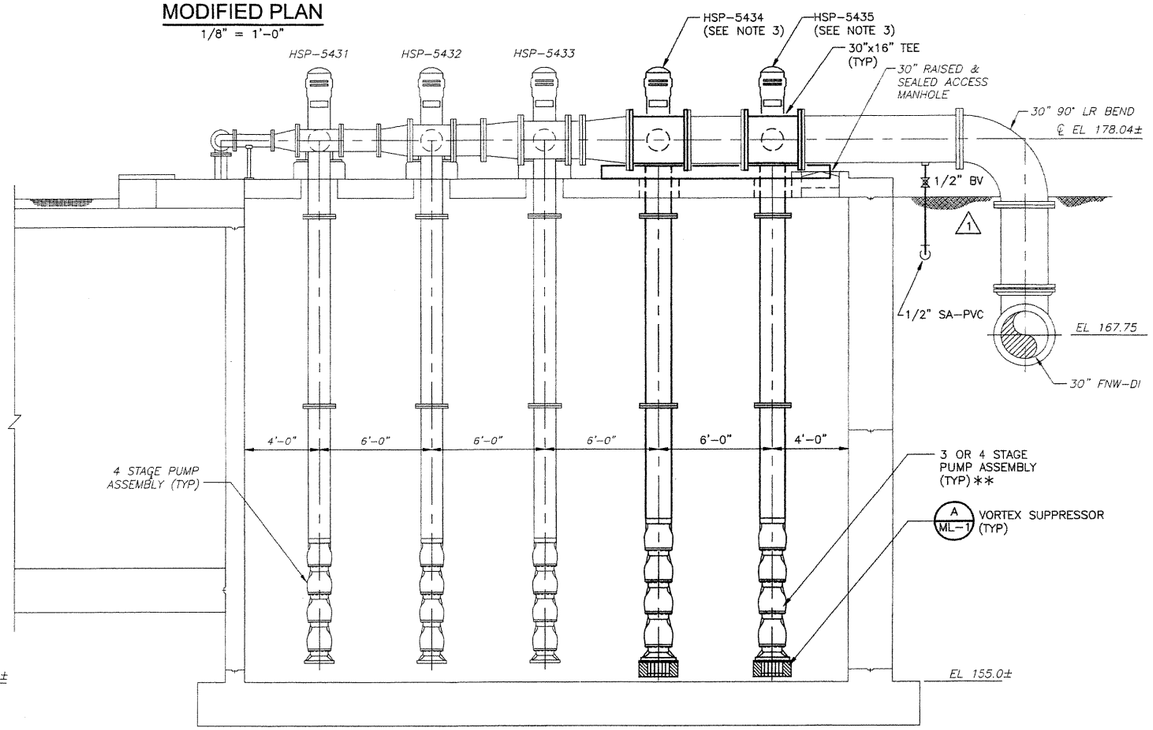
HIGH SERVICE PUMP STATION NO. 3

SECTION 1

1/4" = 1'-0"

MODIFIED PLAN

1/8" = 1'-0"



NOTE:

** WILL BE DETERMINED BASED ON PUMP MANUFACTURER SELECTED AND APPROVED.

HIGH SERVICE PUMP STATION NO. 3

SECTION 2

1/4" = 1'-0"

CONFORMED CONTRACT DOCUMENTS

REV. NO.	DATE	DRWN	CHKD	REMARKS
	09-23-09	BTP	RG	ISSUED AS BID (CONFORMED)
1	07-06-09	BTP	RG	REVISED PER ADDENDUM NO. 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NO. 22157-64978
FILE NAME: MCW-L-02
DESIGNED BY: A. WOOTEN
DRAWN BY: C. BILDERBACK
SHEET CHK'D BY: R. GERLACH
CROSS CHK'D BY: L. REYNOLDS
APPROVED BY: J. HAYDEL
DATE: JUNE 2009

STATE OF LOUISIANA
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CITY OF BOSSIER CITY
LOUISIANA

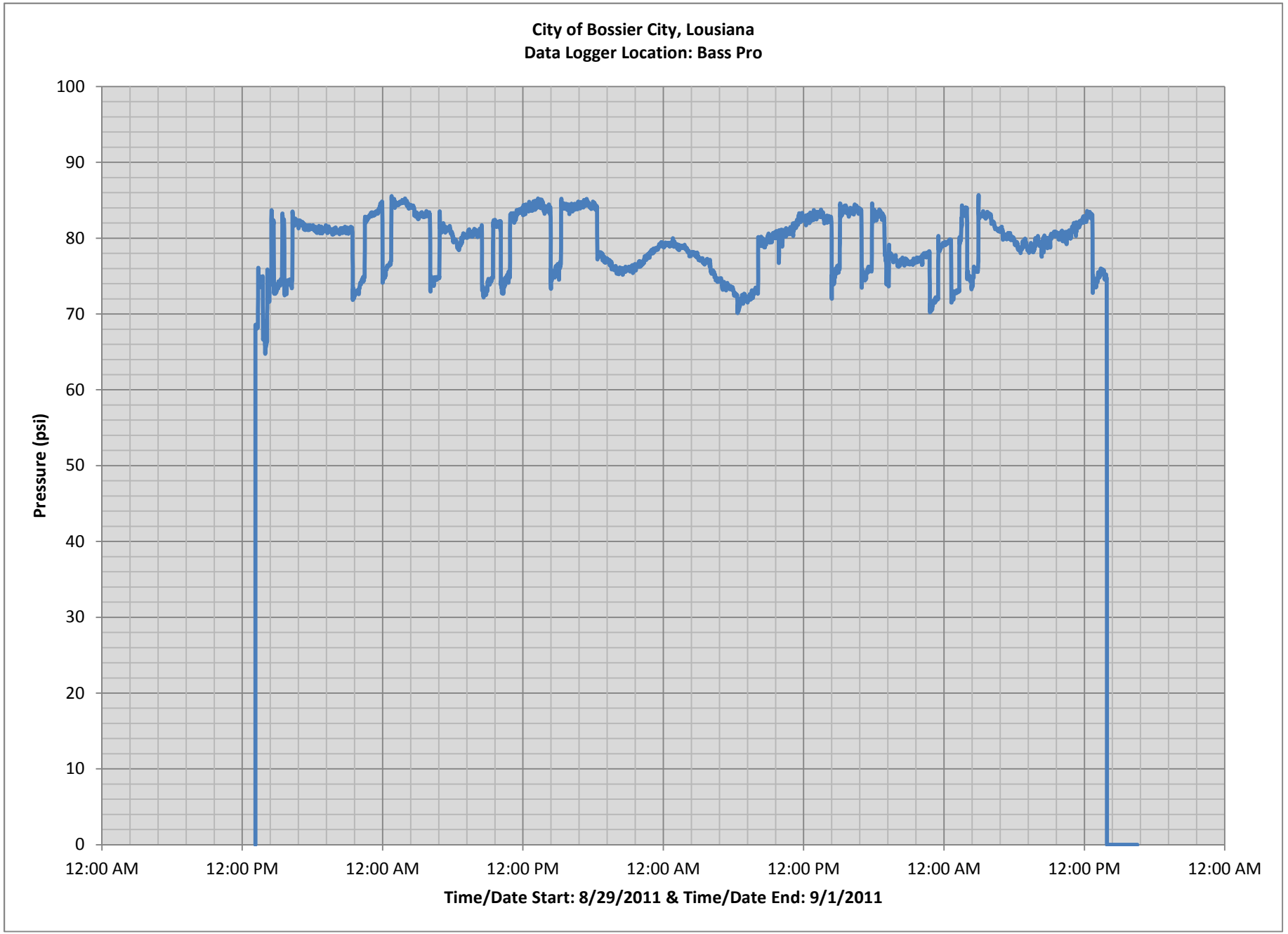
BOSSIER CITY
WATER TREATMENT PLANT
EXPANSION AND REHABILITATION

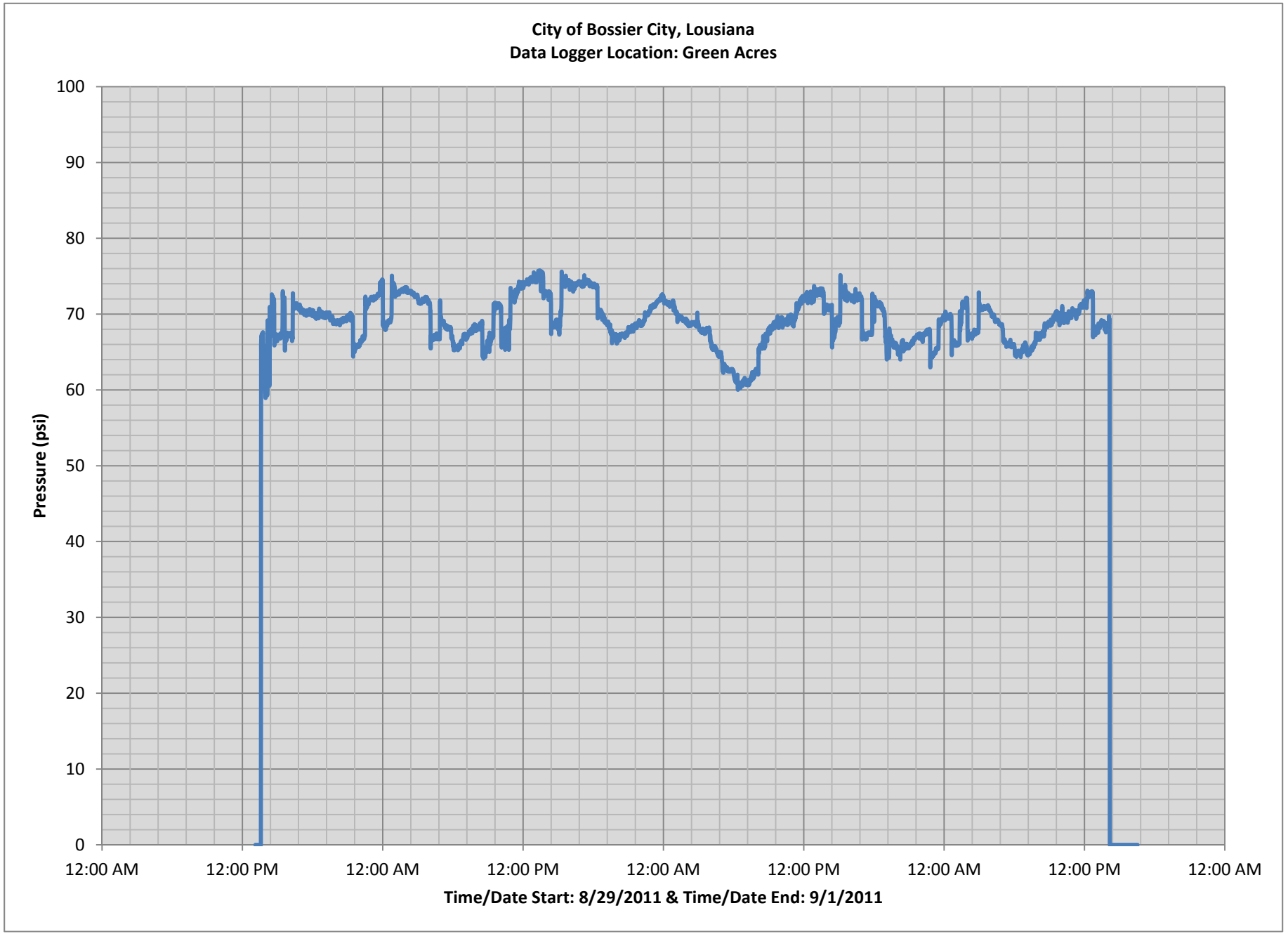
HIGH SERVICE PUMP STATION NO. 3 MODIFICATIONS PLANS, SECTIONS, AND DETAILS

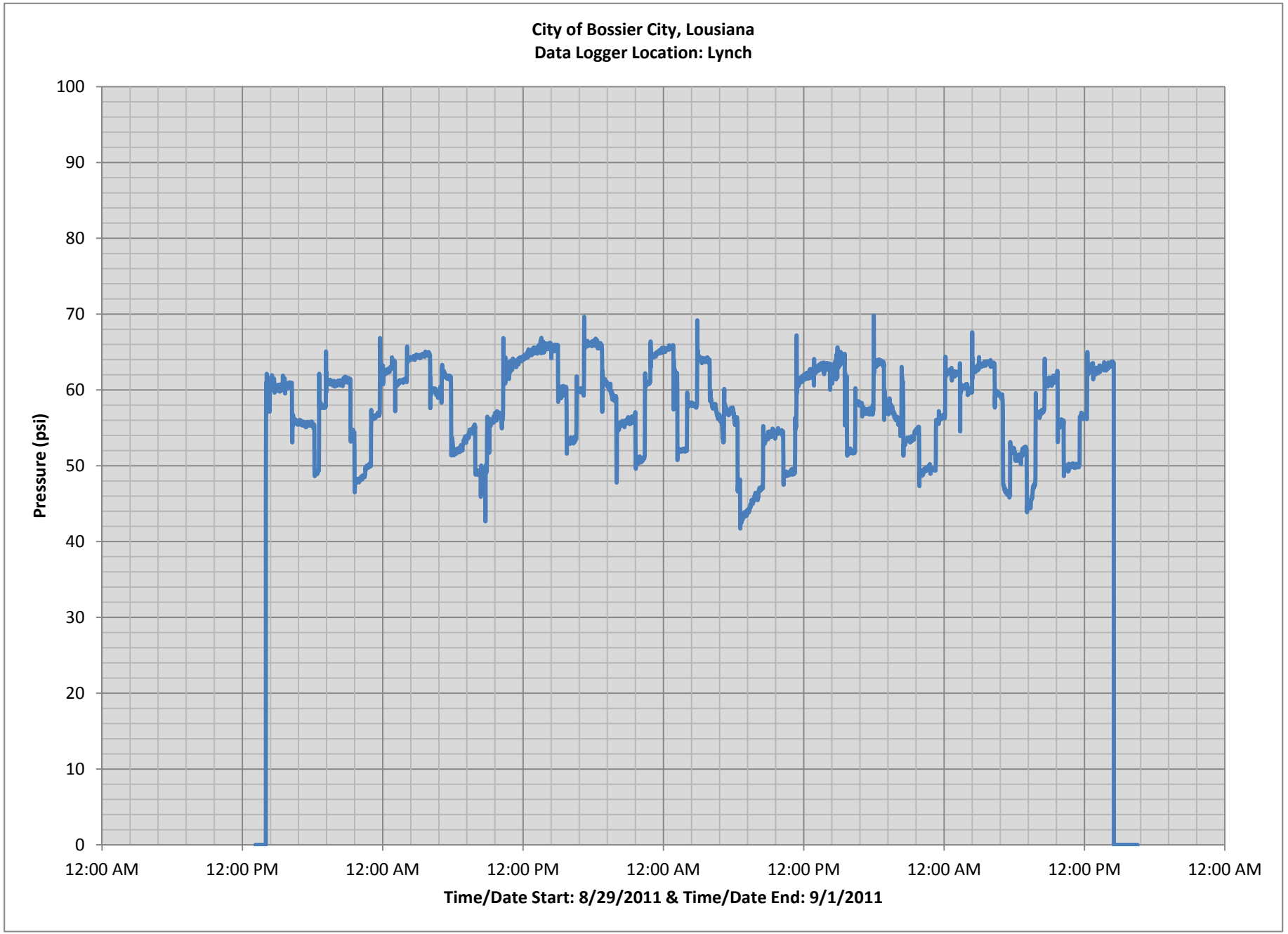
SHEET NO.
ML-2
214 OF 630

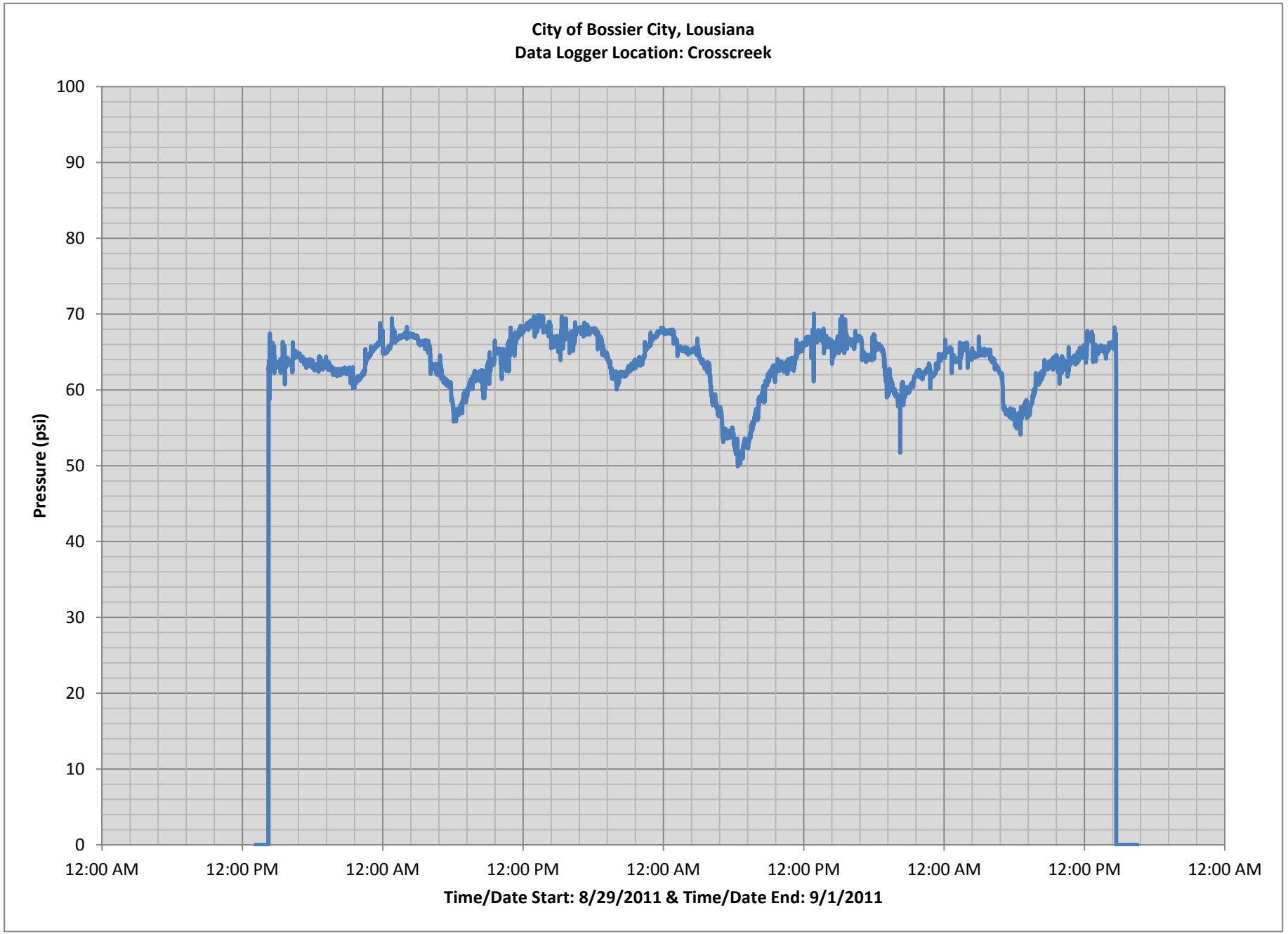
APPENDIX B:

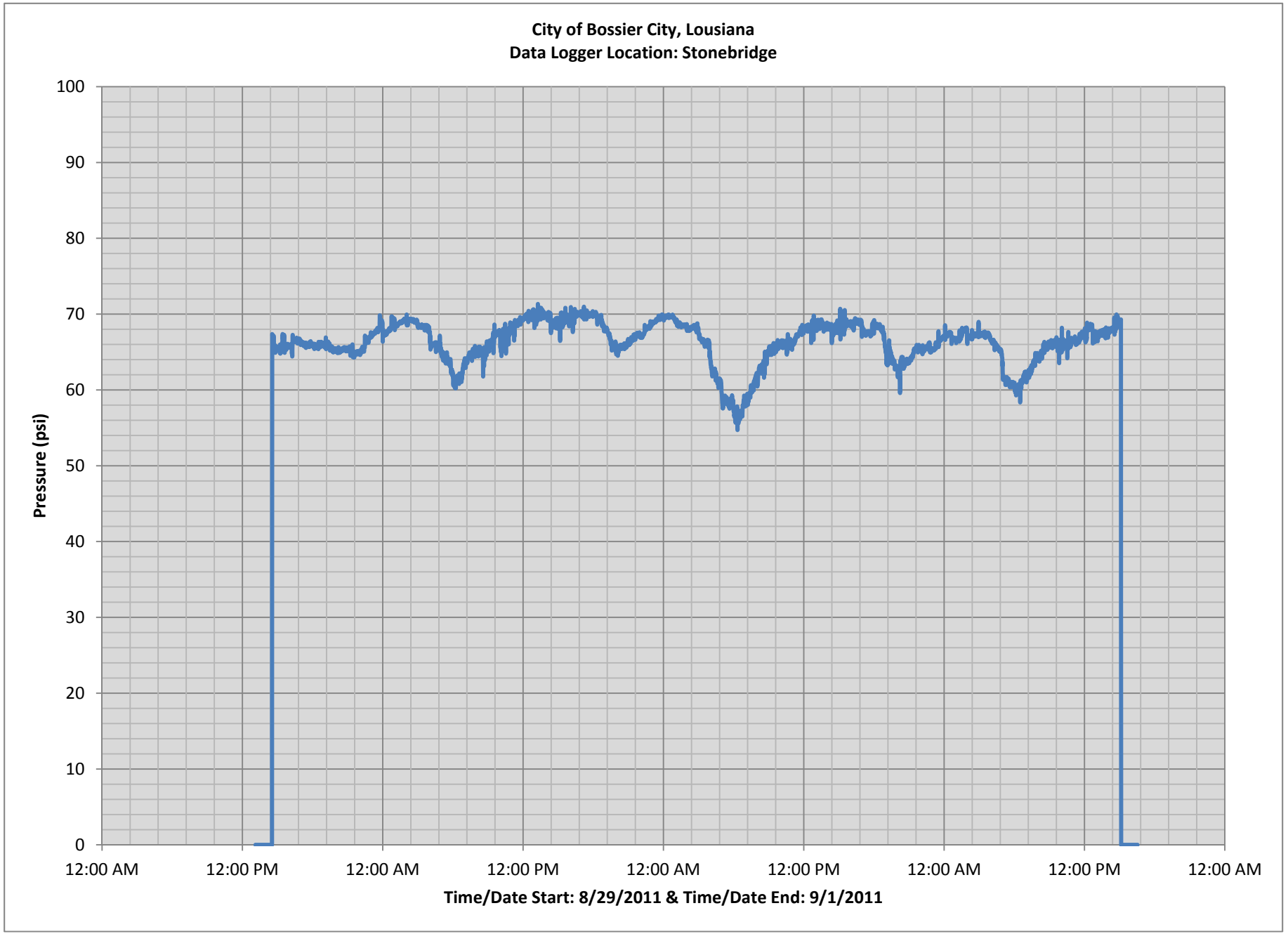
FIELD TESTING DATA

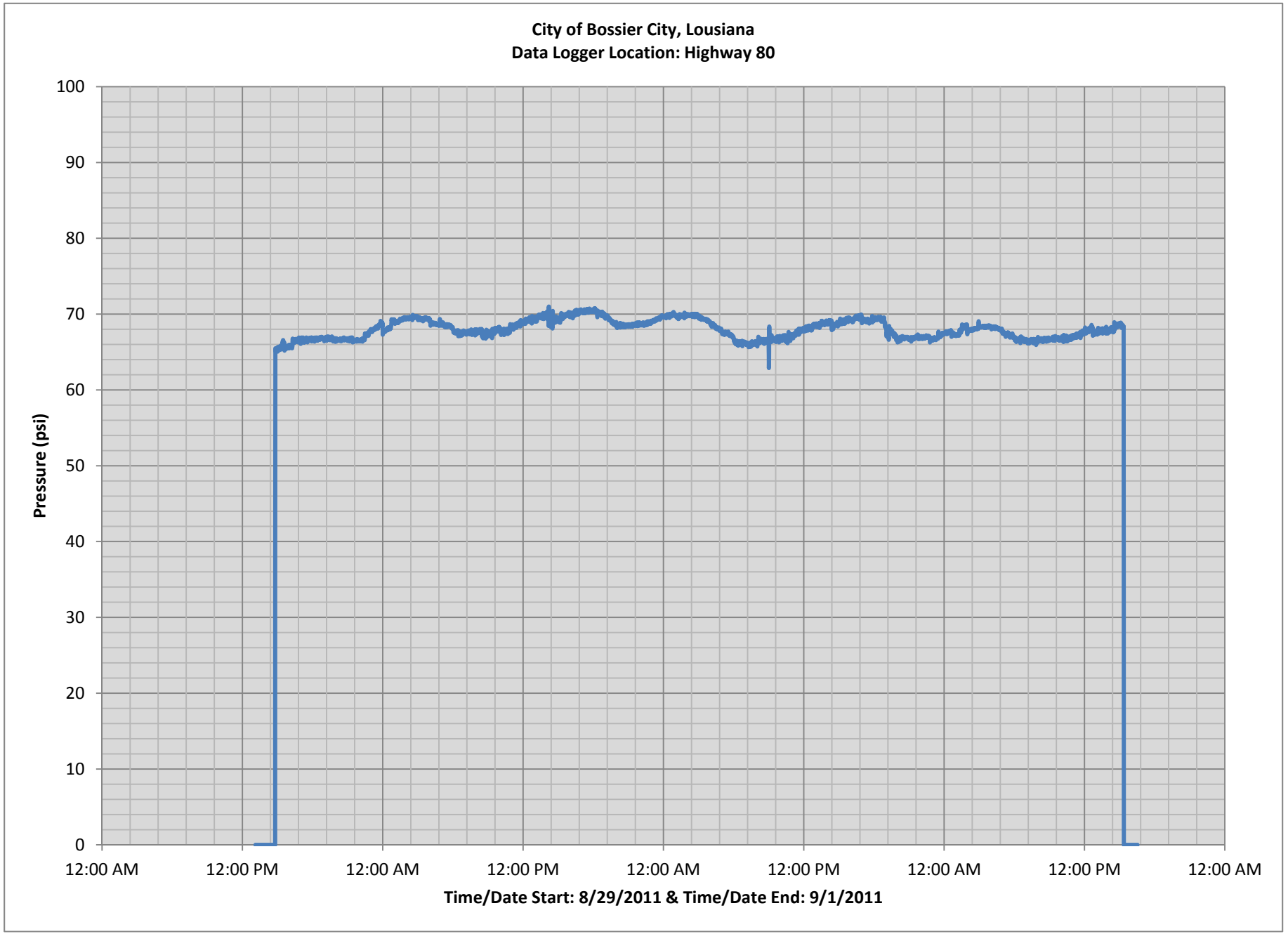

City of Bossier City, Lousiana
Data Logger Location: Bass Pro
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011

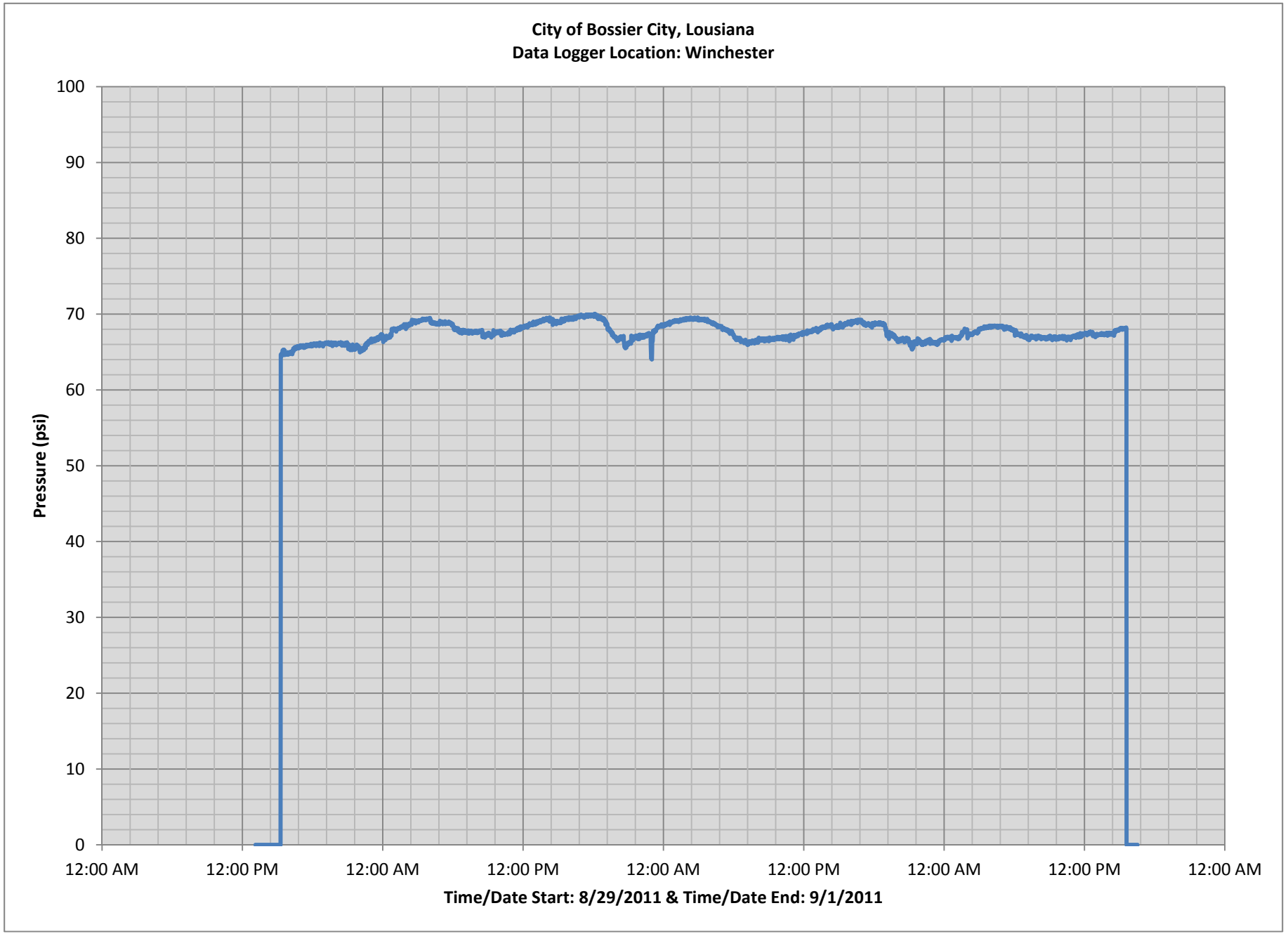

City of Bossier City, Lousiana
Data Logger Location: Green Acres
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011

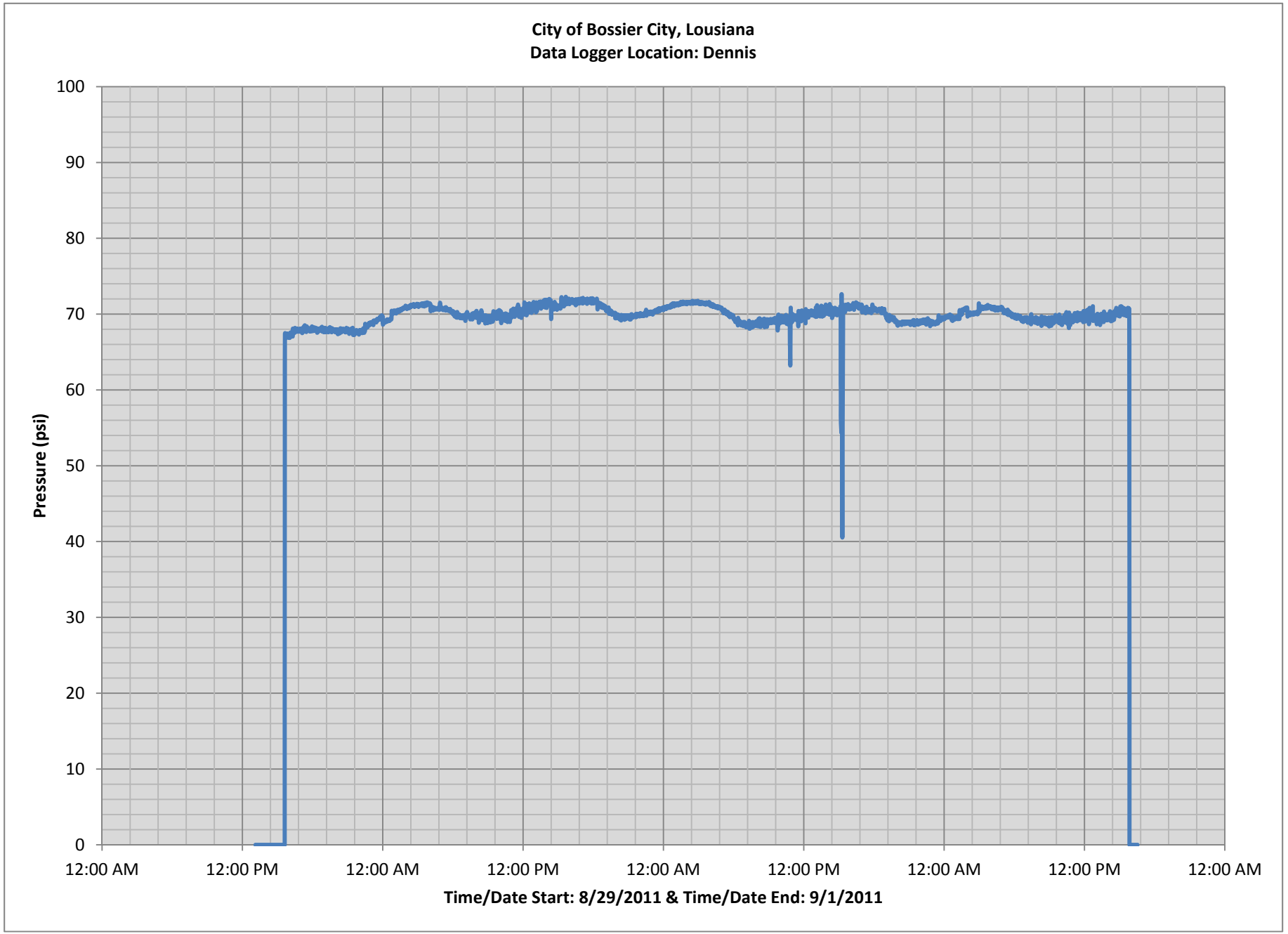

City of Bossier City, Lousiana
Data Logger Location: Lynch
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011

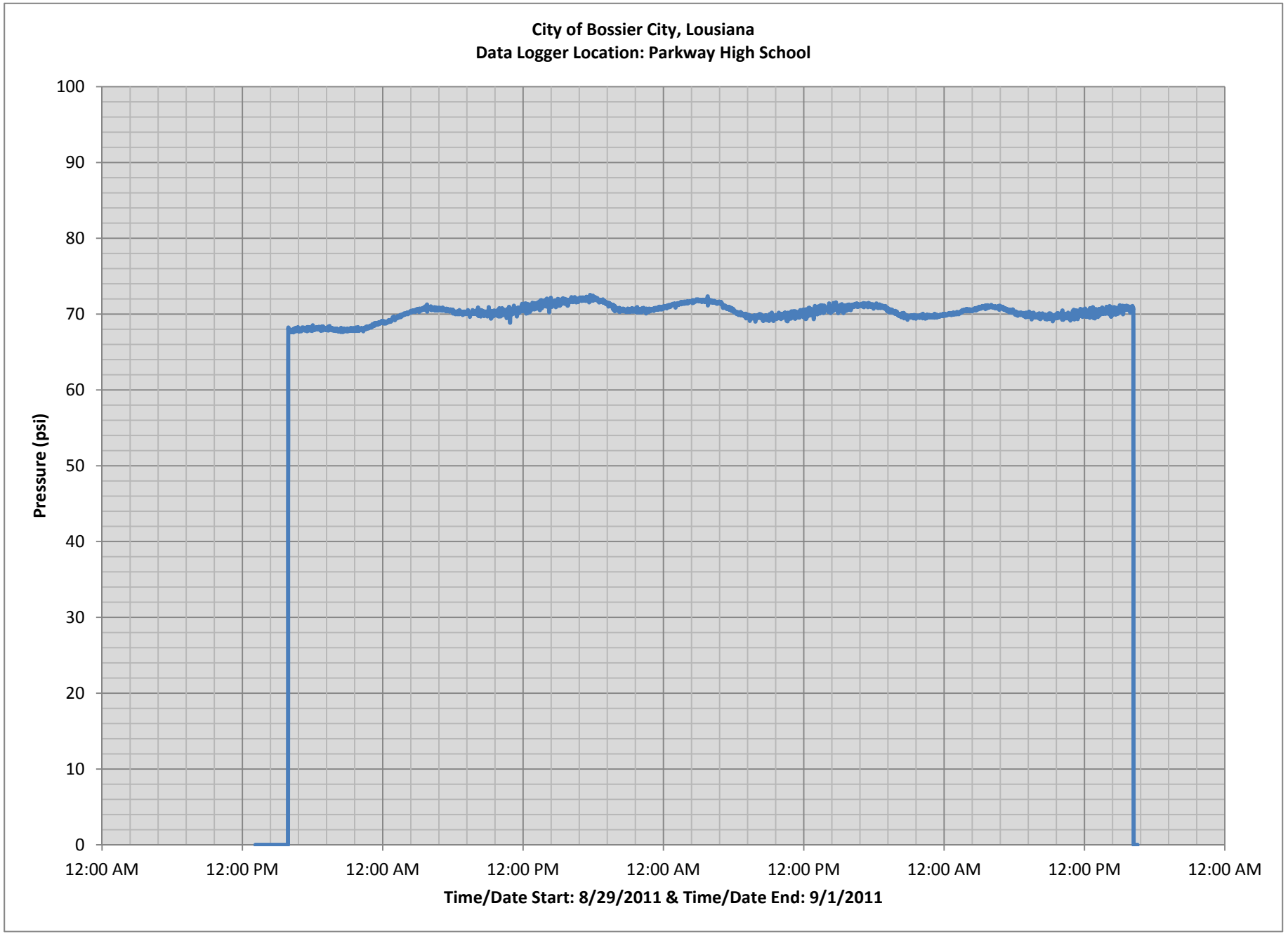

City of Bossier City, Lousiana
Data Logger Location: Crosscreek
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011


City of Bossier City, Lousiana
Data Logger Location: Stonebridge
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011


City of Bossier City, Lousiana
Data Logger Location: Highway 80
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011


City of Bossier City, Lousiana
Data Logger Location: Winchester
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011


City of Bossier City, Lousiana
Data Logger Location: Dennis
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011


City of Bossier City, Lousiana
Data Logger Location: Parkway High School
Pressure (psi)
100
90
80
70
60
50
40
30
20
10
0
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
Time/Date Start: 8/29/2011 & Time/Date End: 9/1/2011

Water Master Plan Field Testing - Set-up and Daily Checks
Bossier City, Lousiana

Date	Time	Telog No.	Location	Pressure (psi)
8/29	1307	76156	I-182 Bass Pro parking lot	68.08
	1336	76153	Green Acres & Hanson AW Moore	66.95
	1400	76151	Lynch & Edwards	58.51
	1413	76154	Crosscreek Dr	62.90
	1433	76158	Stonebridge Blvd	67.90
	1449	76157	Hwy 80 Cyber center	65.56
	1517	76161	Winchester & Northgate (Barksdale)	61.27
	1538	76155	Dennis & Polynores	69.15
	1554	76160	Parkway High School	68.42
	16:36	2379	North pump station	86.05
9/1/11	1355	76156	Bass Pro	74.82
	1408	76153	Green Acres	69.05
	1430	76151	Lynch & Edwards	62.41
	1442	76154	Crosscreek	66.86
	1510	76158	Stonebridge	68.32
	1525	76157	Hwy 80	68.47
	15:36	76161	Winchester	67.25
	1550	76155	Dennis	70.42
	1612	76160	Parkway	70.86
	1632	76152	N. Pump	75.55

Burns & McDonnell SINCE 1898

35 psi
1000 gpm

42 psi

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 8:20

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: 2.5

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	59	48
Flowing Hydrant:	59	42
Differential Static Pressure:		
Differential Flowing Pressure:		1000 gpm
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Cathell Trail & Silkwood

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 0842

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: 2.5

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	55	38
Flowing Hydrant:	39	40
Differential Static Pressure:		920 gpm
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Tall Grass Circle

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 0905

C-Value or Hydrant Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	62	47
Flowing Hydrant:	60	40
~~Differential Static Pressure~~:	Flow	1060
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Bayou Bend Drive

Sketch:

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 0925

C-Value or (Hydrant) Test

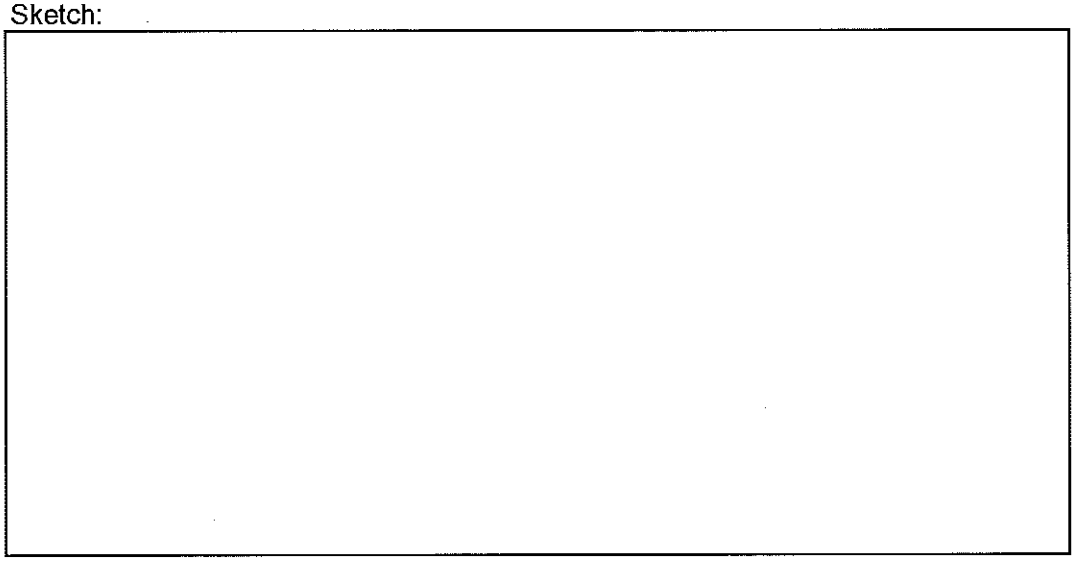
Main Size: _____ Hydrant Opening Size: 2.5

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	66	59
Flowing Hydrant:	62	40
Differential Static Pressure:		10 30
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Dauphine ~~Teache~~ & Vanceville

Sketch:



System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 0940

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	65	57
Flowing Hydrant:	60	50
Differential Static Pressure:		1060
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Hackberry & Adler

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 1000

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	65	59
Flowing Hydrant:	62	48
Differential Static Pressure:		103
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: ~~Old Benton~~ Downs & Alder

Sketch:

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 1030

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	**Flowing Pressure (psi)**
Gage Hydrant:	72	65
Flowing Hydrant:	65	50
Differential Static Pressure:		1130
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Narcross

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 1045

C-Value or (Hydrant) Test

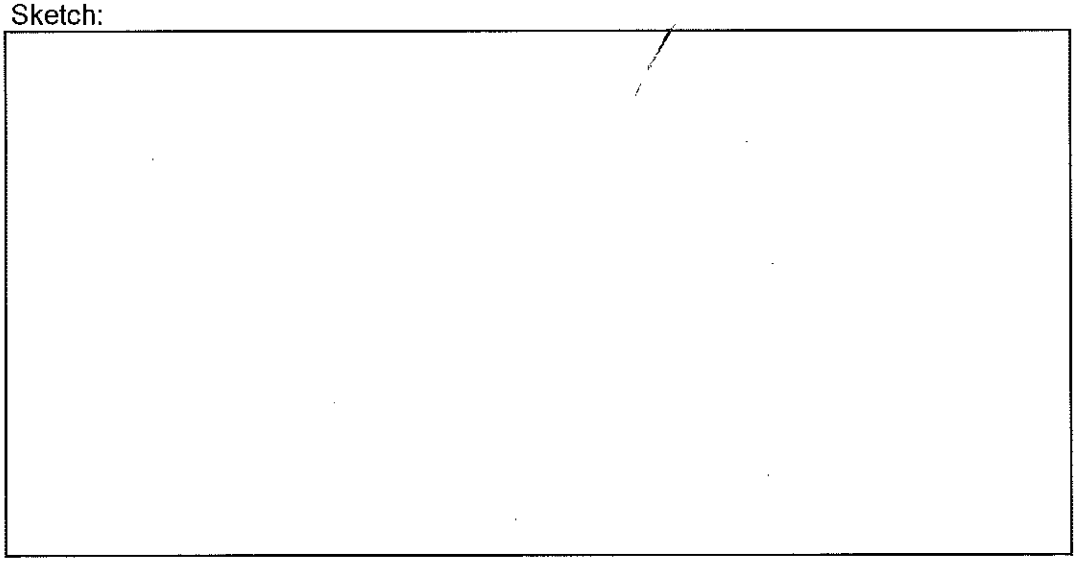
Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	**Flowing Pressure (psi)**
Gage Hydrant:	72	58
Flowing Hydrant:	70	48
Differential Static Pressure:		1020
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Waverly

Sketch:



Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8-30 **Time:** 1325

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	84	67
Flowing Hydrant:	80	50
~~Differential Static Pressure:~~	Flow	1130
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Montgomery

Sketch:

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 1350

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	74	64
Flowing Hydrant:	68	55
Differential Static Pressure:		1130
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Lakeside

Sketch:

System: Bossier City, Louisiana

Date: 8-30 **Time:** 2:08

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	73	67
Flowing Hydrant:	68	52
~~Differential Static Pressure:~~	Flow	1190
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Sullivan

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8-30 **Time:** 2:30

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	74	67
Flowing Hydrant:	67	40
~~Differential Static Pressure:~~	1090	1090
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: PEARL

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8-30 **Time:** 2:48

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	**Flowing Pressure (psi)**
Gage Hydrant:	75	55
Flowing Hydrant:	71	38
~~Differential Static Pressure:~~	Flow:	1000
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Rugby Lane

Sketch:

System: Bossier City, Louisiana

Date: 8/30/11 **Time:** 1505

C-Value or Hydrant Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	80	70
Flowing Hydrant:	70	50
~~Differential Static Pressure:~~	Flow	1210
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Martin Lane

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/31/11 **Time:** 0955

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	86	70
Flowing Hydrant:	82	55
~~Differential Static Pressure:~~	Flow	1220
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Kelly St

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/31/11 **Time:** 10:10

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	83	70
Flowing Hydrant:	75	52
~~Differential Static Pressure:~~	Flow	1220
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Monroe

Sketch:

System: Bossier City, Louisiana

Date: 8/31/11 **Time:** 1026

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	70	55
Flowing Hydrant:	65	48
~~Differential Static Pressure:~~	Flow	1130
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Princeton

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/31/11 **Time:** 1047

C-Value or Hydrant Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	70	39
Flowing Hydrant:	65	20
~~Differential Static Pressure:~~	Flow	750
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Schex

Sketch:

water very dirty, ran for 10-15 min to see if it would clean up

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/31/11 **Time:** 1107

C-Value or Hydrant Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	72	70
Flowing Hydrant:	69	50
~~Differential Static Pressure:~~	Flow	1220
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: McGregor

Sketch:

Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 8/31/1 **Time:** 1132

C-Value or (Hydrant) Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	74	62
Flowing Hydrant:	69	42
~~Differential Static Pressure~~:	Flow	1090
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Oleander

Sketch:

System: Bossier City, Louisiana

Date: 8/31/11 **Time:** 1148

C-Value or (Hydrant) Test

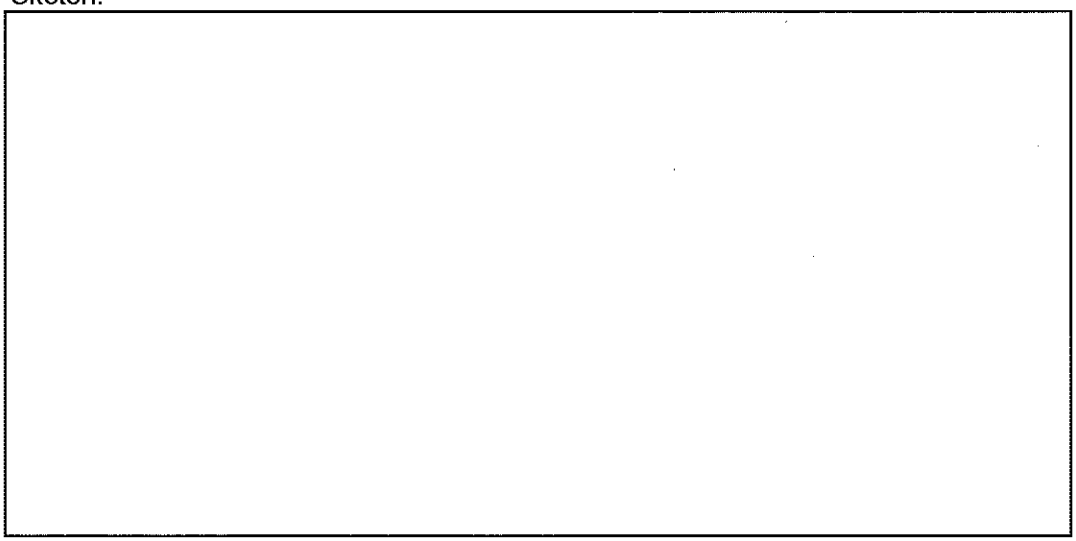
Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	77	73
Flowing Hydrant:	72	52
~~Differential Static Pressure:~~	Flow	1250
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Beauregard

Sketch:



Burns & McDonnell SINCE 1898

System: Bossier City, Louisiana

Date: 9/31/11 **Time:** 1208

C-Value or Hydrant Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	68	63
Flowing Hydrant:	66	48
~~Differential Static Pressure~~:	Flow	1160
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Community Center

Century Mkt

Sketch:

System: Bossier City, Louisiana

Date: 8/31/11 **Time:** 1250

C-Value or Hydrant Test

Main Size: _____ Hydrant Opening Size: _____

	Static Pressure (psi)	Flowing Pressure (psi)
Gage Hydrant:	74	60
Flowing Hydrant:	68	48
~~Differential Static Pressure~~:	Flow	1090
Differential Flowing Pressure:		
Headloss (feet):		
C-Value:		

HL = 0.002083L(100/C)^1.85*(GPM^1.85/D^4.8655)

Location: Hunter Hollow

Sketch:

APPENDIX C:

DIURNAL EVALUATION CALCULATIONS

Appendix C
City of Bossier City, LA
Diurnal Evaluation - Calculations

			Clearwell No. 1 HSPS No. 1			Clearwell No. 3 HSPS No. 3			Benton Road Elevated Tank		Northeast Elevated Tank		Airline Road Elevated Tank		71 Highway Elevated Tank		Analysis				
																	Tot Demand	Equalization Storage		Equalization	
Date		Time	Rate (gpm)	Time On (min)	Volume (gallons)	Rate (gpm)	Time On (min)	Volume (gallons)	Level (feet)	Volume (gallons)	Level (feet)	Volume (gallons)	Level (feet)	Volume (gallons)	Level (feet)	Volume (gallons)	Rate (gph)	Fill (gallons)	Draft (gallons)	Factor (%)	Diurnal (%)
8/30/2011	Actual Time																				
Time Period	23:41	12:00 AM	8403	60	504,167	5764	60	345,833	24.86		26.32		26.69		26.58						
0	0:50	1:00 AM	8056	60	483,333	5694	60	341,667	27.07	(92,201.13)	27.58	(47,713.40)	27.87	(37,733.65)	27.60	(39,438.47)	607,913	137,923			82
1	1:58	2:00 AM	8056	60	483,333	5833	60	350,000	28.67	(66,740.25)	28.91	(50,153.03)	30.01	(68,391.11)	29.06	(56,135.76)	591,913	153,923			79
2	3:07	3:00 AM	8125	60	487,500	6111	60	366,667	30.69	(84,485.29)	30.06	(43,185.34)	31.64	(51,883.44)	30.42	(52,584.44)	622,028	123,808			83
3	4:16	4:00 AM	4306	60	258,333	6250	60	375,000	31.42	(30,090.97)	30.23	(6,617.61)	31.94	(9,728.27)	31.59	(44,766.80)	542,130	203,707			73
4	5:25	5:00 AM	8750	60	525,000	5833	60	350,000	30.49	38,578.13	29.37	32,389.57	31.36	18,572.13	31.64	(2,131.91)	962,408		(216,572)		129
5	6:33	6:00 AM	8750	60	525,000	5764	60	345,833	27.87	109,561.24	27.88	56,421.12	30.36	31,837.68	30.92	27,712.88	1,096,366		(350,530)		147
6	7:42	7:00 AM	8889	60	533,333	5694	60	341,667	26.65	50,537.03	27.15	27,513.89	29.28	34,490.09	30.43	18,830.93	1,006,372		(260,536)		135
7	8:51	8:00 AM	4792	60	287,500	6111	60	366,667	25.24	59,023.99	26.91	9,054.98	28.48	25,647.35	30.33	3,907.76	751,801		(5,965)		101
8	9:59	9:00 AM	8611	60	516,667	5764	60	345,833	25.45	(8,873.15)	27.50	(22,289.82)	28.61	(4,127.32)	30.43	(3,907.76)	823,302		(77,466)		110
9	11:08	10:00 AM	8889	60	533,333	5556	60	333,333	25.48	(1,157.31)	27.46	1,741.36	28.59	589.39	30.50	(2,487.00)	865,353		(119,517)		116
10	12:17	11:00 AM	8889	60	533,333	5556	60	333,333	29.71	(176,686.83)	29.59	(80,800.30)	30.01	(45,398.57)	31.57	(41,214.33)	522,567	223,270			70
11	13:25	12:00 PM	9028	60	541,667	5278	60	316,667	32.38	(111,103.69)	30.92	(50,151.14)	31.46	(46,281.22)	32.48	(35,174.08)	615,623	130,213			83
12	14:34	1:00 PM	5208	60	312,500	5694	60	341,667	34.08	(70,983.52)	31.95	(39,007.75)	32.30	(26,826.28)	33.32	(32,332.18)	485,017	260,819			65
13	15:43	2:00 PM	8958	60	537,500	6042	60	362,500	34.23	(6,171.92)	32.57	(23,334.03)	32.58	(8,843.54)	33.99	(25,936.26)	835,714		(89,878)		112
14	16:51	3:00 PM	8889	60	533,333	5972	60	358,333	34.17	2,314.21	33.47	(33,783.30)	33.55	(31,247.98)	34.63	(24,515.50)	804,434		(58,598)		108
15	18:00	4:00 PM	8889	60	533,333	5625	60	337,500	35.30	(47,064.47)	34.15	(25,772.91)	34.22	(21,224.70)	34.93	(11,724.82)	765,046		(19,210)		103
16	19:09	5:00 PM	6250	60	375,000	6181	60	370,833	35.14	6,558.11	33.76	14,628.00	33.06	37,143.46	34.36	22,028.31	826,191		(80,355)		111
17	20:17	6:00 PM	6181	60	370,833	5972	60	358,333	32.62	105,317.13	31.81	73,834.88	30.86	70,160.40	32.77	61,466.20	1,039,945		(294,109)		139
18	21:26	7:00 PM	6042	60	362,500	5833	60	350,000	30.98	68,283.12	30.68	42,489.70	29.60	40,386.05	31.56	46,543.42	910,202		(164,366)		122
19	22:35	8:00 PM	5903	60	354,167	6111	60	366,667	30.05	38,964.11	30.37	11,841.68	29.53	2,063.66	31.24	12,080.11	785,783		(39,947)		105
20	23:43	9:00 PM	5625	60	337,500	6181	60	370,833	31.66	(67,125.39)	31.12	(28,558.85)	30.22	(21,814.40)	31.68	(16,699.02)	574,136	171,701			77
21	12:52	10:00 PM	5833	60	350,000	5625	60	337,500	33.45	(74,648.65)	32.12	(37,613.83)	31.53	(41,860.32)	32.43	(28,778.55)	504,599	241,238			68
22	2:01	11:00 PM	5556	60	333,333	6319	60	379,167	32.47	40,699.56	32.60	(18,110.71)	32.37	(27,121.14)	33.15	(28,068.75)	679,899	65,937			91
23	3:09	12:00 AM	5694	60	341,667	5972	60	358,333	32.01	19,288.55	32.60	0.00	32.76	(12,380.99)	33.82	(25,580.59)	681,327	64,509			82
					10,954,167			**8,804,167**									**745,836**	**1,777,047**	**(1,777,047)**	**9.93**	**100**
8/31/2011	Actual Time																				
Time Period	23:43	12:00 AM	5625	60	337,500	6181	60	370,833	31.66		31.12		30.22		31.68						
0	0:52	1:00 AM	5833	60	350,000	5625	60	337,500	33.45	(74,648.65)	32.12	(37,613.83)	31.53	(41,860.32)	32.43	(28,778.55)	504,599	329,594			60
1	2:01	2:00 AM	5556	60	333,333	6319	60	379,167	32.47	40,699.56	32.60	(18,110.71)	32.37	(27,121.14)	33.15	(28,068.75)	679,899	154,294			82
2	3:09	3:00 AM	5694	60	341,667	5972	60	358,333	32.01	19,288.55	32.60	0.00	32.76	(12,380.99)	33.82	(25,580.59)	681,327	152,866			82
3	4:18	4:00 AM	5833	60	350,000	6181	60	370,833	30.81	49,765.91	31.28	49,804.08	32.07	22,109.42	33.95	(4,974.58)	837,538		(3,346)		100
4	5:27	5:00 AM	5833	60	350,000	6528	60	391,667	27.57	135,407.89	29.17	79,755.34	30.66	45,102.92	32.97	37,662.05	1,039,595		(205,402)		125
5	6:36	6:00 AM	5972	60	358,333	6389	60	383,333	23.58	166,656.37	26.67	94,382.77	28.51	68,686.61	30.79	83,848.83	1,155,241		(321,049)		138
6	7:44	7:00 AM	6042	60	362,500	6250	60	375,000	20.43	131,164.62	25.02	62,341.96	26.84	53,357.07	29.57	46,899.48	1,031,263		(197,070)		124
7	8:53	8:00 AM	8750	60	525,000	6111	60	366,667	19.79	26,618.82	24.55	17,761.57	26.75	2,947.90	29.05	20,251.49	959,246		(125,054)		115
8	10:02	9:00 AM	9097	60	545,833	5833	60	350,000	20.27	(19,674.94)	25.13	(21,941.05)	27.12	(11,791.60)	29.22	(6,750.63)	835,675		(1,482)		100
9	11:10	10:00 AM	8958	60	537,500	5903	60	354,167	20.36	(3,857.71)	25.63	(18,807.48)	27.52	(12,970.70)	29.56	(12,790.29)	843,240		(9,048)		101
10	12:19	11:00 AM	9167	60	550,000	5347	60	320,833	23.17	(117,276.44)	27.26	(61,644.62)	28.54	(32,427.07)	30.16	(23,449.64)	636,036	198,157			76
11	13:28	12:00 PM	9097	60	545,833	6042	60	362,500	25.98	(117,276.44)	28.73	(55,376.35)	29.63	(34,785.90)	31.12	(36,950.90)	663,944	170,249			80
12	14:36	1:00 PM	5347	60	320,833	5764	60	345,833	27.59	(67,125.39)	29.61	(33,434.35)	30.53	(28,889.30)	31.84	(27,713.46)	509,504	324,688			61
13	15:45	2:00 PM	9097	60	545,833	5903	60	354,167	29.29	(70,983.52)	30.77	(43,882.86)	31.21	(21,815.04)	32.32	(18,474.87)	744,844	89,349			89
14	16:54	3:00 PM	9167	60	550,000	5903	60	354,167	29.57	(11,573.13)	31.64	(32,737.96)	32.24	(33,016.30)	32.91	(22,738.69)	804,101	30,092			96
15	18:02	4:00 PM	9167	60	550,000	5417	60	325,000	29.18	16,202.80	31.61	1,044.97	31.66	18,572.29	32.93	(710.76)	910,109		(75,917)		109
16	19:11	5:00 PM	9583	60	575,000	6042	60	362,500	29.10	3,085.75	30.52	41,445.12	30.88	25,057.16	32.43	19,186.40	1,026,274		(192,082)		123
17	20:20	6:00 PM	9167	60	550,000	6181	60	370,833	27.34	73,683.71	28.33	82,541.47	28.98	60,727.15	30.64	68,927.02	1,206,713		(372,520)		145
18	21:28	7:00 PM	9097	60	545,833	6389	60	383,333	25.72	67,511.37	26.94	52,589.46	27.71	40,680.91	29.74	34,818.79	1,124,767		(290,575)		135
19	22:37	8:00 PM	9028	60	541,667	5764	60	345,833	24.85	36,263.30	26.46	18,110.71	27.21	15,919.24	29.41	12,790.29	970,584		(136,391)		116
20	23:46	9:00 PM	9236	60	554,167	5764	60	345,833	24.24	25,461.30	26.35	4,179.10	26.90	10,022.64	29.41	0.00	939,663		(105,470)		113
21	0:54	10:00 PM	5903	60	354,167	6458	60	387,500	25.83	(66,354.27)	27.05	(26,469.30)	27.58	(21,814.88)	29.87	(17,765.07)	609,263	224,929			73
22	2:03	11:00 PM	5139	60	308,333	6389	60	383,333	26.77	(39,349.05)	27.65	(22,637.45)	28.59	(32,426.75)	30.61	(28,423.07)	568,830	265,362			68
23	3:12	12:00 AM	8542	60	512,500	5903	60	354,167	27.98	(50,150.64)	28.16	(19,155.49)	29.35	(24,173.08)	31.51	(34,819.37)	738,368	95,825			60
					11,395,833			**9,033,333**									**834,193**	**2,035,405**	**(2,035,405)**	**10.17**	**99**
9/1/2011	Actual Time																				
Time Period	23:46	12:00 AM	9236	60	554,167	5764	60	345,833	24.24		26.35		26.90		29.41						
0	0:54	1:00 AM	5903	60	354,167	6458	60	387,500	25.83	(66,354.27)	27.05	(26,469.30)	27.58	(21,814.88)	29.87	(17,765.07)	609,263	358,012			63
1	2:03	2:00 AM	5139	60	308,333	6389	60	383,333	26.77	(39,349.05)	27.65	(22,637.45)	28.59	(32,426.75)	30.61	(28,423.07)	568,830	398,444			59
2	3:12	3:00 AM	8542	60	512,500	5903	60	354,167	27.98	(50,150.64)	28.16	(19,155.49)	29.35	(24,173.08)	31.51	(34,819.37)	738,368	228,907			76
3	4:20	4:00 AM	8403	60	504,167	6042	60	362,500	29.14	(48,608.39)	28.40	(9,055.36)	30.27	(29,479.33)	32.16	(24,870.02)	754,654	212,621			78
4	5:29	5:00 AM	8750	60	525,000	6181	60	370,833	27.07	86,413.94	27.35	39,703.76	30.35	(2,358.19)	31.71	17,054.11	1,036,647		(69,372)		107
5	6:38	6:00 AM	8750	60	525,000	5972	60	358,333	24.52	106,475.28	25.69	62,689.59	29.11	39,501.81	30.64	41,214.33	1,133,214		(165,940)		117
6	7:46	7:00 AM	8611	60	516,667	6250	60	375,000	22.69	76,383.89	24.66	38,658.79	27.98	35,964.84	29.93	27,357.02	1,070,031		(102,756)		111
7	8:55	8:00 AM	8681	60	520,833	5903	60	354,167	23.22	(22,375.55)	24.73	(2,437.75)	27.49	15,918.60	29.56	14,567.88	880,673		86,602		91
8	10:04	9:00 AM	8889	60	533,333	6111	60	366,667	24.37	(47,836.43)	25.30	(21,593.05)	27.38	3,537.61	29.54	710.38	834,819	132,456			86
9	11:13	10:00 AM	9097	60	545,833	5764	60	345,833	24.17	8,487.59	26.04	(27,862.27)	27.65	(8,843.70)	29.85	(12,080.11)	851,368	115,907			88
10	12:21	11:00 AM	9097	60	545,833	5694	60	341,667	25.20	(43,207.39)	27.12	(41,096.73)	28.39	(23,583.21)	30.33	(18,475.83)	761,137	206,138			79
11	13:30	12:00 PM	5833	60	350,000	5903	60	354,167	27.10	(79,084.29)	27.96	(31,692.80)	28.39	(0.16)	30.85	(19,896.01)	573,493	393,781			59
12	14:39	1:00 PM	9028	60	541,667	5556	60	333,333	30.38	(136,951.80)	29.70	(65,476.10)	29.91	(48,640.85)	31.74	(34,463.32)	589,468	377,807			61
13	15:47	2:00 PM	8889	60	533,333	5833	60	350,000	30.47	(3,857.92)	29.78	(3,134.14)	30.05	(4,421.85)	31.77	(1,065.67)	870,854	96,421			90
14	16:56	3:00 PM	9861	60	591,667	6042	60	362,500	30.12	14,660.13	27.03	103,785.75	28.54	48,346.31	31.47	11,368.77	1,132,328		(165,053)		117
15	18:05	4:00 PM	9306	60	558,333	9514	60	570,833	27.96	90,272.06	23.62	128,862.65	26.51	64,853.98	30.44	39,793.57	1,452,949		(485,674)		150
16	19:13	5:00 PM	9097	60	545,833	8889	60	533,333	26.47	62,110.16	19.58	152,893.26	24.38	68,096.10	28.68	67,860.97	1,430,127		(462,852)		148
17	20:22	6:00 PM	9097	60	545,833	9097	60	545,833	23.59	119,977.05	15.23	164,038.54	21.80	82,247.18	25.96	104,811.48	1,562,741		(595,466)		162
18	21:31	7:00 PM	9236	60	554,167	8819	60	529,167	21.67	80,241.60	11.66	135,131.31	20.22	50,704.67	24.52	55,426.54	1,404,837		(437,563)		145
19	22:39	8:00 PM	8889	60	533,333	9514	60	570,833	19.70	82,170.87	8.25	128,862.01	18.84	43,922.86	23.54	37,661.85	1,396,784		(429,509)		144
20	23:48	9:00 PM	5625	60	337,500	10417	60	625,000	18.40	54,395.37	6.09	81,496.88	17.93	29,184.64	23.08	17,765.07	1,145,342		(178,067)		118
21	0:57	10:00 PM	5417	60	325,000	8681	60	520,833	18.40	0.00	6.09	0.00	17.93	0.00	23.08	0.00	845,833	121,441			87
22	2:05	11:00 PM	5347	60	320,833	9097	60	545,833	18.40	0.00	6.09	0.00	17.93	0.00	23.08	0.00	866,667	100,608			90
23	3:14	12:00 AM	2153	60	129,167	9583	60	575,000	18.40	0.00	6.09	0.00	17.93	0.00	23.08	0.00	704,167	263,108			63
					11,812,500			**10,762,500**									**967,275**	**3,005,652**	**(3,005,652)**	**12.95**	**100**

APPENDIX D:

ISO REPOT (PROPERTY INSURANCE ASSOCIATION OF LOUISIANA)

PROPERTY INSURANCE ASSOCIATION OF LOUISIANA

P.O. BOX 56099 • NEW ORLEANS, LA 70156-6099 • (504) 836-7980 • FAX (504) 831-3444

August 03, 2009

Fire Chief Sammy Halphen
Bossier City Fire Department
P.O. Box 5337
Bossier City, La. 71171

RE: Public Fire Protection Survey for:
Bossier City
(Bossier Parish)

Dear Chief Halphen:

We wish to thank you for the cooperation given to us during our recent survey. We have completed our evaluation of the Public Fire Protection Classification for the City of Bossier City and wish to advise that Class 1 continues to apply for residential and commercial properties.

Properties, except those individually rated commercial properties located within the boundaries of the City of Bossier City which are within seven road miles of a recognized fire station and within 1,000 feet of a standard fire hydrant, if required, will continue to receive Class 1 rates.

For your reference and use, attached is a copy of the Classification Details and Rating Impact Statements. The Classification Details sheets display the score received for each graded category. The Rating Impact Statements list areas that are in need of improvement and areas that should continue to receive attention. Where the maximum score was attained, current activities should be continued to avoid a negative impact on any future grading. In addition, other activities are listed that could improve the grading on items where less than the maximum score was attained. Also attached is a copy of the Hydrant Flow Data Summary/Water Shuttle Flow Summary.

The survey was conducted under the authority of R.S. 22:1405. The purpose of the survey was to gather information to determine the proper Public Fire Protection Classification for the City of Bossier City. This Classification will be used by member companies of the P.I.A.L. to develop fire insurance premiums. It was not conducted for property loss prevention nor life safety purposes. Nothing in the survey, whether expressed or implied should be taken as a comment, evaluation, observation, critique or statement concerning property loss prevention or life safety matters, for such concerns are beyond the scope of the survey and the authority, duties and responsibilities of the Property Insurance Association of Louisiana.

If you have any questions concerning the Classification, we would be pleased to hear from you.

In closing, we request that you keep our office informed when there is a significant change in your Fire District. This includes such information as: change in Fire Chief, change in mailing address, change in telephone number, change in the service area boundaries, or other vital information effecting your district. Upgrades can be made to this grading with a written detailed description of the improvements. **THE TIME LIMIT FOR MAKING IMPROVEMENTS TO THIS GRADING IS 6 MONTHS FROM THE DATE OF THIS LETTER. AFTER THAT TIME A NEW SURVEY WILL BE REQUIRED FOR A CLASS CHANGE.** Only tangible improvements (purchase of equipment, increased water shuttle, etc.) will be considered. Deficiencies in historical areas (apparatus response, testing, training, etc.) will be addressed at your next grading.

Sincerely,

Randall K. Loe
Senior Municipal Field Representative

RKL/sao
cc: Honorable Lorenz Walker, Mayor
Water superintendent Bryan Kauffer

PROPERTY INSURANCE ASSOCIATION OF LOUISIANA

P.O. BOX 56099 • NEW ORLEANS, LA 70156-6099 • (504) 836-7980 • FAX (504) 831-3444

August 3, 2009

TO MEMBER COMPANIES, THEIR STATE OR SPECIAL AGENTS
AND AGENTS OF BOSSIER PARISH

RE: Recognized Fire Station Locations for:
Bossier Parish (Dist. Area 080)
Bossier City (ID# 080-050)
Within Corporate Limits

As a result of the recent grading of the City of Bossier City, the classification remains unchanged.

All properties, except individually rated commercial properties listed below, located inside the corporate limits of the City of Bossier City, within the required distance from a Recognized Fire Station, and a Standard Fire Hydrant, if required, will continue to receive Class 1 rates. This is applicable to all in force policies and endorsements thereto.

Individual commercial properties rated using a class poorer than Class 1:

- **Are located on the back of this bulletin**

Recognized Fire Stations considered in the grading:

Station 2 – 1101 Waller Ave., Bossier City, LA 71112
Station 3 – 2710 Northside Dr., Bossier City, LA 71111
Station 4 – 1200 Shady Grove Dr., Bossier City, LA 71112
Station 5 – 915 Meadowview Dr., Bossier City, LA 71111
Station 6 – 700 Barksdale Blvd., Bossier City, LA 71111
Station 7 – 5900 Shed Rd., Bossier City, LA 71111
Station 8 – 2001 Riverbend Dr., Bossier City, LA 71112
Station 9 – 2621 Brownlee Rd., Bossier City, LA 71111

For adjustments to existing policies refer to state statute and/or the appropriate Dwelling, Homeowner, or Commercial Lines Manuals or the Louisiana Insurance Codes for the applicable rules.

Yours very truly,

Blaine W. Rabe'
Divisional Manager

BWR'/mm
rkl

PROPERTY INSURANCE ASSOCIATION OF LOUISIANA
P.O. BOX 56099 • NEW ORLEANS, LA 70156-6099 • (504) 836-7980 • FAX (504) 831-3444

RATING IMPACT STATEMENTS

These Statements relate to items considered in the grading of the Public Fire Protection Classification which is used for fire insurance rating purposes only.

Graded Area: Bossier City Parish: Bossier

Dates Surveyed: May 26, 2009 Surveyed By: Randy Loe

COMMUNICATIONS

1. Additional credit can be obtained by installing an emergency power source such as batteries or a standby permanently installed generator at the dispatch location and each staffed Fire Station for use in the event of a commercial power failure. **This alternate power source should be tested weekly under load and these tests should be documented. (Reference NFPA 1221 Paragraph 10.4.1.1- Installation, Maintenance, and Use of Public Fire Service Communication Systems)**

FIRE DEPARTMENT

2. Continue maintaining comprehensive records on all fires. Master fire record should show:

   Date, Time, Location, Type of Fire, Equipment Responding, Names of Fire Fighters at the Scene, and whether response is within or out of the city.

3. Continue always dispatching at least two engine companies and a ladder company to all structural alarms. Fire department records should reflect this response.

4. Additional credit can be obtained by providing a fire department ladder truck equipped in accordance with NFPA 1901 - Automotive Fire Apparatus and the ISO Fire Suppression Rating Schedule.

5. Additional credit can be obtained by having a service truck or ladder truck equipped (in service and reserve) equipped in accordance with NFPA 1901 - Automotive Fire Apparatus and the ISO Fire Suppression Rating Schedule.

6. Continue conducting pumper service test annually or whenever major repairs or modifications have been made. Tests should be made from draft in accordance with NFPA 1911 - Service Test of Pumps on Fire Department Apparatus. Document the results of this test and retain these records on file.

7. Continue inspecting and testing aerial apparatus, annually in accordance with NFPA 1901 - Automotive Fire Apparatus and NFPA 1914 - Testing Fire Department Aerial Devices. Document the test results and retain records on file.

8. Continue conducting hose test annually in accordance with NFPA 1962 - Care, Use, and Service Testing of Fires Hose Including Connections and Nozzles. Document the test results and retain these records on file.

9. Additional credit can be obtained by having a fire fighter on duty at the station.

10. Additional credit can be obtained by conducting pre-fire planning inspections to include all buildings except 1-4 family dwellings in the city semi-annually by fire department members. During each inspection data pertaining to the building should be recorded and/or updated. These records should include all inspection dates, current information and diagrams. Copies of the pre-plans provide vital information at the fire scene when carried on apparatus.

WATER SUPPLY

11. Continue inspecting and maintaining each fire hydrant semi-annually. This program will identify problems such as damaged hydrants, closed valves, or waterline obstructions. Document the test results and retain records on file. (Reference AWWA Manual M17 - Installation, Field Testing, and Maintenance of Fire Hydrants)

12. Fire flow tests were deficient at several locations (see the attached Hydrant Flow Data Summary Sheet). Additional credit can be obtained by improving the water distribution system to insure that the required fire flow is available in these areas. (Reference AWWA Manual M17- Installation, Field Testing and Maintenance of Fire Hydrant)

13. Additional credit can be obtained by installing standard fire hydrants so that all structures are within 300 feet of at least one standard hydrant.

14. Additional credit can be obtained by replacing one and two way fire hydrants with three way hydrants on a 6 inch or larger main. Also by replacing three way fire hydrants on a 4 inch or smaller main with a 6 inch or larger main.

NOTE 1: Items marked with an asterisk (*) should be given immediate attention.

NOTE 2: "NFPA Standards" refers to the National Fire Codes published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02269-9101.

"ISO Fire Suppression Rating Schedule " refers to the Rating Schedule published by the Insurance Services Office, Commercial Risk Services, Inc., Accounting Division, 7 World Trade Center, New York, New York 10048.

"IFSTA" refers to the International Fire Service Training Association, Fire Protection Publications, Oklahoma State University, 930 N. Willis, Stillwater, Oklahoma 74078-8045.

"AWWA" refers to the American Water Works Association, 6666 West Quincy Ave., Denver, CO 80235

PROPERTY INSURANCE ASSOCIATION OF LOUISIANA

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CLASSIFICATION DETAILS

This Classification has been developed for fire insurance rating purposes only.

Graded Area: Bossier City Parish: Bossier

Population: 64,773 Total credit: 90.13 Class: 1

Date Surveyed: May 26, 2009 Surveyed By: Randy Loe

RECEIVING AND HANDLING FIRE ALARMS

This section of the Fire Suppression Rating Schedule reviews the facilities provided for the general public to report fires, and for the operator on duty at the communication center to dispatch fire department companies to the fires.

		Credit	
		Actual	Maximum
1.	(Item 414) Credit for Telephone Service This item reviews the facilities provided for the public to report fires, including the listing of fire and business numbers in the telephone directory.	2.00	2.00
2.	(Item 422) Credit for Operators This item reviews the number of operators on-duty at the communications center to handle fire calls.	3.00	3.00
3.	(Item 432) Credit for Dispatch Circuits This item reviews the dispatch circuit facilities used to transmit alarms to fire department members.	4.98	5.00
	(ITEM 440) TOTAL CREDIT FOR RECEIVING AND HANDLING FIRE ALARMS	9.98	10.00

FIRE DEPARTMENT

This section of the Fire Suppression Rating Schedule reviews the engine and ladder and/or service companies, equipment carried, response to fires, training and available fire fighters.

		Credit	
		Actual	Maximum
1.	(Item 513) Credit for Engine Companies This item reviews the number of engine companies and the hose and equipment carried.	10.00	10.00
2.	(Item 523) Credit for Reserve Pumpers This item reviews the number of reserve pumpers, their pump capacity and the hose and equipment carried on each.	1.00	1.00
3.	(Item 532) Credit for Pump Capacity This item reviews the total available pump capacity.	5.00	5.00
4.	(Item 549) Credit for Ladder Service This item reviews the number of ladder and/or service companies and the equipment carried.	2.89	5.00
5.	(Item 553) Credit for Reserve Ladder Service This item reviews the number of reserve ladder and/or service trucks, and the equipment carried.	.58	1.00
6.	(Item 561) Credit for Distribution This item reviews the percent of built-upon area which has an adequately equipped, responding first-due engine company within 1-1/2 miles and an adequately equipped, responding ladder and/or service company within 2-1/2 miles.	3.06	4.00
7.	(Item 571) Credit for Company Personnel This item reviews the average number of equivalent fire fighters and company officers on duty with existing companies.	10.43	15.00+

FIRE DEPARTMENT
(Continued)

8.	(Item 581) Credit for Training This item reviews the training facilities and their use.	9.00	9.00
9.	(Item 583) Credit for Public Fire Control Activity This item reviews the Public Fire Control activities (Fire Prevention) and allows for "Bonus Credit" which may be added to the final grading of the Fire Department section.	1.50	2.00*
	(ITEM 590) TOTAL CREDIT FOR FIRE DEPARTMENT	43.46	50.00+

\+ This indicates that credit for manpower is open ended, with no maximum credit for this item.

* This indicates that credit for Public Fire Control activity is "Bonus Credit".

WATER SUPPLY

This section of the Fire Suppression Rating Schedule reviews the water supply system that is available for fire suppression in the city.

		Credit	
		Actual	Maximum
1.	(Item 616) Credit for the Water System This item reviews the supply works, the main capacity and hydrant distribution.	34.10	35.00
2.	(Item 621) Credit for Hydrants This item reviews the type of hydrants and method of installation.	2.00	2.00
3.	(Item 631) Credit for Inspection and Condition of Hydrants. This item reviews the frequency of inspections of hydrants and their condition.	2.51	3.00
	(ITEM 640) TOTAL CREDIT FOR WATER SUPPLY	38.61	40.00

SUMMARY OF CREDIT

	Feature	Assigned	Maximum Credit
	Receiving and Handling Fire Alarms.....	9.98%	10.00%
	Fire Department.....	43.46%	50.00%
	Water Supply.....	38.61%	40.00%
**	Divergence.....	<-1.92%>	
	TOTAL.....	90.13%	100.00%

** Divergence is a mathematical calculation that balances the score of the Fire Department with the score of the Water Supply.

(Water Supply Credit - 80% of Fire Department Credit) X .5 = Divergence

The Public Protection Classification is based on the total percentage credit as follows:

CLASS	%
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	0 to 9.99

Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY

City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient
				Individual Hydrants			Total	Static	Residual	Needed **	Available	
1	Comm	Airline Drive @ Ellis Pottery	12	2472			2472	80	75	6000	9500	
2	Comm	Sligo Rd @ Auction Barn	14	2783			2783	85	77	6000	8600	
3	Comm	East Texas & Beckett	12	3438			3438	82	69	6000	8000	
3a	Comm	East Texas & Beckett	13	3438			3438	82	69	3000	8000	
4	Comm	Airline & Plantation	12	2553			2553	82	72	5000	6800	
5	Comm	Hamilton & Cox	16	2472			2472	80	69	5000	6200	
5a	Comm	Hamilton & Cox	16	2472			2472	80	69	3000	6200	
5b	Comm	Hamilton & Cox	16	2472			2472	80	69	3000	6200	
5c	Comm	Hamilton & Cox	16	2472			2472	80	69	4500	6200	
5d	Comm	Hamilton & Cox	16	2472			2472	80	69	3000	6200	
6	Comm	East Texas @ Sonic	12	2632			2632	82	67	5000	5700	
6a	Comm	East Texas @ Sonic	12	2632			2632	82	67	4500	5700	
6b	Comm	East Texas @ Sonic	12	2632			2632	82	67	3500	5700	
6c	Comm	East Texas @ Sonic	12	2632			2632	82	67	3500	5700	
7	Comm	John Wesley South of Old Minden Rd.	8	2431			2431	80	26	5000	2600	<2400> <48%>

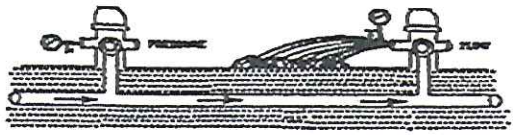
The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

*Apts = Apartments; Comm = Commercial; PBD = Principle Business District; Res = Residential; SC = Shopping Center

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are **not** considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY



City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient	
				Individual Hydrants			Total	Static	Residual	Needed **	Available		
8	Comm	LA Downs @ North End of Grandstand	12	1277			1277	81	71	5000	3400	<1600>	<32%>
9	Comm	Waller & Patricia	6	2612			2612	80	55	5000	4200	<800>	<16%>
10	Comm	Airline north of Shed	12	2472			2472	82	73	4500	7000		
10a	Comm	Airline north of Shed	12	2472			2472	82	73	4000	7000		
10b	Comm	Airline north of Shed	12	2472			2472	82	73	3500	7000		
10c	Comm	Airline north of Shed	12	2472			2472	82	73	3000	7000		
10d	Comm	Airline north of Shed	12	2472			2472	82	73	3000	7000		
11	Comm	Delhi @ Comfort Inn	12	2388			2388	80	64	4500	4900		
12	Comm	Medical Drive West of Colonial Oaks Nursing Home	8	2345			2345	81	70	4500	5900		
12a	Comm	Medical Drive West of Colonial Oaks Nursing Home	8	2345			2345	81	70	3500	5900		
13	Comm	El Chico's on Old Minden Rd.	10	2211			2211	79	70	4500	6100		
13a	Comm	El Chico's on Old Minden Rd.	10	2211			2211	79	70	3000	6100		
13b	Comm	El Chico's on Old Minden Rd.	10	2211			2211	79	70	3000	6100		
13c	Comm	El Chico's on Old Minden Rd.	10	2211			2211	79	70	3000	6100		
13d	Comm	El Chico's on Old Minden Rd.	10	2211			2211	79	70	3000	6100		

The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

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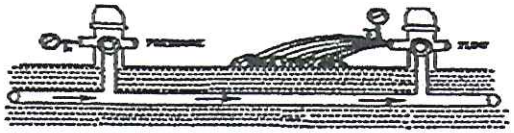
** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are **not** considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY



City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient	
				Individual Hydrants			Total	Static	Residual	Needed **	Available		
13e	Comm	El Chico's on Old Minden Rd.	10	2211			2211	79	70	3000	6100		
13f	Comm	El Chico's on Old Minden Rd.	10	2211			2211	79	70	3000	6100		
14	Comm	Shed & Hamilton	8	2553			2553	80	70	4500	6700		
14a	Comm	Shed & Hamilton	8	2553			2553	80	70	4000	6700		
15	Comm	East Texas @ Mary Kay	15	2553			2553	83	67	4500	5400		
16	Comm	Benton & Burns	12	2211			2211	80	55	4500	3500	<1000>	<22%>
17	Comm	Hospital Drive at South Entrance of Willis Knighton	10	2472			2472	80	58	4500	4300	<200>	<4%>
18	Comm	Jimmie Davis Hwy @ Barksdale Baptist Church	Unk.	2117			2117	80	50	4500	3100	<1400>	<31%>
19	Comm	Old Minden & John Wesley	12	2783			2783	80	68	4500	6600		
20	Comm	Old Minden Rd West of Industrial	8	1689			1689	84	65	4500	3300	<1200>	<27%>
20a	Comm	Old Minden Rd West of Industrial	8	1689			1689	84	65	3000	3300		
20b	Comm	Old Minden Rd West of Industrial	8	1689			1689	84	65	3000	3300		
20c	Comm	Old Minden Rd West of Industrial	8	1689			1689	84	65	3000	3300		
20d	Comm	Old Minden Rd West of Industrial	8	1689			1689	84	65	3000	3300		
20e	Comm	Old Minden Rd West of Industrial	8	1689			1689	84	65	3000	3300		

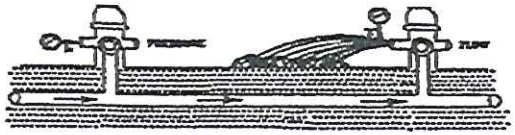
The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

*Apts = Apartments; Comm = Commercial; PBD = Principle Business District; Res = Residential; SC = Shopping Center

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are **not** considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY



City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient	
				Individual Hydrants			Total	Static	Residual	Needed **	Available		
21	Comm	Airline South of Village Lane	12	2472	0		2472	84	75	4000	7100		
21a	Comm	Airline South of Village Lane	12	2472	0		2472	84	75	3500	7100		
21b	Comm	Airline South of Village Lane	12	2472	0		2472	84	75	3000	7100		
21c	Comm	Airline South of Village Lane	12	2472	0		2472	84	75	3000	7100		
22	Comm	Village Lane @ Baymont Inn	8	1966	0		1966	85	55	4000	3000	<1000>	<25%>
22a	Comm	Village Lane @ Baymont Inn	8	1966	0		1966	85	55	3500	3000	<500>	<14%>
22b	Comm	Village Lane @ Baymont Inn	8	1966	0		1966	85	55	3000	3000		
23	Comm	Wittington & Pine	6	2336	0		2336	80	56	4000	3800	<200>	<5%>
24	Comm	Airline Drive South of Airline Baptist Church	12	2211	0		2211	80	67	4000	5100		
24a	Comm	Airline Drive South of Airline Baptist Church	12	2211	0		2211	80	67	3000	5100		
26	Comm	Industrial & Topps Trail	20	2670	0		2670	80	70	4000	7000		
27	Comm	Stafford & Westgate	20	1652	0		1652	80	70	3500	4300		
27a	Comm	Stafford & Westgate	20	1652	0		1652	80	70	3500	4300		
27b	Comm	Stafford & Westgate	20	1652	0		1652	80	70	3000	4300		
28	Comm	Brandon Blvd @ the Arbor	0	2302	0		2302	83	55	3500	3600		

The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

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** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are **not** considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY

City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient
				Individual Hydrants			Total	Static	Residual	Needed **	Available	
29	Comm	Barksdale Blvd @ the Warehouses	20	2670			2670	82	74	3500	8100	
31	Comm	Airline @ Asbury United Methodist Church	12	2564			2564	83	69	3500	5800	
31a	Comm	Airline @ Asbury United Methodist Church	12	2564			2564	83	69	3000	5800	
32	Comm	Barksdale Blvd East of Westerfield	12	2472			2472	80	69	3500	6200	
32a	Comm	Barksdale Blvd East of Westerfield	12	2472			2472	80	69	3000	6200	
32b	Comm	Barksdale Blvd East of Westerfield	12	2472			2472	80	69	3000	6200	
33	Comm	Swan Lake South of Viking	16	2632			2632	81	70	3500	6600	
34	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3500	6200	
34a	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3500	6200	
34b	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3500	6200	
34c	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3500	6200	
34d	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3500	6200	
34e	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3500	6200	
34f	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3000	6200	
34g	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3000	6200	

The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

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Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY

City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient	
				Individual Hydrants			Total	Static	Residual	Needed **	Available		
34h	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3000	6200		
34i	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3000	6200		
34j	Comm	Airline Drive @ Tallowood Apts	12	2472			2472	80	69	3000	6200		
35	Comm	Cox @ the Skill Center	6	671			671	75	43	3000	900	<2100>	<70%>
35a	Comm	Cox @ the Skill Center	6	671			671	75	43	3000	900	<2100>	<70%>
36	Comm	Jimmie Davis & Sunflower	10	2388			2388	81	50	3000	3400		
37	Comm	Barksdale Blvd & Traffic St	8	2302			2302	80	64	3000	4700		
38	Comm	Benton Rd @ Riverwood	20	2553			2553	80	71	3000	7100		
38a	Comm	Benton Rd @ Riverwood	20	2553			2553	80	71	3500	7100		
38e	Comm	Benton Rd @ Riverwood	20	2553			2553	80	71	3000	7100		
38b	Comm	Benton Rd @ Riverwood	20	2553			2553	80	71	3500	7100		
38c	Comm	Benton Rd @ Riverwood	20	2553			2553	80	71	3500	7100		
38d	Comm	Benton Rd @ Riverwood	20	2553			2553	80	71	3000	7100		
39	Comm	Airline & Eugene	16	2431			2431	84	75	3000	7000		
41	Comm	Beckett St. @ the Library	8	1915			1915	82	50	3000	2700	<300>	<10%>

The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

*Apts = Apartments; Comm = Commercial; PBD = Principle Business District; Res = Residential; SC = Shopping Center

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are **not** considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY

City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient	
				Individual Hydrants			Total	Static	Residual	Needed **	Available		
41a	Comm	Beckett St. @ the Library	8	1915			1915	82	50	3000	2700	<300>	<10%>
41b	Comm	Beckett St. @ the Library	8	1915			1915	82	50	3000	2700	<300>	<10%>
42	Comm	Hilton Dr. @ the Hotel	8	2431			2431	85	70	3000	5400		
42a	Comm	Hilton Dr. @ the Hotel	8	2431			2431	85	70	3000	5400		
43	Comm	Texas & Adair	16	2023			2023	81	70	3000	5100		
43a	Comm	Texas & Adair	16	2023			2023	81	70	3000	5100		
44	Comm	Old Benton Rd. & Yarbrough	8	1847			1847	79	68	3000	4600		
45	Comm	Benton Rd & Beckett St.	12	2472			2472	82	69	3000	5700		
45a	Comm	Benton Rd & Beckett St.	12	2472			2472	82	69	3000	5700		
45b	Comm	Benton Rd & Beckett St.	12	2472			2472	82	69	3000	5700		
46	Comm	Benton & Tilman	12	2236			2236	82	72	3000	6000		
46a	Comm	Benton & Tilman	12	2236			2236	82	72	3000	6000		
46b	Comm	Benton & Tilman	12	2236			2236	82	72	3000	6000		
47	Comm	Doctor's Drive South of Pilgrim Manor Nursing Home	6	1915			1915	82	55	3000	3000		
48	Comm	Eatman & East Texas	6	3016			3016	72	62	3000	7300		

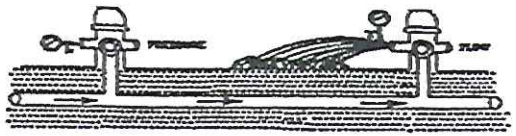
The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

*Apts = Apartments; Comm = Commercial; PBD = Principle Business District; Res = Residential; SC = Shopping Center

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are **not** considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

Property Insurance Association of Louisiana

HYDRANT FLOW DATA SUMMARY



City: Bossier City (Bossier Parish) State: LA Witnessed by: rkl Date: May 28, 2009

Test #	Type Risk	Location	Main Size	Flow - GPM				Pressure (psi)		Flow @ 20 PSI		Deficient
				Individual Hydrants			Total	Static	Residual	Needed **	Available	
49	Res	Longstreet north of Robert E. Lee	8	2472			2472	80	65	1000	5200	
50	Res	Nicki Lynne & Holiday	6	1806			1806	85	45	1000	2300	
51	Res	Dot & Sheryll	6	2019			2019	82	65	1000	4100	
52	Res	Stockwell & Coy	6	2211			2211	80	65	1000	4700	
53	Res	Northpark & Parklane	6	1748			1748	82	70	1000	4200	
The following flow numbers were not used: 25, 30 and 40.												

The above listed needed fire flows are for insurance rating purposes only and are NOT intended to predict the maximum amount of water required for a large scale fire condition. The available flows only indicate the conditions that existed at the time and at the location where tests were witnessed.

*Apts = Apartments; Comm = Commercial; PBD = Principle Business District; Res = Residential; SC = Shopping Center

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are **not** considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

APPENDIX E:

MODEL CALIBRATION FILES

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5988	P - 2861	8.0	140.0	165
5996	P - 4002	6.0	140.0	167
5980	P - 499	6.0	100.0	165
5981	P - 2018	8.0	140.0	165
5982	P - 309	4.0	140.0	165
5983	P - 4850	20.0	140.0	165
5984	P - 4253	8.0	110.0	166
5985	P - 450	6.0	100.0	165
5978	P - 2162	6.0	100.0	166
5987	P - 731	12.0	110.0	165
5977	P - 4233	8.0	140.0	165
5989	P - 2656	20.0	110.0	166
5990	P - 4680	12.0	140.0	166
5991	P - 3820	8.0	140.0	166
5992	P - 4061	6.0	140.0	166
5993	P - 4555	8.0	140.0	166
5994	P - 1919	16.0	90.0	166
5959	P - 4265	12.0	140.0	162
5986	P - 1783	4.0	140.0	165
5969	P - 3900	6.0	100.0	164
6034	P - 4686	20.0	110.0	171
5961	P - 1487	8.0	100.0	169
5962	P - 1190	6.0	120.0	164
5963	P - 1808	8.0	140.0	164
5964	P - 3109	8.0	140.0	165
5965	P - 2043	8.0	140.0	166
5966	P - 3254	10.0	110.0	163
5979	P - 270	4.0	140.0	165
5968	P - 3193	8.0	140.0	164
5997	P - 4697	4.0	110.0	167
5970	P - 683	6.0	110.0	164
5971	P - 942	6.0	110.0	164
5972	P - 4389	8.0	140.0	164
5973	P - 4211	8.0	140.0	165
5974	P - 553	8.0	110.0	164
5975	P - 4187	6.0	140.0	165
5976	P - 3947	8.0	140.0	168
5967	P - 376	10.0	100.0	164
6026	P - 3021	8.0	140.0	171
5995	P - 2180	20.0	110.0	173
6018	P - 2584	6.0	140.0	362
6019	P - 3822	8.0	140.0	168
6020	P - 2899	6.0	140.0	168
6021	P - 4501	6.0	140.0	170
6022	P - 294	8.0	140.0	175
6023	P - 4256	10.0	140.0	169
6016	P - 3023	8.0	140.0	169

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6025	P - 2086	10.0	140.0	170
6015	P - 4117	6.0	140.0	171
6027	P - 1798	6.0	100.0	170
6028	P - 2610	8.0	140.0	169
6029	P - 2015	8.0	140.0	169
6030	P - 944	6.0	110.0	169
6031	P - 3461	8.0	140.0	169
6032	P - 931	6.0	110.0	170
5883	P - 4104	12.0	140.0	155
6024	P - 886	6.0	120.0	169
6007	P - 1073	8.0	140.0	168
5998	P - 3289	6.0	100.0	167
5999	P - 3224	8.0	140.0	176
6000	P - 4809	12.0	140.0	174
6001	P - 3038	8.0	140.0	168
6002	P - 4539	8.0	140.0	168
6003	P - 2110	6.0	110.0	168
6004	P - 4086	8.0	140.0	167
6017	P - 2685	10.0	140.0	167
6006	P - 911	6.0	110.0	168
5958	P - 2344	4.0	140.0	330
6008	P - 4138	8.0	140.0	168
6009	P - 3598	6.0	140.0	261
6010	P - 4836	12.0	110.0	168
6011	P - 1305	4.0	140.0	205
6012	P - 3006	16.0	110.0	168
6013	P - 1089	20.0	110.0	168
6014	P - 3273	8.0	140.0	176
6005	P - 3317	6.0	100.0	168
5912	P - 929	6.0	140.0	158
5920	P - 2450	6.0	140.0	159
5904	P - 972	8.0	110.0	157
5905	P - 2674	8.0	140.0	158
5906	P - 3392	8.0	140.0	157
5907	P - 3362	8.0	140.0	160
5908	P - 3658	12.0	140.0	157
5909	P - 713	8.0	140.0	158
5902	P - 452	8.0	100.0	157
5911	P - 2808	6.0	110.0	159
5901	P - 973	8.0	110.0	158
5913	P - 3797	6.0	100.0	158
5914	P - 3649	8.0	140.0	158
5915	P - 3163	8.0	140.0	158
5916	P - 1548	6.0	100.0	159
5917	P - 2492	8.0	140.0	166
5918	P - 2111	6.0	110.0	160
5960	P - 1047	8.0	110.0	163

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5910	P - 1093	8.0	140.0	159
5893	P - 236	6.0	100.0	157
6186	P - 3752	8.0	100.0	186
5885	P - 1082	6.0	100.0	155
5886	P - 4114	4.0	140.0	272
5887	P - 2265	6.0	140.0	155
5888	P - 4534	6.0	140.0	158
5889	P - 3222	8.0	140.0	156
5890	P - 1498	8.0	100.0	156
5903	P - 3696	10.0	140.0	157
5892	P - 3305	6.0	140.0	156
5921	P - 2389	8.0	100.0	160
5894	P - 3069	8.0	140.0	156
5895	P - 245	8.0	140.0	156
5896	P - 2124	6.0	110.0	164
5897	P - 1891	6.0	110.0	156
5898	P - 3472	8.0	140.0	156
5899	P - 3249	8.0	140.0	157
5900	P - 1502	6.0	100.0	156
5891	P - 166	12.0	140.0	156
5950	P - 4044	8.0	140.0	162
5919	P - 4453	12.0	140.0	161
5942	P - 3902	6.0	100.0	161
5943	P - 1030	8.0	110.0	161
5944	P - 352	8.0	100.0	164
5945	P - 3005	8.0	140.0	161
5946	P - 1101	6.0	100.0	161
5947	P - 3645	8.0	140.0	165
5940	P - 1347	12.0	140.0	161
5949	P - 2210	6.0	110.0	162
5939	P - 4014	8.0	140.0	161
5951	P - 4521	8.0	140.0	162
5952	P - 608	8.0	140.0	165
5953	P - 2711	8.0	140.0	162
5954	P - 2069	10.0	140.0	162
5955	P - 3703	8.0	140.0	162
5956	P - 1699	12.0	140.0	163
5957	P - 3174	8.0	140.0	163
5948	P - 3753	6.0	110.0	162
5931	P - 3970	8.0	140.0	160
5922	P - 2279	8.0	140.0	159
5923	P - 3786	8.0	100.0	159
5924	P - 3708	4.0	140.0	230
5925	P - 4710	8.0	140.0	159
5926	P - 1572	8.0	100.0	159
5927	P - 1315	16.0	140.0	160
5928	P - 2244	12.0	140.0	165

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5941	P - 4131	4.0	140.0	162
5930	P - 902	6.0	110.0	160
6035	P - 3250	8.0	140.0	170
5932	P - 472	10.0	100.0	160
5933	P - 3051	12.0	140.0	160
5934	P - 2898	6.0	140.0	207
5935	P - 2403	4.0	140.0	316
5936	P - 3136	8.0	140.0	161
5937	P - 2036	8.0	140.0	331
5938	P - 9994	8.0	100.0	161
5929	P - 3975	6.0	140.0	160
6140	P - 2023	6.0	140.0	182
6148	P - 4588	8.0	140.0	182
6132	P - 4726	6.0	110.0	180
6133	P - 2139	6.0	110.0	180
6134	P - 758	6.0	100.0	186
6135	P - 2520	8.0	140.0	180
6136	P - 1744	12.0	140.0	181
6137	P - 4155	8.0	140.0	181
6130	P - 3188	8.0	140.0	180
6139	P - 2022	20.0	140.0	181
6129	P - 1296	8.0	140.0	179
6141	P - 3304	8.0	140.0	181
6142	P - 3741	4.0	140.0	257
6143	P - 3147	8.0	100.0	182
6144	P - 4568	8.0	140.0	182
6145	P - 1238	8.0	100.0	182
6146	P - 1252	8.0	100.0	182
6111	P - 3088	8.0	140.0	177
6138	P - 4516	8.0	140.0	181
6121	P - 3678	12.0	140.0	179
6033	P - 2605	8.0	140.0	170
6113	P - 2414	20.0	110.0	180
6114	P - 2948	8.0	100.0	178
6115	P - 1230	8.0	140.0	180
6116	P - 2563	8.0	100.0	186
6117	P - 4133	4.0	140.0	287
6118	P - 4653	8.0	100.0	178
6131	P - 227	6.0	140.0	180
6120	P - 4474	4.0	140.0	179
6149	P - 523	8.0	100.0	192
6122	P - 2573	6.0	100.0	179
6123	P - 3288	8.0	100.0	181
6124	P - 2249	12.0	140.0	179
6125	P - 3981	4.0	140.0	266
6126	P - 2293	6.0	110.0	201
6127	P - 1852	6.0	110.0	179

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6128	P - 1776	6.0	100.0	179
6119	P - 3603	6.0	140.0	179
6178	P - 3195	8.0	140.0	186
6147	P - 4334	8.0	140.0	232
6170	P - 2399	12.0	140.0	186
6171	P - 675	6.0	100.0	185
6172	P - 3052	8.0	140.0	185
6173	P - 2593	8.0	140.0	187
6174	P - 3511	4.0	140.0	265
6175	P - 3132	8.0	140.0	189
6168	P - 3100	8.0	140.0	185
6177	P - 1878	8.0	140.0	186
6167	P - 4842	12.0	110.0	184
6179	P - 3560	8.0	140.0	186
6180	P - 917	4.0	110.0	186
6181	P - 497	6.0	110.0	186
6182	P - 4162	10.0	140.0	187
6183	P - 3104	8.0	140.0	187
6184	P - 2853	12.0	110.0	186
4342	P - 4515	10.0	110.0	1
6176	P - 1275	8.0	140.0	185
6159	P - 2943	6.0	100.0	183
6150	P - 4241	6.0	140.0	201
6151	P - 752	20.0	110.0	182
6152	P - 3276	8.0	140.0	182
6153	P - 3699	10.0	140.0	184
6154	P - 3507	8.0	140.0	183
6155	P - 3328	8.0	140.0	183
6156	P - 4403	8.0	140.0	183
6169	P - 3122	8.0	140.0	185
6158	P - 3171	10.0	110.0	183
6110	P - 3306	8.0	140.0	177
6160	P - 3095	8.0	140.0	183
6161	P - 1306	8.0	100.0	183
6162	P - 2027	6.0	110.0	183
6163	P - 1171	16.0	110.0	184
6164	P - 698	12.0	100.0	184
6165	P - 3075	8.0	140.0	185
6166	P - 4870	10.0	140.0	242
6157	P - 555	12.0	110.0	183
6064	P - 1576	8.0	100.0	174
6072	P - 3469	8.0	140.0	173
6056	P - 3336	8.0	110.0	172
6057	P - 4112	4.0	140.0	284
6058	P - 1800	6.0	100.0	172
6059	P - 3448	8.0	140.0	174
6060	P - 3279	8.0	140.0	172

Existing System Model/Pipe Calibration Data

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6061	P - 4277	6.0	140.0	172
6054	P - 2404	12.0	110.0	171
6063	P - 2647	12.0	140.0	172
6053	P - 3596	12.0	100.0	171
6065	P - 2499	12.0	110.0	175
6066	P - 1395	8.0	100.0	173
6067	P - 654	6.0	100.0	173
6068	P - 3890	6.0	100.0	173
6069	P - 3126	8.0	140.0	173
6070	P - 1011	6.0	100.0	173
6112	P - 2575	12.0	100.0	178
6062	P - 3985	8.0	140.0	177
6045	P - 1675	8.0	100.0	176
6036	P - 1683	8.0	110.0	172
6037	P - 3949	4.0	140.0	301
6038	P - 2608	8.0	140.0	170
6039	P - 3976	8.0	140.0	170
6040	P - 682	8.0	110.0	170
6041	P - 77	12.0	140.0	172
6042	P - 3325	8.0	140.0	170
6055	P - 3204	8.0	140.0	172
6044	P - 921	6.0	110.0	170
6073	P - 755	4.0	100.0	174
6046	P - 3209	8.0	140.0	171
6047	P - 2207	8.0	110.0	171
6048	P - 3091	8.0	140.0	171
6049	P - 3408	4.0	140.0	225
6050	P - 2205	6.0	110.0	171
6051	P - 3108	8.0	140.0	171
6052	P - 4286	12.0	140.0	171
6043	P - 2119	36.0	130.0	170
6102	P - 228	8.0	140.0	176
6071	P - 3213	8.0	140.0	173
6094	P - 4446	8.0	140.0	175
6095	P - 2004	6.0	140.0	176
6096	P - 3106	8.0	140.0	176
6097	P - 1133	8.0	140.0	176
6098	P - 285	8.0	140.0	176
6099	P - 4038	8.0	140.0	382
6092	P - 3371	8.0	140.0	175
6101	P - 2851	6.0	100.0	176
6091	P - 1879	8.0	140.0	175
6103	P - 1465	12.0	100.0	177
6104	P - 3342	6.0	140.0	177
6105	P - 4376	12.0	140.0	177
6106	P - 220	6.0	110.0	177
6107	P - 2329	12.0	140.0	180

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6108	P - 3281	8.0	140.0	177
6109	P - 4546	8.0	140.0	178
6100	P - 649	8.0	140.0	243
6083	P - 1704	8.0	140.0	175
6074	P - 3121	8.0	140.0	174
6075	P - 364	6.0	100.0	174
6076	P - 4487	8.0	140.0	174
6077	P - 2710	8.0	140.0	174
6078	P - 1108	20.0	110.0	175
6079	P - 3011	10.0	140.0	174
6080	P - 689	8.0	140.0	175
6093	P - 3000	8.0	140.0	176
6082	P - 2042	8.0	140.0	183
5882	P - 3667	8.0	140.0	156
6084	P - 2742	6.0	110.0	175
6085	P - 3210	8.0	140.0	175
6086	P - 4802	6.0	140.0	175
6087	P - 4582	8.0	140.0	175
6088	P - 1829	16.0	100.0	175
6089	P - 3867	6.0	140.0	175
6090	P - 462	8.0	140.0	175
6081	P - 4254	12.0	140.0	175
5684	P - 568	6.0	110.0	131
5692	P - 3855	6.0	100.0	132
5676	P - 3577	8.0	140.0	130
5677	P - 2455	6.0	110.0	130
5678	P - 1958	12.0	140.0	130
5679	P - 4525	8.0	140.0	131
5680	P - 500	6.0	110.0	131
5681	P - 2155	8.0	110.0	131
5674	P - 1640	8.0	110.0	129
5683	P - 1514	4.0	110.0	131
5673	P - 862	6.0	110.0	130
5685	P - 483	6.0	110.0	131
5686	P - 3688	4.0	140.0	278
5687	P - 2694	8.0	110.0	163
5688	P - 1515	6.0	110.0	131
5689	P - 970	6.0	110.0	132
5690	P - 2168	8.0	140.0	133
5655	P - 2637	12.0	110.0	127
5682	P - 2519	20.0	110.0	131
5665	P - 3350	8.0	140.0	139
5730	P - 3666	8.0	140.0	138
5657	P - 2624	6.0	140.0	128
5658	P - 955	12.0	140.0	128
5659	P - 552	8.0	140.0	128
5660	P - 105	8.0	110.0	128

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5661	P - 3092	8.0	140.0	128
5662	P - 1700	10.0	140.0	130
5675	P - 4153	8.0	140.0	130
5664	P - 3969	8.0	140.0	129
5693	P - 4290	10.0	110.0	132
5666	P - 3004	12.0	140.0	130
5667	P - 4464	8.0	140.0	130
5668	P - 517	6.0	140.0	130
5669	P - 2576	6.0	140.0	129
5670	P - 1423	6.0	140.0	130
5671	P - 788	18.0	110.0	129
5672	P - 3600	4.0	140.0	327
5663	P - 775	6.0	140.0	129
5722	P - 3514	8.0	140.0	173
5691	P - 2937	8.0	140.0	132
5714	P - 311	8.0	140.0	229
5715	P - 647	8.0	140.0	137
5716	P - 1902	16.0	90.0	136
5717	P - 642	12.0	110.0	136
5718	P - 725	6.0	100.0	136
5719	P - 399	8.0	110.0	136
5712	P - 872	8.0	110.0	137
5721	P - 1676	8.0	100.0	143
5711	P - 1645	8.0	110.0	135
5723	P - 1735	12.0	100.0	137
5724	P - 3012	8.0	140.0	138
5725	P - 4604	10.0	110.0	137
5726	P - 3266	8.0	140.0	137
5727	P - 908	16.0	90.0	137
5728	P - 3211	8.0	140.0	137
5884	P - 422	10.0	140.0	155
5720	P - 30	8.0	140.0	136
5703	P - 3274	8.0	140.0	134
5694	P - 773	6.0	100.0	132
5695	P - 2981	6.0	110.0	132
5696	P - 4322	8.0	100.0	132
5697	P - 1593	12.0	100.0	132
5698	P - 4450	8.0	110.0	132
5699	P - 2291	8.0	140.0	133
5700	P - 3214	8.0	140.0	134
5713	P - 2721	16.0	90.0	135
5702	P - 599	12.0	100.0	134
5654	P - 2005	6.0	140.0	134
5704	P - 4621	8.0	140.0	135
5705	P - 3257	4.0	140.0	134
5706	P - 314	8.0	140.0	134
5707	P - 3689	6.0	140.0	197

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5708	P - 4517	8.0	140.0	135
5709	P - 1463	6.0	110.0	210
5710	P - 2761	8.0	140.0	135
5701	P - 2755	6.0	110.0	134
5608	P - 2181	20.0	110.0	122
5616	P - 770	20.0	110.0	123
5600	P - 1016	8.0	140.0	120
5601	P - 1495	8.0	100.0	121
5602	P - 696	6.0	100.0	121
5603	P - 3492	12.0	140.0	121
5604	P - 4406	20.0	110.0	121
5605	P - 3388	10.0	140.0	122
5598	P - 3647	6.0	140.0	152
5607	P - 2350	10.0	140.0	122
5597	P - 2502	6.0	100.0	121
5609	P - 2531	8.0	140.0	122
5610	P - 1015	8.0	140.0	123
5611	P - 1045	8.0	110.0	122
5612	P - 2789	4.0	140.0	150
5613	P - 4882	18.0	110.0	122
5614	P - 969	6.0	110.0	122
5656	P - 2901	6.0	140.0	128
5606	P - 78	12.0	140.0	122
5589	P - 503	20.0	100.0	120
5580	P - 3662	8.0	140.0	118
5581	P - 1229	6.0	100.0	119
5582	P - 482	6.0	110.0	118
5583	P - 1615	6.0	100.0	118
5584	P - 4269	4.0	140.0	119
5585	P - 3443	4.0	140.0	138
5586	P - 1681	8.0	110.0	119
5599	P - 957	8.0	140.0	123
5588	P - 3089	8.0	140.0	120
5617	P - 2746	10.0	110.0	123
5590	P - 3101	8.0	140.0	120
5591	P - 2667	12.0	110.0	120
5592	P - 3503	8.0	110.0	120
5593	P - 3196	8.0	140.0	120
5594	P - 2577	4.0	140.0	121
5595	P - 2578	8.0	140.0	121
5596	P - 138	8.0	140.0	120
5587	P - 2262	8.0	110.0	119
5646	P - 1182	8.0	110.0	126
5615	P - 2793	6.0	140.0	122
5638	P - 2763	8.0	140.0	126
5639	P - 2946	8.0	100.0	127
5640	P - 3186	8.0	140.0	126

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5641	P - 2600	6.0	140.0	126
5642	P - 3393	8.0	140.0	126
5643	P - 3622	10.0	140.0	126
5636	P - 2762	8.0	140.0	126
5645	P - 1057	6.0	100.0	126
5635	P - 4801	8.0	140.0	125
5647	P - 4341	8.0	140.0	127
5648	P - 1513	4.0	110.0	127
5649	P - 3355	4.0	140.0	223
5650	P - 2396	6.0	100.0	127
5651	P - 3960	4.0	140.0	128
5652	P - 1698	8.0	140.0	127
5653	P - 1578	8.0	110.0	128
5644	P - 1774	8.0	140.0	126
5627	P - 3506	6.0	140.0	124
5618	P - 4454	12.0	140.0	123
5619	P - 3795	6.0	100.0	123
5620	P - 3028	8.0	140.0	123
5621	P - 274	8.0	140.0	123
5622	P - 4480	8.0	140.0	123
5623	P - 4206	12.0	140.0	111
5624	P - 4652	8.0	140.0	124
5637	P - 3973	8.0	140.0	125
5626	P - 4173	4.0	140.0	124
5731	P - 2579	8.0	140.0	138
5628	P - 2728	6.0	100.0	124
5629	P - 3582	16.0	140.0	125
5630	P - 771	6.0	110.0	124
5631	P - 601	6.0	140.0	124
5632	P - 3358	8.0	140.0	128
5633	P - 1062	8.0	140.0	125
5634	P - 3410	6.0	140.0	212
5625	P - 890	20.0	100.0	124
5836	P - 3700	10.0	140.0	151
5844	P - 4864	10.0	140.0	153
5828	P - 180	6.0	100.0	150
5829	P - 534	6.0	110.0	150
5830	P - 3128	4.0	140.0	283
5831	P - 2235	8.0	100.0	150
5832	P - 275	8.0	140.0	151
5833	P - 635	6.0	110.0	150
5826	P - 960	20.0	140.0	192
5835	P - 3936	8.0	140.0	151
5825	P - 4292	12.0	140.0	149
5837	P - 1239	8.0	100.0	151
5838	P - 1697	4.0	140.0	247
5839	P - 1317	8.0	140.0	151

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5840	P - 2977	8.0	110.0	151
5841	P - 933	12.0	140.0	151
5842	P - 253	8.0	140.0	251
5807	P - 455	12.0	140.0	146
5834	P - 1796	12.0	100.0	150
5817	P - 19	6.0	140.0	148
5729	P - 191	12.0	110.0	137
5809	P - 3605	4.0	140.0	346
5810	P - 400	8.0	110.0	146
5811	P - 600	6.0	140.0	147
5812	P - 50	8.0	100.0	147
5813	P - 2951	6.0	110.0	147
5814	P - 1706	10.0	140.0	147
5827	P - 2916	8.0	140.0	150
5816	P - 254	8.0	140.0	148
5845	P - 3241	4.0	140.0	315
5818	P - 3664	8.0	140.0	148
5819	P - 2902	6.0	140.0	148
5820	P - 4404	8.0	140.0	149
5821	P - 3294	8.0	140.0	149
5822	P - 979	6.0	110.0	149
5823	P - 3094	8.0	140.0	149
5824	P - 3883	6.0	100.0	149
5815	P - 1679	4.0	100.0	155
5874	P - 260	6.0	140.0	154
5843	P - 2320	4.0	100.0	154
5866	P - 40	8.0	140.0	149
5867	P - 2661	12.0	90.0	154
5868	P - 4105	8.0	140.0	154
5869	P - 211	4.0	100.0	154
5870	P - 910	16.0	90.0	154
5871	P - 3544	8.0	140.0	154
5864	P - 918	6.0	110.0	153
5873	P - 3240	8.0	140.0	154
5863	P - 976	6.0	110.0	153
5875	P - 1786	4.0	140.0	153
5876	P - 1450	8.0	140.0	166
5877	P - 3436	8.0	140.0	155
5878	P - 3333	4.0	140.0	154
5879	P - 4235	8.0	110.0	155
5880	P - 2527	8.0	140.0	155
5881	P - 3896	10.0	100.0	155
5872	P - 4741	8.0	140.0	154
5855	P - 358	12.0	100.0	152
5846	P - 2236	8.0	100.0	152
5847	P - 1715	6.0	110.0	152
5848	P - 3329	6.0	140.0	152

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5849	P - 57	8.0	140.0	152
5850	P - 1655	6.0	110.0	153
5851	P - 1052	10.0	140.0	152
5852	P - 465	10.0	140.0	152
5865	P - 1325	6.0	140.0	154
5854	P - 1892	12.0	110.0	152
5806	P - 2361	4.0	140.0	334
5856	P - 218	8.0	140.0	153
5857	P - 3692	10.0	140.0	153
5858	P - 4880	16.0	140.0	153
5859	P - 3332	4.0	140.0	152
5860	P - 2277	6.0	110.0	153
5861	P - 355	6.0	110.0	153
5862	P - 727	8.0	140.0	153
5853	P - 4219	8.0	140.0	152
5760	P - 55	8.0	110.0	141
5768	P - 3013	6.0	140.0	142
5752	P - 393	8.0	110.0	140
5753	P - 1643	8.0	110.0	140
5754	P - 1641	8.0	110.0	140
5755	P - 1642	8.0	110.0	140
5756	P - 2836	8.0	110.0	140
5757	P - 2342	4.0	140.0	317
5750	P - 912	8.0	110.0	141
5759	P - 4405	8.0	140.0	141
5749	P - 4109	6.0	140.0	140
5761	P - 3377	4.0	140.0	186
5762	P - 4087	8.0	140.0	141
5763	P - 3610	8.0	110.0	141
5764	P - 4426	8.0	140.0	141
5765	P - 3956	4.0	140.0	285
5766	P - 1375	12.0	110.0	141
5808	P - 473	12.0	100.0	151
5758	P - 4734	12.0	90.0	141
5741	P - 4863	10.0	140.0	143
5732	P - 2317	8.0	140.0	138
5733	P - 1311	4.0	140.0	139
5734	P - 440	4.0	140.0	179
5735	P - 267	10.0	140.0	139
5736	P - 3265	8.0	140.0	138
5737	P - 3280	8.0	140.0	138
5738	P - 3205	8.0	140.0	139
5751	P - 394	8.0	110.0	139
5740	P - 3197	8.0	140.0	139
5769	P - 2173	6.0	140.0	142
5742	P - 2174	8.0	140.0	140
5743	P - 2054	8.0	140.0	139

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5744	P - 3293	8.0	140.0	139
5745	P - 281	8.0	140.0	140
5746	P - 2998	8.0	140.0	139
5747	P - 3203	8.0	140.0	144
5748	P - 3801	6.0	100.0	140
5739	P - 4440	8.0	140.0	138
5798	P - 3363	8.0	140.0	145
5767	P - 2827	8.0	140.0	142
5790	P - 2238	6.0	100.0	145
5791	P - 459	6.0	140.0	145
5792	P - 3948	4.0	140.0	259
5793	P - 2066	4.0	140.0	257
5794	P - 3977	8.0	140.0	144
5795	P - 4425	8.0	140.0	145
5788	P - 3184	8.0	140.0	147
5797	P - 2533	12.0	140.0	145
5787	P - 453	6.0	100.0	144
5799	P - 176	20.0	110.0	145
5800	P - 325	10.0	140.0	145
5801	P - 1056	6.0	100.0	145
5802	P - 4310	20.0	100.0	146
5803	P - 4497	8.0	140.0	146
5804	P - 3259	8.0	140.0	147
5805	P - 1205	8.0	140.0	146
5796	P - 3246	8.0	140.0	145
5779	P - 2944	6.0	100.0	143
5770	P - 4540	8.0	140.0	142
5771	P - 1068	8.0	140.0	145
5772	P - 1396	6.0	100.0	143
5773	P - 3102	8.0	140.0	142
5774	P - 2599	6.0	140.0	142
5775	P - 1782	12.0	110.0	150
5776	P - 3376	8.0	140.0	143
5789	P - 4559	36.0	130.0	144
5778	P - 323	4.0	140.0	144
6187	P - 2347	6.0	140.0	188
5780	P - 1092	8.0	140.0	143
5781	P - 144	20.0	110.0	144
5782	P - 439	4.0	140.0	187
5783	P - 822	8.0	100.0	144
5784	P - 4475	10.0	110.0	144
5785	P - 3656	12.0	140.0	144
5786	P - 3285	8.0	140.0	144
5777	P - 4271	6.0	100.0	145
6596	P - 2131	8.0	100.0	249
6604	P - 1533	8.0	100.0	247
6588	P - 1329	8.0	140.0	250

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6589	P - 1909	6.0	110.0	244
6590	P - 3555	6.0	140.0	249
6591	P - 3918	6.0	110.0	245
6592	P - 2142	8.0	110.0	245
6593	P - 2208	8.0	110.0	245
6586	P - 2734	12.0	110.0	331
6595	P - 3018	20.0	110.0	346
6585	P - 1707	8.0	140.0	244
6597	P - 824	18.0	110.0	245
6598	P - 2476	20.0	90.0	279
6599	P - 3695	6.0	140.0	254
6600	P - 313	8.0	140.0	246
6601	P - 3107	6.0	140.0	393
6602	P - 1804	8.0	100.0	247
6567	P - 3185	8.0	140.0	240
6594	P - 2114	6.0	110.0	253
6577	P - 2779	12.0	140.0	242
6642	P - 292	8.0	140.0	252
6569	P - 239	8.0	140.0	245
6570	P - 2340	6.0	140.0	241
6571	P - 3983	8.0	140.0	241
6572	P - 2263	6.0	110.0	241
6573	P - 2190	8.0	140.0	245
6574	P - 819	12.0	110.0	241
6587	P - 2469	12.0	100.0	244
6576	P - 989	6.0	100.0	302
6605	P - 4471	4.0	140.0	247
6578	P - 808	12.0	110.0	242
6579	P - 1912	6.0	110.0	242
6580	P - 2892	8.0	110.0	243
6581	P - 2248	6.0	100.0	473
6582	P - 1710	4.0	110.0	242
6583	P - 3674	8.0	140.0	243
6584	P - 789	8.0	140.0	243
6575	P - 2441	16.0	110.0	242
6634	P - 3227	6.0	110.0	251
6603	P - 1632	6.0	110.0	247
6626	P - 2737	8.0	100.0	250
6627	P - 919	8.0	140.0	250
6628	P - 4482	8.0	140.0	250
6629	P - 4177	8.0	140.0	250
6630	P - 4908	72.0	140.0	1
6631	P - 4696	16.0	140.0	256
6624	P - 4279	6.0	140.0	249
6633	P - 4466	8.0	140.0	275
6623	P - 3368	10.0	140.0	250
6635	P - 1824	20.0	100.0	251

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6636	P - 1995	8.0	110.0	251
6637	P - 3117	8.0	140.0	251
6638	P - 1430	6.0	110.0	251
6639	P - 3113	12.0	140.0	252
6640	P - 36	12.0	140.0	251
6491	P - 378	6.0	100.0	227
6632	P - 1072	8.0	140.0	254
6615	P - 3532	6.0	140.0	248
6606	P - 4473	4.0	140.0	247
6607	P - 3957	8.0	140.0	247
6608	P - 4623	8.0	140.0	247
6609	P - 4468	4.0	140.0	247
6610	P - 1099	6.0	110.0	247
6611	P - 1993	16.0	110.0	247
6612	P - 264	16.0	140.0	247
6625	P - 4876	10.0	140.0	250
6614	P - 1409	8.0	100.0	248
6566	P - 1003	8.0	110.0	240
6616	P - 2295	6.0	110.0	251
6617	P - 2345	6.0	140.0	253
6618	P - 3967	8.0	140.0	248
6619	P - 2553	8.0	110.0	249
6620	P - 1467	8.0	140.0	248
6621	P - 324	10.0	140.0	249
6622	P - 604	6.0	140.0	249
6613	P - 1877	6.0	110.0	247
6520	P - 2655	8.0	110.0	231
6528	P - 3885	6.0	100.0	232
6512	P - 4176	6.0	140.0	420
6513	P - 1554	6.0	100.0	230
6514	P - 3821	8.0	140.0	230
6515	P - 2012	4.0	100.0	233
6516	P - 4824	12.0	140.0	230
6517	P - 2144	8.0	110.0	230
6510	P - 2689	12.0	90.0	242
6519	P - 3769	8.0	100.0	231
6509	P - 3330	10.0	110.0	230
6521	P - 1440	8.0	110.0	234
6522	P - 2032	16.0	110.0	233
6523	P - 4845	12.0	110.0	233
6524	P - 3830	8.0	140.0	233
6525	P - 1759	10.0	140.0	233
6526	P - 4536	8.0	140.0	239
6568	P - 3022	8.0	110.0	240
6518	P - 2601	6.0	140.0	262
6501	P - 357	6.0	110.0	228
6185	P - 2591	4.0	140.0	209

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6493	P - 1866	6.0	140.0	227
6494	P - 1145	10.0	140.0	227
6495	P - 3360	8.0	140.0	228
6496	P - 2496	8.0	140.0	234
6497	P - 4858	10.0	140.0	228
6498	P - 4020	8.0	140.0	234
6511	P - 226	8.0	140.0	230
6500	P - 1607	6.0	100.0	229
6529	P - 1624	10.0	100.0	235
6502	P - 751	12.0	140.0	228
6503	P - 2188	8.0	140.0	241
6504	P - 2121	8.0	140.0	229
6505	P - 199	8.0	140.0	229
6506	P - 1367	6.0	140.0	236
6507	P - 3502	8.0	140.0	229
6508	P - 366	6.0	100.0	229
6499	P - 1096	8.0	140.0	237
6558	P - 3950	4.0	140.0	383
6527	P - 4441	8.0	140.0	234
6550	P - 2506	4.0	100.0	239
6551	P - 2897	8.0	100.0	239
6552	P - 2000	6.0	110.0	239
6553	P - 2745	8.0	140.0	239
6554	P - 310	8.0	140.0	240
6555	P - 2198	4.0	140.0	300
6548	P - 1499	8.0	100.0	240
6557	P - 3176	4.0	140.0	332
6547	P - 1148	12.0	140.0	238
6559	P - 2247	8.0	140.0	240
6560	P - 3141	8.0	140.0	240
6561	P - 2057	8.0	140.0	240
6562	P - 2338	6.0	140.0	240
6563	P - 1842	8.0	140.0	240
6564	P - 2440	12.0	140.0	240
6565	P - 1712	4.0	110.0	240
6556	P - 3198	8.0	140.0	243
6539	P - 806	8.0	110.0	236
6530	P - 2333	12.0	110.0	235
6531	P - 3406	4.0	140.0	263
6532	P - 4266	12.0	140.0	234
6533	P - 3984	6.0	140.0	238
6534	P - 2332	6.0	140.0	235
6535	P - 2062	6.0	140.0	240
6536	P - 1644	20.0	110.0	235
6549	P - 2471	20.0	110.0	238
6538	P - 2507	4.0	100.0	236
6643	P - 3824	8.0	140.0	252

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6540	P - 4032	8.0	140.0	247
6541	P - 2425	8.0	140.0	237
6542	P - 1358	8.0	140.0	253
6543	P - 2890	6.0	100.0	243
6544	P - 2509	4.0	100.0	237
6545	P - 4511	8.0	140.0	237
6546	P - 1014	8.0	140.0	237
6537	P - 427	12.0	110.0	235
6749	P - 3026	10.0	140.0	269
6757	P - 3832	8.0	140.0	276
6741	P - 1501	6.0	100.0	267
6742	P - 3134	8.0	140.0	354
6743	P - 2750	6.0	100.0	268
6744	P - 4567	8.0	140.0	268
6745	P - 2514	6.0	100.0	269
6746	P - 2167	12.0	110.0	268
6739	P - 3716	20.0	110.0	267
6748	P - 4797	8.0	110.0	271
6738	P - 1764	8.0	140.0	266
6750	P - 3784	8.0	100.0	270
6751	P - 1882	8.0	110.0	270
6752	P - 1439	8.0	100.0	270
6753	P - 2758	8.0	100.0	270
6754	P - 3218	8.0	140.0	271
6755	P - 1150	12.0	100.0	270
6719	P - 403	8.0	100.0	263
6747	P - 3042	10.0	140.0	272
6729	P - 3078	8.0	140.0	264
6641	P - 3391	8.0	140.0	252
6721	P - 2301	6.0	110.0	263
6722	P - 2048	8.0	140.0	268
6723	P - 515	6.0	110.0	263
6724	P - 361	8.0	100.0	269
6725	P - 41	20.0	110.0	263
6726	P - 3229	6.0	110.0	266
6740	P - 2967	8.0	110.0	267
6728	P - 4100	8.0	140.0	264
6758	P - 3710	12.0	140.0	271
6731	P - 3190	8.0	140.0	268
6732	P - 4097	8.0	140.0	265
6733	P - 4413	8.0	140.0	265
6734	P - 4749	20.0	90.0	265
6735	P - 4830	8.0	100.0	266
6736	P - 3592	20.0	110.0	266
6737	P - 1826	12.0	100.0	266
6727	P - 1603	6.0	100.0	264
6787	P - 1867	6.0	110.0	274

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6756	P - 4096	10.0	140.0	270
6779	P - 1299	8.0	140.0	288
6780	P - 4004	6.0	140.0	274
6781	P - 1550	6.0	100.0	274
6782	P - 3115	8.0	140.0	274
6783	P - 3418	4.0	140.0	437
6784	P - 4034	8.0	140.0	274
6777	P - 3380	8.0	140.0	273
6786	P - 2854	6.0	100.0	278
6776	P - 956	12.0	100.0	273
6788	P - 659	8.0	140.0	275
6789	P - 3275	8.0	140.0	288
6790	P - 3541	6.0	140.0	288
6791	P - 870	12.0	110.0	280
6792	P - 1007	6.0	100.0	275
6793	P - 3857	8.0	100.0	276
6794	P - 1097	6.0	110.0	275
6785	P - 3303	8.0	140.0	279
6768	P - 2112	6.0	110.0	273
6759	P - 1138	6.0	100.0	271
6760	P - 1528	8.0	140.0	276
6761	P - 3402	6.0	140.0	308
6762	P - 2212	6.0	110.0	272
6763	P - 4445	10.0	140.0	272
6764	P - 1098	10.0	110.0	272
6765	P - 1770	8.0	140.0	272
6778	P - 37	20.0	110.0	274
6767	P - 3697	6.0	140.0	274
6718	P - 1850	8.0	100.0	263
6769	P - 2006	20.0	100.0	272
6770	P - 3887	6.0	100.0	273
6771	P - 2416	6.0	140.0	272
6772	P - 543	6.0	110.0	272
6773	P - 259	10.0	140.0	274
6774	P - 715	8.0	140.0	273
6775	P - 580	6.0	110.0	273
6766	P - 3416	8.0	140.0	272
6672	P - 1972	8.0	140.0	348
6680	P - 175	20.0	110.0	257
6664	P - 1042	8.0	140.0	255
6665	P - 2375	6.0	110.0	255
6666	P - 2143	8.0	110.0	255
6667	P - 237	8.0	140.0	255
6668	P - 4009	8.0	140.0	255
6669	P - 214	6.0	110.0	255
6662	P - 2288	6.0	100.0	254
6671	P - 145	20.0	110.0	255

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6661	P - 1560	6.0	100.0	259
6673	P - 1622	10.0	100.0	256
6674	P - 1937	6.0	110.0	283
6675	P - 1323	12.0	140.0	256
6676	P - 2743	6.0	140.0	425
6677	P - 1372	20.0	110.0	256
6678	P - 2130	8.0	110.0	258
6720	P - 4430	12.0	140.0	337
6670	P - 869	8.0	140.0	256
6653	P - 3879	10.0	100.0	255
6644	P - 3819	8.0	140.0	252
6645	P - 2796	12.0	140.0	252
6646	P - 2417	8.0	140.0	252
6647	P - 4345	12.0	140.0	268
6648	P - 3829	8.0	140.0	252
6649	P - 1523	8.0	100.0	252
6650	P - 1835	20.0	110.0	253
6663	P - 4296	12.0	140.0	258
6652	P - 1356	8.0	140.0	253
6681	P - 4418	10.0	140.0	257
6654	P - 1897	6.0	110.0	253
6655	P - 3331	8.0	140.0	254
6656	P - 1616	6.0	100.0	254
6657	P - 1380	8.0	140.0	254
6658	P - 4416	12.0	140.0	254
6659	P - 1432	8.0	100.0	254
6660	P - 369	8.0	100.0	254
6651	P - 1870	4.0	110.0	257
6710	P - 4309	6.0	110.0	262
6679	P - 3968	8.0	140.0	257
6702	P - 2095	6.0	110.0	261
6703	P - 2445	6.0	140.0	267
6704	P - 2700	8.0	100.0	261
6705	P - 3452	8.0	140.0	261
6706	P - 3826	8.0	140.0	275
6707	P - 4756	6.0	110.0	261
6700	P - 1269	8.0	140.0	260
6709	P - 103	6.0	110.0	262
6699	P - 4598	4.0	140.0	259
6711	P - 194	20.0	110.0	263
6712	P - 302	8.0	140.0	267
6713	P - 4576	10.0	140.0	268
6714	P - 73	4.0	140.0	273
6715	P - 2402	6.0	100.0	277
6716	P - 1582	8.0	100.0	270
6717	P - 3359	8.0	140.0	263
6708	P - 2411	8.0	140.0	262

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6691	P - 3405	4.0	140.0	259
6682	P - 1839	6.0	100.0	257
6683	P - 3177	8.0	140.0	257
6684	P - 4298	8.0	140.0	291
6685	P - 1838	20.0	110.0	266
6686	P - 4417	10.0	140.0	258
6687	P - 1441	8.0	110.0	258
6688	P - 508	8.0	140.0	258
6701	P - 4495	8.0	140.0	260
6690	P - 3995	8.0	140.0	263
6490	P - 4307	8.0	110.0	255
6692	P - 1067	8.0	140.0	265
6693	P - 3856	6.0	100.0	259
6694	P - 2405	8.0	110.0	262
6695	P - 3426	8.0	140.0	380
6696	P - 375	12.0	100.0	259
6697	P - 2431	12.0	110.0	259
6698	P - 1799	8.0	100.0	259
6689	P - 907	6.0	110.0	259
6292	P - 2003	6.0	110.0	200
6300	P - 1940	8.0	140.0	201
6284	P - 1285	8.0	140.0	199
6285	P - 4242	8.0	140.0	199
6286	P - 3002	8.0	140.0	199
6287	P - 3572	8.0	140.0	199
6288	P - 804	8.0	110.0	199
6289	P - 9995	8.0	100.0	199
6282	P - 4402	8.0	140.0	212
6291	P - 4608	8.0	140.0	200
6281	P - 2169	8.0	100.0	198
6293	P - 4581	8.0	140.0	200
6294	P - 4614	20.0	110.0	200
6295	P - 1429	16.0	110.0	201
6296	P - 4817	12.0	140.0	201
6297	P - 3284	8.0	140.0	202
6298	P - 374	12.0	100.0	201
6263	P - 3082	8.0	140.0	196
6290	P - 627	4.0	110.0	200
6273	P - 4300	6.0	140.0	198
6338	P - 2446	12.0	140.0	205
6265	P - 1773	8.0	140.0	197
6266	P - 3681	12.0	140.0	209
6267	P - 1044	6.0	110.0	197
6268	P - 1484	8.0	100.0	197
6269	P - 4340	8.0	140.0	198
6270	P - 2903	6.0	140.0	197
6283	P - 4565	10.0	140.0	198

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6272	P - 2239	8.0	100.0	203
6301	P - 631	6.0	110.0	202
6274	P - 2406	6.0	110.0	206
6275	P - 1822	12.0	90.0	198
6276	P - 2546	10.0	140.0	220
6277	P - 308	8.0	140.0	199
6278	P - 219	8.0	140.0	198
6279	P - 2257	8.0	140.0	210
6280	P - 4375	6.0	110.0	200
6271	P - 1551	6.0	100.0	197
6330	P - 3471	8.0	140.0	204
6299	P - 3025	8.0	140.0	204
6322	P - 4619	8.0	140.0	203
6323	P - 1575	8.0	100.0	203
6324	P - 4590	8.0	140.0	203
6325	P - 4467	4.0	140.0	203
6326	P - 1780	8.0	140.0	203
6327	P - 2504	6.0	100.0	204
6320	P - 4470	4.0	140.0	203
6329	P - 4409	8.0	140.0	204
6319	P - 419	8.0	140.0	202
6331	P - 2645	4.0	140.0	208
6332	P - 1951	6.0	140.0	204
6333	P - 1139	20.0	110.0	205
6334	P - 2961	6.0	110.0	205
6335	P - 2007	6.0	110.0	205
6336	P - 360	8.0	100.0	205
6492	P - 4209	8.0	140.0	228
6328	P - 2184	8.0	110.0	237
6311	P - 4586	8.0	140.0	203
6302	P - 322	8.0	140.0	275
6303	P - 4632	8.0	140.0	201
6304	P - 2461	16.0	140.0	202
6305	P - 3383	8.0	140.0	204
6306	P - 2156	6.0	100.0	202
6307	P - 3499	12.0	140.0	202
6308	P - 4603	10.0	110.0	206
6321	P - 4469	4.0	140.0	203
6310	P - 2792	8.0	140.0	202
6262	P - 2186	8.0	140.0	196
6312	P - 4813	12.0	140.0	203
6313	P - 3675	8.0	140.0	203
6314	P - 1019	8.0	140.0	209
6315	P - 885	8.0	140.0	211
6316	P - 1058	6.0	110.0	203
6317	P - 3848	6.0	110.0	207
6318	P - 367	8.0	100.0	203

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6309	P - 3164	8.0	140.0	202
6216	P - 1112	8.0	110.0	190
6224	P - 1294	8.0	140.0	192
6208	P - 2615	12.0	140.0	192
6209	P - 2590	4.0	140.0	220
6210	P - 909	16.0	90.0	189
6211	P - 3096	8.0	140.0	189
6212	P - 2097	6.0	110.0	190
6213	P - 3189	8.0	140.0	189
6206	P - 4587	8.0	140.0	188
6215	P - 2294	20.0	100.0	189
6205	P - 4549	8.0	140.0	289
6217	P - 2076	8.0	140.0	190
6218	P - 3318	8.0	140.0	190
6219	P - 2384	8.0	100.0	190
6220	P - 1445	16.0	110.0	191
6221	P - 331	10.0	140.0	269
6222	P - 2557	8.0	140.0	192
6264	P - 4335	12.0	140.0	197
6214	P - 1893	12.0	110.0	189
6197	P - 4506	12.0	140.0	187
6188	P - 3215	8.0	140.0	187
6189	P - 3068	8.0	140.0	187
6190	P - 3208	8.0	140.0	187
6191	P - 100	8.0	110.0	187
6192	P - 947	8.0	140.0	187
6193	P - 2362	8.0	140.0	187
6194	P - 2011	6.0	100.0	189
6207	P - 1189	8.0	140.0	190
6196	P - 2991	10.0	140.0	187
6225	P - 2609	8.0	140.0	191
6198	P - 2079	8.0	140.0	196
6199	P - 3315	8.0	140.0	188
6200	P - 4130	6.0	140.0	188
6201	P - 1527	8.0	140.0	195
6202	P - 2258	6.0	120.0	188
6203	P - 2459	8.0	140.0	188
6204	P - 2224	8.0	140.0	190
6195	P - 4856	8.0	140.0	187
6254	P - 1009	8.0	140.0	195
6223	P - 1898	12.0	110.0	191
6246	P - 3676	8.0	140.0	194
6247	P - 2182	20.0	110.0	194
6248	P - 3258	8.0	140.0	194
6249	P - 3540	6.0	140.0	201
6250	P - 3720	6.0	140.0	195
6251	P - 2643	6.0	140.0	195

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6244	P - 1221	6.0	110.0	194
6253	P - 2485	12.0	110.0	195
6243	P - 616	8.0	140.0	194
6255	P - 4320	8.0	140.0	195
6256	P - 2146	8.0	110.0	195
6257	P - 1326	8.0	110.0	224
6258	P - 3646	8.0	140.0	197
6259	P - 4059	8.0	140.0	198
6260	P - 1769	8.0	140.0	196
6261	P - 4867	8.0	140.0	196
6252	P - 2398	12.0	140.0	195
6235	P - 3523	8.0	140.0	193
6226	P - 4072	8.0	140.0	203
6227	P - 3787	8.0	100.0	192
6228	P - 1237	8.0	100.0	192
6229	P - 2453	4.0	100.0	209
6230	P - 4829	8.0	100.0	192
6231	P - 3119	8.0	140.0	192
6232	P - 4631	8.0	140.0	192
6245	P - 2228	12.0	140.0	194
6234	P - 2123	6.0	110.0	192
6339	P - 1686	8.0	140.0	206
6236	P - 3777	8.0	100.0	194
6237	P - 1236	8.0	100.0	193
6238	P - 4759	8.0	140.0	195
6239	P - 3320	4.0	140.0	339
6240	P - 1489	8.0	100.0	194
6241	P - 1963	8.0	140.0	193
6242	P - 93	20.0	110.0	194
6233	P - 1333	8.0	140.0	301
6444	P - 1980	8.0	140.0	220
6452	P - 4820	12.0	140.0	221
6436	P - 4601	8.0	140.0	228
6437	P - 4218	12.0	140.0	219
6438	P - 233	6.0	140.0	248
6439	P - 1253	10.0	140.0	219
6440	P - 2764	8.0	140.0	227
6441	P - 4635	8.0	140.0	220
6434	P - 3124	8.0	140.0	219
6443	P - 4094	8.0	140.0	220
6433	P - 1199	12.0	140.0	219
6445	P - 2463	12.0	110.0	224
6446	P - 4814	12.0	140.0	220
6447	P - 1128	12.0	140.0	220
6448	P - 3270	8.0	140.0	220
6449	P - 3389	10.0	140.0	222
6450	P - 888	6.0	120.0	221

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6415	P - 2657	8.0	100.0	217
6442	P - 1357	8.0	140.0	220
6425	P - 1442	8.0	140.0	218
6337	P - 4627	8.0	140.0	207
6417	P - 2598	12.0	100.0	242
6418	P - 4722	6.0	110.0	216
6419	P - 4458	8.0	140.0	217
6420	P - 354	8.0	100.0	217
6421	P - 1509	6.0	110.0	218
6422	P - 2016	8.0	140.0	276
6435	P - 1729	8.0	100.0	219
6424	P - 72	4.0	140.0	218
6453	P - 985	6.0	110.0	221
6426	P - 113	8.0	140.0	222
6427	P - 4607	8.0	140.0	219
6428	P - 1365	6.0	140.0	269
6429	P - 622	8.0	110.0	221
6430	P - 4754	6.0	110.0	223
6431	P - 3500	12.0	110.0	218
6432	P - 3462	8.0	140.0	222
6423	P - 2566	6.0	100.0	218
6482	P - 149	8.0	140.0	226
6451	P - 3650	8.0	140.0	234
6474	P - 268	6.0	140.0	224
6475	P - 3639	8.0	140.0	224
6476	P - 740	12.0	100.0	224
6477	P - 4566	8.0	140.0	225
6478	P - 983	6.0	110.0	225
6479	P - 4595	4.0	140.0	225
6472	P - 3888	6.0	100.0	224
6481	P - 3255	4.0	140.0	322
6471	P - 1232	8.0	110.0	224
6483	P - 3668	12.0	140.0	226
6484	P - 81	10.0	140.0	227
6485	P - 958	6.0	140.0	226
6486	P - 2766	8.0	140.0	227
6487	P - 1621	6.0	100.0	226
6488	P - 2154	6.0	110.0	227
6489	P - 1084	20.0	110.0	227
6480	P - 876	8.0	140.0	225
6463	P - 1942	6.0	110.0	222
6454	P - 353	6.0	100.0	221
6455	P - 2550	10.0	140.0	247
6456	P - 397	8.0	110.0	224
6457	P - 377	10.0	100.0	223
6458	P - 513	8.0	140.0	221
6459	P - 887	12.0	110.0	221

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6460	P - 3553	6.0	140.0	345
6473	P - 782	12.0	90.0	224
6462	P - 196	8.0	110.0	222
6414	P - 817	6.0	100.0	216
6464	P - 701	10.0	110.0	222
6465	P - 4016	8.0	140.0	222
6466	P - 1771	8.0	140.0	223
6467	P - 4594	8.0	140.0	226
6468	P - 2592	8.0	140.0	223
6469	P - 4062	6.0	140.0	223
6470	P - 3882	10.0	100.0	224
6461	P - 4429	12.0	140.0	222
6368	P - 280	8.0	140.0	209
6376	P - 3427	4.0	140.0	342
6360	P - 2668	10.0	140.0	217
6361	P - 846	6.0	110.0	209
6362	P - 2606	8.0	140.0	209
6363	P - 2729	8.0	100.0	209
6364	P - 3694	10.0	140.0	210
6365	P - 3478	12.0	140.0	209
6358	P - 991	12.0	110.0	208
6367	P - 3372	10.0	140.0	209
6357	P - 159	8.0	140.0	208
6369	P - 3009	12.0	110.0	209
6370	P - 3172	12.0	140.0	214
6371	P - 2940	12.0	100.0	209
6372	P - 3545	8.0	140.0	210
6373	P - 1293	8.0	140.0	220
6374	P - 4195	8.0	140.0	210
6416	P - 981	8.0	140.0	221
6366	P - 664	6.0	110.0	209
6349	P - 3200	8.0	140.0	217
6340	P - 3060	8.0	140.0	206
6341	P - 2909	6.0	140.0	206
6342	P - 1510	6.0	110.0	206
6343	P - 2267	8.0	110.0	222
6344	P - 1520	6.0	100.0	206
6345	P - 480	8.0	140.0	218
6346	P - 3652	6.0	140.0	232
6359	P - 438	8.0	110.0	208
6348	P - 866	6.0	140.0	220
6377	P - 4103	16.0	110.0	211
6350	P - 222	8.0	140.0	208
6351	P - 3123	4.0	140.0	352
6352	P - 3369	10.0	140.0	285
6353	P - 3194	8.0	140.0	208
6354	P - 2400	12.0	140.0	210

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6355	P - 1195	8.0	110.0	209
6356	P - 122	8.0	140.0	210
6347	P - 1088	20.0	110.0	207
6406	P - 612	8.0	140.0	215
6375	P - 1669	8.0	100.0	210
6398	P - 2852	6.0	100.0	215
6399	P - 1102	6.0	100.0	215
6400	P - 1772	8.0	140.0	215
6401	P - 4421	10.0	140.0	215
6402	P - 1512	6.0	110.0	256
6403	P - 2922	8.0	140.0	215
6396	P - 1368	8.0	140.0	2,104
6405	P - 607	8.0	140.0	215
6395	P - 2275	6.0	110.0	214
6407	P - 2225	8.0	140.0	219
6408	P - 3030	8.0	140.0	215
6409	P - 724	6.0	100.0	216
6410	P - 262	4.0	140.0	217
6411	P - 463	8.0	140.0	216
6412	P - 333	6.0	140.0	216
6413	P - 1929	8.0	110.0	274
6404	P - 3660	8.0	140.0	215
6387	P - 3792	6.0	100.0	213
6378	P - 732	6.0	110.0	211
6379	P - 4091	4.0	140.0	212
6380	P - 941	6.0	110.0	211
6381	P - 4768	6.0	110.0	211
6382	P - 4184	8.0	140.0	212
6383	P - 1500	8.0	100.0	213
6384	P - 3261	8.0	140.0	212
6397	P - 816	8.0	110.0	214
6386	P - 4012	6.0	140.0	308
5577	P - 1385	8.0	140.0	118
6388	P - 2798	8.0	110.0	212
6389	P - 2616	12.0	140.0	213
6390	P - 1941	8.0	140.0	213
6391	P - 1245	8.0	140.0	214
6392	P - 2387	8.0	140.0	227
6393	P - 757	6.0	100.0	214
6394	P - 2653	4.0	140.0	232
6385	P - 2237	6.0	100.0	214
4753	P - 1781	8.0	140.0	29
4762	P - 4885	30.0	140.0	6
4745	P - 14	6.0	110.0	28
4746	P - 7	6.0	140.0	29
4747	P - 230	8.0	140.0	28
4748	P - 777	6.0	140.0	28

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4749	P - 2376	8.0	140.0	28
4750	P - 826	8.0	140.0	28
4743	P - 1858	6.0	110.0	28
4752	P - 5	6.0	140.0	28
4742	P - 1900	6.0	110.0	28
4754	P - 588	8.0	110.0	29
4755	P - 3850	6.0	110.0	29
4756	P - 566	8.0	140.0	29
4757	P - 4523	8.0	140.0	29
4758	P - 4745	20.0	110.0	33
4759	P - 844	4.0	110.0	29
4724	P - 478	8.0	140.0	27
4751	P - 1746	10.0	140.0	28
4734	P - 432	10.0	140.0	27
4813	P - 109	8.0	140.0	31
4726	P - 2040	8.0	140.0	27
4727	P - 916	4.0	110.0	27
4728	P - 1256	8.0	140.0	27
4729	P - 4522	8.0	140.0	27
4730	P - 329	6.0	140.0	28
4731	P - 418	12.0	110.0	51
4744	P - 197	20.0	110.0	27
4733	P - 1950	6.0	110.0	27
4763	P - 446	20.0	110.0	29
4735	P - 1136	6.0	140.0	27
4736	P - 577	6.0	100.0	27
4737	P - 502	6.0	110.0	27
4738	P - 4359	20.0	140.0	27
4739	P - 736	10.0	110.0	27
4740	P - 107	8.0	140.0	27
4741	P - 1457	8.0	140.0	28
4732	P - 129	6.0	140.0	27
4803	P - 4933	30.0	140.0	6
4761	P - 1613	8.0	100.0	29
4788	P - 4924	16.0	140.0	22
4789	P - 4925	16.0	140.0	22
4791	P - 4927	16.0	140.0	22
4793	P - 4920	72.0	140.0	0
4794	P - 4926	16.0	140.0	22
4800	P - 3167	4.0	140.0	30
4786	P - 4921	72.0	140.0	0
4802	P - 4156	8.0	140.0	30
4785	P - 4898	72.0	140.0	0
4804	P - 95	10.0	140.0	43
4805	P - 4930	30.0	140.0	6
4807	P - 4884	30.0	140.0	6
4808	P - 926	8.0	110.0	31

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4809	P - 2326	6.0	100.0	31
4810	P - 2412	6.0	110.0	31
4648	P - 1039	6.0	140.0	25
4801	P - 2894	6.0	140.0	49
4774	P - 139	16.0	140.0	30
4764	P - 88	12.0	100.0	30
4765	P - 1895	8.0	140.0	30
4766	P - 168	10.0	110.0	40
4767	P - 3302	8.0	140.0	30
4768	P - 1881	6.0	140.0	30
4769	P - 1923	8.0	140.0	30
4771	P - 4934	30.0	140.0	6
4787	P - 4917	72.0	140.0	0
4773	P - 1288	8.0	140.0	30
4723	P - 385	12.0	110.0	27
4775	P - 4684	16.0	140.0	25
4776	P - 4918	16.0	140.0	22
4778	P - 4896	72.0	140.0	0
4779	P - 4919	72.0	140.0	0
4781	P - 4897	72.0	140.0	0
4783	P - 4922	72.0	140.0	0
4784	P - 4895	72.0	140.0	0
4772	P - 924	6.0	110.0	30
4677	P - 754	8.0	140.0	24
4685	P - 126	8.0	140.0	24
4669	P - 4889	30.0	140.0	6
4670	P - 893	6.0	110.0	23
4671	P - 938	6.0	110.0	23
4672	P - 209	8.0	110.0	23
4673	P - 1947	20.0	100.0	23
4674	P - 4024	6.0	110.0	23
4667	P - 1787	10.0	140.0	23
4676	P - 2087	6.0	140.0	245
4666	P - 104	12.0	110.0	23
4678	P - 3267	8.0	140.0	23
4679	P - 2306	6.0	110.0	24
4680	P - 74	6.0	110.0	25
4681	P - 187	12.0	110.0	23
4682	P - 1110	6.0	140.0	24
4683	P - 774	6.0	140.0	24
4725	P - 645	6.0	110.0	27
4675	P - 1149	10.0	140.0	23
4658	P - 2065	8.0	140.0	23
5579	P - 3467	8.0	140.0	118
4650	P - 2185	6.0	140.0	21
4651	P - 2078	8.0	140.0	22
4652	P - 1717	4.0	140.0	22

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4653	P - 1137	6.0	140.0	22
4654	P - 858	12.0	140.0	22
4655	P - 305	8.0	140.0	21
4668	P - 4712	6.0	110.0	23
4657	P - 1862	8.0	110.0	23
4686	P - 127	8.0	140.0	25
4659	P - 3626	10.0	140.0	23
4660	P - 802	6.0	100.0	28
4661	P - 3632	10.0	140.0	23
4662	P - 1379	8.0	140.0	23
4663	P - 4812	12.0	140.0	23
4664	P - 1300	8.0	140.0	23
4665	P - 1290	8.0	140.0	23
4656	P - 232	8.0	140.0	23
4715	P - 4	6.0	140.0	25
4684	P - 746	8.0	140.0	24
4707	P - 193	8.0	140.0	25
4708	P - 448	12.0	100.0	25
4709	P - 1049	8.0	110.0	28
4710	P - 785	8.0	140.0	25
4711	P - 33	8.0	140.0	30
4712	P - 639	8.0	110.0	26
4705	P - 640	6.0	110.0	25
4714	P - 9998	12.0	100.0	26
4704	P - 365	6.0	100.0	25
4716	P - 529	12.0	100.0	26
4717	P - 3348	8.0	140.0	26
4718	P - 1111	20.0	140.0	26
4719	P - 4661	6.0	110.0	27
4720	P - 4624	8.0	110.0	27
4721	P - 4931	30.0	140.0	6
4722	P - 212	6.0	110.0	27
4713	P - 468	20.0	90.0	26
4696	P - 832	8.0	140.0	25
4687	P - 315	12.0	140.0	24
4688	P - 4610	4.0	140.0	25
4689	P - 4787	8.0	140.0	24
4690	P - 153	8.0	140.0	24
4691	P - 1801	8.0	100.0	24
4692	P - 2904	6.0	110.0	24
4693	P - 4743	6.0	140.0	29
4706	P - 1217	8.0	140.0	25
4695	P - 256	8.0	140.0	25
4815	P - 460	6.0	140.0	31
4697	P - 1660	6.0	110.0	25
4698	P - 850	8.0	140.0	25
4699	P - 760	6.0	110.0	24

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4700	P - 4388	8.0	140.0	25
4701	P - 417	8.0	140.0	25
4702	P - 3228	6.0	110.0	25
4703	P - 4028	16.0	110.0	25
4694	P - 905	8.0	140.0	28
4921	P - 707	10.0	110.0	41
4929	P - 1090	16.0	110.0	42
4913	P - 266	12.0	140.0	41
4914	P - 753	10.0	140.0	41
4915	P - 4407	8.0	110.0	42
4916	P - 3576	8.0	140.0	41
4917	P - 3031	8.0	140.0	41
4918	P - 4513	10.0	140.0	41
4911	P - 4238	8.0	140.0	40
4920	P - 4205	8.0	140.0	41
4910	P - 4764	6.0	110.0	40
4922	P - 79	10.0	140.0	41
4923	P - 2354	6.0	140.0	41
4924	P - 3520	8.0	140.0	41
4925	P - 4736	12.0	90.0	41
4926	P - 3627	10.0	140.0	41
4927	P - 1421	6.0	140.0	41
4892	P - 867	12.0	100.0	38
4919	P - 3430	8.0	140.0	41
4902	P - 4408	8.0	140.0	39
4811	P - 619	8.0	140.0	31
4894	P - 2534	8.0	140.0	38
4895	P - 4744	6.0	140.0	39
4896	P - 48	6.0	110.0	39
4897	P - 1027	12.0	110.0	40
4898	P - 4461	8.0	140.0	39
4899	P - 999	12.0	110.0	39
4912	P - 4127	6.0	140.0	40
4901	P - 1959	20.0	140.0	39
4930	P - 643	12.0	100.0	42
4903	P - 618	6.0	110.0	40
4904	P - 392	20.0	110.0	40
4905	P - 339	20.0	110.0	41
4906	P - 4252	8.0	100.0	40
4907	P - 4504	12.0	140.0	40
4908	P - 1343	8.0	140.0	43
4909	P - 4157	8.0	140.0	40
4900	P - 4760	8.0	140.0	39
4959	P - 1081	8.0	100.0	44
4928	P - 2305	6.0	110.0	42
4951	P - 2682	10.0	140.0	45
4952	P - 345	8.0	140.0	44

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4953	P - 137	8.0	140.0	44
4954	P - 525	6.0	100.0	44
4955	P - 87	12.0	140.0	44
4956	P - 4505	12.0	140.0	44
4949	P - 4625	8.0	140.0	47
4958	P - 1013	8.0	140.0	44
4948	P - 2013	6.0	100.0	43
4960	P - 4234	4.0	140.0	44
4961	P - 28	6.0	100.0	44
4962	P - 1612	6.0	100.0	44
4963	P - 1302	8.0	140.0	44
4964	P - 3465	8.0	140.0	44
4965	P - 860	12.0	110.0	44
4966	P - 3849	8.0	100.0	45
4957	P - 206	6.0	140.0	44
4940	P - 2907	4.0	140.0	56
4931	P - 937	6.0	110.0	42
4932	P - 4520	8.0	140.0	42
4933	P - 794	6.0	100.0	42
4934	P - 519	8.0	100.0	42
4935	P - 2046	6.0	140.0	42
4936	P - 4600	8.0	140.0	42
4937	P - 2980	8.0	140.0	43
4950	P - 35	12.0	140.0	43
4939	P - 501	6.0	100.0	43
4891	P - 3345	6.0	140.0	37
4941	P - 2874	12.0	110.0	43
4942	P - 2834	8.0	110.0	43
4943	P - 3612	10.0	140.0	43
4944	P - 12	6.0	140.0	43
4945	P - 250	12.0	140.0	43
4946	P - 2547	6.0	100.0	43
4947	P - 4355	4.0	110.0	53
4938	P - 396	8.0	110.0	43
4845	P - 901	6.0	110.0	34
4853	P - 4704	12.0	100.0	35
4836	P - 271	4.0	140.0	33
4837	P - 948	8.0	140.0	33
4838	P - 3628	10.0	140.0	33
4839	P - 563	8.0	140.0	33
4840	P - 4048	8.0	140.0	34
4841	P - 706	12.0	100.0	34
4834	P - 2548	20.0	140.0	33
4844	P - 382	8.0	110.0	33
4833	P - 2090	8.0	110.0	41
4846	P - 2494	12.0	140.0	37
4847	P - 4854	10.0	140.0	35

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4848	P - 1297	20.0	110.0	35
4849	P - 217	8.0	140.0	46
4850	P - 2695	12.0	110.0	35
4851	P - 4261	4.0	140.0	35
4893	P - 4907	72.0	140.0	0
4843	P - 699	6.0	140.0	34
4825	P - 1362	10.0	140.0	32
4816	P - 712	6.0	110.0	33
4817	P - 1070	6.0	110.0	31
4818	P - 2145	8.0	110.0	32
4819	P - 1051	10.0	140.0	32
4820	P - 3463	8.0	140.0	32
4821	P - 3643	8.0	140.0	32
4822	P - 3413	8.0	140.0	32
4835	P - 4875	8.0	140.0	33
4824	P - 3086	8.0	140.0	32
4854	P - 433	8.0	110.0	34
4826	P - 1201	8.0	110.0	32
4827	P - 903	8.0	140.0	33
4828	P - 3373	10.0	140.0	33
4829	P - 4890	30.0	140.0	6
4830	P - 356	8.0	110.0	33
4831	P - 1063	6.0	110.0	33
4832	P - 4932	30.0	140.0	6
4823	P - 2812	12.0	140.0	32
4883	P - 2230	20.0	110.0	37
4852	P - 3351	8.0	140.0	35
4875	P - 4251	20.0	110.0	37
4876	P - 750	12.0	140.0	37
4877	P - 681	10.0	110.0	37
4878	P - 2769	8.0	140.0	37
4879	P - 1999	16.0	90.0	37
4880	P - 694	6.0	110.0	37
4873	P - 3165	8.0	140.0	50
4882	P - 667	12.0	100.0	37
4872	P - 671	12.0	100.0	36
4884	P - 4182	8.0	140.0	37
4885	P - 4585	8.0	140.0	37
4886	P - 3625	10.0	140.0	38
4887	P - 2858	8.0	100.0	38
4888	P - 110	6.0	110.0	38
4889	P - 1021	8.0	140.0	38
4890	P - 935	6.0	110.0	38
4881	P - 1709	10.0	140.0	37
4864	P - 927	20.0	100.0	36
4855	P - 963	8.0	110.0	35
4856	P - 456	12.0	140.0	35

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4857	P - 4166	8.0	140.0	35
4858	P - 961	6.0	140.0	35
4859	P - 851	12.0	110.0	50
4860	P - 1705	4.0	140.0	35
4861	P - 188	8.0	110.0	35
4874	P - 1436	8.0	140.0	52
4863	P - 895	8.0	110.0	35
4647	P - 4740	6.0	140.0	28
4865	P - 565	8.0	140.0	36
4866	P - 2537	8.0	140.0	36
4867	P - 4530	8.0	140.0	36
4868	P - 362	8.0	100.0	36
4869	P - 405	4.0	110.0	36
4870	P - 672	16.0	110.0	36
4871	P - 632	8.0	110.0	36
4862	P - 898	8.0	110.0	35
4447	P - 939	6.0	110.0	8
4455	P - 476	6.0	140.0	9
4439	P - 83	8.0	140.0	10
4440	P - 59	8.0	140.0	7
4441	P - 4477	8.0	140.0	8
4442	P - 257	10.0	140.0	8
4443	P - 2026	6.0	100.0	8
4444	P - 4822	8.0	140.0	9
4437	P - 64	12.0	110.0	7
4446	P - 185	6.0	100.0	8
4436	P - 952	12.0	110.0	7
4448	P - 1344	12.0	140.0	8
4449	P - 1345	12.0	140.0	8
4450	P - 676	12.0	100.0	8
4451	P - 825	6.0	110.0	9
4452	P - 923	6.0	110.0	8
4453	P - 4721	16.0	110.0	8
4418	P - 4688	12.0	140.0	6
4445	P - 913	8.0	140.0	8
4428	P - 4811	12.0	140.0	7
4493	P - 2772	8.0	140.0	11
4420	P - 759	6.0	110.0	6
4421	P - 4772	20.0	100.0	6
4422	P - 787	6.0	110.0	7
4423	P - 668	8.0	140.0	7
4424	P - 949	12.0	110.0	7
4425	P - 65	16.0	110.0	7
4438	P - 11	12.0	110.0	10
4427	P - 4774	12.0	100.0	7
4456	P - 884	8.0	140.0	8
4429	P - 4629	20.0	110.0	7

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4430	P - 669	8.0	140.0	7
4431	P - 2549	6.0	100.0	8
4432	P - 4855	10.0	140.0	7
4433	P - 2621	8.0	140.0	7
4434	P - 509	8.0	140.0	7
4435	P - 655	8.0	110.0	7
4426	P - 51	6.0	100.0	7
4485	P - 3630	10.0	140.0	12
4454	P - 52	4.0	110.0	8
4477	P - 140	6.0	110.0	10
4478	P - 1738	6.0	110.0	10
4479	P - 70	8.0	140.0	10
4480	P - 1916	6.0	110.0	10
4481	P - 436	8.0	140.0	10
4482	P - 408	20.0	110.0	10
4475	P - 3253	8.0	110.0	12
4484	P - 4737	6.0	140.0	10
4474	P - 3659	8.0	140.0	9
4486	P - 328	6.0	110.0	10
4487	P - 186	8.0	140.0	10
4488	P - 4747	6.0	100.0	10
4489	P - 1116	12.0	110.0	10
4490	P - 487	18.0	110.0	26
4491	P - 359	8.0	100.0	10
4649	P - 3578	8.0	140.0	21
4483	P - 2303	12.0	110.0	10
4466	P - 950	16.0	110.0	9
4457	P - 742	12.0	140.0	8
4458	P - 4630	20.0	110.0	9
4459	P - 1050	8.0	110.0	9
4460	P - 4711	8.0	140.0	8
4461	P - 4556	10.0	140.0	9
4462	P - 2246	6.0	140.0	9
4463	P - 1054	10.0	110.0	9
4476	P - 4828	12.0	140.0	12
4465	P - 1741	6.0	140.0	9
4417	P - 868	6.0	140.0	7
4467	P - 2369	16.0	110.0	9
4468	P - 951	16.0	110.0	9
4469	P - 661	8.0	110.0	9
4470	P - 4642	8.0	140.0	9
4471	P - 125	10.0	110.0	9
4472	P - 84	12.0	100.0	9
4473	P - 2465	20.0	90.0	9
4464	P - 2869	12.0	110.0	9
4371	P - 4775	12.0	100.0	4
4379	P - 702	6.0	110.0	4

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4363	P - 9	12.0	140.0	3
4364	P - 1627	10.0	100.0	3
4365	P - 4776	12.0	100.0	3
4366	P - 4738	6.0	140.0	4
4367	P - 766	6.0	110.0	4
4368	P - 24	8.0	110.0	4
4361	P - 4795	8.0	140.0	3
4370	P - 21	8.0	140.0	4
4360	P - 1319	12.0	110.0	3
4372	P - 596	6.0	110.0	4
4373	P - 4025	12.0	140.0	4
4374	P - 2435	8.0	140.0	4
4375	P - 4705	12.0	100.0	4
4376	P - 136	16.0	140.0	4
4377	P - 1369	6.0	140.0	4
4419	P - 863	12.0	110.0	6
4369	P - 4784	8.0	140.0	4
4352	P - 2035	12.0	100.0	2
4343	P - 291	8.0	140.0	2
4344	P - 4728	6.0	110.0	2
4345	P - 85	12.0	140.0	2
4346	P - 18	6.0	100.0	2
4347	P - 1119	8.0	140.0	2
4348	P - 4742	8.0	140.0	3
4349	P - 202	8.0	140.0	2
4362	P - 2307	6.0	140.0	3
4351	P - 133	16.0	140.0	2
4380	P - 648	8.0	140.0	4
4353	P - 798	8.0	110.0	3
4354	P - 102	6.0	110.0	3
4355	P - 1685	8.0	140.0	3
4356	P - 47	6.0	110.0	3
4357	P - 2252	20.0	90.0	3
4358	P - 61	12.0	110.0	3
4359	P - 997	8.0	110.0	3
4350	P - 56	6.0	110.0	2
4409	P - 4769	6.0	110.0	7
4378	P - 2545	12.0	140.0	4
4401	P - 2620	8.0	140.0	5
4402	P - 4771	20.0	100.0	5
4403	P - 190	12.0	110.0	5
4404	P - 4687	20.0	110.0	10
4405	P - 142	16.0	90.0	5
4406	P - 738	6.0	140.0	6
4399	P - 22	8.0	140.0	7
4408	P - 1720	6.0	110.0	6
4398	P - 89	6.0	110.0	6

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4410	P - 273	10.0	140.0	6
4411	P - 213	6.0	140.0	6
4412	P - 4553	10.0	140.0	6
4413	P - 1888	6.0	110.0	6
4414	P - 443	6.0	140.0	6
4415	P - 444	6.0	140.0	6
4416	P - 3631	10.0	140.0	6
4407	P - 320	12.0	140.0	6
4390	P - 510	6.0	140.0	5
4381	P - 4731	8.0	140.0	4
4382	P - 135	10.0	140.0	4
4383	P - 2970	12.0	140.0	5
4384	P - 0	12.0	140.0	4
4385	P - 2292	6.0	110.0	6
4386	P - 4807	16.0	110.0	5
4387	P - 66	6.0	140.0	4
4400	P - 184	10.0	110.0	6
4389	P - 2370	6.0	110.0	5
4494	P - 4819	8.0	110.0	10
4391	P - 131	6.0	140.0	5
4392	P - 99	8.0	110.0	5
4393	P - 2560	8.0	140.0	4
4394	P - 3633	10.0	140.0	5
4395	P - 1307	16.0	140.0	5
4396	P - 3635	10.0	140.0	5
4397	P - 90	6.0	140.0	8
4388	P - 91	6.0	140.0	6
4600	P - 1859	6.0	110.0	18
4608	P - 44	8.0	110.0	19
4591	P - 511	4.0	140.0	24
4592	P - 792	6.0	140.0	24
4593	P - 2073	6.0	110.0	18
4595	P - 585	6.0	110.0	18
4596	P - 964	6.0	110.0	18
4597	P - 1890	6.0	110.0	17
4589	P - 1955	12.0	110.0	24
4599	P - 4641	8.0	140.0	18
4588	P - 363	8.0	100.0	17
4601	P - 4592	6.0	110.0	26
4602	P - 3232	6.0	110.0	21
4603	P - 665	8.0	140.0	18
4604	P - 845	8.0	140.0	19
4605	P - 420	10.0	140.0	18
4606	P - 726	8.0	140.0	18
4570	P - 838	16.0	110.0	16
4598	P - 4283	4.0	140.0	18
4580	P - 4052	8.0	140.0	16

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4492	P - 4791	12.0	140.0	10
4572	P - 2460	16.0	140.0	17
4573	P - 4367	8.0	140.0	15
4574	P - 4725	6.0	110.0	16
4575	P - 2872	16.0	100.0	16
4576	P - 1258	10.0	140.0	16
4577	P - 638	6.0	110.0	16
4590	P - 840	4.0	110.0	17
4579	P - 2413	12.0	110.0	21
4609	P - 1289	8.0	140.0	19
4581	P - 4027	12.0	110.0	16
4582	P - 2955	12.0	110.0	16
4583	P - 1033	8.0	140.0	17
4584	P - 4800	6.0	110.0	15
4585	P - 3636	10.0	140.0	17
4586	P - 411	6.0	100.0	17
4587	P - 4331	10.0	110.0	17
4578	P - 2472	18.0	110.0	19
4639	P - 3669	8.0	140.0	20
4607	P - 3337	8.0	140.0	19
4631	P - 1034	8.0	140.0	20
4632	P - 4390	8.0	140.0	19
4633	P - 4547	8.0	140.0	20
4634	P - 3621	10.0	140.0	19
4635	P - 424	12.0	140.0	20
4636	P - 430	10.0	140.0	20
4629	P - 4622	8.0	140.0	20
4638	P - 2183	10.0	140.0	20
4628	P - 966	6.0	110.0	20
4640	P - 416	6.0	110.0	20
4641	P - 1151	6.0	100.0	20
4642	P - 346	12.0	140.0	20
4643	P - 2929	8.0	140.0	21
4644	P - 3347	8.0	140.0	21
4645	P - 670	8.0	140.0	21
4646	P - 2613	12.0	140.0	21
4637	P - 2928	8.0	140.0	20
4619	P - 192	8.0	110.0	19
4610	P - 437	8.0	140.0	19
4611	P - 2708	4.0	140.0	19
4612	P - 4612	6.0	110.0	19
4613	P - 3400	8.0	140.0	19
4614	P - 458	6.0	140.0	19
4615	P - 2794	6.0	140.0	19
4616	P - 1977	8.0	140.0	19
4630	P - 4707	12.0	110.0	20
4618	P - 4537	8.0	140.0	19

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4569	P - 4332	8.0	140.0	15
4620	P - 2283	8.0	110.0	20
4621	P - 2833	8.0	110.0	20
4623	P - 878	10.0	110.0	20
4624	P - 4717	6.0	110.0	19
4625	P - 628	6.0	110.0	20
4626	P - 134	8.0	140.0	20
4627	P - 1204	8.0	140.0	20
4617	P - 62	10.0	140.0	19
4523	P - 722	6.0	110.0	12
4531	P - 4773	12.0	100.0	13
4515	P - 108	12.0	110.0	11
4516	P - 567	8.0	140.0	15
4517	P - 2251	6.0	140.0	12
4518	P - 121	12.0	110.0	12
4519	P - 1721	6.0	110.0	12
4520	P - 2287	8.0	110.0	12
4513	P - 1312	4.0	140.0	11
4522	P - 928	20.0	100.0	12
4512	P - 1378	6.0	140.0	11
4524	P - 4702	6.0	110.0	12
4525	P - 2535	8.0	140.0	12
4526	P - 4727	6.0	110.0	12
4527	P - 4821	12.0	140.0	12
4528	P - 4076	8.0	140.0	12
4529	P - 4644	8.0	140.0	12
4571	P - 4871	10.0	140.0	17
4521	P - 3300	8.0	140.0	12
4504	P - 43	4.0	110.0	12
4495	P - 1401	6.0	140.0	10
4496	P - 516	6.0	110.0	10
4497	P - 2561	8.0	140.0	10
4498	P - 4649	8.0	140.0	10
4499	P - 3629	10.0	140.0	9
4500	P - 4781	8.0	140.0	10
4501	P - 527	6.0	100.0	15
4514	P - 1552	6.0	100.0	11
4503	P - 2558	8.0	140.0	11
4532	P - 4786	8.0	140.0	13
4505	P - 3623	10.0	140.0	11
4506	P - 4706	12.0	110.0	11
4507	P - 4693	10.0	140.0	11
4508	P - 4662	6.0	110.0	14
4509	P - 4026	20.0	110.0	19
4510	P - 859	12.0	140.0	11
4511	P - 697	6.0	110.0	11
4502	P - 9999	12.0	100.0	11

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4561	P - 471	20.0	100.0	15
4530	P - 470	12.0	90.0	12
4553	P - 141	6.0	110.0	14
4554	P - 630	6.0	110.0	14
4555	P - 23	8.0	140.0	14
4556	P - 3686	6.0	140.0	14
4557	P - 4767	6.0	110.0	14
4558	P - 4257	8.0	140.0	15
4551	P - 520	8.0	100.0	14
4560	P - 625	18.0	110.0	15
4550	P - 481	16.0	100.0	13
4562	P - 609	8.0	140.0	15
4563	P - 49	8.0	140.0	15
4564	P - 4167	8.0	140.0	15
4565	P - 1370	8.0	140.0	15
4566	P - 53	8.0	110.0	15
4567	P - 2422	8.0	140.0	15
4568	P - 1020	8.0	100.0	15
4559	P - 685	6.0	100.0	15
4542	P - 4751	6.0	100.0	12
4533	P - 258	12.0	140.0	13
4534	P - 29	8.0	110.0	12
4535	P - 4755	6.0	110.0	13
4536	P - 3314	10.0	140.0	13
4537	P - 3	8.0	140.0	13
4538	P - 1456	6.0	110.0	12
4539	P - 2493	12.0	140.0	13
4552	P - 97	6.0	110.0	14
4541	P - 4806	8.0	140.0	12
4969	P - 2602	12.0	140.0	45
4543	P - 812	8.0	110.0	13
4544	P - 54	12.0	110.0	14
4545	P - 304	8.0	140.0	13
4546	P - 4883	30.0	140.0	6
4547	P - 3085	8.0	140.0	14
4548	P - 474	12.0	100.0	14
4549	P - 1821	12.0	90.0	14
4540	P - 4602	10.0	140.0	13
5379	P - 2912	6.0	110.0	101
5387	P - 2996	12.0	140.0	93
5371	P - 3982	4.0	140.0	134
5372	P - 278	8.0	140.0	91
5373	P - 3996	4.0	140.0	119
5374	P - 2687	12.0	140.0	92
5375	P - 16	8.0	140.0	91
5376	P - 3593	20.0	110.0	93
5369	P - 3496	8.0	140.0	90

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5378	P - 2768	8.0	140.0	92
5368	P - 332	10.0	140.0	90
5380	P - 2662	6.0	110.0	92
5381	P - 786	12.0	100.0	92
5382	P - 3464	8.0	140.0	92
5383	P - 783	6.0	140.0	92
5384	P - 457	12.0	140.0	94
5385	P - 3352	4.0	140.0	239
5350	P - 265	16.0	140.0	89
5377	P - 1957	12.0	140.0	94
5360	P - 560	12.0	110.0	89
5425	P - 1330	8.0	140.0	96
5352	P - 293	8.0	140.0	82
5353	P - 3608	10.0	140.0	89
5354	P - 4455	8.0	140.0	89
5355	P - 1026	12.0	140.0	89
5356	P - 485	18.0	110.0	89
5357	P - 2646	8.0	140.0	94
5370	P - 300	8.0	140.0	91
5359	P - 223	4.0	140.0	288
5388	P - 1210	8.0	140.0	94
5361	P - 269	12.0	140.0	90
5362	P - 2108	6.0	110.0	90
5363	P - 2351	12.0	140.0	90
5364	P - 4401	8.0	140.0	90
5365	P - 1120	12.0	140.0	90
5366	P - 3978	8.0	140.0	90
5367	P - 1107	10.0	110.0	90
5358	P - 3286	4.0	140.0	176
5417	P - 843	8.0	110.0	99
5386	P - 31	6.0	140.0	96
5409	P - 4514	10.0	110.0	101
5410	P - 2179	20.0	110.0	95
5411	P - 4512	8.0	140.0	96
5412	P - 307	8.0	140.0	96
5413	P - 2497	12.0	110.0	96
5414	P - 3484	12.0	110.0	96
5407	P - 244	8.0	140.0	95
5416	P - 1121	8.0	110.0	96
5406	P - 4113	4.0	140.0	187
5418	P - 4194	8.0	140.0	95
5419	P - 1055	6.0	100.0	96
5420	P - 592	8.0	110.0	96
5421	P - 1479	8.0	140.0	97
5422	P - 2060	4.0	140.0	172
5423	P - 3161	12.0	140.0	97
4967	P - 1488	6.0	100.0	45

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5415	P - 391	20.0	110.0	96
5398	P - 602	8.0	140.0	94
5389	P - 2047	12.0	140.0	93
5390	P - 3271	8.0	140.0	122
5391	P - 395	8.0	110.0	92
5392	P - 2559	8.0	140.0	94
5393	P - 249	12.0	140.0	104
5394	P - 1193	16.0	110.0	94
5395	P - 4029	16.0	110.0	94
5408	P - 3256	8.0	140.0	96
5397	P - 1035	12.0	110.0	94
5349	P - 3252	8.0	140.0	244
5399	P - 2328	6.0	140.0	101
5400	P - 1	6.0	110.0	94
5401	P - 2467	6.0	140.0	94
5402	P - 4075	8.0	140.0	117
5403	P - 203	8.0	140.0	95
5404	P - 934	12.0	110.0	95
5405	P - 177	20.0	110.0	95
5396	P - 1179	8.0	140.0	94
5303	P - 1953	6.0	110.0	83
5311	P - 1262	20.0	110.0	84
5295	P - 1724	6.0	100.0	82
5296	P - 4569	10.0	140.0	83
5297	P - 2223	8.0	140.0	82
5298	P - 3617	8.0	140.0	82
5299	P - 977	6.0	110.0	82
5300	P - 1570	10.0	100.0	82
5293	P - 2030	6.0	110.0	82
5302	P - 3624	10.0	140.0	83
5292	P - 2474	10.0	140.0	82
5304	P - 3394	8.0	140.0	84
5305	P - 2767	8.0	140.0	83
5306	P - 4196	8.0	140.0	239
5307	P - 3125	4.0	140.0	100
5308	P - 1065	6.0	110.0	83
5309	P - 1206	8.0	140.0	84
5351	P - 3093	8.0	140.0	245
5301	P - 835	6.0	100.0	83
5284	P - 4777	6.0	110.0	81
5275	P - 1547	6.0	100.0	80
5276	P - 2927	12.0	140.0	80
5277	P - 128	8.0	140.0	80
5278	P - 4191	12.0	140.0	81
5279	P - 1147	16.0	140.0	80
5280	P - 3298	6.0	140.0	80
5281	P - 2882	8.0	140.0	81

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5294	P - 1718	12.0	110.0	82
5283	P - 215	12.0	90.0	81
5312	P - 2717	12.0	110.0	82
5285	P - 3557	6.0	140.0	81
5286	P - 80	10.0	140.0	81
5287	P - 4808	16.0	110.0	82
5288	P - 1969	12.0	140.0	81
5289	P - 4183	8.0	140.0	81
5290	P - 4181	8.0	140.0	81
5291	P - 1876	8.0	140.0	82
5282	P - 3221	8.0	140.0	81
5341	P - 1386	10.0	140.0	87
5310	P - 2770	8.0	140.0	84
5333	P - 2776	8.0	140.0	88
5334	P - 2346	4.0	140.0	234
5335	P - 101	8.0	140.0	86
5336	P - 2478	8.0	140.0	87
5337	P - 3498	12.0	140.0	87
5338	P - 967	8.0	140.0	87
5331	P - 3151	8.0	140.0	87
5340	P - 2120	8.0	140.0	87
5330	P - 1338	12.0	140.0	91
5342	P - 4833	8.0	110.0	87
5343	P - 2693	6.0	110.0	87
5344	P - 1105	12.0	110.0	88
5345	P - 2738	8.0	100.0	88
5346	P - 4846	8.0	140.0	88
5347	P - 855	8.0	110.0	88
5348	P - 1806	6.0	140.0	88
5339	P - 3356	4.0	140.0	217
5322	P - 1984	8.0	140.0	87
5313	P - 4137	8.0	140.0	84
5314	P - 2732	8.0	100.0	85
5315	P - 823	20.0	140.0	85
5316	P - 1359	8.0	140.0	85
5317	P - 4179	8.0	140.0	85
5318	P - 2771	8.0	140.0	85
5319	P - 900	10.0	140.0	86
5332	P - 1341	8.0	140.0	86
5321	P - 4122	8.0	140.0	85
5426	P - 1002	8.0	140.0	97
5323	P - 4239	6.0	140.0	216
5324	P - 152	8.0	140.0	85
5325	P - 3663	12.0	140.0	86
5326	P - 1123	8.0	110.0	86
5327	P - 3080	12.0	140.0	86
5328	P - 46	16.0	90.0	86

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5329	P - 2498	4.0	140.0	86
5320	P - 4835	12.0	110.0	85
5532	P - 2760	8.0	100.0	112
5540	P - 167	12.0	140.0	113
5524	P - 1875	8.0	140.0	111
5525	P - 2468	10.0	110.0	111
5526	P - 2479	8.0	100.0	111
5527	P - 3129	8.0	140.0	111
5528	P - 554	6.0	110.0	112
5529	P - 603	6.0	140.0	112
5522	P - 1304	4.0	140.0	111
5531	P - 4232	8.0	140.0	202
5521	P - 2993	12.0	140.0	111
5533	P - 321	12.0	140.0	112
5534	P - 2754	6.0	100.0	112
5535	P - 1778	6.0	100.0	113
5536	P - 2178	12.0	110.0	113
5537	P - 2503	6.0	100.0	113
5538	P - 1010	8.0	140.0	134
5503	P - 3657	12.0	140.0	108
5530	P - 2884	6.0	100.0	112
5513	P - 3602	4.0	140.0	168
5424	P - 183	10.0	110.0	96
5505	P - 790	8.0	140.0	108
5506	P - 1434	8.0	140.0	108
5507	P - 1433	8.0	140.0	119
5508	P - 3594	4.0	140.0	113
5509	P - 4880a	20.0	110.0	109
5510	P - 880	12.0	110.0	109
5523	P - 4637	6.0	110.0	111
5512	P - 2541	8.0	140.0	111
5541	P - 2528	8.0	140.0	114
5514	P - 1452	16.0	110.0	110
5515	P - 982	6.0	110.0	110
5516	P - 569	6.0	110.0	110
5517	P - 4524	8.0	140.0	110
5518	P - 1249	6.0	140.0	109
5519	P - 2368	8.0	140.0	111
5520	P - 2783	8.0	140.0	1,140
5511	P - 1301	8.0	140.0	109
5570	P - 2319	6.0	100.0	117
5539	P - 3642	8.0	140.0	113
5562	P - 4605	10.0	110.0	115
5563	P - 2782	8.0	140.0	115
5564	P - 2266	8.0	100.0	115
5565	P - 2611	8.0	140.0	115
5566	P - 4092	8.0	140.0	118

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5567	P - 2900	8.0	100.0	117
5560	P - 1381	4.0	140.0	115
5569	P - 3027	10.0	140.0	116
5559	P - 954	8.0	140.0	115
5571	P - 3230	6.0	110.0	120
5572	P - 1639	8.0	110.0	116
5573	P - 34	8.0	110.0	117
5574	P - 3672	6.0	140.0	117
5575	P - 2151	10.0	110.0	117
5576	P - 4102	8.0	140.0	117
6797	P - 2222	8.0	140.0	286
5568	P - 2085	4.0	140.0	171
5551	P - 2788	10.0	140.0	113
5542	P - 2664	8.0	140.0	113
5543	P - 4879	16.0	140.0	113
5544	P - 157	8.0	140.0	114
5545	P - 1018	8.0	100.0	114
5546	P - 3677	8.0	140.0	114
5547	P - 143	6.0	100.0	114
5548	P - 3278	8.0	140.0	114
5561	P - 3508	6.0	140.0	115
5550	P - 2495	6.0	110.0	114
5502	P - 953	8.0	140.0	107
5552	P - 2751	8.0	140.0	114
5553	P - 2118	8.0	140.0	115
5554	P - 2371	6.0	110.0	115
5555	P - 3529	10.0	140.0	115
5556	P - 2021	8.0	110.0	115
5557	P - 1053	10.0	140.0	115
5558	P - 2581	6.0	140.0	115
5549	P - 2999	6.0	140.0	259
5455	P - 2936	12.0	140.0	101
5463	P - 988	6.0	100.0	103
5447	P - 1314	6.0	140.0	100
5448	P - 2580	6.0	140.0	100
5449	P - 1807	8.0	140.0	100
5450	P - 2733	8.0	110.0	101
5451	P - 208	12.0	140.0	101
5452	P - 3515	6.0	140.0	136
5445	P - 4790	12.0	140.0	100
5454	P - 1703	12.0	140.0	129
5444	P - 2357	12.0	110.0	100
5456	P - 1437	6.0	100.0	102
5457	P - 3619	10.0	140.0	102
5458	P - 2818	8.0	140.0	102
5459	P - 4881	18.0	110.0	102
5460	P - 2388	12.0	110.0	102

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5461	P - 2487	8.0	110.0	135
5504	P - 4676	6.0	140.0	108
5453	P - 4180	8.0	140.0	101
5436	P - 3509	8.0	140.0	211
5427	P - 1360	6.0	140.0	97
5428	P - 2990	12.0	140.0	97
5429	P - 4868	8.0	140.0	97
5430	P - 719	8.0	140.0	97
5431	P - 6	8.0	110.0	102
5432	P - 3706	4.0	140.0	149
5433	P - 164	10.0	140.0	124
5446	P - 1295	8.0	140.0	102
5435	P - 2243	12.0	140.0	98
5464	P - 1012	12.0	110.0	103
5437	P - 1784	4.0	140.0	98
5438	P - 3036	12.0	140.0	98
5439	P - 875	8.0	140.0	99
5440	P - 605	6.0	140.0	99
5441	P - 767	6.0	110.0	99
5442	P - 2424	8.0	140.0	99
5443	P - 242	8.0	140.0	100
5434	P - 1352	4.0	100.0	99
5494	P - 3260	8.0	140.0	110
5462	P - 4284	6.0	100.0	102
5485	P - 3127	8.0	140.0	105
5486	P - 3353	4.0	140.0	105
5487	P - 2359	8.0	140.0	105
5488	P - 848	8.0	140.0	105
5489	P - 4333	12.0	140.0	106
5490	P - 2084	10.0	140.0	106
5483	P - 3937	10.0	140.0	105
5493	P - 3989	8.0	140.0	106
5482	P - 1231	8.0	140.0	105
5495	P - 454	12.0	140.0	107
5496	P - 210	8.0	110.0	107
5497	P - 1163	8.0	100.0	107
5498	P - 3998	6.0	140.0	112
5499	P - 248	8.0	140.0	107
5500	P - 1820	12.0	140.0	108
5501	P - 1094	8.0	140.0	107
5491	P - 1303	4.0	140.0	106
5474	P - 1549	6.0	100.0	104
5465	P - 2638	10.0	140.0	103
5466	P - 932	12.0	140.0	103
5467	P - 2911	6.0	140.0	103
5468	P - 2556	8.0	100.0	103
5469	P - 1118	16.0	90.0	103

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5470	P - 1371	6.0	140.0	103
5471	P - 3994	6.0	140.0	103
5484	P - 4507	4.0	140.0	221
5473	P - 240	8.0	140.0	103
5272	P - 4247	8.0	140.0	79
5475	P - 4723	6.0	110.0	102
5476	P - 861	16.0	140.0	104
5477	P - 1785	4.0	140.0	104
5478	P - 3938	6.0	140.0	104
5479	P - 4350	12.0	100.0	104
5480	P - 3146	8.0	140.0	108
5481	P - 3044	8.0	140.0	105
5472	P - 1402	20.0	110.0	103
5073	P - 1350	12.0	110.0	54
5081	P - 169	20.0	110.0	55
5065	P - 2122	8.0	140.0	54
5066	P - 2966	8.0	110.0	54
5067	P - 700	6.0	110.0	54
5068	P - 4036	8.0	140.0	54
5069	P - 4815	12.0	140.0	54
5070	P - 2957	8.0	110.0	54
5063	P - 1460	6.0	140.0	54
5072	P - 2177	6.0	100.0	55
5062	P - 379	20.0	110.0	53
5074	P - 368	12.0	100.0	55
5075	P - 1146	12.0	140.0	55
5076	P - 63	16.0	90.0	55
5077	P - 4825	12.0	140.0	55
5078	P - 4810	12.0	140.0	55
5079	P - 2540	8.0	140.0	55
5044	P - 4171	6.0	110.0	52
5071	P - 1074	10.0	140.0	54
5054	P - 3066	8.0	140.0	53
5274	P - 1630	6.0	110.0	80
5046	P - 4694	10.0	140.0	52
5047	P - 4766	6.0	110.0	52
5048	P - 1617	6.0	100.0	53
5049	P - 1788	8.0	140.0	53
5050	P - 4143	8.0	140.0	53
5051	P - 1896	6.0	110.0	53
5064	P - 2607	8.0	140.0	54
5053	P - 847	6.0	110.0	53
5082	P - 3379	8.0	140.0	55
5055	P - 4000	4.0	140.0	58
5056	P - 198	14.0	140.0	53
5057	P - 449	8.0	140.0	53
5058	P - 252	8.0	140.0	53

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5059	P - 106	16.0	110.0	53
5060	P - 1634	6.0	110.0	57
5061	P - 1654	6.0	100.0	54
5052	P - 3206	4.0	140.0	56
5111	P - 2787	10.0	140.0	59
5080	P - 4703	6.0	110.0	55
5103	P - 3381	8.0	140.0	58
5104	P - 2880	6.0	110.0	84
5105	P - 1059	8.0	100.0	58
5106	P - 1215	8.0	140.0	64
5107	P - 1747	10.0	140.0	58
5108	P - 4220	12.0	140.0	61
5101	P - 1811	12.0	140.0	57
5110	P - 3451	8.0	140.0	59
5100	P - 650	8.0	140.0	57
5112	P - 4041	8.0	140.0	59
5113	P - 4892	16.0	140.0	22
5114	P - 4888	16.0	140.0	22
5115	P - 4887	16.0	140.0	22
5117	P - 4893	16.0	140.0	22
5118	P - 4886	16.0	140.0	22
5119	P - 841	6.0	140.0	59
5109	P - 797	8.0	140.0	63
5092	P - 162	10.0	110.0	55
5083	P - 1962	16.0	140.0	56
5084	P - 389	8.0	110.0	56
5085	P - 1805	6.0	140.0	56
5086	P - 4412	8.0	140.0	56
5087	P - 1880	6.0	120.0	57
5088	P - 2473	10.0	110.0	56
5089	P - 4746	20.0	110.0	52
5102	P - 894	20.0	100.0	57
5091	P - 993	8.0	110.0	57
5043	P - 3604	8.0	140.0	52
5093	P - 3903	8.0	100.0	56
5094	P - 2240	6.0	110.0	57
5095	P - 2045	6.0	140.0	57
5096	P - 4519	8.0	140.0	57
5097	P - 3748	8.0	140.0	57
5098	P - 930	10.0	110.0	57
5099	P - 204	8.0	140.0	57
5090	P - 3999	8.0	140.0	56
4997	P - 1313	4.0	140.0	48
5005	P - 3616	8.0	140.0	48
4989	P - 1286	8.0	140.0	46
4990	P - 3097	8.0	140.0	47
4991	P - 3965	8.0	140.0	47

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
4992	P - 2544	12.0	110.0	61
4993	P - 2921	12.0	140.0	48
4994	P - 1196	10.0	100.0	47
4987	P - 334	6.0	140.0	45
4996	P - 2419	12.0	140.0	52
4986	P - 2500	16.0	140.0	47
4998	P - 189	8.0	110.0	48
4999	P - 778	6.0	110.0	48
5000	P - 518	8.0	100.0	48
5001	P - 3084	8.0	140.0	48
5002	P - 1844	6.0	140.0	68
5003	P - 904	8.0	140.0	48
5045	P - 1424	6.0	100.0	52
4995	P - 4535	8.0	140.0	48
4978	P - 1390	8.0	100.0	45
5578	P - 1077	10.0	140.0	118
4970	P - 4098	8.0	140.0	45
4971	P - 154	8.0	140.0	45
4972	P - 1967	12.0	110.0	45
4973	P - 4411	8.0	140.0	45
4974	P - 272	12.0	140.0	45
4975	P - 488	20.0	110.0	37
4988	P - 115	8.0	140.0	46
4977	P - 4664	6.0	110.0	45
5006	P - 1702	6.0	110.0	49
4979	P - 2255	8.0	100.0	54
4980	P - 1840	8.0	140.0	45
4981	P - 1587	6.0	100.0	46
4982	P - 161	8.0	140.0	46
4983	P - 123	12.0	110.0	46
4984	P - 1886	18.0	110.0	46
4985	P - 3746	8.0	140.0	46
4976	P - 3580	8.0	140.0	45
5035	P - 538	8.0	140.0	51
5004	P - 621	8.0	100.0	48
5027	P - 4840	12.0	90.0	50
5028	P - 1038	6.0	140.0	50
5029	P - 3322	8.0	140.0	50
5030	P - 4224	8.0	140.0	50
5031	P - 96	8.0	110.0	50
5032	P - 1922	8.0	140.0	50
5025	P - 3493	12.0	110.0	50
5034	P - 442	8.0	140.0	51
5024	P - 915	4.0	110.0	50
5036	P - 4650	8.0	140.0	51
5037	P - 834	8.0	140.0	66
5038	P - 811	6.0	110.0	51

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5039	P - 853	8.0	110.0	58
5040	P - 2072	8.0	140.0	52
5041	P - 839	6.0	110.0	55
5042	P - 3641	8.0	140.0	51
5033	P - 537	8.0	140.0	51
5016	P - 195	12.0	110.0	50
5007	P - 3067	8.0	140.0	48
5008	P - 877	8.0	140.0	49
5009	P - 2815	6.0	140.0	69
5010	P - 657	6.0	110.0	49
5011	P - 594	6.0	110.0	49
5012	P - 2477	8.0	140.0	50
5013	P - 2325	8.0	140.0	50
5026	P - 833	6.0	110.0	50
5015	P - 2933	8.0	140.0	50
5122	P - 3301	8.0	140.0	60
5017	P - 3001	8.0	140.0	50
5018	P - 1349	12.0	110.0	50
5019	P - 2934	8.0	140.0	50
5020	P - 2229	12.0	110.0	50
5021	P - 1348	12.0	110.0	50
5022	P - 3722	6.0	140.0	50
5023	P - 3620	10.0	140.0	50
5014	P - 4227	8.0	140.0	50
5227	P - 373	6.0	100.0	73
5235	P - 2985	8.0	110.0	73
5219	P - 2917	8.0	140.0	71
5220	P - 2286	10.0	140.0	71
5221	P - 3606	6.0	140.0	71
5222	P - 1531	8.0	100.0	71
5223	P - 3357	8.0	140.0	72
5224	P - 2554	8.0	110.0	72
5217	P - 372	8.0	100.0	71
5226	P - 2138	12.0	110.0	72
5216	P - 4079	10.0	140.0	71
5228	P - 3015	10.0	140.0	73
5229	P - 2334	8.0	140.0	76
5230	P - 2074	6.0	110.0	74
5231	P - 3187	8.0	140.0	74
5232	P - 748	8.0	140.0	73
5233	P - 3964	8.0	140.0	73
5120	P - 1889	8.0	100.0	60
5225	P - 4679	12.0	140.0	72
5208	P - 2415	20.0	110.0	76
5199	P - 3634	10.0	140.0	69
5200	P - 2	6.0	140.0	69
5201	P - 2803	8.0	140.0	69

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5202	P - 1351	8.0	140.0	70
5203	P - 1292	8.0	140.0	70
5204	P - 3614	10.0	140.0	70
5205	P - 1113	4.0	140.0	70
5218	P - 1069	8.0	110.0	71
5207	P - 3343	8.0	140.0	70
5236	P - 8	12.0	90.0	74
5209	P - 4288	8.0	140.0	70
5210	P - 1610	6.0	100.0	71
5211	P - 4074	4.0	140.0	70
5212	P - 3637	8.0	140.0	70
5213	P - 4750	20.0	90.0	71
5214	P - 3309	8.0	140.0	71
5215	P - 3425	8.0	140.0	71
5206	P - 4647	8.0	140.0	70
5265	P - 2617	16.0	110.0	77
5234	P - 4198	8.0	110.0	101
5257	P - 3307	4.0	140.0	94
5258	P - 4465	6.0	140.0	77
5259	P - 791	8.0	140.0	77
5260	P - 2290	6.0	110.0	77
5261	P - 1814	8.0	140.0	76
5262	P - 1954	8.0	110.0	77
5255	P - 4860	8.0	140.0	76
5264	P - 4090	4.0	140.0	224
5254	P - 2562	12.0	140.0	76
5266	P - 1723	6.0	100.0	77
5267	P - 132	6.0	140.0	78
5268	P - 3959	4.0	140.0	79
5269	P - 2930	12.0	140.0	79
5270	P - 2881	8.0	140.0	85
5271	P - 3431	12.0	140.0	79
4968	P - 4037	8.0	140.0	45
5263	P - 3149	8.0	110.0	77
5246	P - 2765	12.0	140.0	75
5237	P - 4674	8.0	140.0	79
5238	P - 445	8.0	140.0	74
5239	P - 1095	8.0	140.0	74
5240	P - 2587	8.0	140.0	75
5241	P - 3083	8.0	140.0	75
5242	P - 4066	8.0	140.0	75
5243	P - 3665	8.0	140.0	75
5256	P - 1777	6.0	100.0	76
5245	P - 1071	6.0	110.0	75
5196	P - 1287	8.0	140.0	69
5247	P - 914	6.0	110.0	75
5248	P - 3016	4.0	140.0	76

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5249	P - 86	20.0	140.0	74
5250	P - 1036	16.0	110.0	75
5251	P - 2971	12.0	140.0	75
5252	P - 3535	6.0	140.0	76
5253	P - 883	8.0	140.0	76
5244	P - 1017	8.0	110.0	75
5150	P - 172	12.0	110.0	69
5198	P - 384	8.0	110.0	69
5142	P - 4531	8.0	140.0	65
5143	P - 1903	6.0	110.0	67
5144	P - 1387	6.0	100.0	63
5145	P - 1670	8.0	100.0	63
5146	P - 3367	8.0	140.0	63
5147	P - 3138	8.0	140.0	104
5140	P - 17	6.0	140.0	62
5149	P - 714	8.0	140.0	62
5139	P - 1373	20.0	110.0	62
5151	P - 3076	8.0	140.0	64
5152	P - 1122	8.0	110.0	64
5153	P - 2908	8.0	110.0	66
5154	P - 4449	20.0	110.0	64
5155	P - 3375	10.0	140.0	65
5156	P - 4758	8.0	140.0	65
5157	P - 475	6.0	140.0	65
5148	P - 662	8.0	140.0	62
5131	P - 124	8.0	140.0	62
5273	P - 2464	8.0	110.0	80
5123	P - 741	20.0	140.0	61
5124	P - 2866	20.0	110.0	71
5125	P - 1006	6.0	100.0	61
5126	P - 3457	8.0	140.0	61
5127	P - 4611	4.0	140.0	63
5128	P - 1140	8.0	110.0	61
5141	P - 4584	8.0	140.0	62
5130	P - 1388	6.0	100.0	61
5160	P - 298	12.0	140.0	65
5132	P - 289	8.0	140.0	65
5133	P - 3378	8.0	140.0	62
5134	P - 990	6.0	100.0	62
5135	P - 4573	8.0	140.0	62
5136	P - 2786	8.0	140.0	63
5137	P - 1659	8.0	110.0	62
5138	P - 496	6.0	110.0	62
5129	P - 2378	10.0	140.0	61
5189	P - 1043	6.0	140.0	67
5180	P - 477	12.0	140.0	67
5181	P - 2989	12.0	140.0	67

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
5182	P - 1037	16.0	110.0	67
5183	P - 879	8.0	110.0	68
5184	P - 2420	4.0	140.0	68
5185	P - 842	6.0	120.0	68
5186	P - 4193	8.0	140.0	67
5158	P - 830	8.0	140.0	65
5188	P - 2525	6.0	100.0	68
5177	P - 1943	6.0	110.0	67
5190	P - 684	8.0	110.0	67
5191	P - 3335	8.0	140.0	69
5192	P - 1208	8.0	140.0	69
5193	P - 2314	6.0	140.0	69
5194	P - 1483	16.0	140.0	69
5195	P - 2676	16.0	90.0	69
5121	P - 2688	12.0	140.0	60
5187	P - 1327	8.0	140.0	68
5169	P - 350	6.0	100.0	67
5197	P - 435	12.0	140.0	68
5161	P - 3313	8.0	140.0	65
5162	P - 3466	8.0	140.0	66
5163	P - 2983	8.0	140.0	66
5164	P - 4317	8.0	140.0	66
5165	P - 1023	8.0	100.0	66
5166	P - 4613	6.0	110.0	67
5179	P - 2736	6.0	110.0	68
5168	P - 58	12.0	140.0	67
5178	P - 4001	4.0	140.0	212
5170	P - 3361	8.0	140.0	67
5171	P - 1504	6.0	110.0	67
5172	P - 2829	6.0	110.0	74
5173	P - 1435	8.0	140.0	67
5174	P - 4040	8.0	140.0	67
5175	P - 3638	8.0	140.0	67
5176	P - 1713	4.0	110.0	67
5159	P - 2995	10.0	140.0	65
5167	P - 1755	8.0	140.0	66
8425	P - 2622	6.0	140.0	595
8433	P - 4373	8.0	140.0	603
8417	P - 118	20.0	110.0	593
8418	P - 1175	8.0	140.0	610
8419	P - 2844	10.0	100.0	602
8420	P - 406	12.0	100.0	593
8421	P - 4058	8.0	140.0	619
8422	P - 1994	8.0	110.0	595
8415	P - 3063	8.0	140.0	604
8424	P - 3112	8.0	140.0	668
8414	P - 710	6.0	110.0	589

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8426	P - 3754	6.0	100.0	595
8427	P - 720	8.0	140.0	846
8428	P - 539	8.0	140.0	596
8429	P - 3806	6.0	140.0	613
8430	P - 4793	8.0	140.0	626
8431	P - 2341	6.0	140.0	611
8396	P - 316	10.0	140.0	584
8423	P - 4049	8.0	140.0	665
8406	P - 1684	10.0	110.0	586
8471	P - 173	20.0	110.0	615
8398	P - 2650	8.0	140.0	588
8399	P - 2034	6.0	110.0	584
8400	P - 965	12.0	110.0	585
8401	P - 1846	8.0	140.0	740
8402	P - 2337	8.0	140.0	585
8403	P - 4564	8.0	140.0	586
8416	P - 673	8.0	110.0	602
8405	P - 4488	10.0	140.0	585
8434	P - 2947	6.0	100.0	599
8407	P - 4148	6.0	140.0	719
8408	P - 2049	6.0	140.0	588
8409	P - 3323	8.0	140.0	592
8410	P - 2739	6.0	100.0	662
8411	P - 3568	6.0	140.0	593
8412	P - 229	12.0	140.0	589
8413	P - 889	6.0	110.0	589
8404	P - 225	8.0	140.0	578
8463	P - 3901	6.0	100.0	610
8432	P - 3103	8.0	140.0	598
8455	P - 4047	10.0	140.0	608
8456	P - 735	8.0	140.0	607
8457	P - 747	8.0	140.0	838
8458	P - 1904	6.0	110.0	636
8459	P - 3486	12.0	140.0	609
8460	P - 1543	6.0	100.0	609
8453	P - 1142	8.0	110.0	606
8462	P - 1248	10.0	140.0	698
8452	P - 3242	8.0	140.0	730
8464	P - 4478	10.0	140.0	717
8465	P - 42	20.0	110.0	610
8466	P - 4185	10.0	140.0	622
8467	P - 3993	8.0	140.0	613
8468	P - 3505	8.0	140.0	614
8469	P - 2109	6.0	110.0	614
8320	P - 3058	8.0	140.0	554
8461	P - 4124	8.0	140.0	622
8444	P - 3491	12.0	140.0	604

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8435	P - 3589	8.0	110.0	604
8436	P - 1775	20.0	110.0	602
8437	P - 2976	8.0	110.0	600
8438	P - 1420	16.0	110.0	602
8439	P - 1443	6.0	140.0	1,075
8440	P - 4021	8.0	140.0	608
8441	P - 743	12.0	140.0	602
8454	P - 2356	8.0	110.0	628
8443	P - 4031	8.0	140.0	605
8395	P - 2102	6.0	110.0	597
8445	P - 1701	6.0	140.0	604
8446	P - 431	8.0	110.0	604
8447	P - 4599	6.0	110.0	612
8448	P - 4125	8.0	140.0	637
8449	P - 3767	6.0	100.0	611
8450	P - 3455	8.0	140.0	605
8451	P - 4448	12.0	140.0	605
8442	P - 1522	6.0	100.0	613
8349	P - 4494	8.0	140.0	564
8357	P - 2910	4.0	110.0	631
8341	P - 2958	6.0	110.0	563
8342	P - 3551	6.0	140.0	561
8343	P - 1557	6.0	110.0	565
8344	P - 4197	8.0	140.0	575
8345	P - 3243	8.0	140.0	630
8346	P - 1448	8.0	110.0	564
8339	P - 3609	6.0	140.0	565
8348	P - 3474	8.0	140.0	723
8338	P - 4510	8.0	140.0	591
8350	P - 4095	8.0	140.0	565
8351	P - 4043	8.0	140.0	565
8352	P - 1932	8.0	140.0	657
8353	P - 695	8.0	110.0	566
8354	P - 4268	8.0	140.0	607
8355	P - 3895	6.0	100.0	572
8397	P - 2161	6.0	100.0	703
8347	P - 871	6.0	100.0	564
8330	P - 4244	8.0	140.0	682
8016	P - 2227	16.0	140.0	458
8322	P - 4570	8.0	140.0	566
8323	P - 686	4.0	110.0	554
8324	P - 1694	12.0	140.0	571
8325	P - 1802	12.0	140.0	554
8326	P - 3191	8.0	140.0	555
8327	P - 2432	16.0	90.0	556
8340	P - 2158	6.0	100.0	568
8329	P - 327	12.0	110.0	556

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8358	P - 1155	8.0	100.0	581
8331	P - 1910	6.0	110.0	557
8332	P - 3575	8.0	140.0	575
8333	P - 2582	10.0	140.0	558
8334	P - 1637	20.0	110.0	558
8335	P - 2801	6.0	100.0	561
8336	P - 1472	10.0	140.0	652
8337	P - 1991	10.0	140.0	560
8328	P - 3476	8.0	140.0	574
8387	P - 3504	8.0	140.0	582
8356	P - 610	8.0	140.0	567
8379	P - 1183	6.0	110.0	577
8380	P - 3150	6.0	110.0	578
8381	P - 3447	8.0	140.0	578
8382	P - 4207	8.0	140.0	579
8383	P - 1031	20.0	110.0	579
8384	P - 4073	6.0	140.0	581
8377	P - 1918	8.0	110.0	579
8386	P - 4393	8.0	140.0	581
8376	P - 2061	6.0	140.0	582
8388	P - 4107	8.0	140.0	586
8389	P - 2690	12.0	110.0	582
8390	P - 772	12.0	140.0	584
8391	P - 370	6.0	100.0	582
8392	P - 3584	8.0	110.0	583
8393	P - 2297	6.0	110.0	586
8394	P - 3655	8.0	140.0	584
8385	P - 205	8.0	140.0	580
8368	P - 1234	12.0	90.0	572
8359	P - 1318	8.0	140.0	580
8360	P - 1682	12.0	110.0	569
8361	P - 3717	12.0	110.0	575
8362	P - 505	8.0	140.0	570
8363	P - 3047	12.0	110.0	570
8364	P - 504	6.0	110.0	570
8365	P - 2855	8.0	100.0	571
8378	P - 383	12.0	110.0	577
8367	P - 4121	8.0	140.0	577
8472	P - 3231	6.0	110.0	750
8369	P - 4276	8.0	100.0	599
8370	P - 4677	12.0	140.0	576
8371	P - 1883	6.0	110.0	574
8372	P - 4217	8.0	110.0	583
8373	P - 2571	8.0	100.0	575
8374	P - 4357	12.0	140.0	575
8375	P - 2280	6.0	110.0	593
8366	P - 1985	4.0	140.0	572

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8577	P - 3035	6.0	140.0	668
8585	P - 2457	8.0	140.0	672
8569	P - 340	12.0	140.0	668
8570	P - 3790	6.0	100.0	671
8571	P - 3946	8.0	140.0	665
8572	P - 837	6.0	110.0	665
8573	P - 2720	6.0	110.0	668
8574	P - 4005	8.0	140.0	684
8567	P - 224	6.0	140.0	663
8576	P - 4832	20.0	110.0	667
8566	P - 4558	8.0	140.0	724
8578	P - 2480	12.0	110.0	669
8579	P - 4437	8.0	140.0	912
8580	P - 1428	6.0	100.0	669
8581	P - 2859	6.0	100.0	669
8582	P - 4321	8.0	100.0	669
8583	P - 2875	10.0	110.0	674
8548	P - 1339	12.0	90.0	660
8575	P - 3019	12.0	110.0	667
8558	P - 3277	8.0	140.0	660
8470	P - 3870	12.0	140.0	614
8550	P - 1425	6.0	100.0	662
8551	P - 306	12.0	110.0	657
8552	P - 793	8.0	140.0	849
8553	P - 2215	6.0	110.0	659
8554	P - 1656	6.0	100.0	660
8555	P - 330	8.0	140.0	663
8568	P - 1363	16.0	140.0	663
8557	P - 3283	8.0	140.0	660
8586	P - 728	6.0	110.0	673
8559	P - 3212	8.0	140.0	660
8560	P - 3216	8.0	140.0	662
8561	P - 3953	8.0	140.0	737
8562	P - 1818	12.0	140.0	663
8563	P - 1270	8.0	100.0	662
8564	P - 2408	8.0	140.0	677
8565	P - 2740	12.0	140.0	1,074
8556	P - 3972	8.0	140.0	660
8615	P - 4428	8.0	140.0	692
8584	P - 4550	8.0	140.0	884
8607	P - 1566	6.0	100.0	690
8608	P - 2056	8.0	140.0	695
8609	P - 2567	6.0	100.0	689
8610	P - 1203	20.0	90.0	717
8611	P - 1714	4.0	110.0	690
8612	P - 3442	8.0	140.0	693
8605	P - 3929	6.0	140.0	689

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8614	P - 2153	6.0	110.0	721
8604	P - 2100	8.0	140.0	704
8616	P - 4228	8.0	140.0	702
8617	P - 4147	6.0	140.0	705
8618	P - 1638	20.0	110.0	701
8619	P - 1860	8.0	110.0	695
8620	P - 4363	8.0	140.0	695
8621	P - 4215	8.0	140.0	793
8622	P - 1695	12.0	140.0	698
8613	P - 3118	8.0	140.0	690
8596	P - 3933	8.0	140.0	754
8587	P - 2448	8.0	140.0	680
8588	P - 1989	6.0	140.0	722
8589	P - 3182	8.0	140.0	681
8590	P - 3297	6.0	140.0	690
8591	P - 1464	8.0	110.0	692
8592	P - 1816	6.0	140.0	681
8593	P - 1178	10.0	110.0	692
8606	P - 2886	8.0	110.0	768
8595	P - 3159	6.0	110.0	685
8547	P - 4299	8.0	140.0	929
8597	P - 4272	6.0	100.0	701
8598	P - 2865	8.0	140.0	693
8599	P - 943	6.0	110.0	684
8600	P - 1609	6.0	100.0	691
8601	P - 2029	6.0	110.0	685
8602	P - 663	8.0	140.0	685
8603	P - 3670	6.0	140.0	686
8594	P - 1739	6.0	140.0	686
8501	P - 467	4.0	140.0	638
8509	P - 4589	6.0	110.0	636
8493	P - 1765	6.0	140.0	636
8494	P - 4633	8.0	140.0	675
8495	P - 3845	6.0	100.0	633
8496	P - 2950	20.0	110.0	631
8497	P - 146	10.0	110.0	631
8498	P - 3310	8.0	140.0	676
8491	P - 2648	12.0	90.0	630
8500	P - 2962	6.0	110.0	634
8490	P - 2781	8.0	140.0	628
8502	P - 1418	20.0	110.0	634
8503	P - 4575	8.0	140.0	1,172
8504	P - 2876	8.0	110.0	720
8505	P - 3615	8.0	140.0	659
8506	P - 3473	12.0	140.0	635
8507	P - 4202	8.0	140.0	690
8549	P - 2516	6.0	100.0	1,015

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8499	P - 1792	8.0	110.0	659
8482	P - 3865	8.0	100.0	626
8473	P - 1571	10.0	100.0	616
8474	P - 2437	8.0	110.0	809
8475	P - 1606	10.0	100.0	617
8476	P - 1321	8.0	110.0	618
8477	P - 2632	6.0	100.0	678
8478	P - 2670	6.0	110.0	622
8479	P - 3010	8.0	110.0	631
8492	P - 2401	6.0	100.0	684
8481	P - 2037	8.0	110.0	628
8510	P - 3726	12.0	110.0	637
8483	P - 4695	16.0	140.0	626
8484	P - 3926	6.0	100.0	728
8485	P - 2510	12.0	140.0	628
8486	P - 2816	8.0	110.0	639
8487	P - 4500	8.0	140.0	706
8488	P - 3414	6.0	140.0	625
8489	P - 3679	8.0	140.0	767
8480	P - 3997	8.0	140.0	626
8539	P - 821	8.0	110.0	655
8508	P - 4263	20.0	110.0	635
8531	P - 881	8.0	110.0	699
8532	P - 4164	8.0	140.0	650
8533	P - 2975	8.0	110.0	650
8534	P - 641	6.0	110.0	651
8535	P - 1283	8.0	110.0	651
8536	P - 3234	8.0	140.0	699
8529	P - 3295	6.0	100.0	757
8538	P - 3014	12.0	110.0	666
8528	P - 3574	6.0	140.0	648
8540	P - 1930	6.0	140.0	655
8541	P - 1831	6.0	110.0	701
8542	P - 147	8.0	140.0	655
8543	P - 3403	8.0	140.0	656
8544	P - 1872	12.0	100.0	687
8545	P - 3454	8.0	140.0	656
8546	P - 1680	6.0	100.0	655
8537	P - 1605	10.0	100.0	654
8520	P - 1924	6.0	110.0	641
8511	P - 1620	6.0	100.0	664
8512	P - 3409	8.0	140.0	692
8513	P - 4538	8.0	140.0	808
8514	P - 2791	12.0	140.0	699
8515	P - 279	8.0	140.0	661
8516	P - 1170	8.0	100.0	639
8517	P - 2454	6.0	100.0	638

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8530	P - 598	4.0	110.0	649
8519	P - 3869	12.0	140.0	655
8319	P - 3843	6.0	140.0	874
8521	P - 4324	8.0	140.0	642
8522	P - 2075	6.0	140.0	657
8523	P - 818	12.0	100.0	755
8524	P - 3892	6.0	100.0	657
8525	P - 1048	8.0	110.0	649
8526	P - 4225	12.0	140.0	645
8527	P - 1716	10.0	140.0	647
8518	P - 3105	8.0	140.0	644
8121	P - 2106	6.0	110.0	483
8129	P - 3530	6.0	140.0	645
8113	P - 2028	6.0	110.0	482
8114	P - 1813	8.0	140.0	482
8115	P - 3519	8.0	140.0	504
8116	P - 2380	8.0	110.0	496
8117	P - 1865	6.0	100.0	482
8118	P - 2392	6.0	110.0	482
8111	P - 2920	8.0	140.0	502
8120	P - 836	10.0	140.0	483
8110	P - 2192	8.0	140.0	481
8122	P - 827	6.0	110.0	483
8123	P - 2391	8.0	110.0	489
8124	P - 2211	6.0	110.0	489
8125	P - 2349	10.0	140.0	501
8126	P - 2551	20.0	110.0	487
8127	P - 4022	8.0	140.0	486
8092	P - 2429	6.0	110.0	483
8119	P - 2699	8.0	100.0	483
8102	P - 1629	6.0	100.0	506
8167	P - 1934	8.0	140.0	498
8094	P - 3828	8.0	140.0	478
8095	P - 1730	6.0	100.0	478
8096	P - 4119	8.0	140.0	479
8097	P - 2449	6.0	100.0	510
8098	P - 1008	16.0	110.0	479
8099	P - 4264	10.0	140.0	479
8112	P - 716	6.0	110.0	604
8101	P - 3321	8.0	140.0	485
8130	P - 4144	10.0	140.0	535
8103	P - 3143	6.0	100.0	479
8104	P - 4935	20.0	110.0	483
8105	P - 4362	20.0	110.0	479
8106	P - 4837	6.0	140.0	481
8107	P - 3570	8.0	140.0	487
8108	P - 3738	8.0	140.0	490

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8109	P - 3958	6.0	140.0	481
8100	P - 1491	8.0	100.0	493
8159	P - 4847	8.0	140.0	496
8128	P - 570	8.0	140.0	489
8151	P - 3693	6.0	140.0	602
8152	P - 4823	8.0	140.0	498
8153	P - 4628	8.0	140.0	501
8154	P - 1192	6.0	110.0	493
8155	P - 1635	6.0	110.0	494
8156	P - 3827	8.0	140.0	495
8149	P - 3536	6.0	140.0	497
8158	P - 2312	6.0	140.0	526
8148	P - 4165	8.0	140.0	492
8160	P - 3756	6.0	100.0	503
8161	P - 3751	6.0	100.0	538
8162	P - 1825	8.0	140.0	497
8163	P - 2965	8.0	140.0	496
8164	P - 2542	10.0	140.0	502
8165	P - 3761	6.0	110.0	557
8321	P - 3951	8.0	140.0	556
8157	P - 71	4.0	140.0	690
8140	P - 3709	12.0	110.0	491
8131	P - 4616	8.0	140.0	490
8132	P - 3272	8.0	140.0	489
8133	P - 2209	6.0	140.0	490
8134	P - 2654	8.0	110.0	488
8135	P - 3644	8.0	140.0	496
8136	P - 745	8.0	140.0	696
8137	P - 1997	8.0	110.0	488
8150	P - 1431	6.0	100.0	521
8139	P - 1415	16.0	140.0	491
8091	P - 498	6.0	110.0	477
8141	P - 4554	8.0	140.0	490
8142	P - 2539	8.0	140.0	490
8143	P - 1668	8.0	100.0	490
8144	P - 2321	6.0	100.0	511
8145	P - 1687	12.0	140.0	495
8146	P - 2133	6.0	100.0	505
8147	P - 1200	8.0	110.0	501
8138	P - 3941	8.0	140.0	489
8045	P - 2115	12.0	110.0	464
8053	P - 1711	4.0	110.0	523
8037	P - 3433	8.0	140.0	462
8038	P - 2923	8.0	140.0	488
8039	P - 2245	12.0	140.0	462
8040	P - 3475	8.0	140.0	571
8041	P - 76	8.0	110.0	466

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8042	P - 1540	8.0	100.0	468
8035	P - 1124	6.0	110.0	482
8044	P - 2194	8.0	140.0	464
8034	P - 3201	12.0	140.0	462
8046	P - 160	8.0	140.0	464
8047	P - 3415	8.0	140.0	487
8048	P - 680	8.0	140.0	464
8049	P - 3419	10.0	140.0	465
8050	P - 4462	8.0	140.0	465
8051	P - 3744	8.0	140.0	469
8093	P - 1407	6.0	100.0	478
8043	P - 1336	8.0	140.0	463
8026	P - 4285	12.0	90.0	461
6795	P - 1992	6.0	110.0	276
8018	P - 1938	6.0	100.0	463
8019	P - 1555	6.0	100.0	461
8020	P - 2683	20.0	110.0	459
8021	P - 4237	8.0	110.0	465
8022	P - 4250	8.0	140.0	460
8023	P - 1490	8.0	100.0	463
8036	P - 1591	8.0	100.0	475
8025	P - 2064	8.0	140.0	471
8054	P - 1486	8.0	100.0	474
8027	P - 3724	12.0	110.0	470
8028	P - 163	4.0	140.0	498
8029	P - 2335	4.0	110.0	461
8030	P - 1986	8.0	140.0	461
8031	P - 4120	6.0	140.0	468
8032	P - 3907	6.0	100.0	473
8033	P - 4857	10.0	140.0	461
8024	P - 1928	6.0	110.0	459
8083	P - 94	10.0	140.0	474
8052	P - 2152	10.0	110.0	490
8075	P - 1546	6.0	100.0	472
8076	P - 3835	8.0	140.0	477
8077	P - 4106	10.0	140.0	473
8078	P - 4178	8.0	140.0	480
8079	P - 744	8.0	140.0	1,255
8080	P - 3566	4.0	140.0	522
8073	P - 4273	6.0	100.0	545
8082	P - 2634	8.0	100.0	504
8072	P - 3440	8.0	140.0	472
8084	P - 2234	8.0	140.0	479
8085	P - 2612	8.0	140.0	474
8086	P - 2481	6.0	110.0	475
8087	P - 2691	12.0	110.0	476
8088	P - 3142	6.0	100.0	476

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8089	P - 286	8.0	140.0	508
8090	P - 247	8.0	140.0	477
8081	P - 651	8.0	140.0	500
8064	P - 4780	12.0	140.0	469
8055	P - 2232	20.0	110.0	996
8056	P - 1480	6.0	140.0	467
8057	P - 158	8.0	140.0	475
8058	P - 3599	6.0	140.0	478
8059	P - 2986	20.0	110.0	469
8060	P - 4189	12.0	140.0	475
8061	P - 3671	6.0	140.0	469
8074	P - 4213	8.0	140.0	472
8063	P - 2191	8.0	140.0	469
8168	P - 1817	12.0	140.0	500
8065	P - 381	12.0	110.0	469
8066	P - 4834	8.0	110.0	470
8067	P - 4316	6.0	140.0	470
8068	P - 1340	8.0	110.0	473
8069	P - 2785	8.0	140.0	470
8070	P - 1927	12.0	110.0	473
8071	P - 326	6.0	140.0	471
8062	P - 4509	12.0	140.0	657
8273	P - 3862	6.0	100.0	538
8281	P - 1732	6.0	100.0	584
8265	P - 2810	8.0	140.0	534
8266	P - 807	16.0	110.0	534
8267	P - 2129	6.0	100.0	534
8268	P - 3296	6.0	100.0	536
8269	P - 1884	8.0	140.0	536
8270	P - 1298	20.0	110.0	536
8263	P - 1944	6.0	110.0	533
8272	P - 1598	6.0	100.0	538
8262	P - 1845	8.0	140.0	537
8274	P - 1672	8.0	100.0	684
8275	P - 2680	8.0	100.0	545
8276	P - 2199	8.0	140.0	550
8277	P - 1604	10.0	100.0	540
8278	P - 1393	8.0	110.0	540
8279	P - 2447	6.0	100.0	541
8244	P - 4314	8.0	140.0	529
8271	P - 1517	12.0	100.0	537
8254	P - 2044	6.0	140.0	531
8166	P - 1207	8.0	140.0	498
8246	P - 2175	8.0	140.0	538
8247	P - 1968	6.0	110.0	530
8248	P - 803	8.0	110.0	539
8249	P - 4739	6.0	140.0	531

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8250	P - 2373	6.0	110.0	530
8251	P - 3740	6.0	140.0	531
8264	P - 3148	12.0	110.0	534
8253	P - 1191	6.0	110.0	532
8282	P - 319	10.0	140.0	541
8255	P - 1633	6.0	110.0	531
8256	P - 3155	6.0	110.0	532
8257	P - 3834	8.0	140.0	532
8258	P - 1964	8.0	140.0	532
8259	P - 2665	6.0	110.0	532
8260	P - 2296	4.0	110.0	533
8261	P - 3543	8.0	140.0	533
8252	P - 4528	6.0	110.0	531
8311	P - 4023	16.0	140.0	551
8280	P - 4015	8.0	140.0	545
8303	P - 2270	8.0	110.0	545
8304	P - 3718	6.0	140.0	547
8305	P - 4578	14.0	140.0	548
8306	P - 297	12.0	140.0	548
8307	P - 3432	10.0	140.0	549
8308	P - 4056	8.0	140.0	566
8301	P - 2574	6.0	100.0	547
8310	P - 2830	6.0	110.0	551
8300	P - 2570	8.0	100.0	585
8312	P - 1476	12.0	110.0	551
8313	P - 4071	8.0	140.0	576
8314	P - 892	6.0	110.0	551
8315	P - 3899	6.0	100.0	551
8316	P - 2088	6.0	140.0	716
8317	P - 4199	12.0	140.0	552
8318	P - 2105	6.0	110.0	552
8309	P - 3404	6.0	140.0	550
8292	P - 4435	10.0	140.0	543
8283	P - 1647	12.0	110.0	542
8284	P - 1586	6.0	100.0	585
8285	P - 2618	8.0	110.0	545
8286	P - 2727	8.0	100.0	542
8287	P - 1005	8.0	110.0	542
8288	P - 1600	6.0	100.0	546
8289	P - 4351	8.0	100.0	543
8302	P - 2660	20.0	110.0	547
8291	P - 3915	6.0	100.0	543
8243	P - 1117	12.0	110.0	530
8293	P - 4315	10.0	140.0	586
8294	P - 2393	6.0	110.0	544
8295	P - 3110	8.0	140.0	549
8296	P - 3914	6.0	100.0	685

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8297	P - 891	6.0	110.0	545
8298	P - 429	12.0	140.0	545
8299	P - 2905	4.0	110.0	545
8290	P - 3140	8.0	140.0	551
8197	P - 4135	8.0	140.0	508
8205	P - 2281	16.0	90.0	513
8189	P - 4051	8.0	140.0	505
8190	P - 174	20.0	110.0	504
8191	P - 2322	6.0	110.0	504
8192	P - 3292	8.0	140.0	505
8193	P - 795	6.0	110.0	505
8194	P - 4427	8.0	140.0	506
8187	P - 2702	4.0	140.0	1,636
8196	P - 4078	8.0	140.0	507
8186	P - 251	4.0	140.0	505
8198	P - 4615	20.0	110.0	509
8199	P - 626	18.0	110.0	510
8200	P - 2626	8.0	100.0	523
8201	P - 2658	20.0	110.0	511
8202	P - 390	20.0	110.0	512
8203	P - 2939	4.0	110.0	517
8245	P - 1948	20.0	100.0	613
8195	P - 3654	8.0	140.0	525
8178	P - 2014	8.0	140.0	502
8169	P - 1265	8.0	140.0	501
8170	P - 1213	6.0	100.0	514
8171	P - 2410	8.0	140.0	499
8172	P - 1921	6.0	110.0	501
8173	P - 2913	6.0	110.0	505
8174	P - 1564	6.0	100.0	515
8175	P - 3470	8.0	140.0	503
8188	P - 1841	8.0	140.0	504
8177	P - 4082	8.0	140.0	502
8206	P - 1399	8.0	100.0	560
8179	P - 3247	8.0	140.0	534
8180	P - 4799	6.0	110.0	502
8181	P - 1631	6.0	110.0	534
8182	P - 1166	6.0	100.0	506
8183	P - 1109	12.0	110.0	504
8184	P - 4805	8.0	140.0	511
8185	P - 4752	6.0	100.0	504
8176	P - 2982	4.0	110.0	504
8235	P - 4844	12.0	110.0	524
8204	P - 3613	10.0	140.0	546
8227	P - 3705	6.0	140.0	529
8228	P - 4672	6.0	100.0	528
8229	P - 2193	8.0	140.0	522

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8230	P - 4451	12.0	140.0	525
8231	P - 2128	6.0	100.0	523
8232	P - 3766	6.0	100.0	523
8225	P - 60	12.0	110.0	521
8234	P - 2619	6.0	110.0	523
8224	P - 995	10.0	140.0	520
8236	P - 3489	12.0	140.0	526
8237	P - 111	6.0	140.0	785
8238	P - 3468	8.0	140.0	756
8239	P - 2438	6.0	110.0	527
8240	P - 1260	8.0	110.0	528
8241	P - 3980	8.0	140.0	537
8242	P - 4713	6.0	110.0	744
8233	P - 336	12.0	140.0	523
8216	P - 945	8.0	140.0	515
8207	P - 4080	6.0	140.0	514
8208	P - 3961	10.0	140.0	524
8209	P - 2470	16.0	100.0	658
8210	P - 1719	8.0	110.0	514
8211	P - 4370	12.0	140.0	514
8212	P - 2915	8.0	140.0	514
8213	P - 3745	8.0	140.0	575
8226	P - 3764	8.0	110.0	526
8215	P - 3539	6.0	140.0	541
8625	P - 1602	6.0	100.0	711
8217	P - 2226	10.0	140.0	683
8218	P - 3583	6.0	140.0	516
8219	P - 4069	8.0	140.0	754
8220	P - 4161	8.0	140.0	518
8221	P - 3220	8.0	140.0	518
8222	P - 2418	8.0	140.0	518
8223	P - 1592	8.0	100.0	519
8214	P - 1815	10.0	140.0	515
9039	P - 3815	10.0	140.0	1,153
9047	P - 2811	8.0	140.0	1,174
9031	P - 3158	6.0	110.0	1,142
9032	P - 3446	8.0	140.0	1,144
9033	P - 4818	8.0	110.0	1,148
9034	P - 4163	8.0	140.0	1,145
9035	P - 1225	6.0	100.0	1,152
9036	P - 4243	8.0	140.0	1,147
9029	P - 338	20.0	110.0	1,137
9038	P - 4057	6.0	140.0	1,157
9028	P - 1966	6.0	140.0	1,152
9040	P - 2895	6.0	100.0	1,166
9041	P - 1819	36.0	130.0	1,163
9042	P - 1469	10.0	140.0	1,230

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
9043	P - 2327	6.0	100.0	1,168
9044	P - 1837	10.0	110.0	1,174
9045	P - 780	8.0	100.0	1,170
9010	P - 1949	16.0	140.0	1,100
9037	P - 1996	8.0	140.0	1,147
9020	P - 2442	12.0	110.0	1,118
9085	P - 1834	8.0	110.0	1,365
9012	P - 4342	16.0	110.0	1,101
9013	P - 2583	8.0	110.0	1,114
9014	P - 4172	16.0	110.0	1,104
9015	P - 4436	8.0	140.0	1,103
9016	P - 637	12.0	100.0	1,111
9017	P - 1474	12.0	140.0	1,125
9030	P - 3774	6.0	100.0	1,178
9019	P - 3397	8.0	110.0	1,224
9048	P - 2218	6.0	110.0	1,288
9021	P - 2594	8.0	110.0	1,160
9022	P - 2488	6.0	110.0	1,125
9023	P - 75	8.0	110.0	1,527
9024	P - 2597	6.0	110.0	1,132
9025	P - 337	12.0	140.0	1,131
9026	P - 2147	8.0	110.0	1,133
9027	P - 1354	16.0	140.0	1,139
9018	P - 2331	8.0	140.0	1,111
9077	P - 4064	8.0	140.0	1,346
9046	P - 2220	6.0	110.0	1,175
9069	P - 2631	20.0	110.0	1,264
9070	P - 2744	8.0	140.0	1,266
9071	P - 2623	6.0	140.0	1,268
9072	P - 1760	6.0	140.0	1,269
9073	P - 2172	20.0	110.0	1,278
9074	P - 1754	6.0	140.0	1,270
9067	P - 1823	6.0	110.0	1,268
9076	P - 4532	12.0	140.0	1,282
9066	P - 1589	6.0	100.0	1,295
9078	P - 4267	12.0	140.0	1,285
9079	P - 3050	12.0	140.0	1,294
9080	P - 2978	8.0	140.0	1,290
9081	P - 2081	8.0	140.0	1,292
9082	P - 1901	8.0	140.0	1,294
9083	P - 4169	8.0	110.0	1,339
8623	P - 1590	6.0	100.0	838
9075	P - 3712	10.0	140.0	1,283
9058	P - 4456	8.0	140.0	1,326
9049	P - 3144	6.0	110.0	1,229
9050	P - 4659	20.0	110.0	1,190
9051	P - 1194	10.0	100.0	1,186

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
9052	P - 3527	8.0	110.0	1,250
9053	P - 165	20.0	110.0	1,191
9054	P - 4508	12.0	140.0	1,506
9055	P - 4798	12.0	140.0	1,194
9068	P - 3810	20.0	110.0	1,417
9057	P - 4356	36.0	130.0	1,205
9009	P - 4346	8.0	140.0	1,100
9059	P - 1836	18.0	110.0	1,246
9060	P - 4160	8.0	140.0	1,216
9061	P - 4765	6.0	110.0	1,238
9062	P - 409	12.0	140.0	1,283
9063	P - 3732	8.0	140.0	1,260
9064	P - 2365	8.0	140.0	1,246
9065	P - 2719	12.0	110.0	1,252
9056	P - 1220	8.0	110.0	1,235
8961	P - 4336	8.0	140.0	1,127
8969	P - 3072	8.0	140.0	1,025
8953	P - 4386	12.0	140.0	991
8954	P - 4055	6.0	140.0	1,042
8955	P - 1653	6.0	100.0	993
8956	P - 4804	12.0	140.0	993
8957	P - 1158	6.0	100.0	997
8958	P - 4715	16.0	140.0	994
8951	P - 3441	12.0	140.0	984
8960	P - 4720	16.0	110.0	1,006
8950	P - 3923	6.0	100.0	985
8962	P - 1475	20.0	110.0	1,005
8963	P - 3549	8.0	110.0	1,009
8964	P - 3898	6.0	100.0	1,007
8965	P - 2395	6.0	100.0	1,044
8966	P - 200	8.0	140.0	1,011
8967	P - 4204	8.0	140.0	1,012
9011	P - 2649	8.0	140.0	1,102
8959	P - 3024	8.0	140.0	1,133
8942	P - 3910	6.0	100.0	972
8933	P - 1218	8.0	140.0	987
8934	P - 2707	8.0	140.0	966
8935	P - 1028	20.0	110.0	966
8936	P - 4460	6.0	100.0	974
8937	P - 1212	6.0	100.0	1,136
8938	P - 4200	16.0	140.0	1,048
8939	P - 3733	6.0	140.0	1,008
8952	P - 3374	10.0	140.0	990
8941	P - 4017	12.0	140.0	976
8970	P - 4563	12.0	140.0	1,097
8943	P - 4214	6.0	140.0	985
8944	P - 620	8.0	100.0	975

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8945	P - 2831	6.0	110.0	976
8946	P - 4280	6.0	100.0	1,087
8947	P - 2883	6.0	100.0	994
8948	P - 1494	6.0	100.0	1,021
8949	P - 2630	12.0	140.0	993
8940	P - 2171	20.0	110.0	978
9001	P - 1177	8.0	110.0	1,228
8968	P - 1650	8.0	100.0	1,013
8993	P - 3723	6.0	140.0	1,075
8994	P - 4438	16.0	110.0	1,068
8995	P - 1279	8.0	100.0	1,079
8996	P - 426	10.0	110.0	1,074
8997	P - 4128	6.0	140.0	1,093
8998	P - 633	16.0	110.0	1,082
8991	P - 2705	12.0	110.0	1,065
9000	P - 4170	6.0	110.0	1,305
8990	P - 2482	6.0	110.0	1,063
9002	P - 3008	16.0	140.0	1,106
9003	P - 4529	12.0	140.0	1,092
9004	P - 4839	12.0	90.0	1,092
9005	P - 4281	6.0	100.0	1,292
9006	P - 3587	6.0	140.0	1,128
9007	P - 1322	36.0	130.0	1,098
9008	P - 2443	6.0	110.0	1,098
8999	P - 380	20.0	110.0	1,080
8980	P - 4083	10.0	140.0	1,051
8971	P - 1828	12.0	100.0	1,026
8972	P - 3548	12.0	110.0	1,032
8973	P - 1832	16.0	110.0	1,054
8974	P - 120	36.0	130.0	1,031
8975	P - 2701	12.0	110.0	1,032
8976	P - 2543	12.0	140.0	1,679
8977	P - 2868	20.0	110.0	1,112
8992	P - 4414	12.0	140.0	1,225
8979	P - 4593	6.0	110.0	1,041
9086	P - 9992	8.0	100.0	1,342
8982	P - 1267	8.0	140.0	1,048
8983	P - 4349	12.0	100.0	1,048
8984	P - 1908	6.0	110.0	1,050
8985	P - 4476	10.0	110.0	1,050
8987	P - 3053	8.0	140.0	1,059
8988	P - 4848	8.0	140.0	1,062
8989	P - 971	8.0	110.0	1,081
8978	P - 2117	8.0	140.0	1,041
9194	P - 718	12.0	140.0	3,600
9202	P - 4492	16.0	140.0	5,671
9186	P - 3065	8.0	140.0	3,098

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
9187	P - 386	20.0	140.0	3,056
9188	P - 4216	16.0	140.0	3,069
9189	P - 3833	8.0	140.0	3,141
9190	P - 3061	8.0	140.0	3,248
9191	P - 974	8.0	140.0	3,252
9184	P - 4657	20.0	110.0	3,004
9193	P - 4353	36.0	130.0	3,298
9183	P - 3837	8.0	140.0	3,004
9195	P - 4246	6.0	100.0	3,599
9196	P - 1960	20.0	140.0	3,816
9197	P - 1961	16.0	140.0	4,274
9198	P - 1507	20.0	140.0	4,060
9199	P - 4344	8.0	140.0	4,196
9200	P - 4481	16.0	140.0	4,604
9164	P - 4457	12.0	110.0	2,197
9192	P - 4545	16.0	140.0	3,205
9174	P - 3768	6.0	100.0	2,579
9084	P - 4326	8.0	140.0	1,311
9166	P - 4380	8.0	100.0	2,290
9167	P - 3166	6.0	100.0	2,240
9168	P - 4360	20.0	140.0	2,303
9169	P - 4533	12.0	140.0	2,357
9170	P - 4385	12.0	140.0	2,349
9171	P - 2195	8.0	140.0	2,383
9185	P - 342	20.0	110.0	3,036
9173	P - 39	20.0	110.0	2,530
9203	P - 387	20.0	110.0	6,925
9175	P - 492	20.0	110.0	2,436
9176	P - 3763	8.0	110.0	2,435
9177	P - 1264a	8.0	140.0	2,652
9178	P - 4562	6.0	140.0	2,630
9179	P - 2462	16.0	140.0	3,274
9180	P - 4572	20.0	110.0	2,815
9181	P - 4638	20.0	110.0	2,814
9172	P - 4330	8.0	140.0	2,426
9407	P-40	8.0	110.0	265
9201	P - 343	20.0	140.0	5,896
9297	P-23	8.0	130.0	1,586
9302	P-24	72.0	140.0	1
9312	P-30	72.0	140.0	1
9399	P-35	8.0	110.0	50
9401	P-36	8.0	110.0	395
9402	P-37	8.0	110.0	306
9295	P-21	8.0	140.0	1,553
9405	P-39	6.0	110.0	12
9293	P-20	8.0	140.0	819
9410	P-42	12.0	100.0	33

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
9411	P-43	12.0	100.0	316
9412	P-44	4.0	110.0	14
9413	P-45	8.0	140.0	11
9415	P-46	12.0	140.0	11
9416	P-47	8.0	140.0	10
9417	P-48	8.0	140.0	8
9404	P-38	8.0	140.0	8
9257	P-11	6.0	110.0	436
9207	P-2	72.0	140.0	1
9216	P-3	16.0	140.0	2,311
9219	P-4	20.0	140.0	16
9234	P-5	6.0	140.0	683
9235	P-6	6.0	140.0	424
9244	P-7	6.0	100.0	1,057
9245	P-8	6.0	100.0	1,169
9296	P-22	8.0	140.0	811
9252	P-10	8.0	140.0	366
9163	P - 2777	12.0	140.0	2,307
9258	P-12	6.0	110.0	474
9266	P-13	6.0	140.0	533
9267	P-14	6.0	140.0	915
9274	P-15	6.0	100.0	354
9275	P-16	6.0	100.0	61
9281	P-17	8.0	140.0	469
9282	P-18	8.0	140.0	932
9251	P-9	8.0	140.0	678
9116	P - 3237	8.0	140.0	1,538
9124	P - 1461	8.0	140.0	1,634
9108	P - 3173	8.0	140.0	1,671
9109	P - 3029	8.0	140.0	1,567
9110	P - 2659	8.0	110.0	1,497
9111	P - 4108	6.0	140.0	1,519
9112	P - 2421	4.0	140.0	1,509
9113	P - 4343	10.0	140.0	1,548
9106	P - 1266	8.0	140.0	1,531
9115	P - 2521	6.0	100.0	1,646
9105	P - 3714	20.0	110.0	1,526
9117	P - 2790	8.0	140.0	1,538
9118	P - 3788	8.0	100.0	1,568
9119	P - 2987	12.0	140.0	2,289
9120	P - 2956	10.0	140.0	1,574
9121	P - 2652	20.0	140.0	1,621
9122	P - 1413	12.0	140.0	1,723
9165	P - 4382	20.0	110.0	2,218
9114	P - 3640	6.0	140.0	1,931
9096	P - 1416	12.0	140.0	1,385
9087	P - 1454	20.0	110.0	1,324

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
9088	P - 4352	12.0	100.0	1,326
9089	P - 4302	20.0	110.0	1,330
9090	P - 2684	6.0	110.0	1,329
9091	P - 1353	12.0	140.0	1,336
9092	P - 1154	6.0	100.0	1,589
9093	P - 4145	12.0	140.0	1,358
9107	P - 4348	12.0	100.0	1,458
9095	P - 1506	16.0	140.0	1,365
9125	P - 1202	12.0	140.0	1,677
9098	P - 2299	8.0	140.0	1,476
9099	P - 2475	6.0	110.0	1,482
9100	P - 2166	8.0	110.0	1,407
9101	P - 3729	8.0	140.0	1,469
9102	P - 1273	20.0	110.0	1,419
9103	P - 2352	10.0	140.0	1,506
9104	P - 4391	20.0	110.0	1,427
9094	P - 4275	6.0	100.0	1,364
9155	P - 3817	8.0	140.0	2,070
9123	P - 4591	6.0	110.0	1,631
9146	P - 1689	20.0	110.0	1,919
9148	P - 4379	12.0	140.0	1,963
9149	P - 3344	8.0	100.0	1,971
9150	P - 2963	6.0	110.0	1,973
9151	P - 717	12.0	140.0	2,011
9152	P - 3586	8.0	140.0	2,029
9144	P - 3871	16.0	110.0	1,881
9154	P - 3813	12.0	140.0	2,060
9143	P - 2189	8.0	140.0	2,046
9156	P - 4543	14.0	140.0	2,133
9157	P - 4190	12.0	140.0	2,110
9158	P - 2748	20.0	110.0	2,112
9159	P - 2176	16.0	140.0	2,153
9160	P - 4877	16.0	140.0	2,159
9161	P - 4861	16.0	140.0	2,162
9162	P - 341	20.0	110.0	2,227
9153	P - 572	20.0	110.0	2,044
9135	P - 3789	6.0	100.0	1,846
9126	P - 4399	20.0	110.0	1,667
9127	P - 1398	20.0	110.0	1,671
9128	P - 2360	8.0	140.0	1,717
9129	P - 3202	20.0	90.0	1,689
9130	P - 3831	8.0	140.0	1,712
9131	P - 3550	36.0	130.0	1,714
9132	P - 2860	16.0	110.0	1,755
9145	P - 4274	6.0	100.0	1,991
9134	P - 2864	16.0	90.0	1,735
8930	P - 4579	20.0	110.0	957

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
9136	P - 4398	8.0	110.0	1,744
9137	P - 4431	20.0	110.0	1,779
9138	P - 3395	12.0	110.0	1,780
9139	P - 2196	12.0	140.0	1,799
9140	P - 3585	16.0	110.0	1,798
9141	P - 3611	12.0	110.0	1,804
9142	P - 4311	20.0	90.0	1,821
9133	P - 852	6.0	110.0	1,721
8730	P - 296	10.0	140.0	779
8738	P - 1103	12.0	110.0	774
8722	P - 2635	6.0	100.0	768
8723	P - 3684	8.0	140.0	804
8724	P - 3651	8.0	140.0	1,101
8725	P - 235	6.0	100.0	777
8726	P - 3169	10.0	110.0	770
8727	P - 415	20.0	110.0	770
8720	P - 4201	8.0	140.0	873
8729	P - 276	8.0	140.0	772
8719	P - 2564	6.0	100.0	916
8731	P - 1573	8.0	100.0	870
8732	P - 674	8.0	110.0	772
8733	P - 3396	12.0	110.0	773
8734	P - 335	12.0	140.0	775
8735	P - 1462	12.0	140.0	773
8736	P - 2038	8.0	140.0	783
8701	P - 3483	12.0	140.0	756
8728	P - 3783	6.0	100.0	771
8711	P - 4146	6.0	140.0	938
8932	P - 3438	8.0	140.0	979
8703	P - 4337	20.0	100.0	758
8704	P - 3785	6.0	100.0	757
8705	P - 2526	8.0	140.0	757
8706	P - 2877	8.0	110.0	761
8707	P - 1197	8.0	110.0	758
8708	P - 4245	10.0	140.0	843
8721	P - 3588	12.0	140.0	764
8710	P - 4033	6.0	140.0	771
8739	P - 1233	6.0	100.0	958
8712	P - 1766	6.0	140.0	770
8713	P - 1235	8.0	140.0	785
8714	P - 3007	16.0	140.0	794
8715	P - 4339	10.0	140.0	841
8716	P - 2394	8.0	110.0	768
8717	P - 4229	12.0	140.0	767
8718	P - 4770	6.0	110.0	762
8709	P - 3920	6.0	100.0	759
8768	P - 1661	8.0	100.0	796

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8737	P - 3407	8.0	140.0	781
8760	P - 4392	8.0	140.0	785
8761	P - 3924	6.0	100.0	786
8762	P - 2137	8.0	140.0	806
8763	P - 4313	8.0	140.0	793
8764	P - 2773	6.0	140.0	792
8765	P - 2256	10.0	140.0	1,046
8758	P - 4222	12.0	140.0	785
8767	P - 3087	8.0	140.0	796
8757	P - 1803	12.0	140.0	785
8769	P - 2386	12.0	110.0	796
8770	P - 4304	12.0	110.0	857
8771	P - 3917	6.0	110.0	799
8772	P - 1374	6.0	110.0	798
8773	P - 238	8.0	140.0	798
8774	P - 3762	6.0	100.0	801
8775	P - 1913	6.0	110.0	981
8766	P - 1568	6.0	100.0	801
8749	P - 2964	6.0	110.0	782
8740	P - 2822	8.0	140.0	830
8741	P - 3884	6.0	100.0	779
8742	P - 615	8.0	140.0	776
8743	P - 708	10.0	110.0	779
8744	P - 4158	8.0	140.0	778
8745	P - 581	8.0	110.0	780
8746	P - 4149	6.0	140.0	869
8759	P - 2891	8.0	100.0	807
8748	P - 4748	6.0	100.0	782
8700	P - 3908	6.0	100.0	815
8750	P - 1064	8.0	110.0	783
8751	P - 4278	10.0	100.0	782
8752	P - 4221	12.0	140.0	800
8753	P - 4853	16.0	110.0	783
8754	P - 1438	20.0	110.0	800
8755	P - 1847	6.0	100.0	792
8756	P - 3943	6.0	140.0	787
8747	P - 1414	16.0	140.0	787
8654	P - 3482	12.0	140.0	720
8662	P - 299	12.0	140.0	727
8646	P - 2397	6.0	100.0	712
8647	P - 2885	8.0	100.0	727
8648	P - 1022	16.0	110.0	715
8649	P - 1141	6.0	100.0	715
8650	P - 2050	6.0	140.0	723
8651	P - 4561	6.0	140.0	719
8644	P - 2741	12.0	140.0	911
8653	P - 3521	8.0	140.0	1,435

Existing System Model/Pipe Calibration Data

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8643	P - 1559	6.0	100.0	711
8655	P - 4186	10.0	140.0	733
8656	P - 2379	8.0	110.0	722
8657	P - 4433	12.0	140.0	723
8658	P - 2316	16.0	90.0	725
8659	P - 1366	8.0	140.0	725
8660	P - 3481	12.0	140.0	726
8702	P - 423	12.0	140.0	755
8652	P - 3854	6.0	100.0	720
8634	P - 2157	6.0	100.0	707
8015	P - 2170	8.0	140.0	469
8626	P - 1417	8.0	110.0	700
8627	P - 2302	12.0	140.0	702
8628	P - 4496	8.0	110.0	701
8629	P - 116	20.0	110.0	703
8630	P - 4358	20.0	140.0	705
8631	P - 1247	8.0	140.0	706
8645	P - 1061	8.0	110.0	711
8633	P - 4788	8.0	140.0	709
8663	P - 3556	8.0	140.0	728
8635	P - 873	6.0	110.0	727
8637	P - 1797	8.0	100.0	711
8638	P - 1241	8.0	100.0	710
8639	P - 3811	6.0	140.0	732
8640	P - 4301	6.0	110.0	744
8641	P - 4208	8.0	140.0	710
8642	P - 3803	8.0	140.0	710
8632	P - 3881	10.0	100.0	706
8692	P - 514	20.0	110.0	748
8661	P - 414	10.0	140.0	727
8684	P - 4763	6.0	110.0	738
8685	P - 3244	8.0	140.0	739
8686	P - 1281	8.0	140.0	906
8687	P - 1264	8.0	140.0	805
8688	P - 2278	6.0	100.0	861
8689	P - 3238	8.0	140.0	756
8682	P - 994	8.0	140.0	738
8691	P - 2686	12.0	140.0	753
8681	P - 1541	6.0	100.0	738
8693	P - 1885	6.0	110.0	750
8694	P - 2919	6.0	140.0	750
8695	P - 975	10.0	140.0	762
8696	P - 1272	8.0	140.0	758
8697	P - 2200	8.0	140.0	768
8698	P - 3444	8.0	140.0	1,887
8699	P - 1931	12.0	100.0	753
8690	P - 3773	6.0	100.0	752

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8673	P - 2953	6.0	110.0	753
8664	P - 3561	8.0	140.0	728
8665	P - 3524	8.0	140.0	760
8666	P - 1427	8.0	100.0	733
8667	P - 1601	6.0	100.0	730
8668	P - 2589	8.0	140.0	730
8669	P - 1599	6.0	100.0	730
8670	P - 4719	16.0	140.0	731
8683	P - 2381	6.0	110.0	866
8672	P - 4118	8.0	140.0	780
8778	P - 1040	20.0	110.0	884
8674	P - 4718	16.0	140.0	733
8675	P - 3591	12.0	110.0	732
8676	P - 3661	12.0	140.0	734
8677	P - 1567	6.0	100.0	750
8678	P - 3437	8.0	140.0	736
8679	P - 3653	8.0	140.0	770
8680	P - 1250	8.0	140.0	752
8671	P - 2367	8.0	140.0	747
8885	P - 1998	16.0	90.0	915
8893	P - 1134	6.0	110.0	913
8877	P - 3559	12.0	110.0	905
8878	P - 4150	6.0	140.0	898
8879	P - 2629	16.0	140.0	897
8880	P - 2134	10.0	140.0	900
8881	P - 4308	6.0	110.0	903
8882	P - 1377	8.0	140.0	916
8874	P - 4262	8.0	140.0	896
8884	P - 2080	8.0	140.0	903
8873	P - 1041	20.0	110.0	892
8886	P - 4231	12.0	140.0	936
8887	P - 2906	6.0	110.0	904
8888	P - 1328	12.0	140.0	905
8889	P - 4384	6.0	100.0	914
8890	P - 3074	8.0	140.0	909
8891	P - 3707	12.0	110.0	909
8776	P - 2197	4.0	140.0	802
8883	P - 3064	8.0	140.0	921
8865	P - 347	20.0	110.0	888
8856	P - 2949	12.0	110.0	874
8857	P - 1455	8.0	110.0	874
8858	P - 3579	20.0	110.0	877
8859	P - 231	12.0	140.0	877
8860	P - 2253	8.0	110.0	879
8861	P - 4093	8.0	140.0	882
8862	P - 3020	8.0	140.0	881
8876	P - 3945	10.0	140.0	936

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8864	P - 3488	6.0	140.0	888
8894	P - 1277	8.0	100.0	924
8866	P - 1596	8.0	100.0	885
8867	P - 9991	16.0	140.0	917
8868	P - 2241	12.0	140.0	887
8869	P - 410	12.0	140.0	890
8870	P - 2714	6.0	110.0	890
8871	P - 1274	20.0	110.0	892
8872	P - 3597	12.0	140.0	907
8863	P - 3781	6.0	100.0	888
8923	P - 2931	12.0	140.0	1,173
8892	P - 1259	16.0	110.0	915
8915	P - 1422	10.0	140.0	1,423
8916	P - 1382	12.0	110.0	935
8917	P - 9997	8.0	140.0	990
8918	P - 2692	12.0	110.0	938
8919	P - 524	8.0	100.0	949
8920	P - 3055	8.0	140.0	992
8913	P - 3268	8.0	140.0	976
8922	P - 1419	8.0	140.0	939
8912	P - 4099	8.0	140.0	934
8924	P - 4485	20.0	110.0	945
8925	P - 4297	8.0	140.0	950
8926	P - 2529	6.0	110.0	950
8927	P - 4383	16.0	110.0	950
8928	P - 2439	8.0	140.0	956
8929	P - 9996	8.0	140.0	954
8624	P - 3382	8.0	140.0	700
8921	P - 4116	6.0	140.0	969
8904	P - 3494	12.0	140.0	922
8895	P - 4503	12.0	140.0	919
8896	P - 1276	8.0	140.0	915
8897	P - 4527	8.0	140.0	928
8898	P - 687	4.0	110.0	918
8899	P - 2092	6.0	110.0	930
8900	P - 3533	6.0	140.0	1,174
8901	P - 4548	8.0	140.0	919
8914	P - 4168	8.0	140.0	986
8903	P - 4325	8.0	140.0	946
8853	P - 413	20.0	110.0	867
8905	P - 3921	6.0	100.0	925
8906	P - 1254	12.0	140.0	927
8907	P - 4483	6.0	110.0	931
8908	P - 1894	6.0	110.0	929
8909	P - 4323	8.0	140.0	1,190
8910	P - 3056	8.0	140.0	930
8911	P - 3791	8.0	100.0	942

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8902	P - 1790	20.0	110.0	919
8806	P - 1403	16.0	110.0	826
8855	P - 2814	8.0	110.0	872
8798	P - 3334	8.0	140.0	861
8799	P - 4151	8.0	140.0	856
8800	P - 4733	12.0	90.0	820
8801	P - 4226	8.0	140.0	830
8802	P - 2679	6.0	100.0	822
8803	P - 3439	8.0	140.0	869
8796	P - 4551	8.0	140.0	820
8805	P - 1316	12.0	140.0	1,028
8795	P - 1597	6.0	100.0	826
8807	P - 996	36.0	130.0	825
8808	P - 1905	6.0	110.0	826
8809	P - 3571	6.0	140.0	837
8810	P - 494	20.0	110.0	830
8811	P - 2039	12.0	110.0	830
8812	P - 4419	20.0	110.0	829
8813	P - 2536	20.0	110.0	830
8804	P - 1032	20.0	110.0	824
8787	P - 2304	12.0	140.0	812
8931	P - 2642	16.0	110.0	958
8779	P - 3825	8.0	140.0	811
8780	P - 4452	12.0	140.0	809
8781	P - 4328	6.0	110.0	806
8782	P - 1209	8.0	140.0	825
8783	P - 3485	12.0	140.0	808
8784	P - 3522	8.0	140.0	1,065
8797	P - 4126	6.0	140.0	828
8786	P - 3137	12.0	110.0	829
8816	P - 2538	8.0	140.0	997
8788	P - 4422	10.0	140.0	811
8789	P - 2310	12.0	110.0	819
8790	P - 611	8.0	140.0	813
8791	P - 3893	6.0	100.0	814
8792	P - 2681	6.0	100.0	814
8793	P - 2759	8.0	100.0	814
8794	P - 4152	8.0	140.0	821
8785	P - 3840	8.0	140.0	810
8846	P - 2870	12.0	100.0	860
8836	P - 3287	6.0	100.0	856
8837	P - 2089	16.0	110.0	851
8838	P - 4303	10.0	140.0	863
8839	P - 3776	8.0	100.0	1,071
8840	P - 3775	6.0	100.0	1,229
8841	P - 1565	8.0	100.0	855
8843	P - 4030	16.0	140.0	855

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8814	P - 1310	8.0	140.0	850
8845	P - 4560	6.0	110.0	894
8833	P - 3731	6.0	140.0	861
8847	P - 3802	6.0	100.0	869
8848	P - 4070	8.0	140.0	865
8849	P - 4574	12.0	140.0	869
8850	P - 1085	20.0	110.0	864
8851	P - 4636	6.0	110.0	977
8852	P - 3922	8.0	100.0	867
8777	P - 3233	8.0	140.0	835
8844	P - 3816	10.0	140.0	857
8825	P - 3780	8.0	100.0	848
8854	P - 3842	8.0	140.0	882
8817	P - 1255	6.0	100.0	832
8818	P - 1519	6.0	100.0	881
8819	P - 349	20.0	110.0	838
8820	P - 1848	6.0	100.0	964
8821	P - 1731	6.0	100.0	845
8822	P - 1219	8.0	110.0	841
8835	P - 4312	8.0	140.0	850
8824	P - 1243	8.0	110.0	842
8834	P - 2804	6.0	110.0	850
8826	P - 4432	20.0	110.0	843
8827	P - 4484	8.0	140.0	844
8828	P - 2008	20.0	100.0	859
8829	P - 4372	10.0	110.0	846
8830	P - 2568	8.0	100.0	853
8831	P - 2423	8.0	140.0	859
8832	P - 4783	8.0	140.0	849
8815	P - 2704	8.0	140.0	831
8823	P - 1737	10.0	110.0	845
7206	P - 398	20.0	110.0	325
7214	P - 3039	8.0	140.0	329
7198	P - 4782	8.0	140.0	359
7199	P - 512	8.0	140.0	324
7200	P - 425	12.0	140.0	324
7201	P - 486	18.0	110.0	310
7202	P - 3460	8.0	140.0	324
7203	P - 3691	8.0	140.0	326
7196	P - 1864	8.0	110.0	324
7205	P - 815	8.0	110.0	325
7195	P - 3510	8.0	140.0	323
7207	P - 1129	12.0	140.0	325
7208	P - 3236	8.0	140.0	325
7209	P - 2757	8.0	100.0	325
7210	P - 703	6.0	110.0	325
7211	P - 984	6.0	110.0	326

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7212	P - 2452	8.0	100.0	328
7177	P - 1855	6.0	110.0	321
7204	P - 652	8.0	140.0	325
7187	P - 1664	8.0	100.0	322
7252	P - 2627	8.0	100.0	337
7179	P - 1623	10.0	100.0	321
7180	P - 1115	6.0	110.0	321
7181	P - 2832	8.0	110.0	321
7182	P - 1970	8.0	140.0	407
7183	P - 3880	6.0	100.0	321
7184	P - 1125	6.0	110.0	321
7197	P - 2221	6.0	110.0	325
7186	P - 2019	8.0	140.0	327
7215	P - 3702	8.0	140.0	326
7188	P - 4518	8.0	140.0	322
7189	P - 2839	8.0	100.0	323
7190	P - 3384	6.0	140.0	322
7191	P - 2284	6.0	110.0	323
7192	P - 646	6.0	110.0	323
7193	P - 3988	8.0	140.0	323
7194	P - 4368	12.0	140.0	323
7185	P - 4838	6.0	140.0	321
7244	P - 2805	10.0	140.0	330
7213	P - 3090	8.0	140.0	327
7236	P - 1539	8.0	100.0	336
7237	P - 4444	12.0	140.0	329
7238	P - 4085	8.0	140.0	329
7239	P - 1284	8.0	140.0	330
7240	P - 3049	12.0	140.0	329
7241	P - 2603	8.0	140.0	328
7234	P - 1226	8.0	140.0	335
7243	P - 2595	8.0	140.0	330
7233	P - 3844	8.0	140.0	350
7245	P - 3180	8.0	140.0	330
7246	P - 3459	8.0	140.0	330
7247	P - 2932	12.0	140.0	330
7248	P - 781	12.0	90.0	333
7249	P - 4366	8.0	140.0	330
7250	P - 920	20.0	100.0	330
7101	P - 1324	8.0	140.0	312
7242	P - 1956	12.0	140.0	330
7225	P - 573	8.0	140.0	327
7216	P - 589	8.0	140.0	326
7217	P - 584	4.0	110.0	327
7218	P - 3497	10.0	140.0	337
7219	P - 968	8.0	140.0	327
7220	P - 571	8.0	140.0	327

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7221	P - 3048	8.0	110.0	346
7222	P - 874	6.0	110.0	327
7235	P - 3538	6.0	140.0	330
7224	P - 3366	8.0	140.0	327
7176	P - 2824	8.0	140.0	320
7226	P - 546	6.0	110.0	328
7227	P - 2969	12.0	140.0	328
7228	P - 578	6.0	100.0	328
7229	P - 1611	6.0	100.0	329
7230	P - 2093	6.0	110.0	329
7231	P - 4816	12.0	140.0	328
7232	P - 2323	10.0	140.0	351
7223	P - 3673	6.0	140.0	327
7130	P - 178	20.0	110.0	315
7138	P - 2491	6.0	110.0	316
7122	P - 2841	8.0	100.0	322
7123	P - 4154	12.0	140.0	318
7124	P - 2348	6.0	140.0	315
7125	P - 4447	6.0	140.0	314
7126	P - 2103	6.0	110.0	316
7127	P - 3516	8.0	140.0	321
7120	P - 3804	10.0	140.0	314
7129	P - 2725	12.0	100.0	314
7119	P - 2282	8.0	140.0	314
7131	P - 1320	12.0	140.0	315
7132	P - 1181	10.0	110.0	315
7133	P - 1165	6.0	100.0	324
7134	P - 4377	10.0	100.0	315
7135	P - 531	6.0	100.0	325
7136	P - 1690	4.0	110.0	315
7178	P - 9993	8.0	100.0	321
7128	P - 1144	8.0	100.0	314
7111	P - 3181	8.0	140.0	321
8017	P - 559	6.0	110.0	458
7103	P - 1574	8.0	100.0	312
7104	P - 2096	6.0	110.0	313
7105	P - 2924	8.0	140.0	317
7106	P - 3251	8.0	140.0	313
7107	P - 2730	8.0	100.0	313
7108	P - 1131	8.0	140.0	313
7121	P - 2979	6.0	110.0	330
7110	P - 4424	10.0	140.0	313
7139	P - 1503	6.0	110.0	319
7112	P - 3864	6.0	100.0	315
7113	P - 1511	6.0	110.0	322
7114	P - 1978	12.0	110.0	313
7115	P - 1157	6.0	100.0	313

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7116	P - 2456	6.0	100.0	313
7117	P - 15	8.0	140.0	313
7118	P - 4634	8.0	140.0	326
7109	P - 4762	8.0	140.0	320
7168	P - 1757	8.0	140.0	320
7137	P - 4365	8.0	140.0	399
7160	P - 2843	8.0	100.0	319
7161	P - 1976	8.0	140.0	427
7162	P - 1756	8.0	140.0	320
7163	P - 2821	6.0	110.0	320
7164	P - 1758	10.0	140.0	320
7165	P - 1384	8.0	140.0	320
7158	P - 3734	8.0	140.0	321
7167	P - 2355	6.0	140.0	320
7157	P - 2053	8.0	140.0	319
7169	P - 3370	8.0	140.0	320
7170	P - 3098	8.0	140.0	320
7171	P - 2433	6.0	110.0	320
7172	P - 4757	8.0	140.0	428
7173	P - 4498	8.0	140.0	321
7174	P - 4434	6.0	140.0	357
7175	P - 1745	12.0	140.0	324
7166	P - 3866	6.0	100.0	320
7149	P - 3423	8.0	140.0	316
7140	P - 1874	6.0	140.0	316
7141	P - 784	8.0	140.0	317
7142	P - 1728	12.0	100.0	316
7143	P - 2651	8.0	140.0	316
7144	P - 2202	8.0	110.0	316
7145	P - 1400	6.0	140.0	316
7146	P - 3453	8.0	140.0	316
7159	P - 2532	8.0	140.0	319
7148	P - 3290	6.0	100.0	379
7253	P - 3157	6.0	110.0	330
7150	P - 4730	6.0	110.0	317
7151	P - 4192	12.0	140.0	317
7152	P - 549	8.0	140.0	317
7153	P - 2260	16.0	110.0	317
7154	P - 2515	6.0	100.0	317
7155	P - 1536	8.0	100.0	318
7156	P - 2747	20.0	110.0	400
7147	P - 3838	8.0	140.0	316
7358	P - 3456	6.0	140.0	422
7366	P - 1973	8.0	140.0	342
7350	P - 2889	6.0	100.0	340
7351	P - 1162	8.0	100.0	349
7352	P - 2954	6.0	100.0	341

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7353	P - 1809	8.0	140.0	341
7354	P - 3269	8.0	140.0	353
7355	P - 946	8.0	140.0	346
7348	P - 1477	8.0	110.0	369
7357	P - 1516	12.0	100.0	341
7347	P - 666	6.0	110.0	340
7359	P - 2749	6.0	100.0	341
7360	P - 2428	6.0	110.0	341
7361	P - 606	12.0	110.0	341
7362	P - 4397	6.0	100.0	341
7363	P - 2588	8.0	140.0	342
7364	P - 3429	8.0	140.0	412
7329	P - 4541	8.0	140.0	338
7356	P - 2641	16.0	90.0	341
7339	P - 1626	10.0	100.0	339
7251	P - 3846	6.0	100.0	330
7331	P - 2113	6.0	110.0	346
7332	P - 521	8.0	100.0	339
7333	P - 1657	8.0	110.0	339
7334	P - 2677	8.0	140.0	448
7335	P - 2673	6.0	110.0	339
7336	P - 1791	6.0	100.0	341
7349	P - 4139	8.0	140.0	342
7338	P - 582	6.0	110.0	369
7367	P - 3648	8.0	140.0	360
7340	P - 1861	6.0	110.0	339
7341	P - 1168	6.0	100.0	343
7342	P - 1466	8.0	140.0	339
7343	P - 1530	12.0	100.0	340
7344	P - 4018	8.0	140.0	342
7345	P - 3563	8.0	140.0	340
7346	P - 2512	8.0	100.0	349
7337	P - 117	20.0	110.0	339
7396	P - 3912	8.0	110.0	347
7365	P - 1830	6.0	110.0	342
7388	P - 4708	8.0	110.0	345
7389	P - 1410	8.0	100.0	344
7390	P - 1391	6.0	100.0	344
7391	P - 4054	6.0	140.0	344
7392	P - 1198	12.0	140.0	345
7393	P - 277	8.0	140.0	355
7386	P - 2513	8.0	100.0	344
7395	P - 522	8.0	100.0	344
7385	P - 402	8.0	100.0	344
7397	P - 4716	6.0	110.0	345
7398	P - 1282	12.0	140.0	345
7399	P - 1278	8.0	100.0	345

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7400	P - 2132	6.0	100.0	346
7401	P - 2938	8.0	140.0	350
7402	P - 4042	8.0	140.0	346
7403	P - 3033	8.0	140.0	346
7394	P - 1169	8.0	140.0	348
7377	P - 1652	8.0	100.0	343
7368	P - 3742	8.0	140.0	344
7369	P - 1538	8.0	100.0	344
7370	P - 3450	10.0	140.0	360
7371	P - 2206	8.0	110.0	343
7372	P - 540	8.0	140.0	343
7373	P - 45	8.0	100.0	343
7374	P - 3698	6.0	140.0	500
7387	P - 4681	12.0	140.0	346
7376	P - 2136	10.0	100.0	343
7328	P - 1588	8.0	100.0	338
7378	P - 2149	8.0	110.0	343
7379	P - 1459	12.0	140.0	343
7380	P - 201	8.0	140.0	343
7381	P - 2712	8.0	140.0	350
7382	P - 2935	12.0	140.0	343
7383	P - 27	8.0	110.0	344
7384	P - 2148	8.0	110.0	344
7375	P - 1665	8.0	100.0	343
7282	P - 3223	8.0	140.0	333
7290	P - 544	8.0	140.0	334
7274	P - 130	4.0	140.0	332
7275	P - 810	6.0	110.0	332
7276	P - 1453	16.0	110.0	333
7277	P - 2051	8.0	140.0	333
7278	P - 351	8.0	100.0	340
7279	P - 2430	6.0	100.0	332
7272	P - 1662	8.0	100.0	332
7281	P - 318	6.0	140.0	333
7271	P - 4378	12.0	140.0	332
7283	P - 4663	6.0	110.0	339
7284	P - 3338	8.0	140.0	333
7285	P - 814	8.0	110.0	333
7286	P - 4667	6.0	110.0	333
7287	P - 1833	8.0	110.0	333
7288	P - 1172	8.0	140.0	334
7330	P - 2633	8.0	100.0	343
7280	P - 3925	8.0	100.0	332
7263	P - 2847	8.0	100.0	332
7254	P - 3217	8.0	140.0	331
7255	P - 2722	6.0	110.0	338
7256	P - 3760	6.0	110.0	331

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7257	P - 2289	6.0	110.0	331
7258	P - 617	6.0	110.0	331
7259	P - 801	6.0	110.0	331
7260	P - 3595	6.0	140.0	360
7273	P - 1451	8.0	140.0	344
7262	P - 3569	6.0	140.0	339
7291	P - 3715	8.0	110.0	334
7264	P - 1130	8.0	100.0	331
7265	P - 729	6.0	140.0	332
7266	P - 303	8.0	140.0	338
7267	P - 3311	8.0	140.0	333
7268	P - 3445	8.0	140.0	332
7269	P - 2952	6.0	100.0	355
7270	P - 2871	18.0	90.0	332
7261	P - 3809	20.0	110.0	331
7320	P - 3421	8.0	140.0	358
7289	P - 922	6.0	110.0	334
7312	P - 221	8.0	140.0	337
7313	P - 4851	6.0	140.0	351
7314	P - 2067	8.0	140.0	356
7315	P - 1734	6.0	100.0	342
7316	P - 636	8.0	140.0	338
7317	P - 634	6.0	110.0	337
7310	P - 4618	8.0	140.0	337
7319	P - 421	8.0	140.0	339
7309	P - 1584	8.0	100.0	341
7321	P - 1537	8.0	100.0	338
7322	P - 3687	6.0	140.0	398
7323	P - 3683	8.0	140.0	339
7324	P - 3859	6.0	100.0	338
7325	P - 2002	8.0	110.0	338
7326	P - 2639	8.0	140.0	340
7327	P - 1857	6.0	110.0	338
7318	P - 4077	8.0	140.0	338
7301	P - 3954	8.0	140.0	336
7292	P - 799	6.0	110.0	334
7293	P - 2313	8.0	140.0	338
7294	P - 2893	8.0	110.0	334
7295	P - 1087	20.0	110.0	335
7296	P - 3264	8.0	140.0	335
7297	P - 3081	12.0	140.0	335
7298	P - 2552	8.0	140.0	335
7311	P - 1666	8.0	100.0	337
7300	P - 1849	10.0	140.0	473
7100	P - 2201	8.0	140.0	313
7302	P - 1331	8.0	140.0	344
7303	P - 4753	6.0	110.0	336

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7304	P - 1585	6.0	100.0	336
7305	P - 548	8.0	140.0	336
7306	P - 1332	8.0	140.0	453
7307	P - 3434	8.0	140.0	390
7308	P - 3719	8.0	140.0	337
7299	P - 1075	10.0	140.0	336
6901	P - 709	8.0	100.0	290
6909	P - 3935	8.0	140.0	291
6893	P - 371	8.0	100.0	289
6894	P - 660	8.0	110.0	289
6895	P - 2819	6.0	110.0	290
6896	P - 4859	8.0	140.0	290
6897	P - 3793	4.0	100.0	289
6898	P - 936	6.0	100.0	290
6891	P - 1926	12.0	100.0	289
6900	P - 2268	8.0	140.0	290
6890	P - 1911	6.0	110.0	288
6902	P - 3873	8.0	140.0	298
6903	P - 1753	8.0	140.0	290
6904	P - 2774	8.0	140.0	290
6905	P - 3099	8.0	140.0	290
6906	P - 1752	8.0	140.0	290
6907	P - 3930	8.0	140.0	290
6872	P - 2377	6.0	110.0	300
6899	P - 1404	8.0	100.0	290
6882	P - 1492	8.0	100.0	319
6948	P - 2364	8.0	140.0	295
6874	P - 4865	8.0	140.0	286
6875	P - 404	8.0	100.0	293
6876	P - 3963	8.0	140.0	287
6877	P - 3601	6.0	140.0	295
6878	P - 3897	6.0	100.0	290
6879	P - 484	6.0	110.0	287
6892	P - 2159	4.0	100.0	289
6881	P - 3904	8.0	100.0	287
6910	P - 1750	8.0	140.0	290
6883	P - 2324	10.0	140.0	291
6884	P - 1159	12.0	100.0	288
6885	P - 3071	8.0	140.0	289
6886	P - 4212	8.0	140.0	288
6887	P - 4248	10.0	140.0	290
6888	P - 2706	8.0	140.0	470
6889	P - 2994	12.0	140.0	288
6880	P - 1726	6.0	100.0	297
6940	P - 3955	12.0	140.0	294
6908	P - 1740	8.0	140.0	290
6932	P - 3927	8.0	140.0	293

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6933	P - 749	8.0	140.0	300
6934	P - 992	10.0	140.0	294
6935	P - 3308	8.0	140.0	300
6936	P - 3170	10.0	110.0	303
6937	P - 4803	12.0	140.0	294
6930	P - 2752	8.0	100.0	293
6939	P - 4866	8.0	140.0	331
6929	P - 1518	12.0	100.0	303
6941	P - 2522	8.0	100.0	297
6942	P - 4852	6.0	140.0	295
6943	P - 234	6.0	100.0	299
6944	P - 624	8.0	100.0	295
6945	P - 4732	8.0	140.0	295
6946	P - 3974	8.0	140.0	295
7102	P - 2726	8.0	100.0	312
6938	P - 4785	8.0	140.0	294
6921	P - 4019	8.0	140.0	291
6911	P - 3131	8.0	140.0	297
6912	P - 3928	6.0	140.0	291
6913	P - 1556	6.0	100.0	291
6914	P - 4101	10.0	140.0	291
6915	P - 3495	8.0	140.0	292
6917	P - 3398	6.0	110.0	290
6918	P - 3480	12.0	140.0	291
6931	P - 3139	8.0	110.0	621
6920	P - 4123	8.0	140.0	297
6871	P - 2569	8.0	100.0	286
6922	P - 3861	6.0	100.0	292
6923	P - 2219	8.0	110.0	292
6924	P - 4006	10.0	110.0	292
6925	P - 1628	8.0	100.0	294
6926	P - 1251	10.0	140.0	292
6927	P - 532	6.0	100.0	293
6928	P - 3891	6.0	100.0	329
6919	P - 2009	6.0	100.0	291
6825	P - 1186	8.0	140.0	280
6833	P - 3618	8.0	140.0	303
6817	P - 4067	8.0	140.0	284
6818	P - 3037	8.0	140.0	282
6819	P - 3911	8.0	110.0	301
6820	P - 2596	8.0	140.0	305
6821	P - 2059	6.0	140.0	281
6822	P - 4580	8.0	140.0	282
6815	P - 2918	8.0	140.0	280
6824	P - 26	8.0	110.0	280
6814	P - 1854	6.0	110.0	278
6826	P - 4008	8.0	140.0	294

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6827	P - 2867	16.0	90.0	282
6828	P - 3319	8.0	140.0	281
6829	P - 558	6.0	110.0	280
6830	P - 3755	6.0	100.0	280
6831	P - 1619	6.0	100.0	281
6873	P - 1673	8.0	100.0	297
6823	P - 282	8.0	140.0	280
6806	P - 550	6.0	110.0	277
9432	P-49	16.0	90.0	14
6798	P - 4502	8.0	100.0	276
6799	P - 2585	10.0	140.0	276
6800	P - 3737	8.0	140.0	282
6801	P - 1496	8.0	100.0	282
6802	P - 849	8.0	140.0	277
6803	P - 2799	8.0	110.0	277
6816	P - 464	6.0	110.0	279
6805	P - 1216	8.0	110.0	278
6834	P - 1268	8.0	140.0	282
6807	P - 1524	8.0	100.0	277
6808	P - 2636	10.0	140.0	277
6809	P - 576	6.0	110.0	278
6810	P - 1497	6.0	100.0	278
6811	P - 2817	8.0	140.0	278
6812	P - 1505	6.0	110.0	278
6813	P - 2879	6.0	100.0	278
6804	P - 1827	12.0	100.0	277
6863	P - 4129	6.0	140.0	285
6832	P - 2336	8.0	140.0	310
6855	P - 2511	8.0	100.0	284
6856	P - 2914	8.0	140.0	293
6857	P - 3517	4.0	140.0	444
6858	P - 3385	8.0	140.0	284
6859	P - 1361	10.0	140.0	287
6860	P - 3341	12.0	110.0	284
6853	P - 583	6.0	140.0	283
6862	P - 3207	8.0	140.0	284
6852	P - 1767	8.0	140.0	283
6864	P - 4053	8.0	140.0	285
6865	P - 2530	6.0	110.0	287
6866	P - 2254	20.0	100.0	285
6867	P - 1271	8.0	140.0	285
6868	P - 597	4.0	110.0	290
6869	P - 2925	12.0	140.0	286
6870	P - 3160	12.0	140.0	287
6861	P - 2390	8.0	110.0	285
6844	P - 1971	6.0	110.0	291
6835	P - 1335	8.0	140.0	286

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6836	P - 1561	6.0	100.0	281
6837	P - 4499	12.0	140.0	281
6838	P - 2216	6.0	140.0	281
6839	P - 2242	12.0	140.0	282
6840	P - 723	4.0	120.0	282
6841	P - 1080	12.0	110.0	282
6854	P - 1768	8.0	140.0	284
6843	P - 1965	6.0	110.0	282
6949	P - 2856	6.0	100.0	295
6845	P - 263	8.0	140.0	283
6846	P - 1046	8.0	110.0	283
6847	P - 3987	8.0	140.0	285
6848	P - 3199	12.0	140.0	283
6849	P - 2959	6.0	110.0	302
6850	P - 3477	6.0	140.0	289
6851	P - 1114	6.0	110.0	283
6842	P - 2104	6.0	110.0	282
7054	P - 3349	8.0	140.0	308
7062	P - 2164	8.0	100.0	309
7046	P - 1224	6.0	110.0	307
7047	P - 1863	8.0	140.0	307
7048	P - 737	12.0	100.0	307
7049	P - 2024	6.0	100.0	437
7050	P - 557	6.0	110.0	307
7051	P - 2070	4.0	140.0	511
7044	P - 4557	8.0	140.0	309
7053	P - 1308	10.0	140.0	307
7043	P - 1126	6.0	110.0	307
7055	P - 2298	6.0	140.0	310
7056	P - 3412	8.0	140.0	308
7057	P - 1478	8.0	140.0	308
7058	P - 4188	6.0	140.0	308
7059	P - 574	6.0	110.0	308
7060	P - 4089	10.0	140.0	309
7025	P - 4526	8.0	140.0	429
7052	P - 4626	8.0	140.0	307
7035	P - 4159	8.0	140.0	306
6947	P - 3079	8.0	140.0	295
7027	P - 156	8.0	140.0	304
7028	P - 3411	8.0	140.0	304
7029	P - 1521	6.0	100.0	304
7030	P - 3291	6.0	100.0	305
7031	P - 2353	10.0	140.0	323
7032	P - 2942	8.0	100.0	316
7045	P - 2809	8.0	100.0	307
7034	P - 3905	6.0	100.0	306
7063	P - 451	6.0	100.0	309

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7036	P - 2800	8.0	100.0	306
7037	P - 3565	8.0	140.0	307
7038	P - 2807	10.0	140.0	306
7039	P - 1906	6.0	110.0	306
7040	P - 4142	8.0	140.0	306
7041	P - 1925	12.0	100.0	307
7042	P - 1917	6.0	110.0	307
7033	P - 776	12.0	140.0	305
7092	P - 3162	12.0	140.0	311
7061	P - 3156	16.0	110.0	309
7084	P - 1025	6.0	100.0	310
7085	P - 3909	8.0	100.0	310
7086	P - 1227	8.0	140.0	311
7087	P - 20	8.0	110.0	311
7088	P - 2735	8.0	100.0	312
7089	P - 2724	6.0	100.0	311
7082	P - 1625	6.0	100.0	311
7091	P - 401	8.0	100.0	311
7081	P - 3913	8.0	100.0	310
7093	P - 506	8.0	140.0	311
7094	P - 2846	6.0	100.0	311
7095	P - 4491	8.0	140.0	312
7096	P - 2718	6.0	110.0	312
7097	P - 2041	8.0	140.0	381
7098	P - 2031	8.0	140.0	313
7099	P - 1228	6.0	100.0	336
7090	P - 10	36.0	130.0	311
7073	P - 1580	8.0	100.0	310
7064	P - 1242	8.0	110.0	309
7065	P - 1795	6.0	100.0	309
7066	P - 1411	8.0	110.0	312
7067	P - 1688	10.0	140.0	309
7068	P - 4843	12.0	110.0	309
7069	P - 1156	8.0	100.0	309
7070	P - 551	6.0	140.0	309
7083	P - 4596	6.0	110.0	311
7072	P - 2669	16.0	140.0	311
7024	P - 4260	6.0	140.0	303
7074	P - 2849	8.0	100.0	310
7075	P - 3045	6.0	110.0	310
7076	P - 3387	6.0	140.0	310
7077	P - 2857	6.0	100.0	310
7078	P - 1558	6.0	100.0	311
7079	P - 2753	8.0	100.0	310
7080	P - 3853	6.0	100.0	311
7071	P - 1389	8.0	100.0	310
6978	P - 4794	8.0	140.0	299

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
6986	P - 906	8.0	110.0	300
6970	P - 2271	8.0	140.0	298
6971	P - 1696	12.0	140.0	299
6972	P - 1525	8.0	100.0	298
6973	P - 2625	8.0	110.0	298
6974	P - 1188	8.0	140.0	376
6975	P - 1152	8.0	100.0	298
6968	P - 1843	8.0	140.0	302
6977	P - 528	12.0	100.0	299
6967	P - 959	8.0	140.0	298
6979	P - 1001	8.0	140.0	299
6980	P - 2276	6.0	110.0	299
6981	P - 1674	8.0	100.0	307
6982	P - 3991	8.0	140.0	314
6983	P - 3526	8.0	140.0	312
6984	P - 3564	8.0	140.0	300
7026	P - 3916	8.0	100.0	305
6976	P - 301	8.0	140.0	303
6959	P - 4583	8.0	140.0	298
6950	P - 4141	8.0	140.0	295
6951	P - 4849	8.0	140.0	295
6952	P - 590	8.0	140.0	295
6953	P - 1493	6.0	100.0	302
6954	P - 4013	16.0	140.0	295
6955	P - 2285	6.0	110.0	295
6956	P - 2698	8.0	100.0	295
6969	P - 1693	6.0	110.0	300
6958	P - 1671	8.0	100.0	324
6987	P - 1161	8.0	100.0	304
6960	P - 2020	8.0	140.0	315
6961	P - 3282	8.0	140.0	296
6962	P - 2555	8.0	110.0	296
6963	P - 3932	8.0	140.0	297
6964	P - 940	6.0	110.0	297
6965	P - 1024	8.0	100.0	297
6966	P - 575	6.0	110.0	297
6957	P - 4542	8.0	140.0	301
7016	P - 614	8.0	140.0	303
6985	P - 447	20.0	110.0	300
7008	P - 2973	8.0	110.0	301
7009	P - 507	8.0	140.0	302
7010	P - 1939	6.0	110.0	302
7011	P - 1692	4.0	110.0	304
7012	P - 3111	8.0	140.0	308
7013	P - 1485	8.0	100.0	302
7006	P - 2140	6.0	110.0	302
7015	P - 613	8.0	140.0	303

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7005	P - 2820	6.0	110.0	303
7017	P - 1104	12.0	110.0	303
7018	P - 3919	8.0	100.0	303
7019	P - 1722	6.0	100.0	303
7020	P - 2505	8.0	110.0	308
7021	P - 2466	8.0	90.0	314
7022	P - 2141	8.0	110.0	303
7023	P - 2713	6.0	110.0	303
7014	P - 3736	8.0	140.0	302
6997	P - 2806	8.0	110.0	300
6988	P - 3931	8.0	140.0	300
6989	P - 3219	8.0	140.0	300
6990	P - 1763	8.0	140.0	300
6991	P - 4862	10.0	140.0	308
6992	P - 1812	10.0	140.0	300
6993	P - 3942	8.0	140.0	300
6994	P - 2203	8.0	140.0	300
7007	P - 4210	8.0	140.0	301
6996	P - 3607	8.0	140.0	304
7406	P - 312	4.0	140.0	529
6998	P - 3852	6.0	100.0	303
6999	P - 3364	8.0	140.0	301
7000	P - 3299	8.0	140.0	304
7001	P - 348	4.0	110.0	308
7002	P - 2795	8.0	140.0	303
7003	P - 3940	8.0	140.0	308
7004	P - 4134	8.0	140.0	304
6995	P - 1646	8.0	110.0	305
7816	P - 1408	6.0	100.0	408
7824	P - 2896	6.0	100.0	409
7808	P - 255	8.0	140.0	422
7809	P - 1614	6.0	100.0	405
7810	P - 4410	8.0	140.0	406
7811	P - 2828	8.0	140.0	408
7812	P - 1222	8.0	110.0	406
7813	P - 4111	8.0	140.0	406
7806	P - 4396	8.0	140.0	404
7815	P - 1291	8.0	140.0	417
7805	P - 3851	6.0	100.0	405
7817	P - 3518	8.0	140.0	417
7818	P - 4354	8.0	100.0	407
7819	P - 2231	20.0	110.0	408
7820	P - 3339	8.0	140.0	405
7821	P - 2709	12.0	140.0	408
7822	P - 882	8.0	140.0	409
7787	P - 2409	6.0	140.0	405
7814	P - 2025	6.0	140.0	526

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7797	P - 1733	6.0	100.0	403
7862	P - 1449	12.0	140.0	416
7789	P - 1779	6.0	140.0	402
7790	P - 2972	12.0	140.0	404
7791	P - 4364	6.0	140.0	401
7792	P - 704	4.0	110.0	401
7793	P - 4063	8.0	140.0	402
7794	P - 828	6.0	110.0	402
7807	P - 4544	8.0	140.0	406
7796	P - 1342	8.0	110.0	402
7825	P - 3077	8.0	140.0	415
7798	P - 4236	8.0	110.0	406
7799	P - 1915	8.0	140.0	404
7800	P - 2077	4.0	140.0	622
7801	P - 4081	6.0	140.0	405
7802	P - 171	20.0	110.0	404
7803	P - 4088	10.0	140.0	413
7804	P - 4685	16.0	140.0	410
7795	P - 2272	12.0	110.0	457
7854	P - 535	8.0	140.0	414
7823	P - 1004	8.0	100.0	411
7846	P - 4381	8.0	140.0	413
7847	P - 4068	8.0	140.0	413
7848	P - 3906	6.0	100.0	420
7849	P - 1618	6.0	100.0	419
7850	P - 1135	8.0	110.0	414
7851	P - 2094	6.0	110.0	413
7844	P - 1869	12.0	110.0	413
7853	P - 3962	8.0	140.0	416
7843	P - 1309	6.0	140.0	412
7855	P - 2250	12.0	90.0	414
7856	P - 3747	8.0	140.0	422
7857	P - 4295	12.0	140.0	440
7858	P - 1810	6.0	100.0	415
7859	P - 2107	6.0	110.0	415
7860	P - 3316	6.0	100.0	415
7404	P - 2274	8.0	100.0	346
7852	P - 1029	8.0	100.0	413
7835	P - 4439	8.0	140.0	546
7826	P - 3537	6.0	140.0	433
7827	P - 925	6.0	100.0	409
7828	P - 2675	6.0	110.0	409
7829	P - 4792	8.0	140.0	422
7830	P - 3435	8.0	140.0	410
7831	P - 3711	12.0	110.0	410
7832	P - 4841	12.0	110.0	410
7845	P - 2010	6.0	100.0	413

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7834	P - 2731	12.0	100.0	411
7786	P - 1280	8.0	140.0	521
7836	P - 2001	6.0	110.0	411
7837	P - 3225	6.0	110.0	411
7838	P - 3690	10.0	140.0	411
7839	P - 2501	6.0	100.0	455
7840	P - 1405	8.0	100.0	412
7841	P - 1444	10.0	140.0	416
7842	P - 3534	6.0	140.0	412
7833	P - 1355	8.0	140.0	411
7740	P - 2517	6.0	100.0	396
7748	P - 1508	6.0	110.0	393
7732	P - 561	8.0	140.0	390
7733	P - 1583	8.0	100.0	390
7734	P - 4472	8.0	140.0	436
7735	P - 809	8.0	140.0	391
7736	P - 2862	12.0	100.0	391
7737	P - 1636	20.0	110.0	391
7730	P - 1334	8.0	140.0	397
7739	P - 3894	6.0	110.0	392
7729	P - 733	8.0	140.0	390
7741	P - 3235	8.0	140.0	392
7742	P - 3685	6.0	140.0	486
7743	P - 4259	8.0	100.0	393
7744	P - 864	6.0	140.0	392
7745	P - 986	6.0	110.0	393
7746	P - 1532	8.0	100.0	394
7788	P - 4223	8.0	140.0	559
7738	P - 1946	4.0	110.0	392
7721	P - 1663	8.0	100.0	389
7712	P - 3875	6.0	140.0	388
7713	P - 1914	8.0	110.0	388
7714	P - 1887	6.0	110.0	388
7715	P - 3420	12.0	140.0	391
7716	P - 3872	6.0	140.0	388
7717	P - 3765	8.0	110.0	389
7718	P - 3807	10.0	140.0	389
7731	P - 1529	12.0	100.0	390
7720	P - 3818	8.0	140.0	389
7749	P - 2802	6.0	100.0	398
7722	P - 1470	10.0	140.0	389
7723	P - 1473	4.0	140.0	392
7724	P - 3992	8.0	140.0	389
7725	P - 545	8.0	110.0	390
7726	P - 1691	6.0	110.0	392
7727	P - 3501	12.0	140.0	390
7728	P - 734	8.0	140.0	390

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7719	P - 779	8.0	110.0	389
7778	P - 3178	8.0	140.0	403
7747	P - 1447	8.0	140.0	400
7770	P - 3847	6.0	110.0	403
7771	P - 3701	8.0	100.0	402
7772	P - 1471	10.0	140.0	400
7773	P - 3073	8.0	140.0	398
7774	P - 820	6.0	120.0	398
7775	P - 4327	8.0	110.0	401
7768	P - 542	8.0	140.0	398
7777	P - 3743	6.0	140.0	399
7767	P - 2033	16.0	110.0	397
7779	P - 261	4.0	140.0	400
7780	P - 1981	12.0	110.0	400
7781	P - 82	20.0	110.0	400
7782	P - 1983	8.0	140.0	403
7783	P - 317	8.0	140.0	400
7784	P - 2997	12.0	140.0	400
7785	P - 829	8.0	140.0	400
7776	P - 2116	10.0	140.0	399
7759	P - 2663	8.0	140.0	396
7750	P - 92	6.0	140.0	393
7751	P - 3839	8.0	140.0	394
7752	P - 1677	8.0	100.0	395
7753	P - 2842	8.0	100.0	428
7754	P - 4394	8.0	140.0	396
7755	P - 4371	8.0	110.0	394
7756	P - 1482	16.0	140.0	395
7769	P - 2444	10.0	140.0	398
7758	P - 2941	6.0	100.0	399
7863	P - 2382	6.0	110.0	483
7760	P - 3179	8.0	140.0	521
7761	P - 4318	8.0	140.0	401
7762	P - 1945	6.0	110.0	396
7763	P - 1793	8.0	140.0	400
7764	P - 4420	10.0	140.0	397
7765	P - 3183	8.0	140.0	401
7766	P - 678	8.0	110.0	397
7757	P - 4136	8.0	140.0	400
7969	P - 3939	6.0	140.0	463
7977	P - 4831	20.0	110.0	447
7961	P - 4936	20.0	110.0	444
7962	P - 2315	8.0	140.0	444
7963	P - 2840	8.0	100.0	446
7964	P - 2523	8.0	100.0	459
7965	P - 3721	8.0	140.0	459
7966	P - 2385	6.0	100.0	453

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7959	P - 2343	6.0	140.0	453
7968	P - 181	12.0	110.0	445
7958	P - 2988	6.0	140.0	533
7970	P - 4724	6.0	110.0	445
7971	P - 4415	8.0	140.0	582
7972	P - 3558	8.0	140.0	450
7973	P - 2259	20.0	100.0	452
7974	P - 3680	12.0	140.0	453
7975	P - 2099	6.0	110.0	460
7940	P - 4761	8.0	140.0	571
7967	P - 4249	8.0	140.0	445
7950	P - 2150	8.0	110.0	445
7861	P - 1060	12.0	110.0	415
7942	P - 1376	8.0	140.0	437
7943	P - 3542	6.0	100.0	443
7944	P - 3886	6.0	100.0	439
7945	P - 1936	6.0	110.0	438
7946	P - 2309	8.0	140.0	439
7947	P - 243	8.0	140.0	440
7960	P - 3525	8.0	140.0	566
7949	P - 4287	8.0	140.0	445
7978	P - 3327	8.0	140.0	450
7951	P - 4258	12.0	140.0	441
7952	P - 3390	8.0	140.0	461
7953	P - 2604	8.0	140.0	441
7954	P - 3805	8.0	140.0	444
7955	P - 2696	8.0	140.0	442
7956	P - 3770	12.0	100.0	443
7957	P - 3239	8.0	140.0	443
7948	P - 739	4.0	110.0	446
8007	P - 3874	6.0	140.0	460
7976	P - 3062	8.0	140.0	447
7999	P - 4270	6.0	100.0	453
8000	P - 4003	8.0	140.0	453
8001	P - 1426	6.0	100.0	506
8002	P - 1990	8.0	140.0	460
8003	P - 2058	8.0	140.0	474
8004	P - 4463	12.0	140.0	454
7997	P - 3554	6.0	140.0	592
8006	P - 2797	12.0	110.0	456
7996	P - 4050	8.0	140.0	467
8008	P - 2101	8.0	140.0	480
8009	P - 2628	6.0	100.0	483
8010	P - 1789	8.0	110.0	569
8011	P - 4493	12.0	140.0	458
8012	P - 1725	6.0	100.0	471
8013	P - 2264	12.0	100.0	458

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
8014	P - 469	12.0	90.0	459
8005	P - 1736	10.0	110.0	454
7988	P - 4668	6.0	110.0	450
7979	P - 3728	8.0	140.0	456
7980	P - 2572	6.0	100.0	449
7981	P - 3808	6.0	140.0	448
7982	P - 1651	8.0	100.0	454
7983	P - 4489	8.0	140.0	449
7984	P - 4174	8.0	140.0	465
7985	P - 1562	6.0	100.0	455
7998	P - 4305	12.0	110.0	467
7987	P - 1346	12.0	140.0	450
7939	P - 4039	8.0	140.0	437
7989	P - 2091	6.0	110.0	450
7990	P - 4400	6.0	140.0	682
7991	P - 1091	8.0	140.0	451
7992	P - 3017	20.0	110.0	479
7993	P - 2826	8.0	140.0	453
7994	P - 4671	6.0	110.0	452
7995	P - 765	6.0	100.0	454
7986	P - 4011	6.0	140.0	449
7893	P - 4395	8.0	140.0	424
7901	P - 1176	8.0	110.0	568
7885	P - 3952	8.0	140.0	459
7886	P - 1899	8.0	140.0	423
7887	P - 526	6.0	100.0	430
7888	P - 1086	20.0	110.0	423
7889	P - 4046	8.0	140.0	427
7890	P - 290	8.0	140.0	425
7883	P - 3262	8.0	140.0	422
7892	P - 1458	12.0	140.0	424
7882	P - 1727	6.0	100.0	528
7894	P - 1261	20.0	110.0	424
7895	P - 4347	8.0	140.0	431
7896	P - 3154	16.0	90.0	424
7897	P - 3417	8.0	140.0	437
7898	P - 3133	6.0	140.0	425
7899	P - 756	4.0	100.0	425
7941	P - 3145	8.0	100.0	437
7891	P - 3263	8.0	140.0	483
7874	P - 284	8.0	140.0	420
7864	P - 2960	6.0	110.0	417
7865	P - 4060	8.0	140.0	429
7866	P - 644	8.0	140.0	418
7867	P - 1658	8.0	110.0	425
7868	P - 679	6.0	100.0	419
7869	P - 1545	6.0	100.0	419

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7871	P - 412	20.0	110.0	395
7884	P - 1907	6.0	110.0	424
7873	P - 3054	8.0	140.0	420
7902	P - 2204	6.0	140.0	604
7875	P - 148	8.0	140.0	420
7876	P - 4203	8.0	140.0	420
7877	P - 677	6.0	110.0	421
7878	P - 3750	8.0	110.0	1,360
7879	P - 283	8.0	140.0	421
7880	P - 3032	6.0	110.0	421
7881	P - 3130	6.0	140.0	423
7872	P - 1412	12.0	140.0	425
7931	P - 2873	18.0	110.0	432
7900	P - 2518	8.0	110.0	426
7923	P - 2716	6.0	110.0	433
7924	P - 3771	12.0	100.0	434
7925	P - 4423	10.0	140.0	434
7926	P - 4387	8.0	140.0	434
7927	P - 3003	12.0	140.0	439
7928	P - 2383	8.0	100.0	440
7921	P - 4571	16.0	140.0	431
7930	P - 4140	10.0	140.0	435
7920	P - 4338	8.0	140.0	431
7932	P - 2671	12.0	110.0	435
7933	P - 1132	8.0	110.0	435
7934	P - 4329	8.0	140.0	436
7935	P - 216	12.0	90.0	436
7936	P - 2968	8.0	110.0	436
7937	P - 2125	8.0	110.0	441
7938	P - 3814	8.0	140.0	441
7929	P - 441	8.0	140.0	566
7912	P - 4689	12.0	140.0	443
7903	P - 3114	8.0	140.0	426
7904	P - 4306	10.0	140.0	426
7905	P - 3567	8.0	140.0	437
7906	P - 3059	8.0	140.0	427
7907	P - 1167	6.0	100.0	687
7908	P - 119	16.0	110.0	428
7909	P - 3135	10.0	140.0	428
7922	P - 1762	8.0	140.0	432
7911	P - 2052	8.0	140.0	502
7709	P - 2715	16.0	90.0	380
7913	P - 2984	6.0	110.0	429
7914	P - 1078	20.0	110.0	429
7915	P - 3424	8.0	140.0	444
7916	P - 4255	12.0	140.0	438
7917	P - 2887	6.0	100.0	432

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7918	P - 1988	8.0	140.0	431
7919	P - 2992	12.0	140.0	437
7910	P - 4369	12.0	140.0	428
7511	P - 1987	8.0	140.0	360
7519	P - 1569	6.0	100.0	361
7503	P - 246	8.0	140.0	364
7504	P - 3798	8.0	100.0	360
7505	P - 3966	8.0	140.0	360
7506	P - 987	6.0	100.0	360
7507	P - 2083	8.0	140.0	380
7508	P - 3168	8.0	140.0	360
7501	P - 434	8.0	110.0	385
7510	P - 3386	8.0	140.0	369
7500	P - 4374	6.0	110.0	359
7512	P - 3175	8.0	140.0	360
7513	P - 170	20.0	110.0	360
7514	P - 3562	8.0	140.0	360
7515	P - 2888	6.0	100.0	360
7516	P - 4007	20.0	110.0	360
7517	P - 2850	8.0	100.0	363
7482	P - 980	8.0	140.0	357
7509	P - 3863	6.0	110.0	362
7492	P - 1751	8.0	140.0	358
7711	P - 3034	12.0	140.0	413
7484	P - 3841	8.0	140.0	358
7485	P - 1383	6.0	140.0	358
7486	P - 2068	8.0	140.0	358
7487	P - 2017	6.0	110.0	358
7488	P - 2845	10.0	100.0	359
7489	P - 2490	18.0	110.0	361
7502	P - 3245	8.0	140.0	359
7491	P - 4729	6.0	110.0	358
7520	P - 2778	12.0	140.0	361
7493	P - 1979	6.0	140.0	358
7494	P - 3531	6.0	140.0	367
7495	P - 3248	6.0	140.0	367
7496	P - 1581	8.0	100.0	363
7497	P - 4175	8.0	140.0	359
7498	P - 1577	8.0	100.0	359
7499	P - 3192	8.0	140.0	363
7490	P - 2330	8.0	140.0	358
7549	P - 3324	8.0	140.0	365
7518	P - 3116	8.0	140.0	360
7541	P - 2126	8.0	110.0	371
7542	P - 1211	6.0	140.0	421
7543	P - 1481	10.0	140.0	364
7544	P - 3590	12.0	110.0	364

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7545	P - 2813	12.0	140.0	364
7546	P - 2565	6.0	100.0	375
7539	P - 1364	6.0	140.0	364
7548	P - 4115	6.0	140.0	514
7538	P - 2135	8.0	140.0	363
7550	P - 2703	8.0	140.0	365
7551	P - 2358	8.0	140.0	371
7552	P - 705	6.0	110.0	365
7553	P - 978	6.0	110.0	365
7554	P - 730	6.0	100.0	391
7555	P - 3312	6.0	100.0	376
7556	P - 3057	8.0	140.0	371
7547	P - 2586	10.0	140.0	365
7530	P - 2127	8.0	100.0	362
7521	P - 3735	6.0	140.0	361
7522	P - 2640	8.0	140.0	363
7523	P - 3513	6.0	140.0	466
7524	P - 3153	6.0	110.0	361
7525	P - 2318	8.0	140.0	363
7526	P - 813	8.0	110.0	361
7527	P - 3858	6.0	100.0	375
7540	P - 2644	4.0	140.0	364
7529	P - 1187	6.0	110.0	362
7481	P - 796	8.0	140.0	357
7531	P - 2508	6.0	100.0	363
7532	P - 1160	6.0	100.0	369
7533	P - 179	20.0	110.0	362
7534	P - 3041	10.0	140.0	363
7535	P - 3944	8.0	140.0	370
7536	P - 4240	8.0	140.0	363
7537	P - 4577	8.0	140.0	407
7528	P - 1742	6.0	140.0	362
7435	P - 2614	12.0	140.0	350
7443	P - 1868	6.0	110.0	351
7427	P - 586	8.0	110.0	351
7428	P - 3794	6.0	100.0	350
7429	P - 1185	6.0	110.0	350
7430	P - 2837	8.0	110.0	350
7431	P - 1392	8.0	100.0	350
7432	P - 3758	6.0	100.0	350
7425	P - 3878	10.0	100.0	353
7434	P - 2945	8.0	100.0	350
7424	P - 3868	8.0	140.0	489
7436	P - 4443	12.0	140.0	350
7437	P - 4665	6.0	110.0	347
7438	P - 4132	6.0	140.0	354
7439	P - 2458	8.0	140.0	350

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7440	P - 1240	6.0	100.0	351
7441	P - 1794	6.0	100.0	351
7483	P - 2372	6.0	110.0	357
7433	P - 4479	10.0	140.0	350
7416	P - 3046	6.0	110.0	348
6796	P - 564	8.0	140.0	276
7407	P - 2863	8.0	140.0	347
7408	P - 4827	12.0	140.0	347
7409	P - 3512	6.0	140.0	457
7410	P - 1184	6.0	110.0	347
7411	P - 4735	12.0	90.0	347
7413	P - 1974	8.0	140.0	348
7426	P - 1246	8.0	140.0	381
7415	P - 1153	8.0	100.0	350
7444	P - 4654	8.0	100.0	351
7417	P - 1468	6.0	110.0	348
7418	P - 764	6.0	100.0	348
7419	P - 1743	6.0	140.0	348
7420	P - 4490	8.0	140.0	349
7421	P - 3490	8.0	140.0	354
7422	P - 4110	8.0	140.0	349
7423	P - 3759	6.0	100.0	354
7414	P - 1678	8.0	100.0	350
7473	P - 2524	6.0	100.0	464
7442	P - 593	6.0	110.0	351
7465	P - 3713	12.0	110.0	355
7466	P - 4552	8.0	110.0	355
7467	P - 3727	8.0	140.0	355
7468	P - 1066	8.0	140.0	355
7469	P - 711	6.0	110.0	355
7470	P - 4620	8.0	140.0	356
7463	P - 2436	6.0	140.0	422
7472	P - 1594	12.0	100.0	356
7462	P - 3070	8.0	140.0	354
7474	P - 3757	6.0	100.0	362
7475	P - 4651	8.0	140.0	356
7476	P - 1397	6.0	100.0	356
7477	P - 1595	12.0	100.0	357
7478	P - 2756	6.0	110.0	357
7479	P - 461	6.0	140.0	357
7480	P - 2269	6.0	110.0	357
7471	P - 1748	8.0	140.0	356
7454	P - 1446	8.0	140.0	396
7445	P - 761	8.0	140.0	351
7446	P - 2233	6.0	100.0	357
7447	P - 2261	8.0	110.0	352
7448	P - 658	8.0	110.0	352

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7449	P - 4045	12.0	140.0	352
7450	P - 3040	10.0	140.0	352
7451	P - 1526	6.0	100.0	352
7464	P - 1083	16.0	110.0	355
7453	P - 2434	8.0	140.0	353
7559	P - 1933	8.0	110.0	366
7455	P - 3934	6.0	140.0	353
7456	P - 2835	6.0	110.0	354
7457	P - 3889	6.0	100.0	354
7458	P - 3458	8.0	140.0	354
7459	P - 623	8.0	140.0	354
7460	P - 3782	6.0	100.0	354
7461	P - 2407	6.0	110.0	357
7452	P - 587	8.0	140.0	352
7664	P - 769	20.0	110.0	381
7672	P - 3772	6.0	100.0	382
7656	P - 2678	6.0	100.0	382
7657	P - 4035	8.0	140.0	406
7658	P - 2055	8.0	140.0	381
7659	P - 2825	8.0	140.0	380
7660	P - 2300	6.0	110.0	380
7661	P - 32	8.0	110.0	381
7654	P - 3479	12.0	110.0	380
7663	P - 656	6.0	110.0	381
7653	P - 831	6.0	100.0	383
7665	P - 4361	20.0	110.0	385
7666	P - 547	8.0	110.0	381
7667	P - 1174	8.0	140.0	381
7668	P - 2163	6.0	100.0	389
7669	P - 2063	8.0	140.0	392
7670	P - 865	8.0	110.0	381
7557	P - 2082	8.0	140.0	428
7662	P - 1851	6.0	110.0	381
7645	P - 1871	12.0	100.0	412
7636	P - 1920	6.0	110.0	381
7637	P - 2484	8.0	140.0	377
7638	P - 1000	8.0	110.0	378
7639	P - 1127	8.0	110.0	387
7640	P - 1394	16.0	140.0	392
7641	P - 2672	8.0	100.0	390
7642	P - 1257	6.0	140.0	467
7655	P - 556	6.0	110.0	380
7644	P - 4597	8.0	140.0	382
7673	P - 3682	6.0	140.0	536
7646	P - 2775	8.0	140.0	527
7647	P - 530	6.0	110.0	379
7648	P - 541	8.0	140.0	381

Existing System Model/Pipe Calibration Data

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7649	P - 763	6.0	110.0	400
7650	P - 2483	8.0	140.0	380
7651	P - 800	8.0	140.0	380
7652	P - 1223	6.0	110.0	380
7643	P - 2451	6.0	140.0	380
7702	P - 562	8.0	140.0	387
7671	P - 2823	8.0	140.0	382
7694	P - 3226	6.0	110.0	386
7695	P - 3354	8.0	140.0	395
7696	P - 25	12.0	110.0	387
7697	P - 3971	8.0	140.0	387
7698	P - 1173	8.0	110.0	387
7699	P - 2697	6.0	100.0	387
7692	P - 1952	8.0	140.0	391
7701	P - 3823	8.0	140.0	387
7691	P - 2214	6.0	110.0	386
7703	P - 2187	8.0	140.0	387
7704	P - 2366	12.0	140.0	388
7705	P - 4230	12.0	140.0	388
7706	P - 1608	6.0	100.0	458
7707	P - 1563	6.0	100.0	396
7708	P - 629	6.0	110.0	388
7405	P - 3860	6.0	100.0	346
7700	P - 2974	6.0	110.0	387
7683	P - 1975	6.0	140.0	384
7674	P - 2427	6.0	100.0	383
7675	P - 1579	8.0	100.0	383
7676	P - 3877	6.0	100.0	383
7677	P - 295	10.0	140.0	387
7678	P - 805	8.0	110.0	383
7679	P - 768	8.0	100.0	384
7680	P - 1542	6.0	100.0	383
7693	P - 4010	8.0	100.0	386
7682	P - 962	6.0	110.0	384
7633	P - 3422	8.0	110.0	383
7684	P - 3876	6.0	100.0	384
7685	P - 1873	4.0	100.0	391
7686	P - 3043	6.0	140.0	385
7687	P - 13	8.0	140.0	385
7688	P - 3152	6.0	110.0	385
7689	P - 2217	6.0	110.0	385
7690	P - 4669	6.0	110.0	386
7681	P - 3547	8.0	140.0	384
7587	P - 536	8.0	140.0	370
7635	P - 1164	6.0	100.0	382
7579	P - 1244	6.0	110.0	369
7580	P - 1544	6.0	100.0	369

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7581	P - 1553	6.0	100.0	369
7582	P - 4084	8.0	140.0	369
7583	P - 1406	6.0	100.0	369
7584	P - 1076	10.0	140.0	370
7577	P - 1935	8.0	140.0	368
7586	P - 3739	6.0	140.0	430
7576	P - 3986	8.0	140.0	383
7588	P - 1749	8.0	140.0	370
7589	P - 3990	8.0	140.0	371
7590	P - 3725	8.0	140.0	370
7591	P - 4282	6.0	110.0	370
7592	P - 1534	8.0	100.0	370
7593	P - 591	6.0	100.0	370
7594	P - 112	6.0	140.0	471
7585	P - 4459	8.0	140.0	370
7568	P - 2486	12.0	110.0	372
7710	P - 1143	8.0	100.0	393
7560	P - 2213	6.0	140.0	366
7561	P - 3120	6.0	140.0	368
7562	P - 1761	8.0	140.0	366
7563	P - 3365	6.0	140.0	368
7564	P - 2838	6.0	110.0	374
7565	P - 155	8.0	140.0	366
7578	P - 4826	12.0	140.0	368
7567	P - 1667	8.0	100.0	366
7597	P - 3796	6.0	100.0	371
7569	P - 1648	8.0	100.0	367
7570	P - 4486	12.0	140.0	367
7571	P - 1982	12.0	110.0	368
7572	P - 2339	6.0	140.0	367
7573	P - 2308	8.0	140.0	367
7574	P - 1856	8.0	110.0	369
7575	P - 4291	10.0	110.0	368
7566	P - 3487	12.0	140.0	366
7626	P - 1853	8.0	110.0	376
7617	P - 998	12.0	110.0	374
7618	P - 1708	8.0	140.0	375
7619	P - 595	8.0	110.0	375
7620	P - 579	8.0	110.0	375
7621	P - 3546	8.0	140.0	378
7622	P - 1649	8.0	100.0	385
7623	P - 3528	6.0	140.0	375
7595	P - 3326	8.0	140.0	370
7625	P - 2311	6.0	140.0	377
7614	P - 3749	8.0	110.0	381
7627	P - 4289	10.0	140.0	382
7628	P - 407	8.0	110.0	376

FlexTable: Pipe Table (Figures.wtg)

Current Time: 0.000 hours

ID	Label	Diameter (in)	Hazen-Williams C	Length (ft)
7629	P - 479	8.0	140.0	1,129
7630	P - 3581	16.0	140.0	377
7631	P - 2926	12.0	140.0	378
7632	P - 1180	12.0	110.0	379
7558	P - 4442	10.0	110.0	373
7624	P - 466	6.0	140.0	375
7606	P - 207	6.0	140.0	373
7634	P - 3552	6.0	140.0	379
7598	P - 4670	6.0	110.0	373
7599	P - 762	6.0	110.0	371
7600	P - 1535	8.0	100.0	371
7601	P - 1263	20.0	110.0	372
7602	P - 4678	12.0	140.0	374
7603	P - 3704	12.0	140.0	454
7616	P - 4872	10.0	140.0	421
7605	P - 3979	8.0	140.0	383
7615	P - 2071	6.0	140.0	374
7607	P - 1079	8.0	140.0	373
7608	P - 2780	12.0	110.0	373
7609	P - 4319	8.0	140.0	373
7610	P - 241	8.0	140.0	377
7611	P - 1214	8.0	100.0	383
7612	P - 3730	8.0	140.0	385
7613	P - 2165	8.0	100.0	384
7596	P - 2160	6.0	100.0	420
7604	P - 4796	6.0	140.0	414