the city of RIDGELAND

NOVEMBER 2020

2020
CITY OF RIDGELAND
WATER MASTER PLAN

PREPARED BY:

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1. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The City of Ridgeland owns, operates, and maintains a water distribution that serves over its population of over 24,100 through nearly 8,000 water connections. The City of Ridgeland is committed to providing a high quality of life to its residents as is shown through the numerous awards including being recognized as a Tree City USA, a Bicycle Friendly Community, top 100 place to live named by MONEY® Magazine in 2007. The City's commitment to its citizens is also demonstrated by its commitment to providing high-quality and reliable water service. A reliable water-system is a necessary backbone component required for any City to thrive. Ridgeland recognizes the importance of its infrastructure systems and places a high priority on these systems.

As the City continues to grow and change, improvements are continuously needed throughout the water system. The most pressing issues facing the water system include the following:

- **Facilities rehabilitation/replacement**
- **Residential and commercial growth**
- **Annexation that will increase the City's boundary**

An analysis of the City's supply and storage infrastructure found deficits in both available supply and storage capacity. The details of these evaluations are included in Section 6. To remedy these deficiencies, the City proposes a multi-phase approach which is shown below.

TABLE 1 – RECOMMENDED IMPROVEMENTS

Recommended Improvements	Estimated Cost
Phase 1 Improvements	
Highland Colony Parkway Tank and Well	$4,545,250
Colony Park Blvd (Highland Colony Pkwy to Sunnybrook Rd), I-55 Frontage Rd S, I-55 Frontage Rd N, & Steed Rd Water Main Connections	$2,363,426
Highland Colony Pkwy Water Main Connection	$886,625
Commerce Park Connector Water Main Connection	$987,500
Colony Park Blvd Water Main Connection (Sunnybrook Rd to Hwy 51)	$1,470,375
Midway Ave to I-55 Water Main Connection	$568,275
Total Phase 1 Improvements	**$10,821,451**
Phase 2 Improvements	
Midway Road Well	$1,795,750
Western System New Tank and Well	$4,545,250
Olde Towne Water Main Improvements	$1,774,500
West County Line Road Water Main Connection	$1,042,400

[1] According to MDOH, the City of Ridgeland has 13,953 connections. However, this is equivalent connections which includes multiple apartment complexes and commercial centers. The City has 7,866 actual connections.

Recommended Improvements	Estimated Cost
Peach Orchard Well to North Park Tank Water Main Connection	$171,350
North Park Dr to Old Canton Rd Water Main Connection	$227,500
Total Phase 2 Improvements	**$9,556,750**

2. PURPOSE AND NEED

The City of Ridgeland completed its Ridgeland Area Master Plan (RAMP) in 2008. The RAMP discussed priorities of the growing city and outlined a framework of projects, programs, and policies which would allow the city to continue its status as an attractive location for residential, commercial, and business growth. Some of the items in the RAMP include:

- Growth of commercial corridors. **Infrastructure capacity must be adequate to support this growth**
- Demolition of apartment complexes and redevelopment as less dense residential and commercial zones.
- Growth in the previously annexed western part of the City, as well as in the "Additional Planning Area" to the north and west of the city.

The water distribution system of the City of Ridgeland serves an area of 20.75 square miles with a population of 24,104 and consists of over 180 miles of transmission and supply mains supplied by its eight existing water wells found in two different confined aquifers. The City stores water in four elevated water storage tanks and in one ground storage tank that functions as an elevated tank. The City's water distribution system is divided into two hydraulic gradelines to provide adequate pressures throughout the system. The higher gradeline includes areas in the northwest portion of the City and the previously acquired Livingston Road Water Association (LRWA).

Copies of the most recent Mississippi Department of Health (MSDH) Capacity Assessment Form and Inspection Report can be found in the Appendix. In addition, the City completed a 2013 Water System Facility Plan and a 2004 Comprehensive Water System Plan. This Facility Plan will provide an update to the results presented in the 2013 Water System Facility.

The City has completed numerous water system improvements, including the following since the 2013 Plan:

- Samuels Lane Well Rehabilitation – This well rehabilitation provided a redundant water supply source for the higher gradeline area.
- Water Mains in Bridgewater 11-A Subdivision
- Water Mains in Bridgewater 11-C Subdivision

Despite the City's commitment to its water system, the City is in need of additional water distribution system infrastructure. These needs are throughout the water distribution systems. These needs include the following:

- Supply - Additional supply capacity is needed to meet existing and future peak demands. The existing wells are not capable of meeting the current peak day demand within MSDH recommended runtimes.
- Storage - The City needs additional elevated storage capacity to meet current and future MSDH storage guidelines.
- Distribution System - In addition, numerous distribution improvements are needed to improve service throughout the system.

These required improvements to address these needs will be detailed in Development of Alternatives Sections. **These improvements are necessary for addressing the following types of needs:**

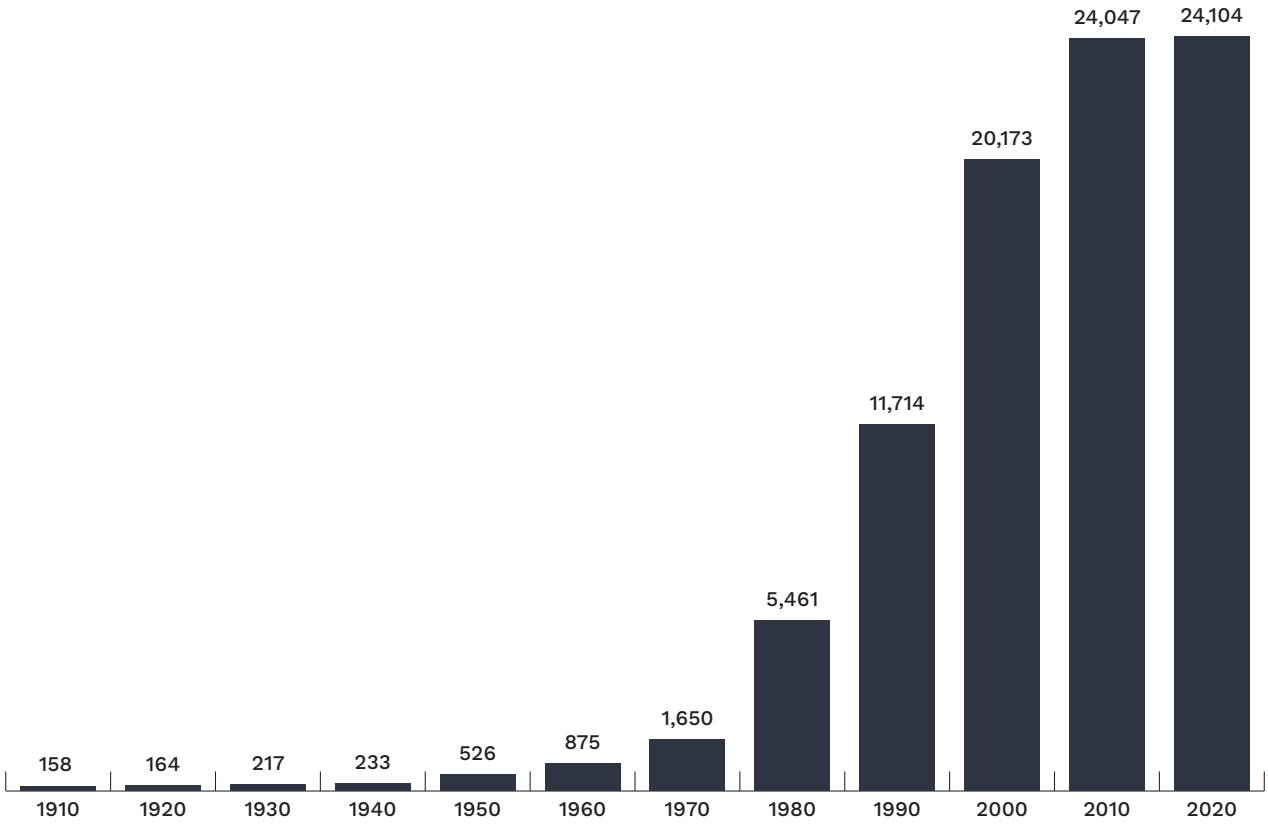
- **Facilities rehabilitation/replacement**
- **Residential and commercial growth**
- **Annexation that will increase the City's boundary**

3. EXISTING SITUATION

General Environment

The planning area for the City's water distribution system is shown in Exhibit 2.1. This area includes the existing City boundaries, the previously acquired Livingston system, and nearby areas within one mile of the existing boundaries. Within the area shown as "Future Expansion", the City will continue to require developers to construct municipal grade distribution system components before allowing connection to the City's system, as required by the City's subdivision ordinance. The planning area is served exclusively by groundwater wells. The system is wholly owned by the City of Ridgeland. The zip codes included in this area are 39157 and 39158. Current and historical population data for the City is presented in the following table. As shown, the City has experienced tremendous growth since 1980. However, beginning in 2000 growth has been at a much slower rate than in previous decades.

FIGURE 1 – CITY OF RIDGELAND HISTORICAL POPULATION FIGURES



Existing Drinking Water Facilities

As mentioned previously, the existing drinking water facilities for the City include the eight water supply wells and five storage tanks. These facilities are shown on Exhibit 2.2. In addition, these facilities are summarized on the following tables.

TABLE 2 – CITY OF RIDGELAND WELL INVENTORY

Location	Built	Source Aquifer	Capacity (gpm)	Screen Depth (ft)	Casing Diameter (in)	Static Water Level	Drawdown (ft.)	Pumping Water Level Drawdown (ft.)	Pump Setting Depth	Specific Capacity (gpm/ft)
Peach Orchard	1973	Sparta	613	1,113	16	388 *(2011)*	20 *(2018)*	408	470	31
Charity Church	1973	Cockfield	805	720	16	280 *(2018)*	40 *(2018)*	322	330	20
Lake Harbour	1983	Cockfield	791	587	16	228 *(2006)*	34 *(2018)*	262	330	23
School Street	1986	Sparta	670	1,153	16	422 *(2018)*	22 *(2018)*	444	450	30.5
Hardy Road	1993	Sparta	1,320	1,335	18	451 *(2018)*	21 *(2018)*	472	540	63
Old Canton Road	1999	Cockfield	950	710	16	250 *(2005)*	40 *(2007)*	290	360	24
Western	2010	Sparta	1,500	1,230	16	437 *(2018)*	43 *(2018)*	516	5440	35
Samuels Lane	2017	Sparta	742	1,216	16	280 *(2018)*	53 *(2018)*	536	530	14
Total Supply Capacity, gpm			**7,391**							

TABLE 3 - CITY OF RIDGELAND TANK INVENTORY

Location	Built	Capacity (gals)	Ground Elevation (ft)	Bottom Capacity Elevation (ft)	Head Range (ft)	Bowl Diameter (ft)	Overflow Elevation (ft)
Natchez Trace	1973	300,000	385	485	22.5	46	507.5
North Park	1983	500,000	355	476	31.5	56	507.5
Hardy Road	1992	1,000,000	476	476	30.5	75	507.5
Old Canton Road	1993	1,000,000	353	467.5	40	74	507.5
Western	2010	500,000	444	561.5	37.5	55.5	599
Total Storage Capacity		**3,300,000**					

As noted by MSDH calculations the City system is operating at over75% of design capacity. While this is an improvement from the 2013 plan, when the system was operating at 91% capacity, this is not adequate. MSDH recommends that systems at 75% capacity or greater include improvements in design capacity when planning for system improvements. The nearly 14,000 equivalent connections throughout the City are impacted by this deficiency. A detailed breakdown of residential, commercial, and public building demand can be found in the Appendix. Exhibits 2.3 shows the water certificates in the area and Exhibit 2.4 shows the water storage tanks and zones they serve.

To compare the current flow demand to the original hydraulic design capacity, the most recent tests were compared to the original design capacity of the wells. The City has undertaken a successful rehabilitation and maintenance program over the lifespan of its wells as shown by the following results.

TABLE 4 – WELL CAPACITY COMPARISON

Well	Original Design Capacity (gpm)	Current Capacity (gpm)
Peach Orchard	495	613
Charity Church	700	805
Lake Harbour	700	791
School Street	950	670
Hardy Road	1,600	1,320
Old Canton Road	1,300	950
Western	1,600	1,500
Samuels Lane	775	742
Total Well Capacity, gpm	**8,120**	**7,391**

Current system pressures maintained in the distribution system are shown on Exhibit 2.5. The City does not operate any treatment facilities beyond chlorination and fluoridation. The system has no Major Users (MU). At this time, the City can provide service to the entire planning area, provided recommended improvements are implemented.

The City's most recent water loss reports can be found in the Appendix. The year to date loss is 11%.

4. FUTURE ENVIRONMENT

If the City chose to not construct the recommended improvements to correct the system deficiencies, the No Action alternative, the following negative impacts will be felt by all users of the City's system:

- City of Ridgeland System Supply Improvements - Without the recommended improvements, this system cannot meet current or future peak demands within the MSDH recommended runtime conditions (12 hours per day).
- City of Ridgeland System Storage Improvements - The City is in need of additional elevated storage to meet current and future MSDH recommended storage capacity.
- Both systems need distribution improvements in order to increase the hydraulic connectivity of the existing networks. By adding these additional water mains, the systems will be able to provide better service to both existing and future customers. The performance of the system with the future demands is shown in the hydraulic model in the Appendix.

Additionally, the following table compares the environmental impact of the No Action alternative with the alternative recommending construction of the proposed improvements.

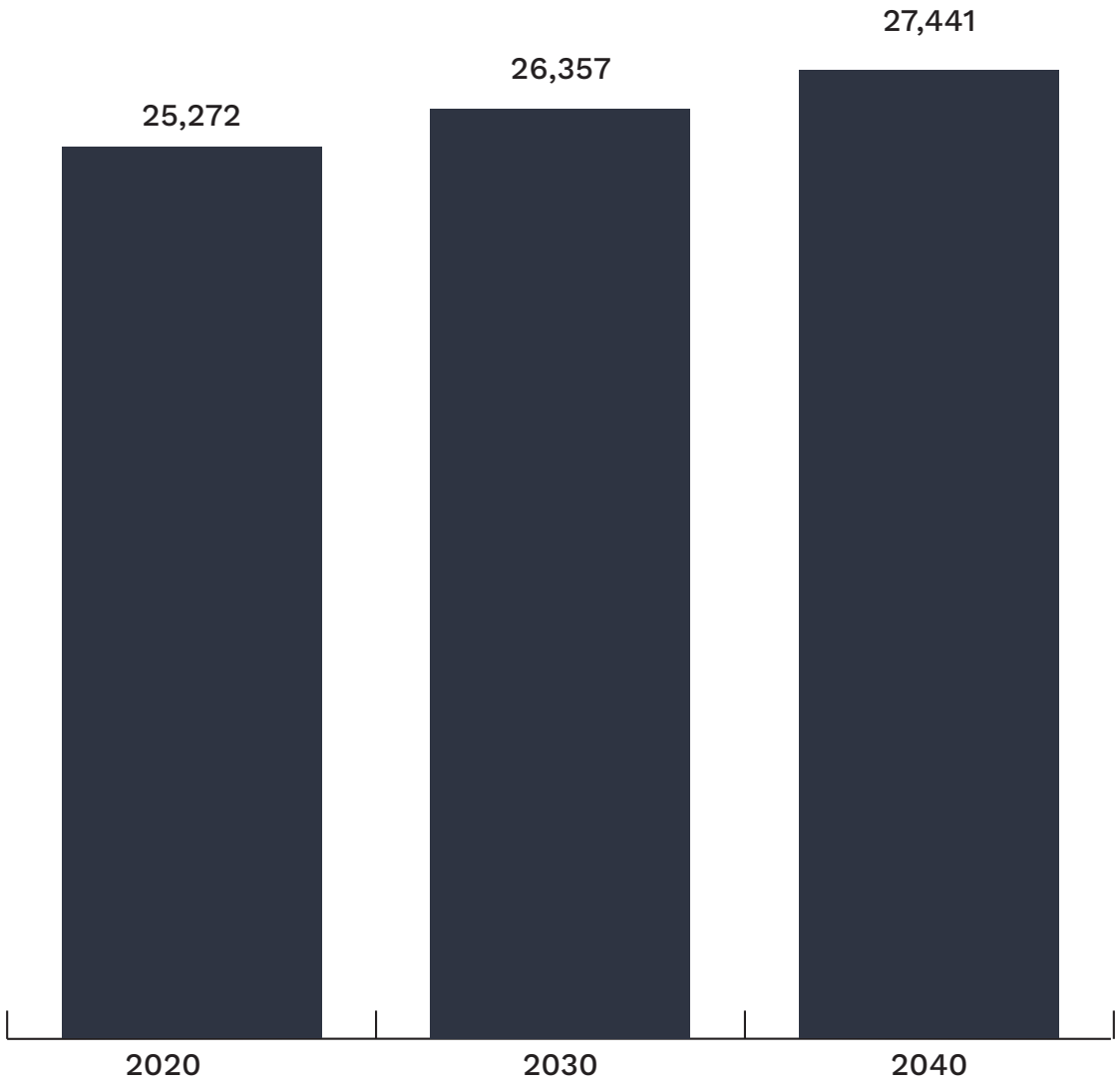
Environmental Impact	No Action Alternative	Construct Proposed Water System Improvements
Surface/Groundwaters	Can eventually lead to more on-site well systems to serve individual homes.	No impact on surface water. Adequate groundwater for these purposes.
Archaeological/Historical/ Cultural Resources	No Impact	No Impact
Vegetative/Wildlife	No Impact	No post-construction impact and all reasonable efforts will be made during construction to prevent disturbance.
Wetlands/Navigable Waterways	No Impact	No post-construction impact and all reasonable efforts will be made during construction to prevent disturbance.
Floodplains	No Impact	No post-construction impact and all reasonable efforts will be made during construction to prevent disturbance.
Coastal Zones	Not Applicable	Not Applicable
Wild/Scenic Rivers	Not Applicable	Not Applicable
Air Quality	Not Applicable	Not Applicable

5. DEVELOPMENT OF WATER DEMAND

Residential

Population projections through 2040 are shown in the following table. These projections were completed by the Central Mississippi Planning and Development District (CMPDD) as one of its responsibilities as the Metropolitan Planning Organization (MPO). As the area MPO, CMPDD is responsible for population projections used to support area transportation projects which are partially federally funded. As shown below, the CMPDD has predicted very conservative growth rates when compared to historical growth rates in the City.

FIGURE 2 - CITY OF RIDGELAND PLANNING AREA PROJECTED POPULATIONS



The growth predictions are divided into Traffic Analysis Zones (TAZ). For purposes of flow development and infrastructure sizing, if the population in a TAZ was projected to decrease, the future population was modified to be equivalent to the current population. Exhibit 4.1 illustrates the TAZ's and the 2010 and 2040 population for each. Historical well data was used to determine the present day demands. Over the last 4 years, the total water demand slightly decreased; therefore, an average over the last 5 years (2015 – 2019) was used for the "Current Average Day Demand". In the hydraulic model the TAZ populations were converted to demands based upon current metered usage per connection.

Water consumption changes with the seasons, the days of the week, and the hours of the day. Fluctuations are greater in small than in large communities, and during short rather than long periods of time. The variation in demand is normally reported as a factor of the average day, often referred to as peak factor. Water supply facility design should be based on the peak day demand. The average day and peak day demands are detailed in the following table and hydraulic model calculations in the Appendix.

TABLE 5 - CURRENT AND PROJECTED DEMANDS*

Ridgeland Planning Area Population and Demands	
Current Planning Area Population	25,272
Current Average Day Demand, gpd	3,775,714
Current Peak Day Demand, gpd	6,384,714
2040 Planning Area Population	27,983
2040 Average Day Demand, gpd	4,345,085
2040 Peak Day Demand, gpd	7,386,645

**Peak Factor = 1.7 - From the ratio of average to peak day demands for subdivisions/urban MSDH Design Guide*

Commercial/Industrial/Major Issues

As previously stated, the system has no "Major Users".

Design Demand

As there are no "Major Users", the design demand will be based solely on the existing demands and projected typical demands.

6. DEVELOPMENT OF ALTERNATIVES

Consolidation

The City has already consolidated its system with the Livingston Road Water Association system. By purchasing this system and providing needed upgrades, the system is now capable of providing a much higher quality of service to the former Livingston Road customers and existing City customers located in the higher ground elevation area. There are no other systems in the area where consolidation will be a practical alternative to completing system improvements.

Supply

The City system is currently composed of entirely groundwater supply wells. It will be cost-prohibitive to move entirely to a surface water supply system. Due to the existing chemical imbalances, it is not recommended to mix the two water supplies. The City should continue to invest in groundwater supply wells as its primary water source. As with all systems that use groundwater as their primary source, aquifer drawdown is a concern.

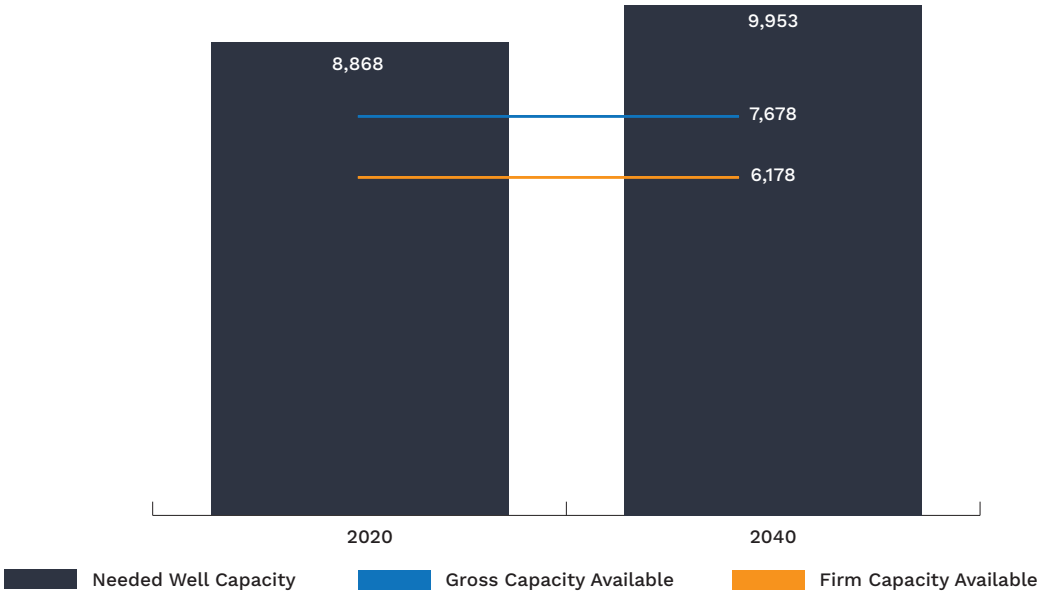
Evaluation of the City's supply infrastructure is necessary to determine if there are existing deficiencies within the City's available supply infrastructure. Despite the success of the City's maintenance program for wells, the City's existing wells are not capable of meeting the current or future needs of the City within MSDH recommendations. The evaluation of the supply infrastructure determined that the City's wells are not capable of meeting firm supply capacity (total supply capacity when the largest well is not in service) or gross supply capacity (all wells running) within MSDH recommended well runtimes. **Well-designed systems are capable of meeting the maximum daily demand with only the firm supply capacity.** This allows for adequate system redundancy and reduces the likelihood of a water supply failure. The details of the supply evaluation are in the following tables/figures.

As shown there, the City does not have adequate supply capacity to meet the current and future peak demands within the MSDH recommended runtimes.

TABLE 6 –RIDGELAND PLANNING AREA WATER SUPPLY EVALUATION

Ridgeland Planning Area Demands and Supply Deficiencies	
Actual Supply Capacity, gpm	7,391
Current Average Day Demand, gpd	3,755,714
Current Peak Day Demand, gpd	6,384,714
Gross Daily Water Supply (8 wells, 12 hours/day), gpd	5,321,520
Firm Daily Water Supply (7 wells, 12 hours/day), gpd	4,241,520
System Deficiency, Gross Supply Operating at Recommended Runtimes, gpm (Peak Demand)	1,477
System Deficiency, Firm Supply Operating at Recommended Runtimes, gpm (Peak Demand)	2,977
2040 Peak Day Demand, gpd	7,386,645
System Deficiency, Gross Supply Operating at Recommended Runtimes, gpm	2,868
System Deficiency, Firm Supply Operating at Recommended Runtimes, gpm	4,368

FIGURE 3 – RIDGELAND PLANNING AREA WATER SUPPLY EVALUATION



This deficiency is further highlighted by an analysis of average runtimes for each well. The results are presented in the following table. As shown there, **six of the City's eight wells are nearing the recommended daily run times to meet the average daily needs.** The City cannot meet the growing demands with its existing water supply infrastructure.

TABLE 7 – WELL CAPACITY AND RUNTIMES

Well	FY 19 Metered Water Pumped (1000 gal)	Average Daily Demand (1000 gal)	Well Capacity, gpm	Average Daily Runtime, hours	Annual Well Total Using Recommended Runtimes (7d/ week, 12 hr/d)(1000 gal)
Peach Orchard	110,231	210	587	9	154,264
Charity Church	136,805	260	710	9	186,588
Lake Harbour	144,661	275	748	9	196,574
School Street	152,995	291	682	10	179,230
Hardy Road	323,268	615	1,275	12	335,070
Old Canton Road	293,303	558	1,325	10	348,210
Western	81,957	156	1,500	2	394,200
Samuels Lane	37,258	71	851	2	223,643

As previously mentioned, the City's water system consists of two hydraulic gradelines. The upper gradeline wells are the Samuels Lane and Western wells. As shown in Table 8, these wells typically operate the least number of hours on any given day. The upper system is capable of feeding water into the lower system by means of motorized valves, however the runtimes illustrate that these upper wells are either not able to meet the excess demand on the lower system or are not being used to supplement the wells in the lower system. These upper wells may not be utilized more due to their location relative the location of the bulk of the existing demand within the City. The upper system currently has only 8% of the water demand on the entire system, however much of the City's future growth is expected in this area.

By 2040, the upper system will have approximately 13% of the water demand. The lower system tanks could call upon motor actuated valves located between the two systems to help exercise the upper wells more and assist with the lower system wells' burden to supply the bulk of the City's water demands. To further evaluate the needed well supply capacity, the individual gradelines were evaluated separately. The higher gradeline is the "Western Planning Area" and the lower gradeline is the "Eastern Planning Area". The following charts and tables illustrate the supply evaluation for each hydraulic gradeline.

TABLE 8 – EASTERN PLANNING AREA SUPPLY EVALUATION

Eastern Ridgeland Planning Area Demands and Supply Deficiencies	
Actual Supply Capacity, gpm	5,149
Current Average Day Demand, gpd	3,332,746
Current Peak Day Demand, gpd	5,665,669
Gross Daily Water Supply (6 wells, 12 hours/day)	3,707,280
Firm Daily Water Supply (5 wells, 12 hours/day)	2,756,880
System Deficiency, Gross Supply Operating at Recommended Runtimes, gpm (Peak Demand)	2,720
System Deficiency, Firm Supply Operating at Recommended Runtimes, gpm (Peak Demand)	4,040
2040 Peak Day Demand, gpd	5,748,065
System Deficiency, Gross Supply Operating at Recommended Runtimes, gpm	2,834
System Deficiency, Firm Supply Operating at Recommended Runtimes, gpm	4,154

FIGURE 4 – EASTERN PLANNING AREA WATER SUPPLY EVALUATION

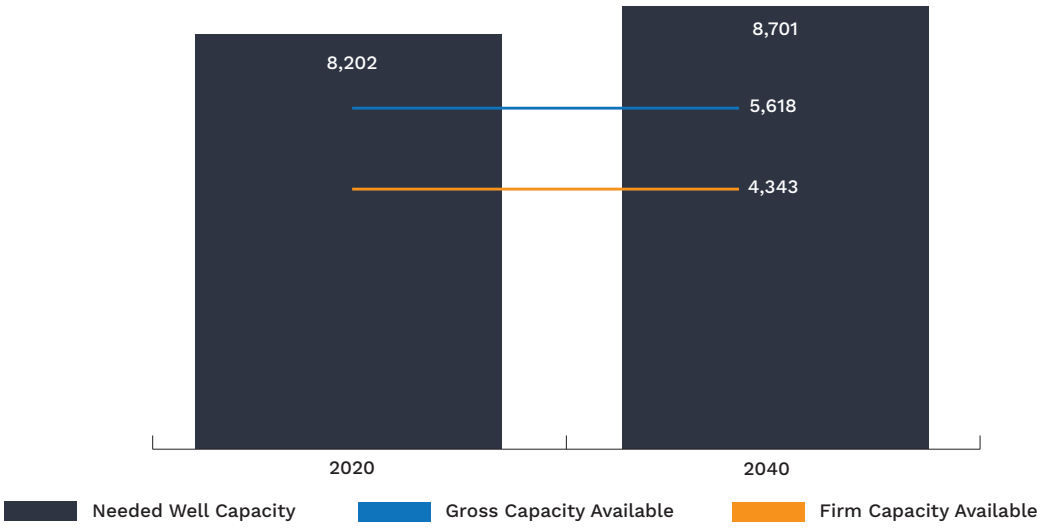
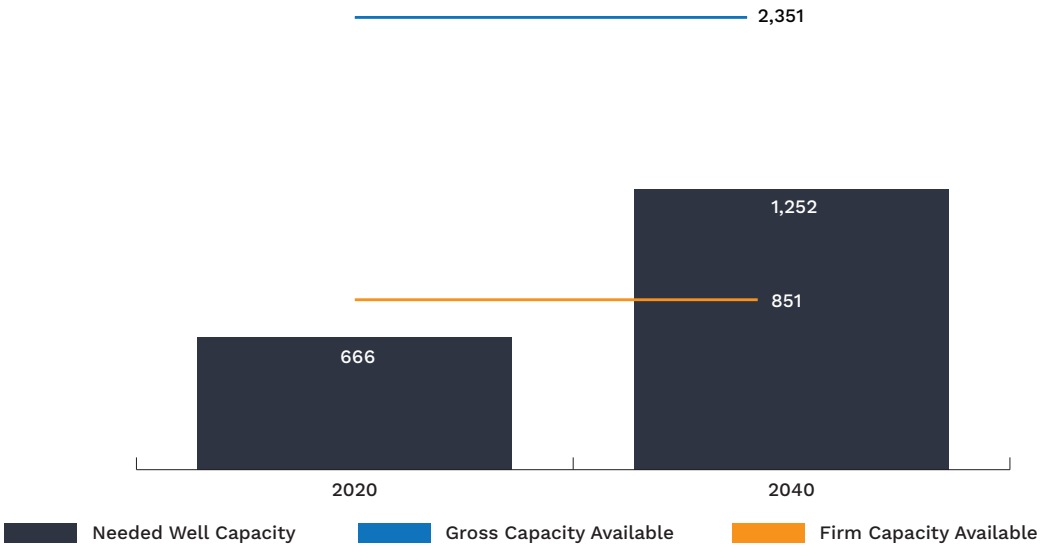


TABLE 9 – WESTERN PLANNING AREA SUPPLY EVALUATION

Western Ridgeland Planning Area Demands and Supply Deficiencies	
Actual Supply Capacity, gpm	2,242
Current Average Day Demand, gpd	422,967
Current Peak Day Demand, gpd	719,045
Gross Daily Water Supply (2 wells, 12 hours/day)	1,614,240
Firm Daily Water Supply (1 well, 12 hours/day)	534,240
System Deficiency, Gross Supply Operating at Recommended Runtimes, gpm (Peak Demand)	1,243
System Deficiency, Firm Supply Operating at Recommended Runtimes, gpm (Peak Demand)	257
2040 Peak Day Demand, gpd	1,638,580
System Deficiency, Gross Supply Operating at Recommended Runtimes, gpm	34
System Deficiency, Firm Supply Operating at Recommended Runtimes, gpm	1,534

FIGURE 5 – WESTERN PLANNING AREA WATER SUPPLY EVALUATION



As these illustrate, both systems need additional water supply capacity to meet the future demands. The lower system needs additional water supply infrastructure to meet both current and future peak demands. In order to correct these supply deficiencies, the City intends to construct multiple new wells. The planned improvements include construction of three new wells at approximately 1,500 gpm each. This will provide a minimum of 4,500 gpm of water supply, which will address the current and future deficiencies. Two wells will be on the lower (Eastern) system with one additional well on the upper (Western) system. The City should also consider rehabilitating School Street Well. Rehabilitation of this well would increase its capacity to near the original design capacity. There are no feasible alternatives other than new well construction/well rehabilitation.

Treatment

The existing groundwater wells in the City's system do not require treatment beyond chlorination and fluoridation. It is expected that additional wells in the area will have similar treatment requirements. However, the Hardy Road Well has a history of producing water with color and organic issues. Because of this possibility, future test wells will include sampling to determine if these issues exist at these new well sites.

As with all groundwater, the City's system is susceptible to producing Disinfection By-Products (DBP's). The disinfectants used to destroy pathogens in water and the by-products of the reaction of these disinfectants with organic materials in the water are of potential health concern. One class of DBPs has been regulated since 1979. This class is known as trihalomethanes (THMs). THMs are formed when a water containing an organic precursor is chlorinated. In this case it means an organic compound capable of reacting to produce a THM. The precursors are natural organic substances formed from the decay of vegetative matter, such as leaves, and aquatic organisms. THMs are of concern because they are known or potential carcinogens. The City has experienced some issues with this previously. The City continues to use preventative maintenance and building policies, such as flushing and avoiding dead-end lines, to reduce the possibility of forming DBP's. The City will continue to monitor its system in the future for these issues.

EPA has regulated the amount of Lead and Copper in drinking water since the early 1990's. This regulation is commonly referred to as the "Lead and Copper Rule". Throughout the 2000's, this rule was revised several times in regards to monitoring, reporting, and public education. EPA is currently considering additional revisions to this rule. These proposed revisions include:

- Inventory of all lead service lines (LSL) in the distribution system - publically available
- Collection of tap samples from homes with LSL
- Replacement of water system owned portion of LSL when customers replace customer-owned portion - (samples over 15 ppb)
- Revised tap sampling instructions
- Establishment of new trigger level of 10 ppb and report level exceedance within 24 hours to customers
- Sampling at schools and childcare facilities

The City will need to be begin efforts to identify LSL and other required measures when the rule goes into effect.

Storage

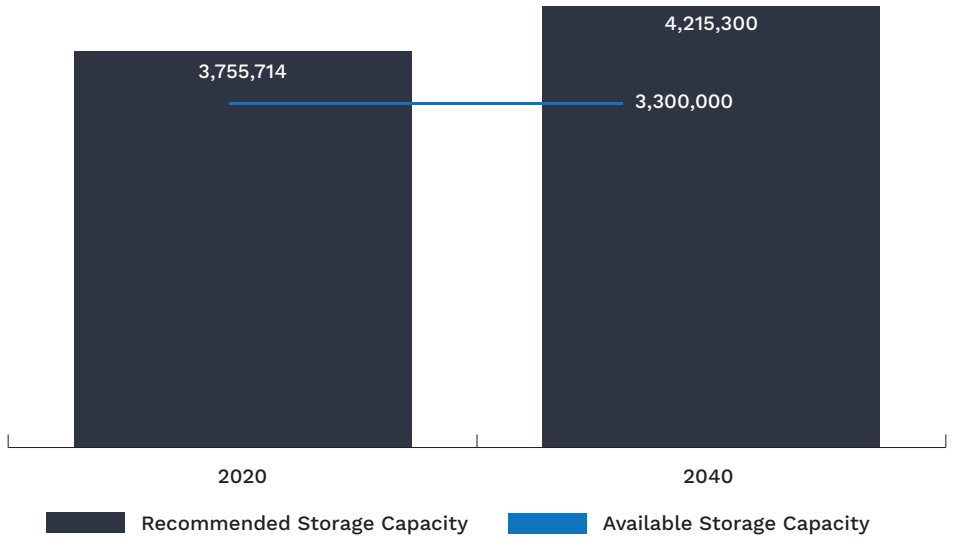
Evaluation of the City's storage infrastructure was performed to determine if any deficiencies exist. The City's storage infrastructure consists entirely of elevated storage tanks. MSDH states that a system's minimum elevated storage capacity should be equivalent to at least 50% of the average daily demand.

However, MSDH "strongly encourages" systems to have elevated storage equivalent to 100% of the average daily demand. The following tables and figures details water storage capacity evaluation.

TABLE 10 – RIDGELAND PLANNING AREA STORAGE CAPACITY EVALUATION

Ridgeland Planning Area Demands and Storage Deficiencies	Capacity (gals)
Natchez Trace	300,000
North Park	500,000
Hardy Road	1,000,000
Old Canton Road	1,000,000
Western	500,000
Total Storage Capacity	**3,300,000**
Current Ridgeland Planning Area Average Daily Demand, gal	3,755,714
Minimum Storage Amount (50% of Average Day)	1,877,857
Recommended Storage Amount (100% of Average Day)	3,755,714
Current Ridgeland Planning Area Storage Deficiency	(455,714)
2040 Average Day Demand, gpd	4,345,085
Minimum Storage Amount (50% of Average Day)	2,172,543
Recommended Storage Amount (100% of Average Day)	4,345,085
2040 Ridgeland Planning Area Storage Deficiency	(1,045,085)

FIGURE 6 – RIDGELAND PLANNING AREA WATER STORAGE EVALUATION



Similar to the water supply capacity evaluation, a detailed review of the available storage capacity for each hydraulic gradeline is necessary to determine where the true needs of the system are located. The following tables and figures illustrate the storage capacity evaluation for the upper or Western system and the lower or Eastern System.

TABLE 11 – EASTERN PLANNING AREA STORAGE CAPACITY EVALUATION

Eastern Ridgeland Planning Area Demands and Storage Deficiencies	Capacity (gals)
Natchez Trace	300,000
North Park	500,000
Hardy Road	1,000,000
Old Canton Road	1,000,000
Total Storage Capacity	**2,800,000**
Current Eastern Planning Area Average Daily Demand, gal	3,332,746
Minimum Storage Amount (50% of Average Day)	1,666,373
Recommended Storage Amount (100% of Average Day)	3,332,746
Current Ridgeland Planning Area Storage Deficiency	(532,746)
2040 Average Day Demand, gpd	3,381,215
Minimum Storage Amount (50% of Average Day)	1,690,607
Recommended Storage Amount (100% of Average Day)	3,381,215
2040 Ridgeland Planning Area Storage Deficiency	(581,215)

FIGURE 7 – EASTERN PLANNING AREA STORAGE CAPACITY EVALUATION

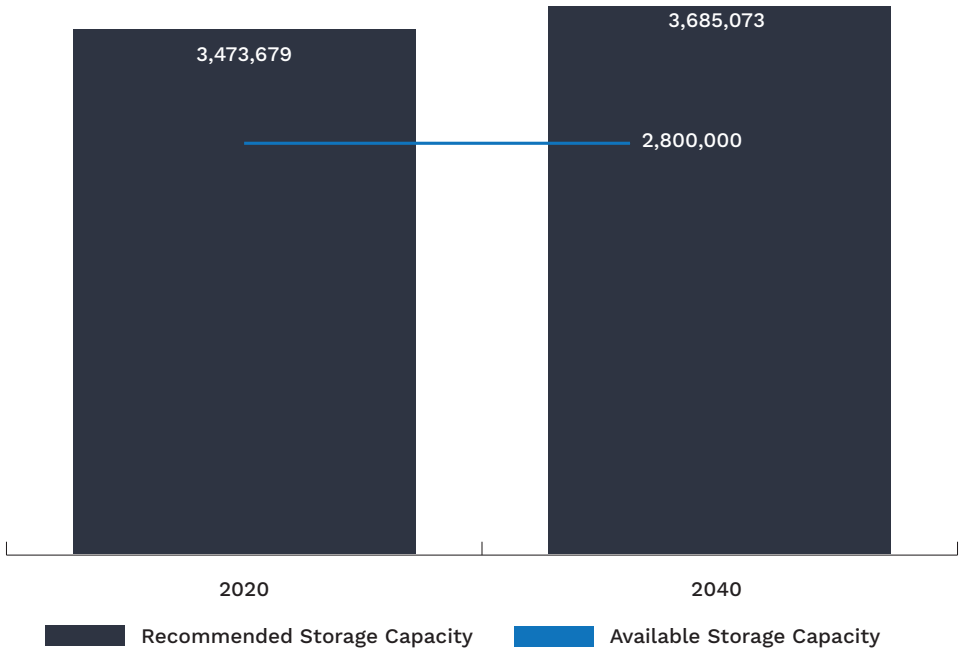
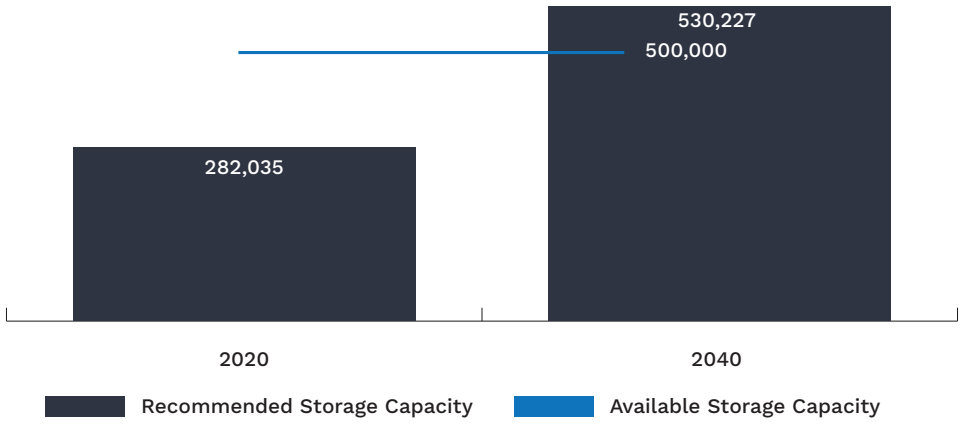


TABLE 12 – WESTERN PLANNING AREA STORAGE CAPACITY EVALUATION

Western Ridgeland Planning Area Demands and Storage Deficiencies	Capacity (gals)
Western	500,000
Total Storage Capacity	**500,000**
Current Western Planning Area Average Daily Demand, gal	422,967
Minimum Storage Amount (50% of Average Day)	211,484
Recommended Storage Amount (100% of Average Day)	422,967
Current Ridgeland Planning Area Storage Deficiency	77,033
2040 Average Day Demand, gpd	963,870
Minimum Storage Amount (50% of Average Day)	481,935
Recommended Storage Amount (100% of Average Day)	963,870
2040 Ridgeland Planning Area Storage Deficiency	(463,870)

FIGURE 8 – WESTERN PLANNING AREA STORAGE CAPACITY EVALUATION



As depicted in the above evaluations, the additional storage capacity should be constructed on both systems. To correct the deficiencies shown, the City intends to construct two additional elevated storage tanks, each with a capacity of 750,000. There are no feasible alternatives other than construction of new storage tanks to provide the needed capacity.

Distribution

Evaluation of the existing distribution system, including a hydraulic model, was performed to determine the needed improvements throughout the system. Details of this model can be found in the Appendix. In order to meet demands throughout the entire system, numerous distribution system upgrades are recommended. Due to increased demands, some mains are recommended to be increased in size. In other cases, new "loops" are recommended to improve the hydraulic connectivity of the system. In addition, these "loops" reduce the potential of forming DBP's by providing better water circulation, or reducing the "travel time" of the water between source and user. These loops will allow the system to better serve both existing and future demands. Details of the proposed improvements are included in the "Selected Plan" Section. Without these distribution improvements, the City will not be able to provide the same quality of water service to its customers throughout the planning period. There are no feasible alternatives other than construction of the distribution improvements.

Water aging is a common issue in water systems and occurs from the amount of time it takes for the water to enter a system from its source, either from a well or aquifer, and leave the system where it is consumed. The factors that influence water aging the most are the flow velocities and the lengths that the water has to travel before being consumed. An analysis was done using WaterCad to generate water aging results throughout the City of Ridgeland's water distribution system. The analysis was done by running a simulation over the duration of a 72-hour time period. Exhibit 5.1 shows the range of water aging in the system from least to greatest and gives an illustration of where the least and most problematic areas are. The most effective way to reduce water aging within a water distribution system is by making connections "looping", like mentioned above, to reduce the number of dead end lines along with decreasing the amount of time it might take for water to exit the system.

7. HYDRAULIC MODEL

A hydraulic model is a useful tool that is used to produce an illustration of a water distribution system to determine how a system is functioning hydraulically on a daily basis under various water demands, as well as identifying any water quality issues. The model predicts low and high pressure areas, available fire flow, water age, water quality and demonstrates the effectiveness/ineffectiveness of proposed system improvements. Water system models use piping information, tank elevations, tank control information, well data, and system demand data to simulate a water system's hydraulic characteristics.

An existing Bentley WaterCAD water model was updated for the City of Ridgeland's water system to evaluate and identify any pressure, water age, supply, and storage concerns. As a result of these findings, improvement scenarios were input into the model to predict the most effective solutions. Updates to the model were done by the following approach:

- The existing water model was updated with any changes from projects that had been completed since the last update.
- Missing tank data, well data and tank controls data were input into the model.
- A steady-state analysis was then conducted over different durations to analyze the system over different time periods. The steady state analysis helped to identify low and high pressure areas along with well runtimes, tank drain and fill times.
- Fire flow analysis was performed to determine the available fire flow throughout the system under extreme conditions. Results generated from the fire flow analysis can be found in Exhibit 2.6.
- A water age analysis was also conducted to illustrate how the water age varied throughout the system. Exhibit 5.1 shows the water age results generated from the model. The water main improvements projects recommended will help to alleviate the high water age areas.
- Any deficiencies found in the model were identified.
- Alternatives and different scenarios were input into the model to compare before and after results with and without the alternative improvements.

The main focus for conducting the hydraulic model was to look for any deficiencies in the system and identify improvements for existing and future needs. The following deficiencies found in the model were noted:

1. Higher pressures are shown on Bridgewater Blvd, Green Glades, and Hidden Oaks Drive in the Bridgewater subdivision. Also, high pressures are shown in the most western and eastern parts of the City.
2. The model shows the two wells in the western gradeline, Samuel's Lane and Western Well, running for low durations of only about two hours on average throughout the day. These two wells could be used more to supply the demand in the eastern portion of the City to provide a little relief to the six wells serving this area. Three motorized flow control valves restrict flow from the wells in the higher grade line in the western area, Samuel's Lane and Western wells, from entering the lower grade line in the eastern area. A 72-hour simulation was run over the model to predict how the system would act when the three motorized flow control valves were opened allowing the entire system to be integrated compared to the three flow control valves being closed. The results showed the Western and Samuel's Lane wells running for 22.19 hours over the 72-hour period with the valves opening and closing compared to 4.89 hours with the valves always closed (7.4 hrs/day versus 1.63 hrs

per day). Results showed Charity Church, School Street, Old Canton, Lake Harbour, & Peach Orchard wells running for 22.02 hours compared to 13.91 hours (5.3 hrs/day versus 7.34 hrs/day). Hardy Rd well ran for 256.67 hours compared to 43.57 hours (8.89 hrs/day versus 14.52 hrs/day). The results can be found in the Appendix.

3. Water age is showing in a few places throughout the system. This is mostly due to dead end lines and in low demand areas. The low demand areas where water aging shows up most frequently is in the western grade line portion of the City where it is not as populated.

Results from the WaterCAD model can be found in the Appendix.

8. SELECTED PLAN

Phase One of the selected plan includes the following improvements, which are shown on Exhibit 6.1: Detailed Opinions of Probable Cost can be found in the Appendix.

- **Colony Park Blvd (Highland Colony Pkwy to Sunnybrook Rd), I-55 Frontage Rd South, I-55 Frontage Rd North, & Steed Rd Water Main Connections** - The Colony Park Blvd, I-55 Frontage Rd South, I-55 Frontage Rd North, & Steed Rd Water Main Connections will provide approximately 14,000 LF of 12" water main. The project will allow the system to better serve both existing and future users and provide additional fire flow. The project will create a connection loop in the system, which will increase the hydraulic conductivity and reduce the travel time of flow in the high demand area of the City.

- **Highland Colony Pkwy Water Main Connection** - The Highland Colony Pkwy Water Main Connection project will provide approximately 3,500 LF of water main. The project would connect an existing 16" water main along New Pointe Dr and Highland Colony Pkwy South to an existing 12" water main on Old Agency. The connection will improve the water circulation in the system, helping to reduce any water aging and eliminate any disinfection by-products from potentially forming.

- **Commerce Park Connector Water Main Connection** - The Commerce Park Connector Water Main project will provide approximately 7,750 LF of 12" water main. The water main will run along the proposed Commerce Park Connector Rd. This proposed Frontage Rd will increase development in the area allowing the proposed water main to better serve existing customers along with future customers.

- **Highland Colony Parkway Tank and Well** - The Highland Colony Pkwy Tank and Well project will include construction of a 1,500 gpm and a 750,000 gal elevated storage tank. These facilities will also function to alleviate the deficiencies the City is currently experiencing.

- **Colony Park Blvd (Sunnybrook Rd to Hwy 51) Water Main Connection** – The Colony Park Blvd Water Main Connection will provide approximately 7,500 LF of 12” water line along the northern side of newly constructed Colony Park Blvd and will connect Sunnybrook Rd and Hwy 51. This water line will allow service to future development as well as improve the hydraulic conductivity of the system by creating a loop.

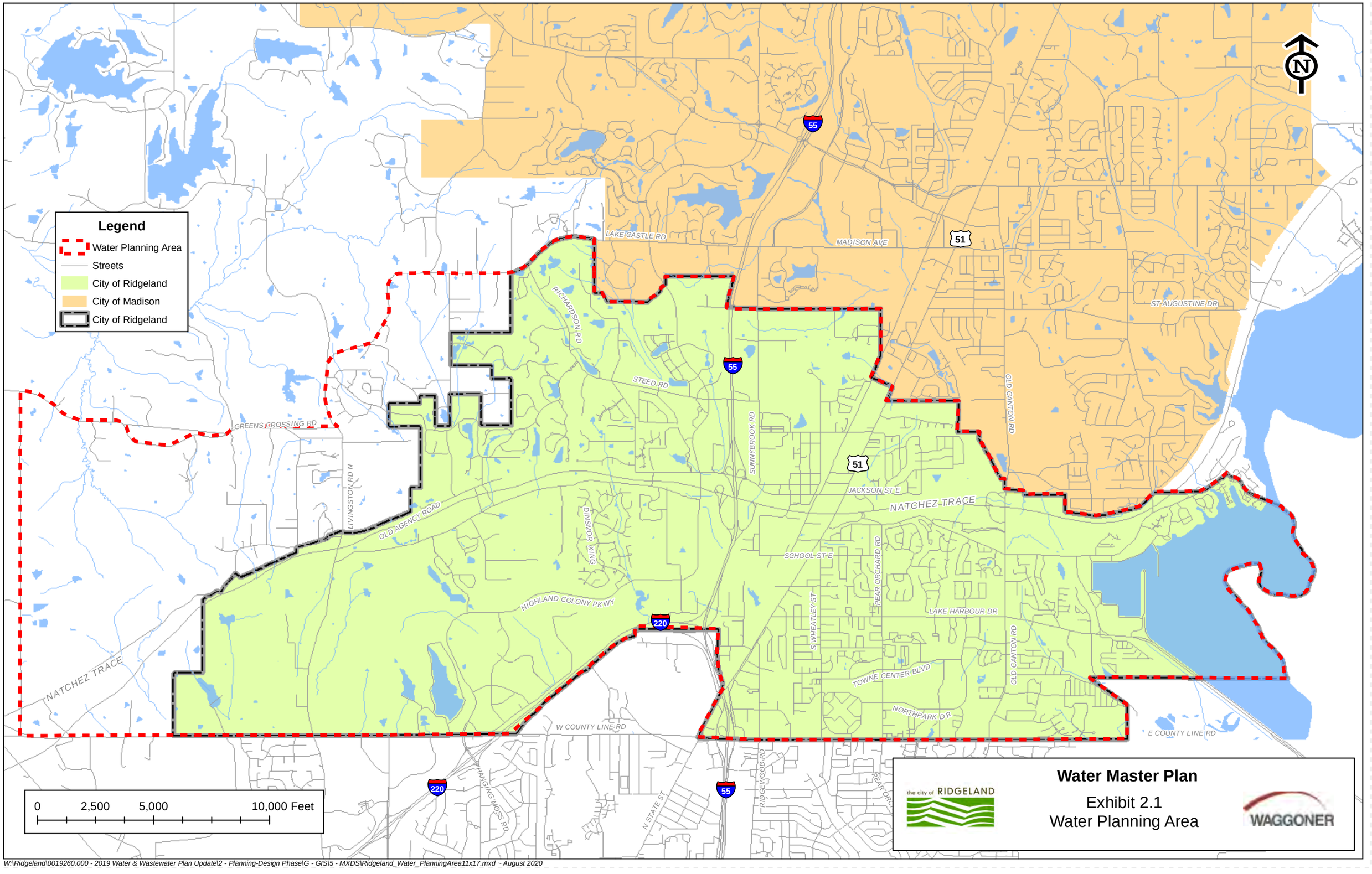
- **Midway Ave to I-55 Water Main Connection** – The Midway Ave to I-55 water main connection will provide approximately 3,500 LF of 16” Water Main to connect an existing 16” line, which crosses I-55 from West School Street over to Highland Colony Pkwy, to an existing line on Hwy 51. This project will help to alleviate dead end lines where water aging occurs as well

as increase the hydraulic conductivity in this area. This proposed line will also help connect the proposed Highland Colony Pkwy Well and Tank to supply more areas of the City.

- **School Street Well Rehabilitation** - The School Street Well Rehabilitation includes rehabilitation of the existing well to increase its capacity from 682 gpm to near design capacity of 950 gpm. The latest pump tests performed by Griner Drilling Service recommends lowering the pump deeper into the well due to low submergence. Also, the well has lost 20% of its original capacity and replacing the motor could increase the capacity.

Phase Two of the selected plan includes the following improvements, which are shown on Exhibit 6.2.

- **Midway Road Water Supply Well** - The Midway Road Water Supply Well will be located within the original City system and is needed to meet the demands of this area. This well is essential to mitigate the irm and gross supply capacity de icits the City is currently operating under. The Midway Well project will include installation of a 1,500 gpm water well on Midway Avenue.
- **Western System Tank and Well** – The Western System Tank and Well project will include construction of a 1,500 gpm and a 750,000 gal elevated storage tank to partially alleviate the supply and storage de iciencies the City is currently experiencing which will only worsen as the City continues to grow.
- **West County Line Road Water Main Connection** - The Western County Line Road Water Main Connection will provide approximately 6,400 linear feet of 12-inch water line along West County Line Road for connecting the recently constructed Western water system on Livingston Road to the City's existing 12-inch water line on Echelon Parkway. With this project, the City will eliminate a long "dead-end" line and be able to serve the West County Line Road area by connecting to the newly constructed water system. This project also provides the ability to serve residences and businesses on the North side of County Line Road which is currently an unserved area.
- **Olde Towne Water Main Improvements** – The Olde Towne Water Main Improvement project will rehabilitate and/or replace 11,000 LF of existing water lines in the oldest part of Ridgeland known as Olde Towne. The original well which supplied water to the City was installed in 1965 and was located at the old concrete plant near the intersection of Moon Street and Madison Drive. The City's original water tank was located on Madison Drive near the Natchez Trace right-of-way. The water lines from the original well and tank on Madison Drive to the Olde Town residential area along and North of Jackson Street are approximately 50 years old and need to be rehabilitated, repaired, or replaced to upgrade deteriorated water lines and assure safe and reliable operation of the water system.
- **Peach Orchard Well to North Park Tank Water Main Connection** – This project will provide approximately 1,000 LF of 12" water line to directly connect the Peach Orchard Well to the North Park Tank.
- **North Park Dr to Old Canton Rd** – The project consists of approximately 1,400 LF of 12" water line. The main purpose of this project is to increase hydraulic conductivity in this high demanding area and also help alleviate water aging in the area.



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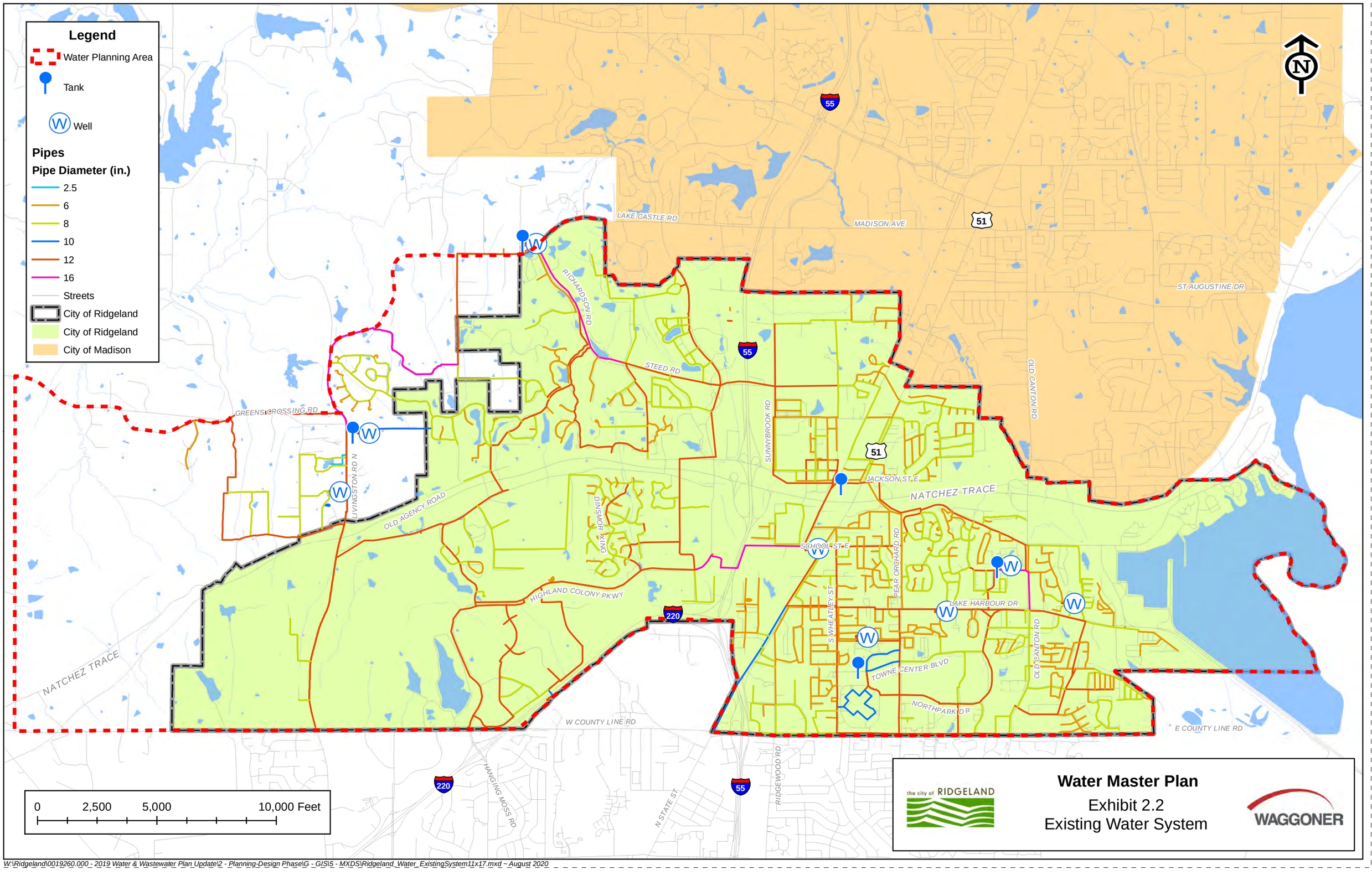

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Lake Lorman Utility District

Bear Creek Water Assn., Inc.

Madison, City of

Pearl River Valley Water Supply District

City of Ridgeland

Legend

- Water Planning Area
- Streets
- City of Ridgeland

LAKE CASTLE RD
MADISON AVE
ST AUGUSTINE DR
RICHARDSON RD
STEED RD
GREENS CROSSING RD
LIVINGSTON RD N
OLD AGENCY ROAD
DINSMOR XING
SUNNYBROOK RD
OLD CANTON RD
JACKSON ST E
NATCHEZ TRACE
SCHOOL ST E
PEAR ORCHARD RD
S WHEATLEY ST
LAKE HARBOUR DR
TOWNE CENTER BLVD
NORTHPARK DR
HIGHLAND COLONY PKWY
W COUNTY LINE RD
E COUNTY LINE RD
HANGING MOSS RD
N STATE ST
RIDGEWOOD RD

55 51 220

0 2,500 5,000 10,000 Feet

Water Facilities Plan

Exhibit 2.3
Water Certificates

the city of RIDGELAND

WAGGONER

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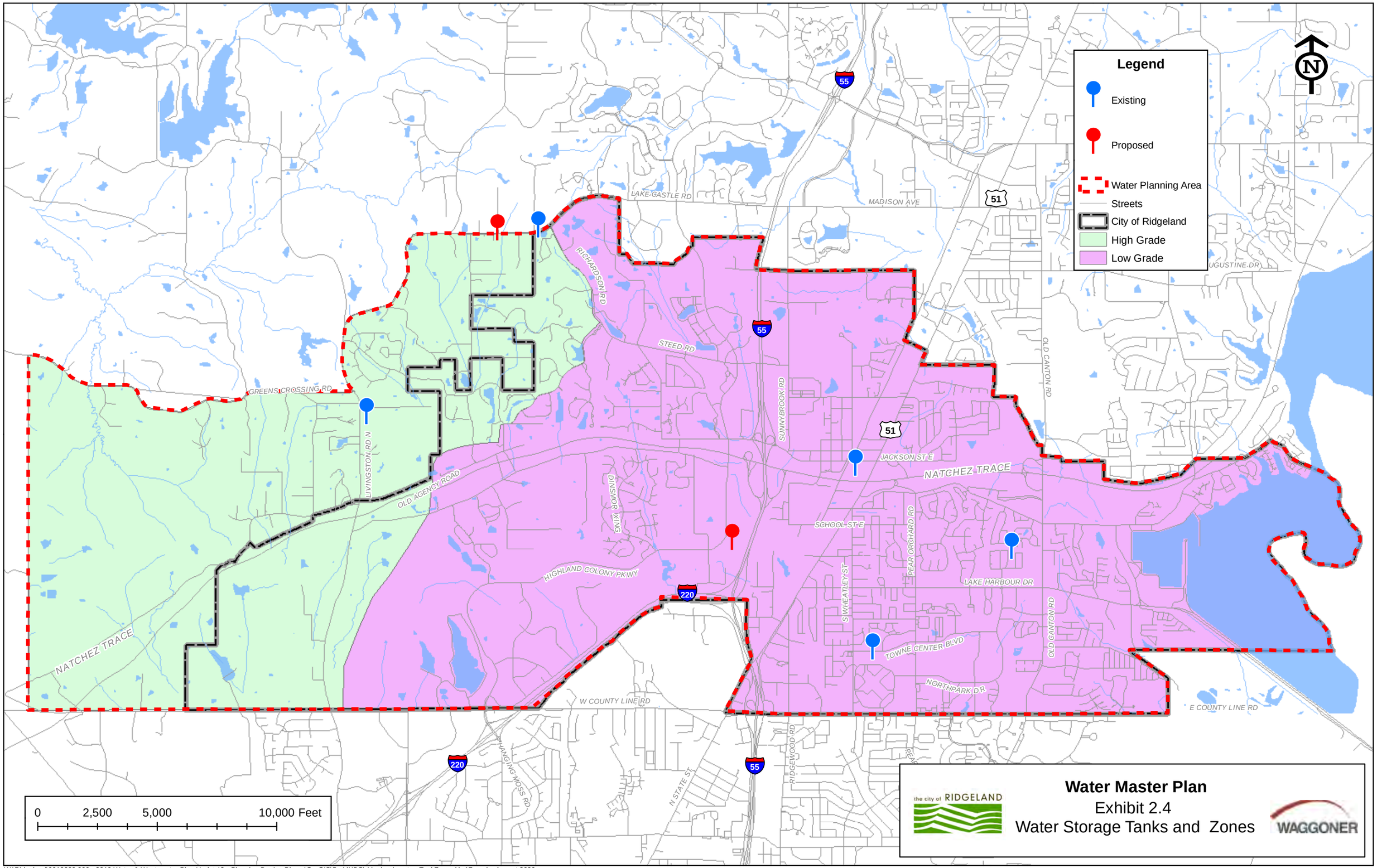

Water Master Plan

Exhibit 2.4

Water Storage Tanks and Zones

the city of RIDGELAND

WAGGONER

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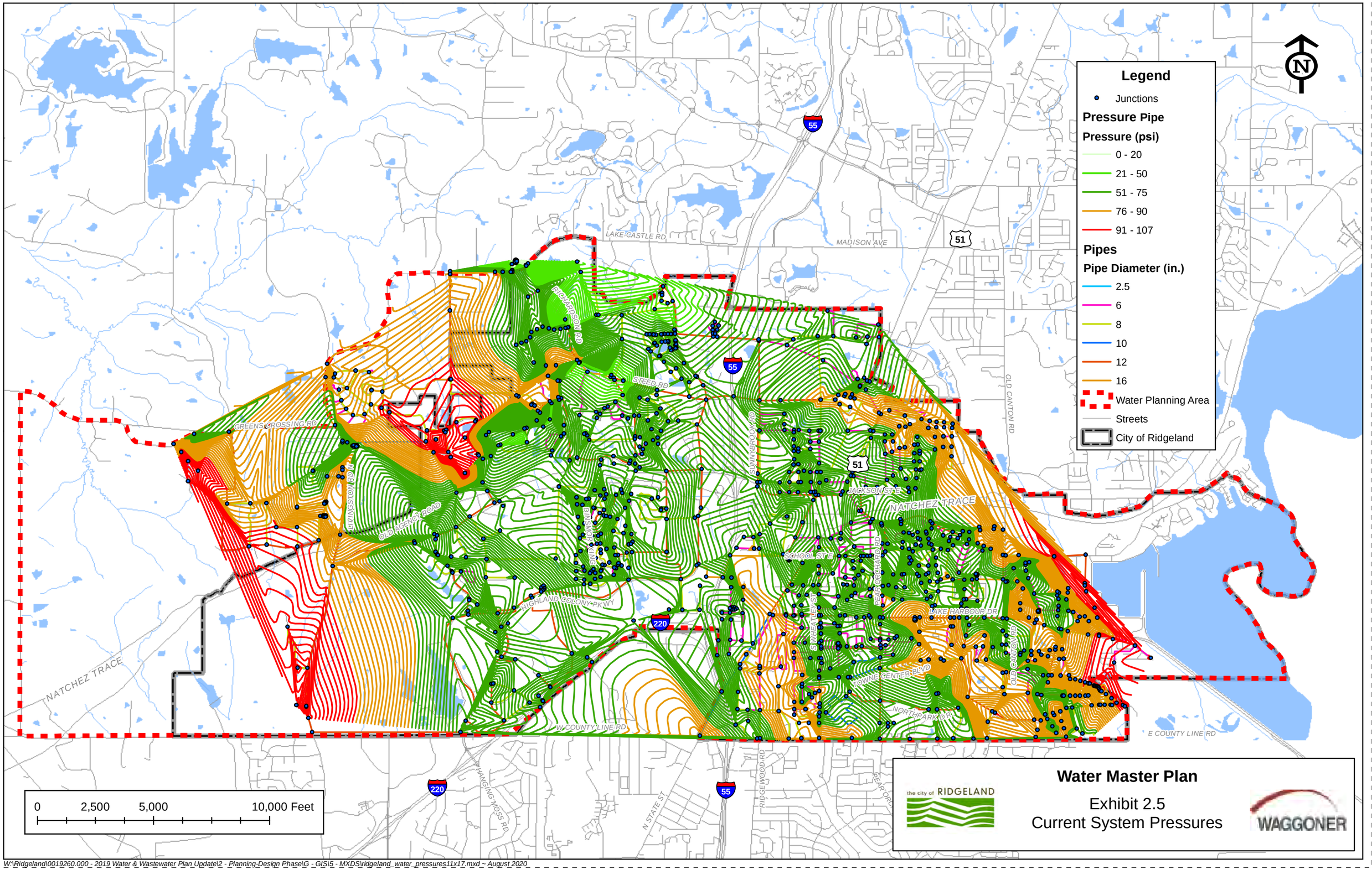

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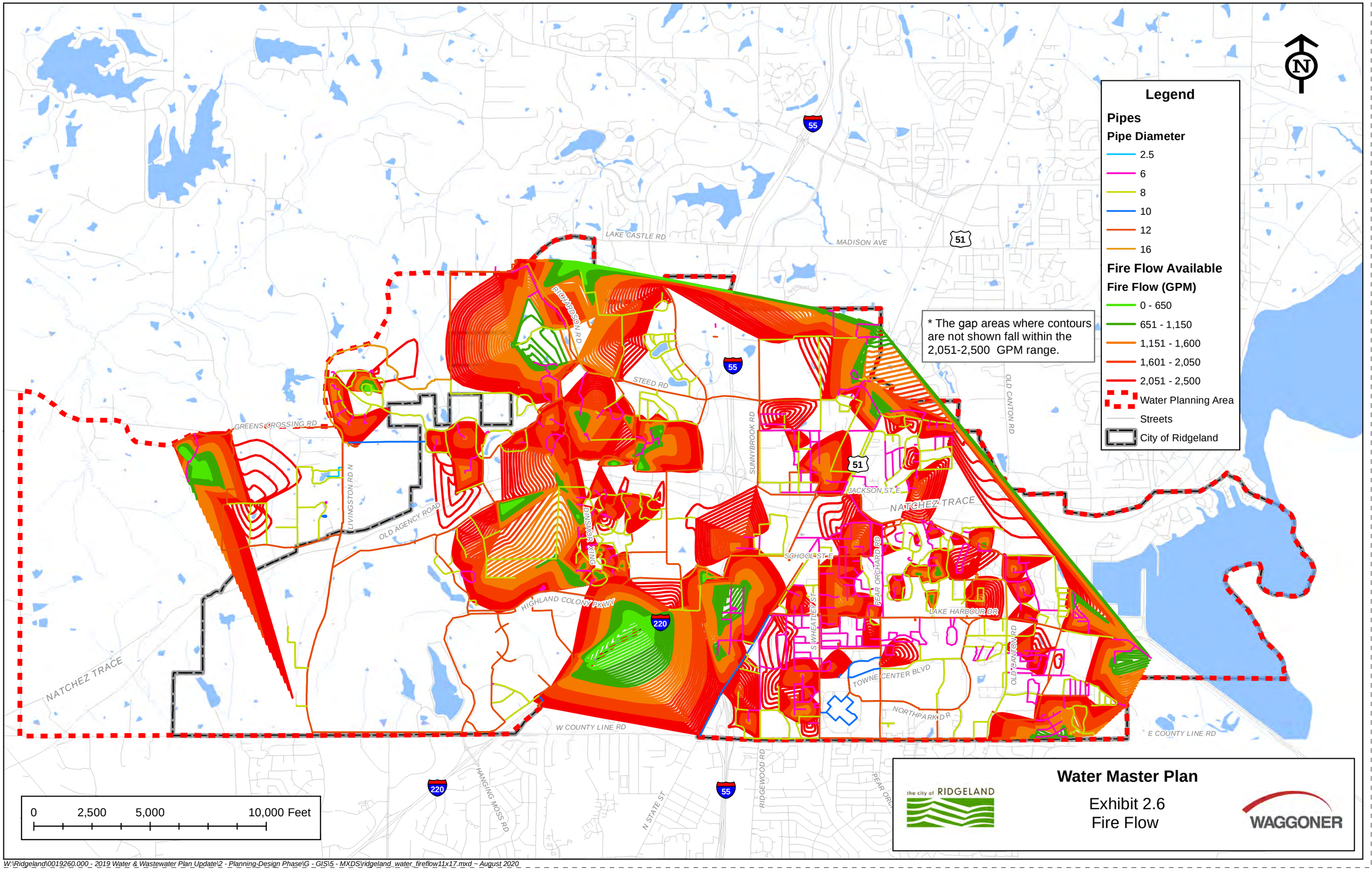

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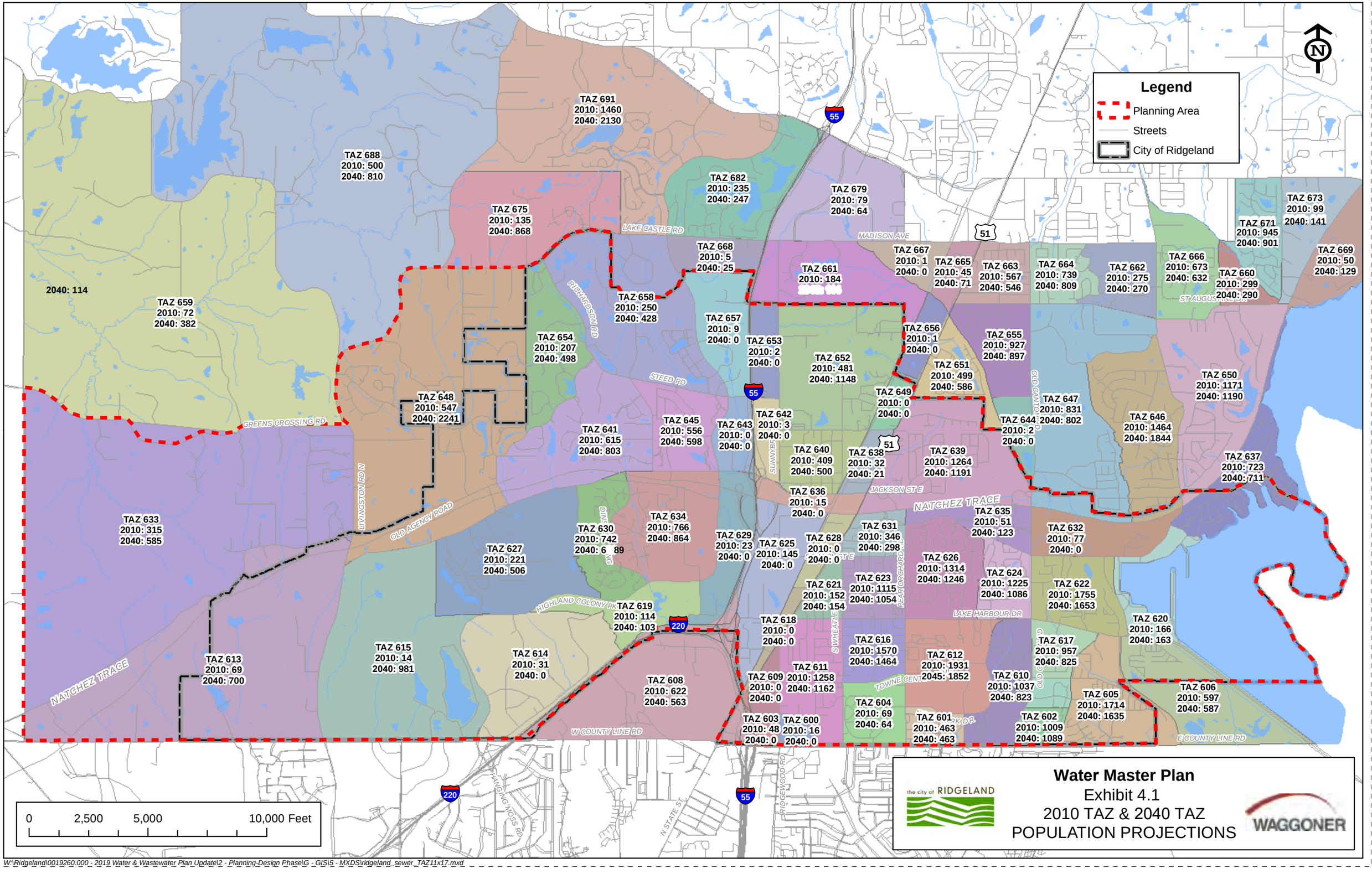

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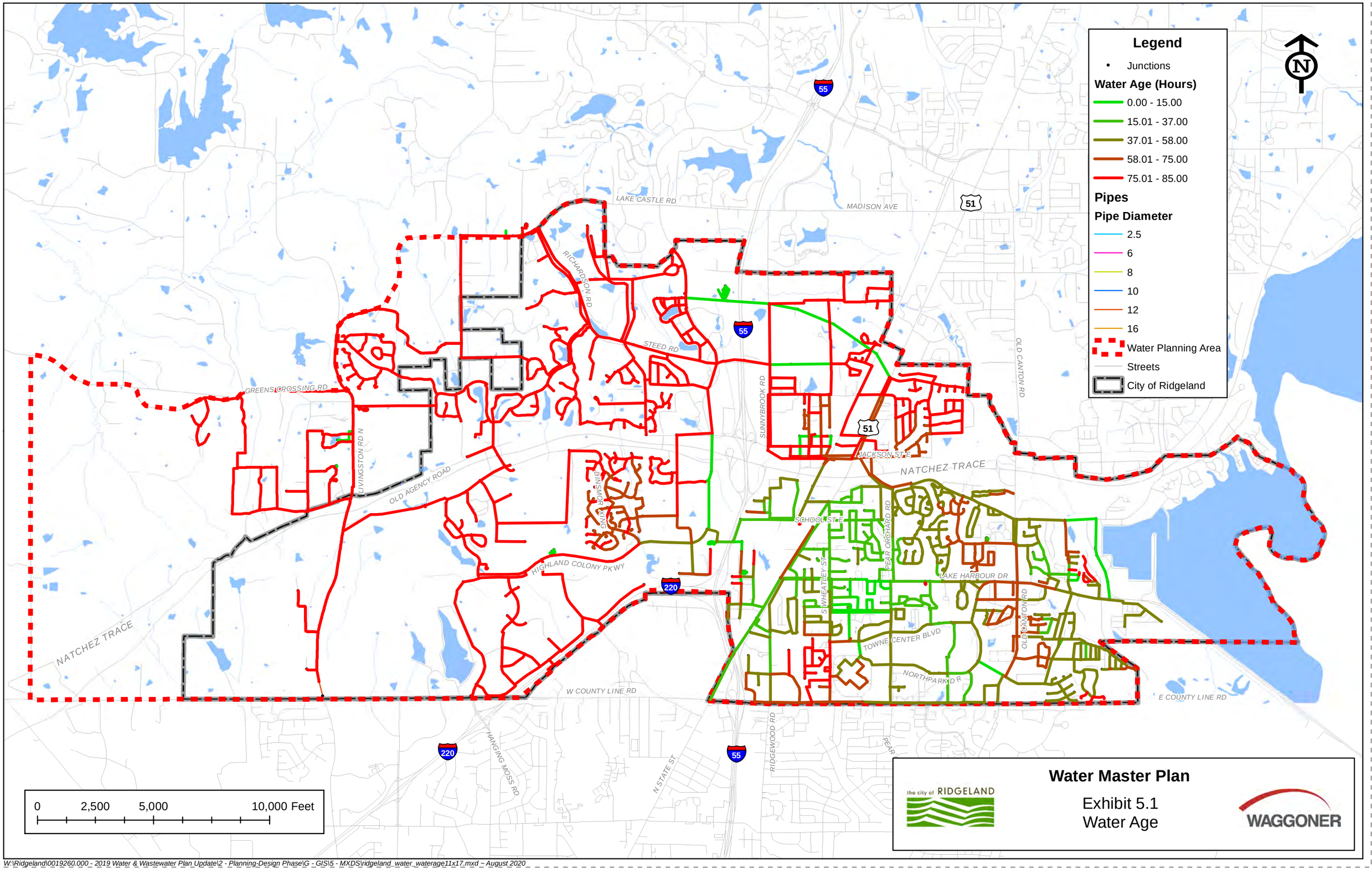

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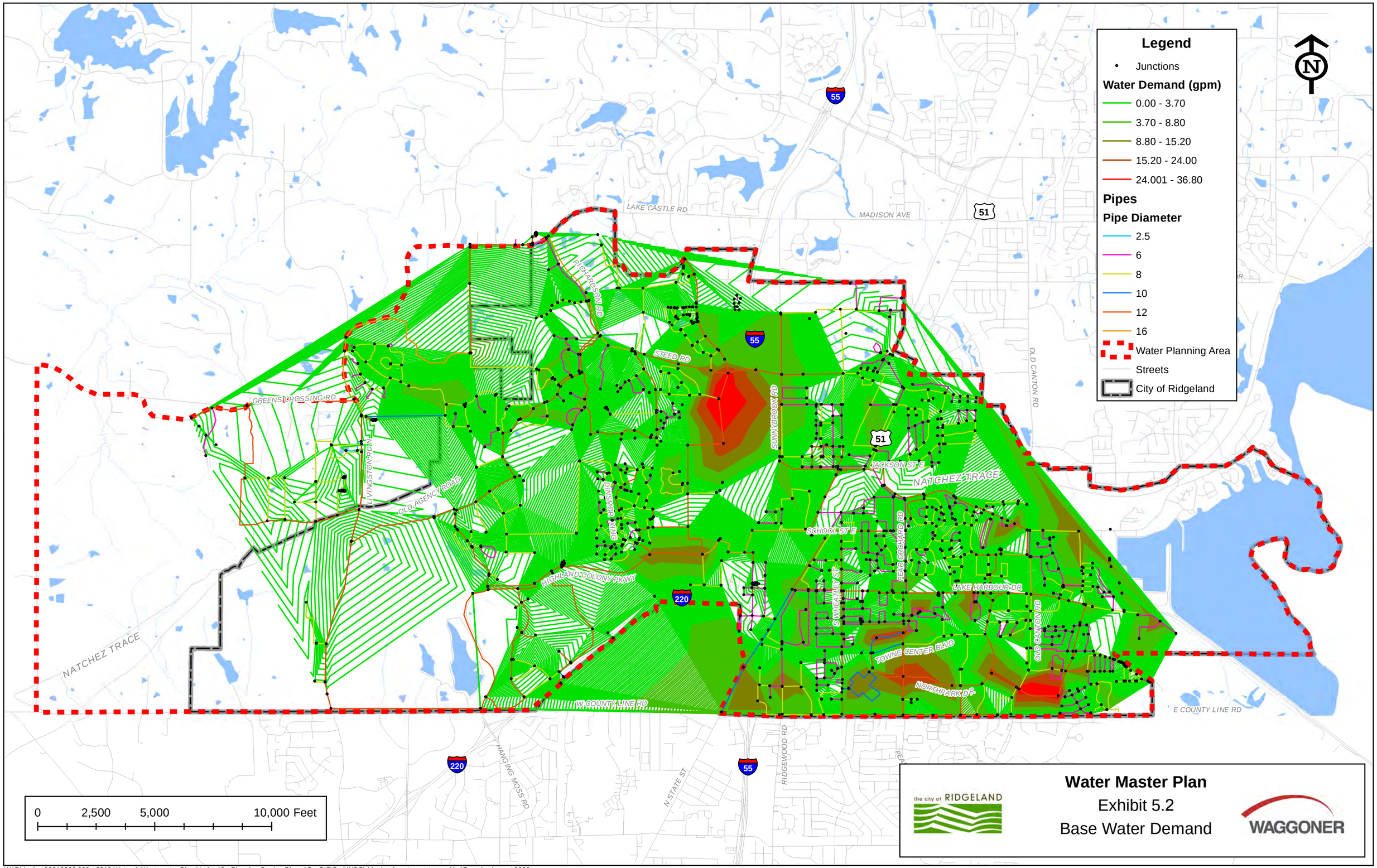

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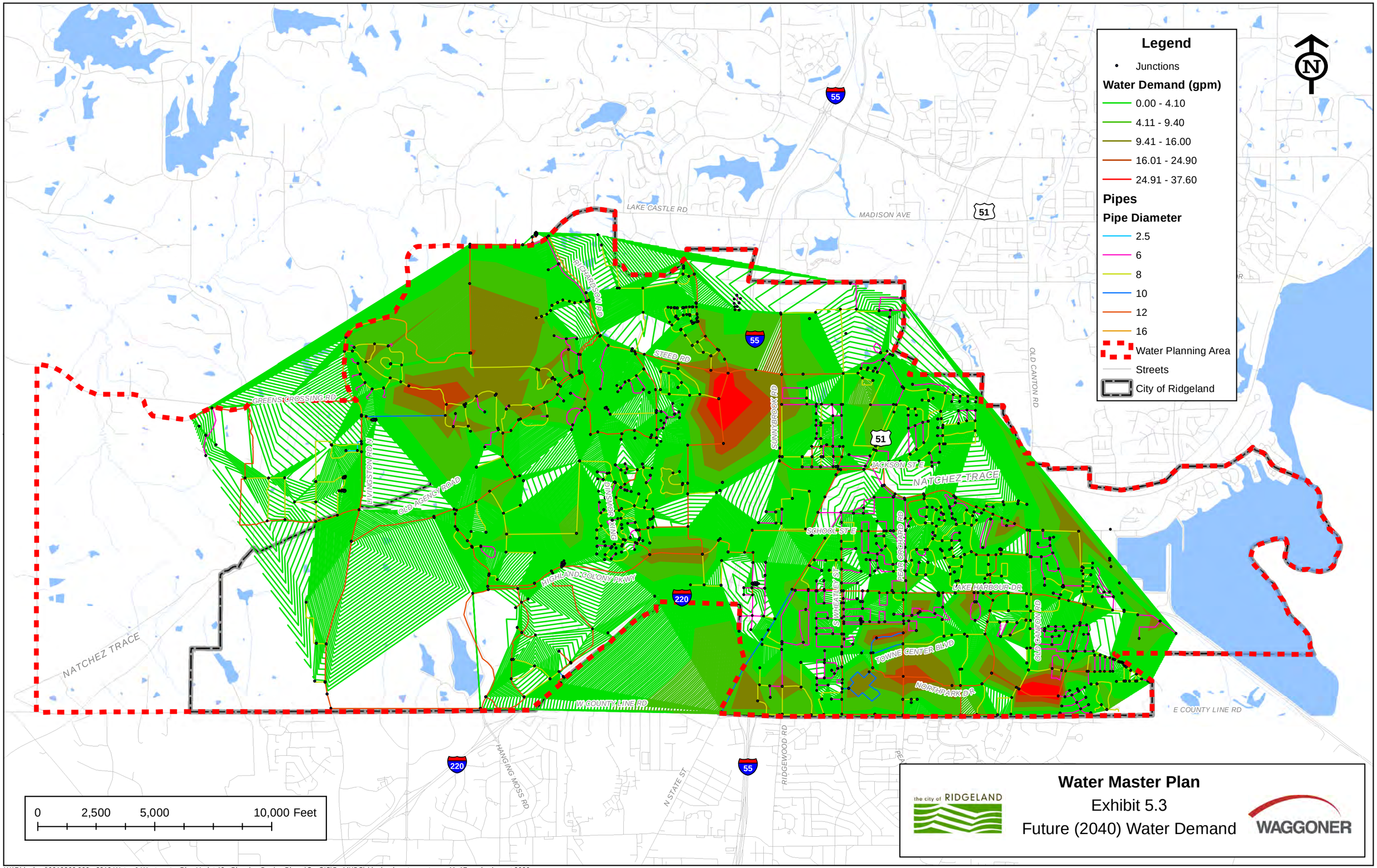

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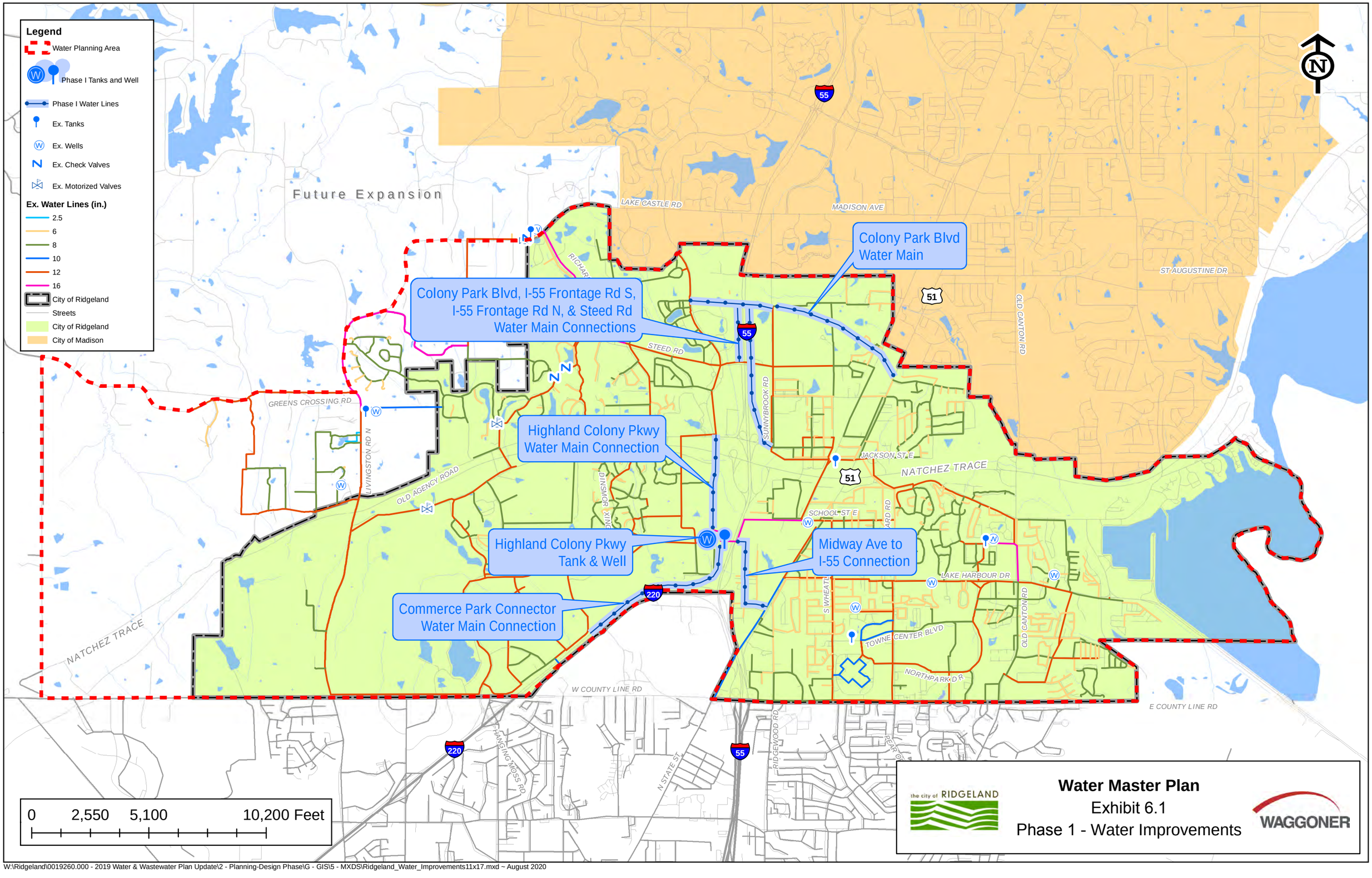

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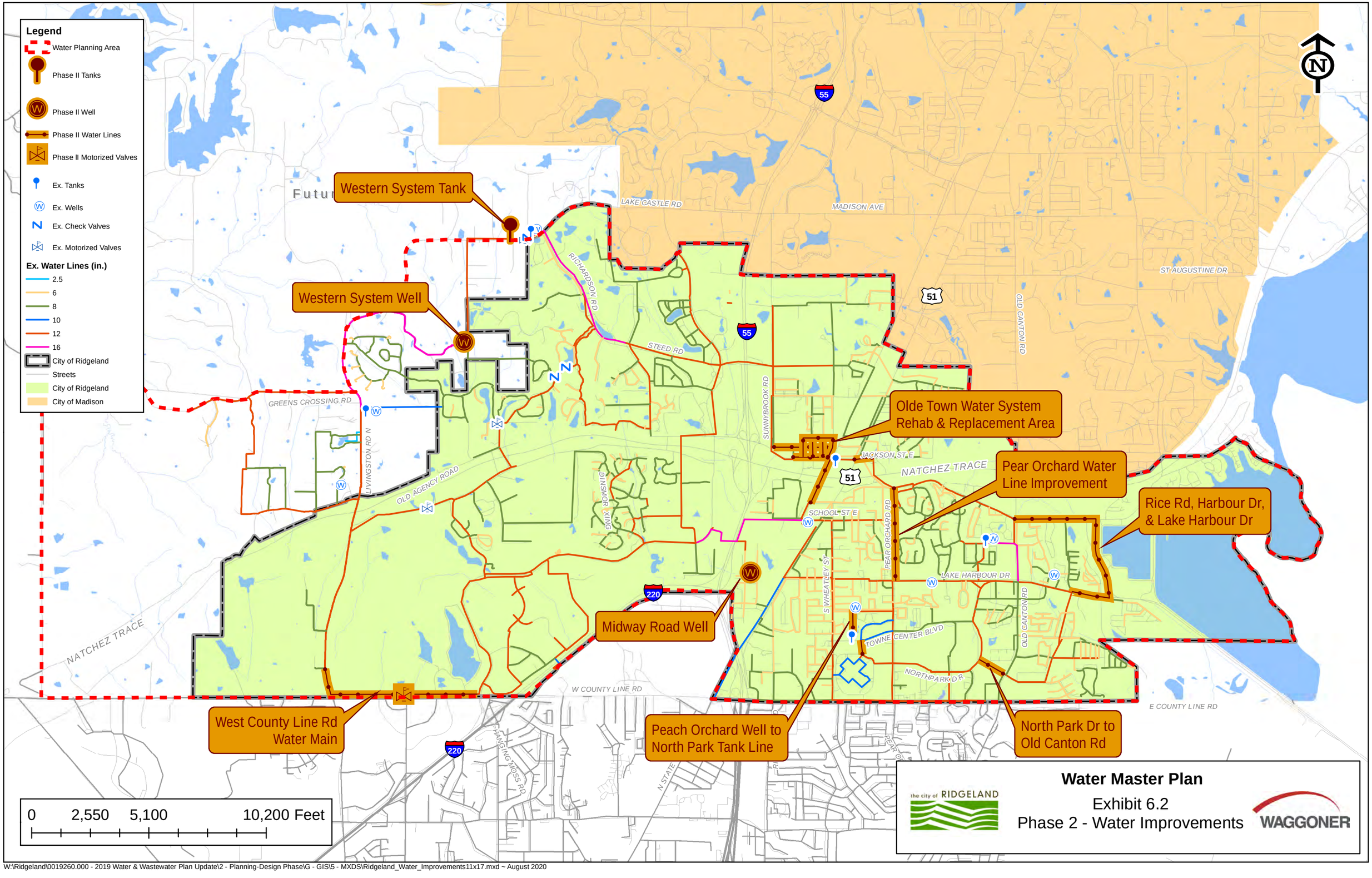

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City of Ridgeland

WAGGONER

Colony Park Blvd (Highland Colony Pkwy to Sunnybrook Rd) Water Main Connection **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization/Demobilization	LS	1	$50,000	$50,000
2	Maintenance of Traffic	LS	1	$20,000	$20,000
3	Clearing and Grubbing	AC	0.75	$5,000	$3,750
4	Erosion Control	LS	1	$25,000	$25,000
5	Seeding, Sodding, Fertilizing, and Mulching	AC	0.75	$1,750	$1,313
6	Connection to Existing Waterline	EA	2	$2,500	$5,000
7	12" PVC Water Main	LF	3,600	$35	$126,000
8	12" Water Main Directional Bore	LF	250	$175	$43,750
9	24" Steel Casing, Bore and Jack	LF	465	$215	$99,975
10	12" Gate Valve and Box	EA	2	$2,500	$5,000
11	Connection/Disconnection to Existing Water Line	EA	2	$2,500	$5,000
12	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	12	$3,500	$42,000
13	Select Bedding	CY	350	$22	$7,700
14	Select Backfill	CY	350	$13	$4,550
15	Ductile Iron Fittings	LBS	3,000	$7	$21,000

Contingencies (15%)	$70,000
Subtotal Water	$530,038

Construction Cost	$530,038
Non-Construction Cost	$162,900
Property Acquisition	$49,900
Design Survey	$15,000
Design Engineering Services	$49,500
Construction Phase Services	$48,500

Total Opinion of Probable Cost	**$692,938**

City of Ridgeland

WAGGONER

I-55 Frontage Rd N Water Main Connection **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization/Demobilization	LS	1	$75,000	$75,000
2	Maintenance of Traffic	LS	1	$25,000	$25,000
3	Clearing and Grubbing	AC	1.75	$5,000	$8,750
4	Erosion Control	LS	1	$50,000	$50,000
5	Seeding, Sodding, Fertilizing, and Mulching	AC	1.75	$1,750	$3,063
6	12" PVC Water Main	LF	7,700	$35	$269,500
7	18" Steel Casing, Jack and Bore	LF	250	$200	$50,000
8	24" Steel Casing, Jack and Bore	LF	845	$215	$181,675
9	Connection/Disconnection to Existing Waterline	EA	4	$2,500	$10,000
10	12" Gate Valve and Box	EA	2	$2,500	$5,000
11	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	25	$3,500	$87,500
12	Select Bedding	CY	575	$22	$12,650
13	Select Backfill	CY	575	$13	$7,475
14	Ductile Iron Fittings	LBS	7,700	$7	$53,900

Contingencies (15%)	$126,000
Subtotal Water	$965,513
Construction Cost	$965,513
Non-Construction Cost	$256,500
Property Acquisition	$79,000
Design Survey	$31,000
Design Engineering Services	$83,500
Construction Phase Services	$63,000
Total Opinion of Probable Cost	**$1,222,013**

City of Ridgeland

WAGGONER

I-55 Frontage Rd S Water Main Connection **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization/Demobilization	LS	1	$25,000	$25,000
2	Maintenance of Traffic	LS	1	$15,000	$15,000
3	Clearing and Grubbing	AC	0.5	$5,000	$2,500
4	Erosion Control	LS	1	$20,000	$20,000
5	Seeding, Sodding, Fertilizing, and Mulching	AC	0.5	$1,750	$875
6	Connection/Disconnection to Existing Waterline	EA	2	$2,500	$5,000
7	12" PVC Water Main	LF	2,500	$35	$87,500
8	18" Steel Casing, Jack and Bore	LF	115	$200	$23,000
9	24" Steel Casing, Bore and Jack	LF	230	$215	$49,450
10	12" Gate Valve and Box	EA	2	$2,500	$5,000
11	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	8	$3,500	$28,000
12	Select Bedding	CY	250	$22	$5,500
13	Select Backfill	CY	250	$13	$3,250
14	Ductile Iron Fittings	LBS	2,000	$7	$14,000

Contingencies (15%)	$43,000
Subtotal Water	$327,075

Construction Cost	$327,075
Non-Construction Cost	$121,400
Property Acquisition	$42,400
Design Survey	$10,000
Design Engineering Services	$32,000
Construction Phase Services	$37,000

Total Opinion of ProbableCost	**$448,475**

City of Ridgeland

Commerce Park Connector Water Main Connection **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization/Demobilization	LS	1	$50,000	$50,000
2	Clearing and Grubbing	AC	2	$5,000	$10,000
3	Erosion Control	LS	1	$30,000	$30,000
4	Seeding, Sodding, Fertilizing, and Mulching	AC	2	$1,750	$3,500
5	Connection/Disconnection to Existing Waterline	EA	5	$2,500	$12,500
6	12" PVC Water Main	LF	7,750	$35	$271,250
7	12" Gate Valve and Box	EA	2	$2,500	$5,000
8	18" Steel Casing, Jack and Bore	LF	160	$200	$32,000
9	12" Water Main Directional Bore	LF	350	$175	$61,250
10	12" Water Main Unencased Bore	LF	100	$75	$7,500
11	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	22	$3,500	$77,000
12	Select Bedding	CY	750	$22	$16,500
13	Select Backfill	CY	750	$13	$9,750
14	Ductile Iron Fittings	LBS	7,000	$7	$49,000

Contingencies (15%)	$96,000
Subtotal Water	$731,250

Construction Cost	$731,250
Non-Construction Cost	$256,250
Property Acquisition	$85,000
Design Survey	$50,000
Design Engineering Services	$65,500
Construction Phase Services	$55,750

Total Opinion of Probable Cost	**$987,500**

City of Ridgeland

WAGGONER

Highland Colony Pkwy 1,500 GPM Water Supply Well **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$50,000	$50,000
2	Clearing and Grubbing	LS	1	$7,500	$7,500
3	Erosion Control	LS	1	$5,000	$5,000
4	Site Improvements	LS	1	$25,000	$25,000
5	Fencing	LF	75	$40	$3,000
6	5' Pedestrian Gate	EA	1	$750	$750
7	20' Double Gate	EA	1	$1,500	$1,500
8	18" Reinforced Concrete Culvert	LF	25	$50	$1,250
9	18" Flared End Sections	EA	2	$750	$1,500
10	Test Well (1400')	LS	1	$150,000	$150,000
11	Permanent Potable Water Well (1,500 GPM at 1200')	LS	1	$750,000	$750,000
12	Above Ground Piping & Appurtenances	LS	1	$40,000	$40,000
13	Well Bldg & Chemical Feed Equipment	LS	1	$100,000	$100,000
14	16" C900 PVC Water Main	LF	50	$45	$2,250
15	16" Gate Valve & Box	EA	1	$3,500	$3,500
16	Ductile Iron Fittings	LBS	750	$8	$6,000
17	Connection to Ex. System	EA	1	$2,500	$2,500
18	Emergency Generator	EA	1	$85,000	$85,000
19	Electrical, Controls & SCADA	LS	1	$100,000	$100,000

Contingencies (15%)	$201,000
Subtotal Water	$1,535,750

Construction Costs	$1,535,750
Non-Construction Costs	$260,000
Property Acquisition	$50,000
Design Survey	$10,000
Design Engineering Services	$120,000
Construction Phase Services	$80,000
Total Opinion of Probable Project Cost	**$1,795,750**

City of Ridgeland

Highland Colony Pkwy 750,000 Gallon Elevated Water Storage Tank — **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$100,000	$100,000
2	Erosion Control	LS	1	$10,000	$10,000
3	750,000 Gallon Elevated Water Storage Tank, Complete w/ All Piping, Foundation, and Appurtenances	LS	1	$2,000,000	$2,000,000

Contingencies (15%)	$317,000
Subtotal Water	$2,427,000

Construction Costs	$2,427,000
Non-Construction Costs	$322,500
Property Acquisition (Included in Well Project)	
Design Survey	$10,000
Design Engineering Services	$187,500
Construction Phase Services	$125,000
Total Opinion of Probable Project Cost	**$2,749,500**

City of Ridgeland

WAGGONER

Colony Park Blvd (Sunnybrook Rd to Hwy 51) 12" Water Line **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$100,000	$100,000
2	Maintenance of Traffic	LS	1	$20,000	$20,000
3	Erosion Control	LS	1	$50,000	$50,000
4	Seeding, Sodding, Fertilizing, and Mulching	AC	3	$1,750	$5,250
5	Clearing and Grubbing	AC	1	$5,000	$5,000
6	Select Bedding	CY	850	$22	$18,700
7	Select Backfill	CY	850	$13	$11,050
8	12" C900 PVC Water Main	LF	7,500	$35	$262,500
9	18" Steel Casing, Bore & Jack	LF	375	$200	$75,000
10	24" Steel Casing, Jack & Bore	LF	550	$215	$118,250
11	12" Water Main Directional Bore	LF	875	$175	$153,125
12	12" Gate Valve and Box	EA	4	$2,500	$10,000
13	Connection to Existing Water Main	EA	2	$2,500	$5,000
14	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	15	$3,500	$52,500
15	Ductile Iron Fittings	LB	10,000	$7	$70,000
				Contingencies (15%)	$144,000
				Subtotal Water	$1,100,375

Construction Costs	$1,100,375
Non-Construction Costs	$370,000
Property Acquisition	$175,000
Design Survey	$35,000
Design Engineering Services	$92,500
Construction Phase Services	$67,500
Total Opinion of Probable Project Cost	**$1,470,375**

City of Ridgeland

WAGGONER

Midway Ave to I-55 Water Line Connection **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$50,000	$50,000
3	Erosion Control	LS	1	$25,000	$25,000
5	Clearing and Grubbing	AC	3	$5,000	$15,000
6	Select Bedding	CY	400	$22	$8,800
7	Select Backfill	CY	400	$13	$5,200
8	16" C900 PVC Water Main	LF	3,550	$45	$159,750
9	Driveway Unencased Bores	LF	160	$75	$12,000
10	18" Steel Casing, Jack & Bore	LF	50	$200	$10,000
11	24" Steel Casing, Jack & Bore	LF	85	$215	$18,275
12	HDPE Directional Bore Creek Crossing	LF	150	$175	$26,250
13	16" Gate Valve and Box	EA	2	$3,500	$7,000
14	Connection to Existing Water Main	EA	2	$2,500	$5,000
15	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	8	$3,500	$28,000
16	Ductile Iron Fittings	LB	3,000	$7	$21,000

Contingencies (15%)	$59,000
Subtotal Water	$450,275

Construction Costs	$450,275
Non-Construction Costs	$118,000
Property Acquisition	$25,000
Design Survey	$5,000
Design Engineering Services	$43,000
Construction Phase Services	$45,000
Total Opinion of Probable Project Cost	**$568,275**

City of Ridgeland

Western System 1,500 GPM Water Supply Well **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$50,000	$50,000
2	Clearing and Grubbing	LS	1	$7,500	$7,500
3	Erosion Control	LS	1	$5,000	$5,000
4	Site Improvements	LS	1	$25,000	$25,000
5	Fencing	LF	75	$40	$3,000
6	5' Pedestrian Gate	EA	1	$750	$750
7	20' Double Gate	EA	1	$1,500	$1,500
8	18" Reinforced Concrete Culvert	LF	25	$50	$1,250
9	18" Flared End Sections	EA	2	$750	$1,500
10	Test Well (1400')	LS	1	$150,000	$150,000
11	Permanent Potable Water Well (1,500 GPM at 1200')	LS	1	$750,000	$750,000
12	Above Ground Piping & Appurtenances	LS	1	$40,000	$40,000
13	Well Bldg & Chemical Feed Equipment	LS	1	$100,000	$100,000
14	16" C900 PVC Water Main	LF	50	$45	$2,250
15	16" Gate Valve & Box	EA	1	$3,500	$3,500
16	Ductile Iron Fittings	LBS	750	$8	$6,000
17	Connection to Ex. System	EA	1	$2,500	$2,500
18	Emergency Generator	EA	1	$85,000	$85,000
19	Electrical, Controls & SCADA	LS	1	$100,000	$100,000

Contingencies (15%)	$201,000
Subtotal Water	$1,535,750

Construction Costs	$1,535,750
Non-Construction Costs	$260,000
Property Acquisition	$50,000
Design Survey	$10,000
Design Engineering Services	$120,000
Construction Phase Services	$80,000
Total Opinion of Probable Project Cost	**$1,795,750**

City of Ridgeland

Western System 750,000 Gallon Elevated Water Storage Tank **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$100,000	$100,000
2	Erosion Control	LS	1	$10,000	$10,000
3	750,000 Gallon Elevated Water Storage Tank, Complete w/ All Piping, Foundation, and Appurtenances	LS	1	$2,000,000	$2,000,000

Contingencies (15%)	$317,000
Subtotal Water	$2,427,000

Construction Costs	$2,427,000
Non-Construction Costs	$322,500
Property Acquisition (Included in Well Project)	
Design Survey	$10,000
Design Engineering Services	$187,500
Construction Phase Services	$125,000
Total Opinion of Probable Project Cost	**$2,749,500**

City of Ridgeland

WAGGONER

Midway Rd Water Supply Well **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$50,000	$50,000
2	Clearing and Grubbing	LS	1	$7,500	$7,500
3	Erosion Control	LS	1	$5,000	$5,000
4	Site Improvements	LS	1	$25,000	$25,000
5	Fencing	LF	75	$40	$3,000
6	5' Pedestrian Gate	EA	1	$750	$750
7	20' Double Gate	EA	1	$1,500	$1,500
8	18" Reinforced Concrete Culvert	LF	25	$50	$1,250
9	18" Flared End Sections	EA	2	$750	$1,500
10	Test Well (1400')	LS	1	$150,000	$150,000
11	Permanent Potable Water Well (1,500 GPM at 1200')	LS	1	$750,000	$750,000
12	Above Ground Piping & Appurtenances	LS	1	$40,000	$40,000
13	Well Bldg & Chemical Feed Equipment	LS	1	$100,000	$100,000
14	16" C900 PVC Water Main	LF	50	$45	$2,250
15	16" Gate Valve & Box	EA	1	$3,500	$3,500
16	Ductile Iron Fittings	LBS	750	$8	$6,000
17	Connection to Ex. System	EA	1	$2,500	$2,500
18	Emergency Generator	EA	1	$85,000	$85,000
19	Electrical, Controls & SCADA	LS	1	$100,000	$100,000

Contingencies (15%)	$201,000
Subtotal Water	$1,535,750

Construction Costs	$1,535,750
Non-Construction Costs	$260,000
Property Acquisition	$50,000
Design Survey	$10,000
Design Engineering Services	$120,000
Construction Phase Services	$80,000
Total Opinion of Probable Project Cost	**$1,795,750**

City of Ridgeland

Old Towne 12" Water Line Improvements **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$60,000	$60,000
2	Maintenance of Traffic	LS	1	$30,000	$30,000
3	Erosion Control	LS	1	$50,000	$50,000
4	Seeding, Sodding, Fertilizing, and Mulching	AC	10	$1,750	$17,500
5	Clearing and Grubbing	AC	10	$5,000	$50,000
6	Select Bedding	CY	1,000	$22	$22,000
7	Select Backfill	CY	1,000	$13	$13,000
8	12" C900 PVC Water Main	LF	11,200	$35	$392,000
9	24" Steel Casing, Jack & Bore	LF	1,000	$215	$215,000
10	12" Water Main Unencased Bore	LF	600	$75	$45,000
11	3/4" Service Line Unencased Bore	LF	100	$17	$1,700
12	12" Gate Valve and Box	EA	8	$2,500	$20,000
13	Connection to Existing Water Main	EA	2	$2,500	$5,000
14	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	26	$3,500	$91,000
15	3/4" HDPE Service Line	LF	200	$7	$1,400
16	Asphalt Repair	TN	1,540	$110	$169,400
17	Ductile Iron Fittings	LB	4,000	$7	$28,000

Contingencies (15%)	$182,000
Subtotal Water	$1,393,000

Construction Costs	$1,393,000
Non-Construction Costs	$381,500
Property Acquisition	$80,000
Design Survey	$77,500
ROW & Easement Documents	$38,000
Design Engineering Services	$110,000
Construction Phase Services	$76,000

Total Opinion of Probable Project Cost	**$1,774,500**

City of Ridgeland

North Park Dr. to Old Canton Rd. 12" Water Line **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$20,000	$20,000
2	Erosion Control	LS	1	$5,000	$5,000
3	Clearing and Grubbing	AC	0.25	$5,000	$1,250
4	Select Bedding	CY	150	$22	$3,300
5	Select Backfill	CY	150	$13	$1,950
6	12" C900 PVC Water Main	LF	1,400	$35	$49,000
7	12" Water Main Directional Bore	LF	250	$175	$43,750
8	12" Gate Valve and Box	EA	2	$2,500	$5,000
9	Connection to Existing Water Main	EA	2	$2,500	$5,000
10	Ductile Iron Fittings	LB	1,000	$7	$7,000
				Contingencies (15%)	$22,000
				Subtotal Water	$163,250

Construction Costs	$163,250
Non-Construction Costs	$64,250
Property Acquisition	$15,000
Design Survey	$5,000
Design Engineering Services	$18,000
Construction Phase Services	$26,250
Total Opinion of Probable Project Cost	**$227,500**

City of Ridgeland

WAGGONER

West County Line Rd 12" Water Line Connection **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$75,000	$75,000
2	Maintenance of Traffic	LS	1	$20,000	$20,000
3	Erosion Control	LS	1	$50,000	$50,000
4	Seeding, Sodding, Fertilizing, and Mulching	AC	3	$1,750	$5,250
5	Clearing and Grubbing	AC	3	$5,000	$15,000
6	Select Bedding	CY	750	$22	$16,500
7	Select Backfill	CY	750	$13	$9,750
8	12" C900 PVC Water Main	LF	6,400	$35	$224,000
9	6" C900 PVC Fire Hydrant Legs	LF	400	$17	$6,800
10	24" Steel Casing, Jack & Bore	LF	100	$230	$23,000
11	12" Water Main Stream Crossing	LF	150	$175	$26,250
12	12" Water Main Unencased Bore	LF	100	$85	$8,500
13	3/4" Service Line Unencased Bore	LF	50	$15	$750
14	12" Gate Valve and Box	EA	4	$2,500	$10,000
15	Connection to Existing Water Main	EA	2	$2,500	$5,000
16	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	13	$3,500	$45,500
17	3/4" HDPE Service Line	LF	100	$6	$600
18	3/4" Service Assembly Reconnection	EA	5	$500	$2,500
19	Ductile Iron Fittings	LB	5,000	$7	$35,000
20	Gate Valve Actuator Assembly w/ Electrical Controls and Power Supply	EA	1	$45,000	$45,000

Contingencies (15%)	$94,000
Subtotal Water	$718,400

Construction Costs	$718,400
Non-Construction Costs	$324,000
Property Acquisition	$175,000
Design Survey	$29,500
Design Engineering Services	$64,500
Construction Phase Services	$55,000
Total Opinion of Probable Project Cost	**$1,042,400**

City of Ridgeland

WAGGONER

Highland Colony Pkwy Blvd 12" Water Line **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$50,000	$50,000
2	Erosion Control	LS	1	$25,000	$25,000
3	Seeding, Sodding, Fertilizing, and Mulching	AC	1	$1,750	$1,750
4	Clearing and Grubbing	AC	1	$5,000	$5,000
5	Select Bedding	CY	500	$22	$11,000
6	Select Backfill	CY	500	$13	$6,500
7	12" C900 PVC Water Main	LF	4,350	$35	$152,250
8	18" Steel Casing, Bore & Jack	LF	400	$200	$80,000
9	24" Steel Casing, Jack & Bore	LF	200	$215	$43,000
10	12" Water Main Directional Bore	LF	375	$175	$65,625
11	12" Gate Valve and Box	EA	4	$2,500	$10,000
12	Connection to Existing Water Main	EA	2	$2,500	$5,000
13	3-Way Fire Hydrant Assembly w/ 6" Valve, 3'-0" Bury	EA	10	$3,500	$35,000
14	Ductile Iron Fittings	LB	4,000	$7	$28,000
				Contingencies (15%)	$78,000
				Subtotal Water	$596,125

Construction Costs	$596,125
Non-Construction Costs	$290,500
Property Acquisition	$150,000
Design Survey	$35,000
Design Engineering Services	$54,500
Construction Phase Services	$51,000
Total Opinion of Probable Project Cost	**$886,625**

City of Ridgeland

WAGGONER

Peach Orchard Well to Northpark Tank Connection - 12" Water Main **November 2020**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization	LS	1	$10,000	$10,000
2	Erosion Control	LS	1	$7,500	$7,500
3	Clearing and Grubbing	AC	0.25	$5,000	$1,250
4	Select Bedding	CY	100	$22	$2,200
5	Select Backfill	CY	100	$13	$1,300
6	12" C900 PVC Water Main	LF	1,000	$35	$35,000
7	18" Steel Casing, Jack & Bore	LF	40	$215	$8,600
8	12" Water Main Unencased Bore	LF	100	$85	$8,500
9	12" Gate Valve and Box	EA	2	$2,500	$5,000
10	Connection to Existing Water Main	EA	2	$2,500	$5,000
11	Ductile Iron Fittings	LB	1,500	$7	$10,500
				Contingencies (15%)	$15,000
				Subtotal Water	$109,850

Construction Costs	$109,850
Non-Construction Costs	$61,500
Property Acquisition	$25,000
Design Survey	$5,000
Design Engineering Services	$13,000
Construction Phase Services	$18,500
Total Opinion of Probable Project Cost	**$171,350**

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MISSISSIPPI STATE DEPARTMENT OF HEALTH

REPORT OF INSPECTION OF DRINKING WATER SUPPLY

PWS: 0450013 **Class:** D

An inspection of the CITY OF RIDGELAND water supply in MADISON county was made on 10/29/2019. Present at the time of inspection was JASON JONES, OPERATOR; DON JOHNSON, OPERATOR; WRITER. Official JOHN M MCCOLLUM Address 304 HWY 51 RIDGELAND MS 39157 W.W. Operator MARK B MCMANUS Address 546 NORTHWIND DRIVE BRANDON MS 39047 No. Connections 13953 No. Meters ___ Population Served 24047 Field Chemical Analysis: pH __ Cl2(free) 1.3 Cl2(total) ___ H2S N/A Iron ___ Fluoride 0.8 Point of Sampling PUBLIC WORKS SHOP Water Rates ___ This inspection included a sanitary survey for compliance with the Ground Water Rule.

COMMENTS

Technical: 5 Managerial: 5 Financial: 5

OVERALL CAPACITY RATING: 5.0 / 5.0

1. This annual inspection also served as the City's Sanitary Survey as required under the Ground Water Rule. No significant deficiencies were noted during the Survey.

2. The City is conducting triggered monitoring to comply with the Ground Water Rule.

3. The system was very well maintained and operating properly at the time of inspection. It is clear that the City takes pride in their water system. This office appreciates all the work they put forth.

4. When repairs are made on the distribution system, all lines affected should be properly chlorinated and flushed before they are placed back in service.

5. All dead-end water lines should be flushed on a routine schedule to clear the lines of sediment and stagnant water. Full scale flushing should be carefully planned and carried out, beginning at the well or water plant and going to the outer edges of the distribution system. This flushing should be done during periods of low usage.

6. Whenever system pressure is lost, even for brief periods of time, contaminants may be introduced to the system through back-siphonage and/or back flow. When this occurs, system officials should notify all customers in the affected area to boil their drinking water vigorously for one minute. This boil water notice should remain in effect until clear bacteriological samples have been obtained.

Completed by Amy L. McLeod, E.I. on 11/07/2019.

Reviewed by Greg Caraway, P.E. on 11/12/2019.

If you have any questions, please call (601)576-7518.

pc:

JOHN M MCCOLLUM, OFFICIAL
MARK B MCMANUS, OPERATOR

Mississippi Department of Health
Bureau of Public Water Supply

STANDARD FORM

FY 2020 Public Water System Capacity Assessment Form

NOTE: This form must be completed whenever a routine sanitary survey of a public water system is conducted by a regional engineer of the Bureau of Public Water Supply

PWS ID#: 0450013 Class: D Survey Date: 10-29-2019 County: MADISON
Public Water System: CITY OF RIDGELAND Conn: 13953
Certified Waterworks Operator: MARK B MCMANUS Pop: 24047

CAPACITY RATING DETERMINATION

Technical (T) Capacity Rating: [5] Managerial (M) Capacity Rating [5] Financial (F) Capacity Rating [5]

Capacity Rating $= \frac{T+M+F}{3} = \frac{15}{3} = 5$

Overall Capacity Rating = 5.0

Completed by Amy L. McLeod, E.I. on 11/07/2019
Reviewed by Greg Caraway, P.E. on 11/12/2019

Comments: _____

Technical Capacity Assessment	Point Scale	Point Award
[T1] Does the water system have any significant deficiencies? [Y (N)]	N - 1pt. Y - 0pt.	1
[T2] **1)** Was the water treatment process functioning properly? [(Y) N] (i.e. Is pH, iron, chlorine, fluoride, etc. within acceptable range?) **2)** Was needed water system equipment in place and functioning properly at the time of survey? [(Y) N] (**NOTE:** Equipment deficiencies must be identified in survey report.) **3)** Were records available to the regional engineer clearly showing that all water storage tanks have been inspected and cleaned or painted (if needed) within the past 5 years? [(Y) N NA] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T3] **1)** Was the certified waterworks operator or his/her authorized representative present for the survey? [(Y) N] **2)** Was PWS Operations record up to date and properly maintained? [(Y) N] (Are minimum days being met based on system classification) **3)** Was the water system properly maintained at the time of survey? [(Y) N] **4)** Did operator/system personnel satisfactorily demonstrate to the regional engineer that he/she could fully perform all water quality tests required to properly operate this water system? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T4] **1)** Does water system routinely track water loss and were acceptable record available for review? [(Y) N] **2)** Is water system overloaded? (i.e. serving customers in excess of MSDH approved design capacity)? [Y (N)] **3)** Was there any indication that the water system is/has been experiencing pressure problems in any part(s) of the distribution system? [Y (N)] (based on operator information, customer complaints, MSDH records, other information) **4)** Are well pumping tests performed routinely? [(Y) N NA] (**NOTE:** YES FOR #1 & YES OR N/A FOR #4 AND NOs FOR #2 & #3 required to receive point)	1)Y - pt. 2)N - pt. 3)N - pt. 4)Y - pt.	1
[T5] **1)** Does the water system have the ability to provide water during power outages? (i.e. generator, emergency tie-ins, etc.) [(Y) N] **2)** Does the water system have a usable backup source of water? [(Y) N] (**NOTE:** Must be documented on survey report)	All Y - 1 pt. Else - 0 pt.	1
TECHNICAL CAPACITY RATING = [5] (Total Points)		

Public Water System: CITY OF RIDGELAND PWS ID #: 0450013

FY 2020 Public Water System Capacity Assessment Form Survey Date: 10-29-2019

Managerial Capacity Assessment	Point Scale	Point Award
[M1] Were all SDWA required records maintained in a logical and orderly manner and available for review by the regional engineer during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M2] 1) Have acceptable written policies and procedures for operating this water system been formally adopted and were these policies available for review during the survey? [(Y) N] **2)** Have all board members (in office more than 12 months) completed Board Member Training? [(Y) N NA] **3)** Does the Board of Directors meet monthly and were minutes of Board meetings available for review during the survey? (**NOTE:** Quarterly meetings allowed if system has an officially designated full time manager) [(Y) N NA] (**NOTE:** ALL YESs or NAs required to receive point. NA - Not Applicable)	All Y - 1 pt. Else - 0 pt.	1
[M3] Has the water system had any SDWA violations since the last Capacity Assessment? [Y (N)]	N - 1pt. Y - 0pt.	1
[M4] Has the water system developed a long range improvements plan and was this plan available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M5] 1) Does the water system have an effective cross connection control program in compliance with MSDH regulations? [(Y) N] **2)** Was a copy of the MSDH approved bacti site plan and lead/copper site plan available for review during the survey and do the bacti results clearly show that this approved plan is being followed? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
MANAGERIAL CAPACITY RATING = [5] (Total Points)		

Financial Capacity Assessment	Point Scale	Point Award
[F1] Has the water system raised water rates in the past 5 years? [(Y) N] (**NOTE:** Point may be awarded if the water system provides acceptable financial documentation clearly showing that a rate increase is not needed, i.e. revenue has consistently exceeded expenditures by at least 10%, etc.)	Y - 1pt. N - 0pt.	1
[F2] Does the water system have an officially adopted policy requiring that water rates be routinely reviewed and adjusted as appropriate and was this policy available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[F3] Does the water system have an officially adopted cut-off policy for customers who do not pay their water bills, was a copy of this policy available for review by the regional engineer, and do system records (cut-off lists, etc.) clearly show that the water system effectively implements this cut-off policy? [(Y) N]	Y - 1pt. N - 0pt.	1
[F4] Was a copy of the water system's officially adopted annual budget available for review by the regional engineer and does the water system's financial accounting system clearly and accurately track the expenditure and receipt of funds? [(Y) N]	Y - 1pt. N - 0pt.	1
[F5 - Municipal Systems] 1) Was a copy of the latest audit report available for review at the time of the survey? [(Y) N] **2)** Does this audit report clearly show that water and sewer fund account(s) are maintained separately from all other municipal accounts? [(Y) N] (**NOTE:** Yes answer to all questions required to receive point.)	All Y - 1 pt. Else - 0 pt.	1
[F5 - Rural Systems] 1) Was the latest financial report / audit report available for review? [Y N] **2)** Does the latest financial report show that receipts exceeded expenditures? [Y N] (**NOTE:** Yes answer to both questions required to receive point)	All Y - 1 pt. Else - 0 pt.	
FINANCIAL CAPACITY RATING = [5] (Total Points)		

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MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET

System: **CITY OF RIDGELAND**
ID: **0450013** Class: **D** County: **MADISON**

Date Completed: **11/07/2019**
Connections - Actual: **13953** Equivalent: **13507**
Design Capacity: **17977** Percent Design Capacity: **13507/17977 = 75.1%**

WELL CAPACITY:
Well #1 - abandoned
Well #2 = 613 GPM
Well #3 = 805 GPM
Well #4 = 791 GPM
Well #5 = 670 GPM
Well #6 = 1320 GPM
Well #7 = 950 GPM
Well #8 - inactive
Well #9 - inactive
Well #10 = 1500 GPM
Well #11 = 742 GPM
Total well capacity = 7391 GPM
October 2019 pump tests

STORAGE CAPACITY:
500,000 gallon Elevated Tank at Northpark Mall
300,000 gallon Elevated Tank North of Natchez Trace
1,000,000 gallon Elevated Tank at Well #7
1,000,000 gallon Ground Tank at Well #6
500,000 gallon Elevated Tank at Well #10

Excess storage credit can be given for the tanks at Wells #6 and #7:
1320 gpm x 6 x 60 = 475,200 gallons
950 gpm x 6 x 60 = 342,000 gallons

Total Storage = 500,000 + 300,000 + 475,200 + 342,000 + 500,000
= 2,117,200 gallons

DESIGN CAPACITY:
Total Design Capacity = Total Well Capacity + Total Storage/200 minutes
= 7391 + (2,117,200/200)
= 17,977 connections

CALCULATE ADJUSTED CONNECTIONS FOR UN-METERED APARTMENTS/MOBILE HOMES:
Total number of apartment units/mobile homes = 4599 at 84 meters
Apartment Adjusted Connections = (4599 X 0.67) - 84 = 2997 connections

CALCULATE ADJUSTED CONNECTIONS FOR THE SCHOOLS:
Notes: Twice the Average Daily Usage are used in the calculations for peak usage
Schools with cafeterias = 40 gpd
Schools with cafeterias and showers = 50 gpd

Ann Smith Elementary and Highland Elementary (total of 2 meters):
Total number of students = 780 + 720 = 1500 students
Equivalent connections = (40 gpd/student x 1500 students)/400gpcd - 2 meters = 148

Olde Towne Middle and Ridgeland High (total of 11 meters):
Total number of students = 766 + 860 = 1626 students
Equivalent connections = (50 x 1626)/400 - 11 = 192

Total equivalent connections for schools = 148 + 192 = 340 equivalent connections

MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET

CITY OF RIDGELAND 11/07/2019

CALCULATE ADJUSTED CONNECTIONS FOR NURSING/RETIREMENT HOMES:
Twice the average daily usage: Nursing homes = 300 gpd/bed
There are 9 nursing/retirement homes on 20 meters
Total approximate number of beds = 984
Equivalent connections = (300 gpd/bed x 984 beds)/400 gpcd - 20 meters = 718 eq. conn.

Total Actual Connections = metered connections + unmetered = 9,452 + 4,501 = 13,953
Final Equivalent Connections = 9452 + 2997 + 340 + 718 = 13,507
(NOTE: All usage data obtained from City during 10/29/19 inspection)

THEREFORE THIS SYSTEM IS CURRENTLY AT 13,507/17,977 * 100% = 75% CAPACITY.

MISSISSIPPI STATE DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
MASTER DATA SHEET

Name of Supply City of Ridgeland **Owner** City

County Madison **Class** D **Date of Last Inspection** 10 – 29 – 2019

Master Meter Yes **PWS ID #** MS0450013

Supply Source: **Purchase** ____ **Surface** ____ **Ground** X **Number of Wells** Eight (Active)

Well Data:

Well ID NO.	Location	Year Const.	Cap. (GPM)	Pres.	Casing	Screen	Depth	Controls	Aux. Power
450013-01	Concrete Plant	1965			10"		690'	ABAND	n/a
450013-02	Peach Orchard	1973	495	65 psi	16"		1113'	AUTO	none
450013-03	Charity Church	1973	700	80 psi	16"		720'	AUTO	200 kW gen
450013-04	Lake Harbour	1983	700	85 psi	16"		587'	AUTO	175 kW gen
450013-05	School St	1986	950	70 psi	16"		1153'	AUTO	200 kW gen
450013-06	Hardy Rd.	1993	1600	15 psi	18"		1335'	AUTO	400 kW gen
450013-07	Old Canton Rd.	1999	800		16"	10"	710'	AUTO	250 kW gen
450013-08	Samuel Ln-West	1968	70	65 psi	6"	4"	706'	INACT	none
450013-09	Samuel Ln-East	1994	150		8"	4"	695'	INACT	none
450013-10	Walter Peyton Rd.	2010	1600 (VFD)	72 psi	16"	10"	1230'	AUTO	550 kW gen
450013-11	Samuel Ln	2017	775		16"	10"	1216'	AUTO	250 kW gen

Pump test results (Oct. 2019): Well #2 – 613 GPM @ 55 psi, Well #3 – 805 GPM @ 80 psi; Well #4 – 794 GPM @ 80 psi; Well #5 – 670 GPM @ 80 psi; Well #6 – 1320 GPM @ 10 psi; Well #7 – 950 GPM @ 65 psi; Well #10 – 1500 GPM @ 65 psi; Well #11 – 742 GPM @ 80 psi

System controlled by SCADA

Treatment: **Iron** ____ **Softening** ____ **Corrosion** ____ **Chlorine** X **Fluoride** X

	Type	Capacity	Settings	Location
Chlorinator	Capital Advance	100 ppd	50 ppd	Well #2
Fluoridator	WM qdos30	500 mL/min	97 mL/min	Well #2
Chlorinator	Capital Advance	100 ppd	60 ppd	Well #3
Fluoridator	WM qdos30	500 mL/min	98 mL/min	Well #3
Chlorinator	Capital Advance	100 ppd	50 ppd	Well #4
Fluoridator	WM qdos30	500 mL/min	100 mL/min	Well #4
Chlorinator	Capital Advance (tons)	100 ppd	65 ppd	Well #5
Fluoridator	WM qdos30	500 mL/min	141 mL/min	Well #5
Chlorinator	W&T S10K (tons)	300 ppd	145 ppd	Well #6
Fluoridator	WM qdos30	500 mL/min	250 mL/min	Well #6
Chlorinator	Capital Advance (tons)	200 ppd	125 ppd	Well #7
Fluoridator	WM qdos30	500 mL/min	290 mL/min	Well #7
Chlorinator	Capital Advance (tons)	200 ppd w/ switchover	105 ppd	Well #10
Fluoridator	WM qdos30	500 mL/min	200 mL/min	Well #10
Chlorinator	Capital Advance	100 ppd	70 ppd	Well #11
Fluoridator	Flex-Pro		199 mL/min	Well #11

MISSISSIPPI STATE DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
MASTER DATA SHEET

Name of Supply City of Ridgeland **Owner** City

County Madison **Class** D **Date of Last Inspection** 10 – 29 – 2019

Master Meter Yes **PWS ID #** MS0450013

Supply Source: **Purchase** ____ **Surface** ____ **Ground** X **Number of Wells** Eight (Active)

Storage:	Location	Material	Capacity	Remarks
Elevated	N. of Northpark	Steel	500,000 gallons	152' to OF
Elevated	N. of Natchez Trace	Steel	300,000 gallons	
Elevated	Old Canton Rd. at Well #7	Steel	1,000,000 gallons	114'6"
Ground	Hardy St. at Well #6	Concrete	1,000,000 gallons	
Pressure	Well #8	Steel	2,500 gallons	offline
Pressure	Well #9	Steel	6,000 gallons	offline
Elevated (2010)	Well #10	Steel	500,000 gallons	155' to OF; 37'6" HR

Booster Stations:

Location	Collector Tank	Pumps	Pressure Tank
Hardy St. at 1.0 MG Tank		2-100 gpm @50 psi (each)	4000 gal pressure tank
Serves approximately 20 connections			
Bridgewater S/D	100 gpm in-line booster station (MSDH approval 4/99) - OFFLINE		

MISSISSIPPI STATE DEPARTMENT OF HEALTH

REPORT OF INSPECTION OF DRINKING WATER SUPPLY

PWS: 0450013 **Class:** D

An inspection of the CITY OF RIDGELAND water supply in MADISON county was made on 11/03/2020. Present at the time of inspection was MARK B MCMANUS, OPERATOR; JOHN M MCCOLLUM, OWNER; RENEE BUCKNER;THOMAS BISHOP; WRITER. Official JOHN M MCCOLLUM Address 304 HWY 51 RIDGELAND MS 39157 W.W. Operator MARK B MCMANUS Address 546 NORTHWIND DRIVE BRANDON MS 39047 No. Connections 15130 No. Meters ___ Population Served 24047 Field Chemical Analysis: pH ___ Cl2(free) 1.8 Cl2(total) ___ H2S N/A Iron ___ Fluoride 1.0 Point of Sampling PW SHOP Water Rates ___

COMMENTS

Technical: 5 Managerial: 5 Financial: 5

OVERALL CAPACITY RATING: 5.0 / 5.0

1. The City is conducting triggered monitoring to comply with the Ground Water Rule.

2. The system was very well maintained and operating properly at the time of inspection. It is clear that the City takes pride in their water system. This office appreciates all the work they put forth.

3. Mr. McCollum reported that a new Long Range Plan was being developed. He anticipated it would be adopted by the City by the end of the year. Mrs. Buckner showed in the minutes where this project was approved to begin.

4. When repairs are made on the distribution system, all lines affected should be properly chlorinated and flushed before they are placed back in service.

5. All dead-end water lines should be flushed on a routine schedule to clear the lines of sediment and stagnant water. Full scale flushing should be carefully planned and carried out, beginning at the well or water plant and going to the outer edges of the distribution system. This flushing should be done during periods of low usage.

6. Whenever system pressure is lost, even for brief periods of time, contaminants may be introduced to the system through back-siphonage and/or back flow. When this occurs, system officials should notify all customers in the affected area to boil their drinking water vigorously for one minute. This boil water notice should remain in effect until clear bacteriological samples have been obtained.

Completed by Amy L. McLeod, E.I. on 11/17/2020.

Reviewed by Greg Caraway, P.E. on 11/23/2020.

If you have any questions, please call (601)576-7518.

pc:

JOHN M MCCOLLUM, OFFICIAL
MARK B MCMANUS, OPERATOR

Mississippi Department of Health
Bureau of Public Water Supply

STANDARD FORM

FY 2021 Public Water System Capacity Assessment Form

NOTE: This form must be completed whenever a routine sanitary survey of a public water system is conducted by a regional engineer of the Bureau of Public Water Supply

PWS ID#: 0450013 Class: D Survey Date: 11-03-2020 County: MADISON
Public Water System: CITY OF RIDGELAND Conn: 15130
Certified Waterworks Operator: MARK B MCMANUS Pop: 24047

CAPACITY RATING DETERMINATION

Technical (T) Capacity Rating: [5] Managerial (M) Capacity Rating [5] Financial (F) Capacity Rating [5]

Capacity Rating = $\frac{T+M+F}{3} = \frac{15}{3} = 5$

Overall Capacity Rating = 5.0

Completed by Amy L. McLeod, E.I. on 11/17/2020
Reviewed by Greg Caraway, P.E. on 11/23/2020

Comments: _____

Technical Capacity Assessment	Point Scale	Point Award
[T1] Does the water system have any significant deficiencies? [Y (N)]	N - 1pt. Y - 0pt.	1
[T2] 1) Was the water treatment process functioning properly? [(Y) N] (i.e. Is pH, iron, chlorine, fluoride, etc. within acceptable range?) **2)** Was needed water system equipment in place and functioning properly at the time of survey? [(Y) N] (**NOTE:** Equipment deficiencies must be identified in survey report.) **3)** Were records available to the regional engineer clearly showing that all water storage tanks have been inspected and cleaned or painted (if needed) within the past 5 years? [(Y) N NA] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T3] 1) Was the certified waterworks operator or his/her authorized representative present for the survey? [(Y) N] **2)** Was PWS Operations record up to date and properly maintained? [(Y) N] (Are minimum days being met based on system classification) **3)** Was the water system properly maintained at the time of survey? [(Y) N] **4)** Did operator/system personnel satisfactorily demonstrate to the regional engineer that he/she could fully perform all water quality tests required to properly operate this water system? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T4] 1) Does water system routinely track water loss and were acceptable record available for review? [(Y) N] **2)** Is water system overloaded? (i.e. serving customers in excess of MSDH approved design capacity)? [Y (N)] **3)** Was there any indication that the water system is/has been experiencing pressure problems in any part(s) of the distribution system? [Y (N)] (based on operator information, customer complaints, MSDH records, other information) **4)** Are well pumping tests performed routinely? [(Y) N NA] (**NOTE:** YES FOR #1 & YES OR N/A FOR #4 AND NOs FOR #2 & #3 required to receive point)	1)Y - pt. 2)N - pt. 3)N - pt. 4)Y - pt.	1
[T5] 1) Does the water system have the ability to provide water during power outages? (i.e. generator, emergency tie-ins, etc.) [(Y) N] **2)** Does the water system have a usable backup source of water? [(Y) N] (**NOTE:** Must be documented on survey report)	All Y - 1 pt. Else - 0 pt.	1
TECHNICAL CAPACITY RATING = [5] (Total Points)		

Public Water System: CITY OF RIDGELAND PWS ID #: 0450013

FY 2021 Public Water System Capacity Assessment Form Survey Date: 11-03-2020

Managerial Capacity Assessment	Point Scale	Point Award
[M1] Were all SDWA required records maintained in a logical and orderly manner and available for review by the regional engineer during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M2] 1) Have acceptable written policies and procedures for operating this water system been formally adopted and were these policies available for review during the survey? [(Y) N] **2)** Have all board members (in office more than 12 months) completed Board Member Training? [(Y) N NA] **3)** Does the Board of Directors meet monthly and were minutes of Board meetings available for review during the survey? (**NOTE:** Quarterly meetings allowed if system has an officially designated full time manager) [(Y) N NA] (**NOTE:** ALL YESs or NAs required to receive point. NA - Not Applicable)	All Y - 1 pt. Else - 0 pt.	1
[M3] Has the water system had any SDWA violations since the last Capacity Assessment? [Y (N)]	N - 1pt. Y - 0pt.	1
[M4] Has the water system developed a long range improvements plan and was this plan available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M5] 1) Does the water system have an effective cross connection control program in compliance with MSDH regulations? [(Y) N] **2)** Was a copy of the MSDH approved bacti site plan and lead/copper site plan available for review during the survey and do the bacti results clearly show that this approved plan is being followed? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
MANAGERIAL CAPACITY RATING = [5] (Total Points)		

Financial Capacity Assessment	Point Scale	Point Award
[F1] Has the water system raised water rates in the past 5 years? [(Y) N] (**NOTE:** Point may be awarded if the water system provides acceptable financial documentation clearly showing that a rate increase is not needed, i.e. revenue has consistently exceeded expenditures by at least 10%, etc.)	Y - 1pt. N - 0pt.	1
[F2] Does the water system have an officially adopted policy requiring that water rates be routinely reviewed and adjusted as appropriate and was this policy available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[F3] Does the water system have an officially adopted cut-off policy for customers who do not pay their water bills, was a copy of this policy available for review by the regional engineer, and do system records (cut-off lists, etc.) clearly show that the water system effectively implements this cut-off policy? [(Y) N]	Y - 1pt. N - 0pt.	1
[F4] Was a copy of the water system's officially adopted annual budget available for review by the regional engineer and does the water system's financial accounting system clearly and accurately track the expenditure and receipt of funds? [(Y) N]	Y - 1pt. N - 0pt.	1
[F5 - Municipal Systems] 1) Was a copy of the latest audit report available for review at the time of the survey? [(Y) N] **2)** Does this audit report clearly show that water and sewer fund account(s) are maintained separately from all other municipal accounts? [(Y) N] (**NOTE:** Yes answer to all questions required to receive point.)	All Y - 1 pt. Else - 0 pt.	1
[F5 - Rural Systems] 1) Was the latest financial report / audit report available for review? [Y N] **2)** Does the latest financial report show that receipts exceeded expenditures? [Y N] (**NOTE:** Yes answer to both questions required to receive point)	All Y - 1 pt. Else - 0 pt.	
FINANCIAL CAPACITY RATING = [5] (Total Points)		

Generated November 24, 2020, 8:46 AM CST.

MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET

System: **CITY OF RIDGELAND**
ID: **0450013** Class: **D** County: **MADISON**

Date Completed: **11/17/2020**
Connections - Actual: **15130** Equivalent: **14690**
Design Capacity: **19204** Percent Design Capacity: **14690/19204 = 76.5%**

WELL CAPACITY:
Well #1 - abandoned
Well #2 = 603 GPM
Well #3 = 710 GPM
Well #4 = 767 GPM
Well #5 = 670 GPM
Well #6 = 1260 GPM
Well #7 = 1490 GPM
Well #8 - inactive
Well #9 - inactive
Well #10 = 1500 GPM
Well #11 = 754 GPM
Total well capacity = 7754 GPM
October 2020 pump tests

STORAGE CAPACITY:
500,000 gallon Elevated Tank at Northpark Mall
300,000 gallon Elevated Tank North of Natchez Trace
1,000,000 gallon Elevated Tank at Well #7
1,000,000 gallon Ground Tank at Well #6
500,000 gallon Elevated Tank at Well #10

Excess storage credit can be given for the tanks at Wells #6 and #7:
1260 gpm x 6 x 60 = 453,600 gallons
1490 gpm x 6 x 60 = 536,400 gallons

Total Storage = 500,000 + 300,000 + 453,600 + 536,400 + 500,000
= 2,290,000 gallons

DESIGN CAPACITY:
Total Design Capacity = Total Well Capacity + Total Storage/200 minutes
= 7754 + (2,290,000/200)
= 19,204 connections

CALCULATE ADJUSTED CONNECTIONS FOR UN-METERED APARTMENTS/MOBILE HOMES:
Total number of apartment units/mobile homes = 4599 at 84 meters
Apartment Adjusted Connections = (4599 X 0.67) - 84 = 2997 connections

CALCULATE ADJUSTED CONNECTIONS FOR THE SCHOOLS:
Notes: Twice the Average Daily Usage are used in the calculations for peak usage
Schools with cafeterias = 40 gpd
Schools with cafeterias and showers = 50 gpd

Ann Smith Elementary and Highland Elementary (total of 2 meters):
Total number of students = 780 + 720 = 1500 students
Equivalent connections = (40 gpd/student x 1500 students)/400gpcd - 2 meters = 148

Olde Towne Middle and Ridgeland High (total of 11 meters):
Total number of students = 766 + 860 = 1626 students
Equivalent connections = (50 x 1626)/400 - 11 = 192

Total equivalent connections for schools = 148 + 192 = 340 equivalent connections

MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET

CITY OF RIDGELAND 11/17/2020

CALCULATE ADJUSTED CONNECTIONS FOR NURSING/RETIREMENT HOMES:
Twice the average daily usage: Nursing homes = 300 gpd/bed
There are 9 nursing/retirement homes on 20 meters
Total approximate number of beds = 984
Equivalent connections = (300 gpd/bed x 984 beds)/400 gpcd - 20 meters = 718 eq. conn.

Total Actual Connections = metered connections + unmetered = 10,635 + 4,495 = 15,130
Final Equivalent Connections = 10635 + 2997 + 340 + 718 = 14,690
(NOTE: All usage data obtained from City during 11/03/20 inspection)

THEREFORE THIS SYSTEM IS CURRENTLY AT 14,690/19,204 * 100% = 76% CAPACITY.

MISSISSIPPI STATE DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
MASTER DATA SHEET

Name of Supply City of Ridgeland **Owner** City

County Madison **Class** D **Date of Last Inspection** 11 – 03 – 2020

Master Meter Yes **PWS ID #** MS0450013

Supply Source: **Purchase** ____ **Surface** ____ **Ground** X **Number of Wells** Eight (Active)

Well Data:

Well ID NO.	Location	Year Const.	Cap. (GPM)	Pres.	Casing	Screen	Depth	Controls	Aux. Power
450013-01	Concrete Plant	1965			10"		690'	ABAND	n/a
450013-02	Peach Orchard	1973	495	65 psi	16"		1113'	AUTO	none
450013-03	Charity Church	1973	700	80 psi	16"		720'	AUTO	200 kW gen
450013-04	Lake Harbour	1983	700	85 psi	16"		587'	AUTO	175 kW gen
450013-05	School St	1986	950	70 psi	16"		1153'	AUTO	200 kW gen
450013-06	Hardy Rd.	1993	1600	15 psi	18"		1335'	AUTO	400 kW gen
450013-07	Old Canton Rd.	1999	800		16"	10"	710'	AUTO	250 kW gen
450013-08	Samuel Ln-West	1968	70	65 psi	6"	4"	706'	INACT	none
450013-09	Samuel Ln-East	1994	150		8"	4"	695'	INACT	none
450013-10	Walter Peyton Rd.	2010	1600 (VFD)	72 psi	16"	10"	1230'	AUTO	550 kW gen
450013-11	Samuel Ln	2017	775		16"	10"	1216'	AUTO	250 kW gen

Pump test results (Oct. 2020): Well #2 – 603 GPM @ 55 psi, Well #3 – 710 GPM @ 80 psi; Well #4 – 767 GPM @ 80 psi; Well #5 – 670 GPM @ 80 psi; Well #6 – 1260 GPM @ 10 psi; Well #7 – 1490 GPM @ 65 psi; Well #10 – 1500 GPM @ 65 psi; Well #11 – 754 GPM @ 80 psi

System controlled by SCADA

Treatment: **Iron** ____ **Softening** ____ **Corrosion** ____ **Chlorine** X **Fluoride** X

	Type	Capacity	Settings	Location
Chlorinator	Capital Advance	100 ppd	35 ppd	Well #2
Fluoridator	WM qdos30	500 mL/min	105 mL/min	Well #2
Chlorinator	Capital Advance	100 ppd	60 ppd	Well #3
Fluoridator	WM qdos30	500 mL/min	110 mL/min	Well #3
Chlorinator	Capital Advance	100 ppd	60 ppd	Well #4
Fluoridator	WM qdos30	500 mL/min	110 mL/min	Well #4
Chlorinator	Capital Advance (tons)	100 ppd	65 ppd	Well #5
Fluoridator	WM qdos30	500 mL/min	141 mL/min	Well #5
Chlorinator	W&T S10K (tons)	300 ppd	150 ppd	Well #6
Fluoridator	WM qdos30	500 mL/min	240 mL/min	Well #6
Chlorinator	Capital Advance (tons)	200 ppd	115 ppd	Well #7
Fluoridator	WM qdos30	500 mL/min	285 mL/min	Well #7
Chlorinator	Capital Advance (tons)	200 ppd w/ switchover	105 ppd	Well #10
Fluoridator	WM qdos30	500 mL/min	199 mL/min	Well #10
Chlorinator	Capital Advance	100 ppd	50 ppd	Well #11
Fluoridator	Flex-Pro		123 mL/min	Well #11

MISSISSIPPI STATE DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
MASTER DATA SHEET

Name of Supply City of Ridgeland **Owner** City

County Madison **Class** D **Date of Last Inspection** 11 – 03 – 2020

Master Meter Yes **PWS ID #** MS0450013

Supply Source: **Purchase** ____ **Surface** ____ **Ground** X **Number of Wells** Eight (Active)

Storage:	**Location**	**Material**	**Capacity**	**Remarks**
Elevated	N. of Northpark	Steel	500,000 gallons	152' to OF
Elevated	N. of Natchez Trace	Steel	300,000 gallons	
Elevated	Old Canton Rd. at Well #7	Steel	1,000,000 gallons	114'6"
Ground	Hardy St. at Well #6	Concrete	1,000,000 gallons	
Pressure	Well #8	Steel	2,500 gallons	offline
Pressure	Well #9	Steel	6,000 gallons	offline
Elevated (2010)	Well #10	Steel	500,000 gallons	155' to OF; 37'6" HR

Booster Stations:

Location	**Collector Tank**	**Pumps**	**Pressure Tank**
Hardy St. at 1.0 MG Tank		2-100 gpm @50 psi (each)	4000 gal pressure tank
Serves approximately 20 connections			
Bridgewater S/D	100 gpm in-line booster station (MSDH approval 4/99) - OFFLINE		

GRINER DRILLING SERVICE INC.

- Industrial, Municipal, and Irrigation Water Wells
- Pumps, Gears, Motors
- Maintenance and Machine Shops

126 Interstate Drive • Richland, MS 39218 • Phone (601) 932-4511 • Fax (601) 932-4751

November 2, 2018

City of Ridgeland
Mr. Mark McManus
P. O. Box 217
Ridgeland, MS 39158

RE: 2018 Annual Flow Tests

Mr. McManus:

Our service man has recently completed testing your water wells. Here are the results of those tests.

School Street:

This pump is currently producing **682 GPM @ 80 PSI** operating pressure. While operating, the pump has about 28 feet of submergence. There was no sand or abnormal vibration noted during the test. The motor is rated for 176 amps and is pulling about 174 amps while operating. Based on this test, the pump appears to be in good operating condition.

The submergence on this pump at operating pressure is at 28 feet and at open valve there is only about 12 feet of submergence. At this level, you can begin picking up some old oil, especially if you have a low pressure situation. It would be a good idea to lower this pump deeper into the well.

Charity Church:

This test was run through the master meter to prevent issues with the water discharge. This pump is producing **710 GPM @ 80 PSI**. The airline indicates that the pump has about 50 feet of submergence at operating pressure which is plenty. There was no abnormal vibration noted during the test and the amp load appeared normal for the pump.

Peach Orchard:

This pump is producing **587 GPM @ 60 PSI**. It is operating with over 70 feet of submergence. There was no unusual noise or vibration during the test and the amp load was normal. This flow rate is similar to past readings, according to our records. This unit appears to be in good operating condition.

Hardy Road:

This well is producing **1275 GPM @ 10 PSI**. Again, there was no unusual vibration or noise in the pump and the amp load was normal for the motor. These readings are very similar to past readings and the pump appears to be in good condition.

Lake Harbor:

This pump is currently producing **748 GPM @ 80 PSI**. According to the airline, the pump is operating with over 100 feet of submergence. There was no vibration or sand noted during the test. This test was also run through the master meter and the pump appears to be in good condition.

Western Well:

This test was run through the flow meter at 59.8 Hz on the VFD. The pump produced approximately **1500 GPM @ 65 PSI**. This flow rate is identical to the past couple of years. There was no sand or abnormal vibration noted during the test. The amp load was slightly above the nameplate rating for the motor, but well within the service factor. This indicates very little, if any, wear in the pump.

Old Canton Road:

This test was run through the flow meter at 56.2 Hz on the VFD. This is the programmed speed on the VFD. According to the meter, the pump is producing **1325 GPM @ 48 PSI**. This flow rate has not changed much over the past few years. The tests over the past couple of years were run at a slower speed (46 – 47 Hz) so this year's test shows a much higher flow rate.

The one area of concern is there is some vibration in the pump. As it stands now, there does not appear to be much wear in the pump because it is still producing close to what it did originally. We recommend working on this pump to find/repair the cause of this vibration before it begins wearing out all of the other components.

Samuels Lane:

This pump is currently producing **751 GPM @ 80 PSI**. There was no vibration or sand noted during the test and the pump operates with nearly 60 feet of submergence. The amp load was just under the nameplate rating for the motor. This pump is performing nearly identically to when it was new.

Please do not hesitate to call if you have any questions concerning these tests, or the maintenance we performed.

Thank You,

Robert Morris
Griner Drilling Service

SUMMARY OF 2018 PUMPING TESTS

WELL LOCATION	CAPACITY (GPM)	OPERATING PRESSURE (PSI)	RECOMMENDATIONS
School Street	682	80	Lower the pump deeper into well
Charity Church	710	80	None
Peach Orchard	587	60	None
Hardy Road	1275	10	None
Lake Harbor	748	80	None
Western Well	1500	65	None
Old Canton Road	1325	48	Pull to inspect & repair vibration before it worsens and damages more components
Samuels Lane	751	80	None

STEP TEST

GRINER DRILLING SERVICE, INC.

126 Interstate Drive - Richland, MS 39218 - Phone (601) 932-4511

Owner **City of Ridgeland**

Date 10/22/2018 County Madison Location School Street

Static Level 400 Air Line Length 450 Observer Mike Hart

Time	T (MINS)	Submerg-ence (FT)	Water Level (FT)	Drawdown (FT)	Head (INCHES)	Flow Rate (GPM)	Pressure (PSI)	Remarks
		12	438	38	65	**104**	0	
		13	437	37	62	**980**	10	
		14	436	36	60	**964**	20	
		16	434	34	57	**940**	30	
		18	432	32	53	**906**	40	
		19	431	31	47	**853**	50	
		20	430	30	43	**816**	60	
		24	426	26	38	**767**	70	
		28	422	22	30	**682**	80	Line PSI
		30	420	20	26	**635**	90	
		32	418	18	16.5	**506**	100	

STEP TEST

GRINER DRILLING SERVICE, INC.

126 Interstate Drive - Richland, MS 39218 - Phone (601) 932-4511

Owner **City of Ridgeland**

Date 10/22/2018 County Madison Location Charity Church

Static Level 240 Air Line Length 330 Observer Mike Hart

Time	T (MINS)	Submerg-ence (FT)	Water Level (FT)	Drawdown (FT)	Head (INCHES)	Flow Rate (GPM)	Pressure (PSI)	Remarks
		50	280	40		**710**	80	Line PSI
		54	276	36		**670**	90	
		56	274	34		**650**	100	
		58	272	32		**630**	110	
		60	270	30		**600**	120	

STEP TEST

GRINER DRILLING SERVICE, INC.

126 Interstate Drive - Richland, MS 39218 - Phone (601) 932-4511

Owner **City of Ridgeland**

Date 10/22/2018 County Madison Location Peach Orchard

Static Level _____ Air Line Length 503 Observer Mike Hart

Time	T (MINS)	Submerg-ence (FT)	Water Level (FT)	Drawdown (FT)	Head (INCHES)	Flow Rate (GPM)	Pressure (PSI)	Remarks
		79		21		**587**	60	
		80		20		**562**	70	
		81		16		**537**	80	
		82		18		**506**	90	
		84		16		**396**	100	
		86		14		**357**	120	

STEP TEST

GRINER DRILLING SERVICE, INC.

126 Interstate Drive - Richland, MS 39218 - Phone (601) 932-4511

Owner **City of Ridgeland**

Date 10/23/2018 County Madison Location Hardy Road

Static Level 430 Air Line Length 540 Observer Mike Hart

Time	T (MINS)	Submerg-ence (FT)	Water Level (FT)	Drawdown (FT)	Head (INCHES)	Flow Rate (GPM)	Pressure (PSI)	Remarks
		110						
		89	451	21		**1275**	10	Line PSI
		90	450	20		**1230**	20	
		92	448	18		**1176**	30	
		94	446	16		**998**	40	
		96	444	14		**904**	50	
		98	442	12		**884**	60	
		98	442	12		**817**	70	
		100	440	10		**697**	80	
		100	440	10		**482**	90	

STEP TEST

GRINER DRILLING SERVICE, INC.

126 Interstate Drive - Richland, MS 39218 - Phone (601) 932-4511

Owner **City of Ridgeland**

Date 10/22/2018 County Madison Location Lake Harbor

Static Level 430 Air Line Length 540 Observer Mike Hart

Time	T (MINS)	Submerg-ence (FT)	Water Level (FT)	Drawdown (FT)	Head (INCHES)	Flow Rate (GPM)	Pressure (PSI)	Remarks
		126		34		**748**	80	Line PSI
		126		32		**718**	90	
		130		30		**698**	100	
		132		28		**677**	110	
		134		26		**646**	120	

STEP TEST

GRINER DRILLING SERVICE, INC.

126 Interstate Drive - Richland, MS 39218 - Phone (601) 932-4511

Owner **City of Ridgeland**

Date 10/23/2018 County Madison Location Western Well

Static Level 430 Air Line Length 540 Observer Mike Hart

Time	T (MINS)	Submerg-ence (FT)	Water Level (FT)	Drawdown (FT)	Head (INCHES)	Flow Rate (GPM)	Pressure (PSI)	Remarks
						1500	65	59.8 Hz
		65	475	45		**1400**	70	
		67	473	43		**1350**	80	
		69	471	41		**1250**	90	
		71	469	39		**1200**	100	

STEP TEST

GRINER DRILLING SERVICE, INC.

126 Interstate Drive - Richland, MS 39218 - Phone (601) 932-4511

Owner **City of Ridgeland**

Date 10/23/2018 County Madison Location Samuels Lane

Static Level 430 Air Line Length 540 Observer Mike Hart

Time	T (MINS)	Submerg-ence (FT)	Water Level (FT)	Drawdown (FT)	Head (INCHES)	Flow Rate (GPM)	Pressure (PSI)	Remarks
		36	494	**64**	34.5	**930**	0	
		38	492	62	33	**909**	10	
		39	491	61	32.5	**902**	20	
		40	490	60	32	**895**	30	
		42	488	58	31	**881**	40	
		43	487	57	30	**867**	50	
		44	486	56	27.5	**830**	60	
		46	484	54	25	**791**	70	
		47	483	53	22.5	**751**	80	Line PSI
		48	482	52	21	**725**	90	
		50	480	50	19.5	**699**	100	

Historical Well Production

City of Ridgeland

1/23/2020

CITY OF RIDGELAND SYSTEM (COR)

METERED WATER PUMPED, (1,000 gal.)

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Well Name	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**
School Street	312,289	278,441	436,012	415,171	336,365	163,938	156,263	175,649	179,739	192,951	198,710	150,064	169,936	152,995
Peach Orchard	296,535	329,487	232,361	99,646	75,502	195,135	206,602	134,081	130,110	149,730	144,409	122,765	117,699	110,231
Lake Harbour	174,499	206,790	116,038	130,155	144,585	184,483	200,237	137,294	140,181	154,331	150,165	123,142	133,128	144,661
Charity Church	133,866	40,855	127,462	124,125	150,705	148,457	147,980	149,513	159,600	181,717	163,580	150,724	140,505	136,805
Old Canton	157,902	146,179	133,168	198,825	251,399	164,550	205,310	265,890	254,733	230,835	225,194	279,339	321,201	293,303
Hardy Road	267,747	227,609	263,910	283,304	264,377	175,119	105,915	83,650	69,341	200,245	254,199	270,140	308,492	323,268
Western	0.0	0.0	0.0	0.0	0.0	310,919	394,535	360,637	416,318	313,314	288,034	203,599	129,188	81,957
Samuels Lane	212,502	217,346	191,607	167,067	181,441	55,839	94	0	0	0	0	56,796	49,568	37,258
YEARLY TOTAL	**1,555,340**	**1,446,707**	**1,500,558**	**1,418,293**	**1,404,374**	**1,398,440**	**1,416,936**	**1,306,714**	**1,350,022**	**1,423,123**	**1,424,291**	**1,356,569**	**1,369,717**	**1,280,478**

AVERAGE DAILY DEMAND

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Well Name	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**
School Street	594	530	830	790	640	312	297	334	342	367	378	286	323	291
Peach Orchard	564	627	442	190	144	371	393	255	248	285	275	234	224	210
Lake Harbour	332	393	221	248	275	351	381	261	267	294	286	234	253	275
Charity Church	255	78	243	236	287	282	282	284	304	346	311	287	267	260
Old Canton	300	278	253	378	478	313	391	506	485	439	428	531	611	558
Hardy Road	509	433	502	539	503	333	202	159	132	381	484	514	587	615
Western	NIS	NIS	NIS	NIS	NIS	592	751	686	792	596	548	387	246	156
Samuels Lane	404	414	365	318	345	106	0	NIS	NIS	NIS	NIS	190	190	71
YEARLY TOTAL	**2,959**	**2,752**	**2,855**	**2,698**	**2,672**	**2,661**	**2,696**	**2,486**	**2,569**	**2,708**	**2,710**	**2,581**	**2,606**	**2,436**

MAXIMUM CAPACITY

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Well Name	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**
School Street	850	850	850	850	850	850	850	850	850	850	850	850	850	682
Peach Orchard	630	630	630	630	630	630	630	630	630	630	630	630	630	587
Lake Harbour	700	700	700	700	700	700	700	700	700	700	700	700	700	748
Charity Church	750	750	750	750	750	750	750	750	750	750	750	750	750	710
Old Canton	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,325
Hardy Road	1,390	1,390	1,390	1,390	1,390	1,390	1,397	1,397	1,397	1,380	1,370	1,370	1,370	1,275
Western	NIS	NIS	NIS	NIS	NIS	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,500
Samuels Lane	90	90	90	90	90	NIS	NIS	NIS	NIS	NIS	NIS	750	750	751
YEARLY TOTAL	**5,710**	**5,710**	**5,710**	**5,710**	**5,710**	**7,020**	**7,027**	**7,027**	**7,027**	**7,010**	**7,000**	**7,750**	**7,750**	**7,578**

AVERAGE DAILY RUNTIME, HRS

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Well Name	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**
School Street	17	15	23	22	18	9	8	9	10	10	11	8	9	10
Peach Orchard	21	24	17	7	5	14	15	10	9	11	10	9	9	9
Lake Harbour	11	13	8	8	9	12	13	9	9	10	10	8	9	9
Charity Church	8	2	8	8	9	9	9	9	10	11	10	9	9	9
Old Canton	6	5	5	7	9	6	7	9	9	8	8	10	11	10
Hardy Road	9	7	9	9	9	6	3	3	2	7	8	9	10	12
Western	NIS	NIS	NIS	NIS	NIS	10	13	12	14	10	9	7	4	2
Samuels Lane	108	110	97	85	92	NIS	NIS	NIS	NIS	NIS	NIS	3	3	2
YEARLY TOTAL	**12**	**12**	**12**	**11**	**11**	**9**	**9**	**8**	**9**	**9**	**9**	**8**	**8**	8

FISCAL YEAR SUMMARY - HISTORICAL WATER PRODUCTION, CONSUMPTION & LOSS

City of Ridgeland

01/23/20

WELL PRODUCTION				
FISCAL YEAR	FY TOTAL (*kgal.*)	AVERAGE MONTH (*kgal.*)	PEAK MONTH (*kgal.*)	MINIMUM MONTH (*kgal.*)
FY 2019	1,280,478	106,707	153,519	74,851
FY 2018	1,369,717	114,143	157,272	80,154
FY 2017	1,356,569	113,047	163,979	81,447
FY 2016	1,424,292	118,691	162,342	84,128
FY 2015	1,423,123	118,594	202,099	79,758
FY 2014	1,350,022	112,502	146,670	82,332
FY 2013	1,306,714	108,893	153,223	84,182
FY 2012	1,416,936	118,078	152,198	87,280
WATER CONSUMPTION				
FISCAL YEAR	FY TOTAL (*kgal.*)	AVERAGE MONTH (*kgal.*)	PEAK MONTH (*kgal.*)	MINIMUM MONTH (*kgal.*)
FY 2019	1,132,156	94,346	133,665	68,510
FY 2018	1,160,678	96,723	137,370	69,303
FY 2017	1,229,231	102,436	158,340	73,641
FY2016	1,278,820	106,568	157,225	73,869
FY 2015	1,269,530	105,794	179,691	71,241
FY 2014	1,162,729	96,894	136,820	71,945
FY 2013	1,162,850	96,904	139,426	72,325
FY 2012	1,164,941	97,078	127,922	71,167

WATER LOSS						
FISCAL YEAR	FY TOTAL (%)	FY TOTAL (*kgal.*)	FY TOTAL (water$)	AVERAGE MONTH (*kgal.*)	PEAK MONTH (*kgal.*)	MINIMUM MONTH (*kgal.*)
FY2019	11%	148,322	$444,967	12,135	19,854	2,895
FY 2018	15%	209,039	$424,348	17,072	25,582	10,851
FY 2017	9%	127,338	$253,403	10,612	22,102	(2,101)
FY 2016	11%	162,313	$316,510	13,289	17,226	12,482
FY 2015	11%	153,593	$293,362	12,419	16,538	5,652
FY 2014	14%	187,293	$341,960	15,415	52,365	7,098
FY 2013	11%	143,864	$262,666	11,743	36,348	1,079
FY 2012	18%	251,995	$451,071	20,256	37,850	3,157

CITY OF RIDGELAND SYSTEM (COR) ***PWS ID #0450013***

METERED WATER PUMPED, (1,000 gal.)

	FY2019	Oct-18		Nov-18		Dec-18		Jan-19		Feb-19		Mar-19		Apr-19		May-19		Jun-19		Jul-19		Aug-19		Sep-19	
Well Name	**Total-to-Date (1,000 gal.)**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**	**Amount**	**Read Date**
School Street	152,995	13,884	October 8, 2019	16,112	November 13, 2018	10,601	December 10, 2018	13,532	January 14, 2019	14,345	February 11, 2019	10,755	March 11, 2019	10,072	April 8, 2019	8,836	May 13, 2019	11,321	June 10, 2019	12,983	July 8, 2019	17,411	August 12, 2019	13,143	September 9, 2019
Peach Orchard	110,231	10,374	October 8, 2019	12,168	November 13, 2018	7,857	December 10, 2018	10,127	January 14, 2019	1,061	February 11, 2019	8,010	March 11, 2019	7,666	April 8, 2019	10,714	May 13, 2019	8,892	June 10, 2019	9,964	July 8, 2019	13,382	August 12, 2019	10,019	September 9, 2019
Lake Harbor	144,661	12,801	October 8, 2019	12,377	November 13, 2018	5,640	December 10, 2018	12,144	January 14, 2019	9,710	February 11, 2019	8,540	March 11, 2019	7,923	April 8, 2019	13,638	May 13, 2019	12,384	June 10, 2019	13,549	July 8, 2019	16,420	August 12, 2019	19,535	September 9, 2019
Charity Church	136,805	12,286	October 8, 2019	14,388	November 13, 2018	9,021	December 10, 2018	12,005	January 14, 2019	12,844	February 11, 2019	9,155	March 11, 2019	8,879	April 8, 2019	12,341	May 13, 2019	10,411	June 10, 2019	11,195	July 8, 2019	12,651	August 12, 2019	11,629	September 9, 2019
Old Canton	293,303	26,950	October 8, 2019	31,545	November 13, 2018	20,717	December 10, 2018	26,524	January 14, 2019	11,062	February 11, 2019	21,010	March 11, 2019	19,621	April 8, 2019	26,775	May 13, 2019	22,686	June 10, 2019	25,280	July 8, 2019	33,989	August 12, 2019	27,144	September 9, 2019
Hardy Road	323,268	24,231	October 8, 2019	29,197	November 13, 2018	18,483	December 10, 2018	23,785	January 14, 2019	18,549	February 11, 2019	19,417	March 11, 2019	20,109	April 8, 2019	24,433	May 13, 2019	34,332	June 10, 2019	30,248	July 8, 2019	44,752	August 12, 2019	35,732	September 9, 2019
Livingston	81,957	7,481	October 8, 2019	7,465	November 13, 2018	3,855	December 10, 2018	5,001	January 14, 2019	4,854	February 11, 2019	3,485	March 11, 2019	3,834	April 8, 2019	5,523	May 13, 2019	8,166	June 10, 2019	8,729	July 8, 2019	9,935	August 12, 2019	13,629	September 9, 2019
Samuels Lane	37,258	3,968	October 8, 2019	3,895	November 13, 2018	1,927	December 10, 2018	2,484	January 14, 2019	2426	February 11, 2019	1,734	March 11, 2019	1,929	April 8, 2019	2,752	May 13, 2019	4,096	June 10, 2019	4,361	July 8, 2019	4,979	August 12, 2019	2,707	September 9, 2019
MONTHLY TOTAL	N/A	**111,975**		**127,147**		**78,101**		**105,602**		**74,851**		**82,106**		**80,033**		**105,012**		**112,288**		**116,309**		**153,519**		**130,831**	
YEARLY TOTAL-TO-DATE	**1,280,478**	**111,975**		**239,122**		**317,223**		**422,824**		**497,675**		**579,781**		**659,814**		**764,825**		**877,113**		**993,422**		**1,146,941**		**1,277,771**	

METERED WATER CONSUMPTION, (1,000 gal.)

	Total-to-Date (1,000 gal.)	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
SPR-020-10-RESIDENTIAL	87,113	10,864	8,636	1,413	1,144	591	410	1,888	2,873	12,231	15,700	16,837	14,526
SPR-020-20-COMMERCIAL	90,381	9,917	9,468	3,433	3,930	1,708	4,082	3,545	9,678	8,249	10,509	13,560	12,302
SPR-020-21-COMMERCIAL COMPOUND SPRINKLER	14,794	1,230	1,552	166	172	124	589	744	869	1,321	2,901	2,947	2,179
SPR-020-99-NO CHARGE--CITY	3,289	196	194	37	46	33	7	22	183	728	628	793	422
WTR-010-10-RESIDENTIAL INSIDE	615,339	50,546	60,614	42,927	54,394	43,103	41,541	43,253	55,351	51,570	53,020	64,961	54,059
WTR-010-11-RESIDENTIAL COMPOUND, INSIDE	10,765	508	632	482	985	1,106	767	746	1,294	986	903	1,444	912
WTR-010-20-COMMERCIAL	288,825	22,899	27,062	18,886	24,171	20,894	20,640	23,170	30,066	22,649	23,212	30,353	24,823
WTR-010-21-COMMERCIAL COMPOUND	0	0	0	0	0	0	0	0	0	0	0	0	0
WTR-010-22-COMMERCIAL BACKOUT	4,297	522	285	202	371	315	290	278	272	345	412	566	439
WTR-010-25-COMMERCIAL OUTSIDE	48	4	6	2	2	4	4	2	12	4	4	2	2
WTR-010-30-RESIDENTIAL OUTSIDE	13,135	932	1,188	891	1,218	905	853	859	1,226	1,144	1,069	1,279	1,571
WTR-010-99-NO CHARGE--CITY	4,170	348	284	71	97	82	81	108	293	579	772	923	532
MONTHLY TOTAL	N/A	**97,966**	**109,921**	**68,510**	**86,530**	**68,865**	**69,264**	**74,615**	**102,117**	**99,806**	**109,130**	**133,665**	**111,767**
YEARLY TOTAL-TO-DATE	**1,132,156**	**97,966**	**207,887**	**276,397**	**362,927**	**431,792**	**501,056**	**575,671**	**677,788**	**777,594**	**886,724**	**1,020,389**	**1,132,156**

WATER LOSS, (%)

		OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
MONTHLY TOTAL		**13%**	**14%**	**12%**	**18%**	**8%**	**16%**	**7%**	**3%**	**11%**	**6%**	**13%**	**15%**
YEARLY TOTAL-TO-DATE		**13%**	**13%**	**13%**	**14%**	**13%**	**14%**	**13%**	**11%**	**11%**	**11%**	**11%**	**11%**
	Month Loss	14,009	17,226	9,591	19,072	5,986	12,842	5,418	2,895	12,482	7,179	19,854	19,064

HYDRAULIC MODEL RESULTS

Well Pumping Runtimes

WaterCad Hydraulic Model Results Over a 24-Hour Steady State Simulation

Ex. Wells Runtimes								
	Charity Church Well (PMP-1) (Hours)	**School Street Well (PMP-2) (Hours)**	**Peach Orchard Well (PMP-3) (Hours)**	**Lake Harbor Well (PMP-4) (Hours)**	**Old Canton Rd Well (PMP-5) (Hours)**	**Hardy Rd Well (PMP-6) (Hours)**	**Western Well (PMP-7) (Hours)**	**Samuel's Lane Well (PMP-8) (Hours)**
Base Avg. Day (2,308 gpm)	*6.93*	*6.93*	*6.93*	*6.93*	*6.93*	*11.19*	*1.4*	*1.4*
Base Peak Day (3,923 gpm)	*16.34*	*16.34*	*16.34*	*16.34*	*16.34*	*12.87*	*2.63*	*2.63*
Future (2040) Avg. Day (2,953 gpm)	*7.8*	*7.8*	*7.8*	*7.8*	*7.8*	*13.34*	*3.52*	*3.52*
Future (2040) Peak. Day (5,016 gpm)	*18.13*	*18.13*	*18.13*	*18.13*	*18.13*	*14.61*	*6.99*	*6.99*

Ex. Wells + Highland Colony Well & Tank Runtimes									
	Charity Church Well (PMP-1) (Hours)	**School Street Well (PMP-2) (Hours)**	**Peach Orchard Well (PMP-3) (Hours)**	**Lake Harbor Well (PMP-4) (Hours)**	**Old Canton Rd Well (PMP-5) (Hours)**	**Highland Colony Well (PMP-20) (Hours)**	**Hardy Rd Well (PMP-6) (Hours)**	**Western Well (PMP-7) (Hours)**	**Samuel's Lane Well (PMP-8) (Hours)**
Base Avg. Day (2,308 gpm)	-	-	-	-	-	-	-	-	-
Base Peak Day (3,923 gpm)	*10.95*	*10.95*	*10.95*	*10.95*	*10.95*	*10.95*	*12.41*	*2.87*	*2.87*
Future (2040) Avg. Day (2,953 gpm)	*6.46*	*6.46*	*6.46*	*6.46*	*6.46*	*6.46*	*10.37*	*3.51*	*3.51*
Future (2040) Peak. Day (5,016 gpm)	*13.42*	*13.42*	*13.42*	*13.42*	*13.42*	*13.42*	*14.2*	*7.51*	*7.51*

Pumping Results

WaterCad Hydraulic Model Results Over a 24-Hour Steady State Simulation

Base Avg. Day (2,308 gpm)
Ex. Wells

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Flow (Total) (gpm)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)
2594	PMP-1	341.95	Charity Church Well	On	719	341.55	516.28	174.7
2598	PMP-2	354.35	School Street Well	On	795	354.19	503.01	148.8
2599	PMP-3	370	Peach Orchard Well	On	598	369.94	501.82	131.9
2600	PMP-4	317.5	Lake Harbour Well	On	745	317.44	503.79	186.4
2602	PMP-5	350.25	Old Canton Road Well	On	907	350.22	504.6	154.4
5043	PMP-6	470	Hardy Road Well	On	1251	469.79	505.45	35.65
5046	PMP-7	440	Western Well	On	1486	439.17	587.4	148.2
5568	PMP-9	415	Colony Park Well	Off	(N/A)	(N/A)	(N/A)	(N/A)
6076	PMP-8	407.5	Samuel Lane Well	On	772	407.29	593	185.7
6615	PMP-20	365	Highland Colony Well	Off	(N/A)	(N/A)	(N/A)	(N/A)

Base Avg. Peak Day (3,923 gpm)
Ex. Wells

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Flow (Total) (gpm)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)
2594	PMP-1	341.95	Charity Church Well	On	720	341.55	515.1	173.6
2598	PMP-2	354.35	School Street Well	On	797	354.19	502.32	148.1
2599	PMP-3	370	Peach Orchard Well	On	600	369.94	500.7	130.8
2600	PMP-4	317.5	Lake Harbour Well	On	746	317.44	503.08	185.7
2602	PMP-5	350.25	Old Canton Road Well	On	908	350.22	504.56	154.3
5043	PMP-6	470	Hardy Road Well	On	1251	469.79	505.45	35.65
5046	PMP-7	440	Western Well	On	1486	439.17	587.36	148.2
5568	PMP-9	415	Colony Park Well	Off	(N/A)	(N/A)	(N/A)	(N/A)
6076	PMP-8	407.5	Samuel Lane Well	On	772	407.29	592.9	185.6
6615	PMP-20	365	Highland Colony Well	Off	(N/A)	(N/A)	(N/A)	(N/A)

Future Avg. Day (2,953 gpm)
Ex. Wells

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Flow (Total) (gpm)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)
2594	PMP-1	341.95	Charity Church Well	On	719	341.55	516.26	174.7
2598	PMP-2	354.35	School Street Well	On	796	354.19	502.76	148.6
2599	PMP-3	370	Peach Orchard Well	On	599	369.94	501.74	131.8
2600	PMP-4	317.5	Lake Harbour Well	On	745	317.44	503.74	186.3
2602	PMP-5	350.25	Old Canton Road Well	On	907	350.22	504.6	154.4
5043	PMP-6	470	Hardy Road Well	On	1251	469.79	505.45	35.65
5046	PMP-7	440	Western Well	On	1486	439.17	587.28	148.1
5568	PMP-9	415	Colony Park Well	Off	(N/A)	(N/A)	(N/A)	(N/A)
6076	PMP-8	407.5	Samuel Lane Well	On	772	407.29	592.8	185.5
6615	PMP-20	365	Highland Colony Well	Off	(N/A)	(N/A)	(N/A)	(N/A)

Future Avg. Peak Day (5,016 gpm)
Ex. Wells

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Flow (Total) (gpm)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)
2594	PMP-1	342	Charity Church Well	On	720	341.55	515.05	173.5
2598	PMP-2	354.4	School Street Well	On	798	354.19	502.03	147.8
2599	PMP-3	370	Peach Orchard Well	On	600	369.94	500.61	130.7
2600	PMP-4	317.5	Lake Harbour Well	On	746	317.44	503.02	185.6
2602	PMP-5	350.3	Old Canton Road Well	On	908	350.22	504.55	154.3
5043	PMP-6	470	Hardy Road Well	On	1251	469.79	505.45	35.65
5046	PMP-7	440	Western Well	On	1487	439.17	587.19	148
5568	PMP-9	415	Colony Park Well	Off	(N/A)	(N/A)	(N/A)	(N/A)
6076	PMP-8	407.5	Samuel Lane Well	On	773	407.29	592.59	185.3
6615	PMP-20	365	Highland Colony Well	Off	(N/A)	(N/A)	(N/A)	(N/A)

Base Avg. Peak Day (3,923 gpm)
Ex. Wells + Highland Colony Well & Tank

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Flow (Total) (gpm)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)
2594	PMP-1	341.95	Charity Church Well	On	720	341.55	515.22	173.7
2598	PMP-2	354.35	School Street Well	On	793	354.2	504.38	150.2
2599	PMP-3	370	Peach Orchard Well	On	599	369.94	501.16	131.2
2600	PMP-4	317.5	Lake Harbour Well	On	745	317.44	503.32	185.9
2602	PMP-5	350.25	Old Canton Road Well	On	908	350.22	504.57	154.4
5043	PMP-6	470	Hardy Road Well	On	1251	469.79	505.45	35.65
5046	PMP-7	440	Western Well	On	1486	439.17	587.36	148.2
5568	PMP-9	415	Colony Park Well	Off	(N/A)	(N/A)	(N/A)	(N/A)
6076	PMP-8	407.5	Samuel Lane Well	On	772	407.29	592.9	185.6
6615	PMP-20	365	Highland Colony Well	On	1549	364.44	506.22	141.8

Future Avg. Day (2,953 gpm)
Ex. Wells + Highland Colony Well & Tank

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Flow (Total) (gpm)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)
2594	PMP-1	341.95	Charity Church Well	On	718	341.55	516.35	174.8
2598	PMP-2	354.35	School Street Well	On	792	354.2	504.68	150.5
2599	PMP-3	370	Peach Orchard Well	On	598	369.94	502.19	132.3
2600	PMP-4	317.5	Lake Harbour Well	On	745	317.44	503.95	186.5
2602	PMP-5	350.25	Old Canton Road Well	On	907	350.22	504.6	154.4
5043	PMP-6	470	Hardy Road Well	On	1251	469.79	505.45	35.65
5046	PMP-7	440	Western Well	On	1486	439.17	587.28	148.1
5568	PMP-9	415	Colony Park Well	Off	(N/A)	(N/A)	(N/A)	(N/A)
6076	PMP-8	407.5	Samuel Lane Well	On	772	407.29	592.8	185.5
6615	PMP-20	365	Highland Colony Well	On	1548	364.44	506.32	141.9

Future Avg. Peak Day (5,016 gpm)
Ex. Wells + Highland Colony Well & Tank

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Flow (Total) (gpm)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)
2594	PMP-1	342	Charity Church Well	On	720	341.55	515.18	173.6
2598	PMP-2	354.4	School Street Well	On	793	354.2	504.29	150.1
2599	PMP-3	370	Peach Orchard Well	On	599	369.94	501.11	131.2
2600	PMP-4	317.5	Lake Harbour Well	On	745	317.44	503.28	185.9
2602	PMP-5	350.3	Old Canton Road Well	On	908	350.22	504.57	154.4
5043	PMP-6	470	Hardy Road Well	On	1251	469.79	505.45	35.65
5046	PMP-7	440	Western Well	On	1487	439.17	587.19	148
5568	PMP-9	415	Colony Park Well	Off	(N/A)	(N/A)	(N/A)	(N/A)
6076	PMP-8	407.5	Samuel Lane Well	On	773	407.29	592.59	185.3
6615	PMP-20	365	Highland Colony Well	On	1550	364.44	506.16	141.7

Tank Results

WaterCad Hydraulic Model Results Over a 24-Hour Steady State Simulation

Base Avg. Day (2,308 gpm)
Ex. Tanks

ID	Label	Notes	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume Full (Calculated) (MG)	Percent Full (%)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
26	3	Hardy Road Tank	477.25	477.75	505	507.5	0.98	91.6	75	-708	505
28	5	Natchez Trace Tank	385	485	502	507.5	0.28	75.6	46	-437	502
29	6	North Park Tank	355	470.5	491.5	507.5	0.67	56.8	55.5	-2219	491.5
30	7	Old Canton Tank	353	467.5	504.5	507.5	1.29	92.5	74	233	504.5
5032	T-1	Western Tank	440	557.5	585	595	0.68	73.3	55.5	-2129	585
6637	T-10	Highland Colony Tank	365	467.5	504.5	507.5	(N/A)	(N/A)	10	(N/A)	(N/A)

Base Avg. Peak Day (3,923 gpm)
Ex. Tanks

ID	Label	Notes	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume Full (Calculated) (MG)	Percent Full (%)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
26	3	Hardy Road Tank	477.25	477.75	505	507.5	0.98	91.6	75	-599	505
28	5	Natchez Trace Tank	385	485	502	507.5	0.28	75.6	46	93	502
29	6	North Park Tank	355	470.5	491.5	507.5	0.67	56.8	55.5	-2,032	492
30	7	Old Canton Tank	353	467.5	504.5	507.5	1.29	92.5	74	726	504.5
5032	T-1	Western Tank	440	557.5	585	595	0.68	73.3	55.5	-2,045	585
6637	T-10	Highland Colony Tank	365	467.5	504.5	507.5	(N/A)	(N/A)	64	(N/A)	(N/A)

Base Avg. Peak Day (3,923 gpm)
Ex. Tanks + Highland Colony Tank & Well

ID	Label	Notes	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume Full (Calculated) (MG)	Percent Full (%)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
26	3	Hardy Road Tank	477.25	477.75	505	507.5	0.98	91.6	75	-739	505
28	5	Natchez Trace Tank	385	485	502	507.5	0.28	75.6	46	-515	502
29	6	North Park Tank	355	470.5	491.5	507.5	0.67	56.8	55.5	-2,093	492
30	7	Old Canton Tank	353	467.5	504.5	507.5	1.29	92.5	74	601	504.5
5032	T-1	Western Tank	440	557.5	585	595	0.68	73.3	55.5	-2,039	585
6637	T-10	Highland Colony Tank	365	467.5	504.5	507.5	0.96	92.5	64	-616	504.5

Future Avg. Day (2,953 gpm)
Ex. Tanks

ID	Label	Notes	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume Full (Calculated) (MG)	Percent Full (%)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
26	3	Hardy Road Tank	477.25	477.75	505	507.5	0.98	91.6	75	-642	505
28	5	Natchez Trace Tank	385	485	502	507.5	0.28	75.6	46	-287	502
29	6	North Park Tank	355	470.5	491.5	507.5	0.67	56.8	55.5	-2,209	492
30	7	Old Canton Tank	353	467.5	504.5	507.5	1.29	92.5	74	269	504.5
5032	T-1	Western Tank	440	557.5	585	595	0.68	73.3	55.5	-1,833	585
6637	T-10	Highland Colony Tank	365	467.5	504.5	507.5	(N/A)	(N/A)	64	(N/A)	(N/A)

Future Avg. Day (2,953 gpm)
Ex. Tanks + Highland Colony Tank & Well

ID	Label	Notes	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume Full (Calculated) (MG)	Percent Full (%)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
26	3	Hardy Road Tank	477.25	477.75	505	507.5	0.98	91.6	75	-739	505
28	5	Natchez Trace Tank	385	485	502	507.5	0.28	75.6	46	-515	502
29	6	North Park Tank	355	470.5	491.5	507.5	0.67	56.8	55.5	-2,093	492
30	7	Old Canton Tank	353	467.5	504.5	507.5	1.29	92.5	74	601	504.5
5032	T-1	Western Tank	440	557.5	585	595	0.68	73.3	55.5	-2,039	585
6637	T-10	Highland Colony Tank	365	467.5	504.5	507.5	0.96	92.5	64	-616	504.5

Future Avg. Peak Day (5,016 gpm)
Ex. Tanks

ID	Label	Notes	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume Full (Calculated) (MG)	Percent Full (%)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
26	3	Hardy Road Tank	477.25	477.75	505	507.5	0.98	91.6	75	-488	505
28	5	Natchez Trace Tank	385	485	502	507.5	0.28	75.6	46	375	502
29	6	North Park Tank	355	470.5	491.5	507.5	0.67	56.8	55.5	-2,020	492
30	7	Old Canton Tank	353	467.5	504.5	507.5	1.29	92.5	74	761	504.5
5032	T-1	Western Tank	440	557.5	585	595	0.68	73.3	55.5	-1,536	585
6637	T-10	Highland Colony Tank	365	467.5	504.5	507.5	(N/A)	(N/A)	64	(N/A)	(N/A)

Future Avg. Peak Day (5,016 gpm)
Ex. Tanks + Highland Colony Tank & Well

ID	Label	Notes	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume Full (Calculated) (MG)	Percent Full (%)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
26	3	Hardy Road Tank	477.25	477.75	505	507.5	0.98	91.6	75	-621	505
28	5	Natchez Trace Tank	385	485	502	507.5	0.28	75.6	46	-342	502
29	6	North Park Tank	355	470.5	491.5	507.5	0.67	56.8	55.5	-2,086	492
30	7	Old Canton Tank	353	467.5	504.5	507.5	1.29	92.5	74	633	504.5
5032	T-1	Western Tank	440	557.5	585	595	0.68	73.3	55.5	-1,536	585
6637	T-10	Highland Colony Tank	365	467.5	504.5	507.5	0.96	92.5	64	-499	504.5

BASE WATER CONSUMPTION DEMAND

MOTORIZED FLOW CONTROL VALVES CLOSED

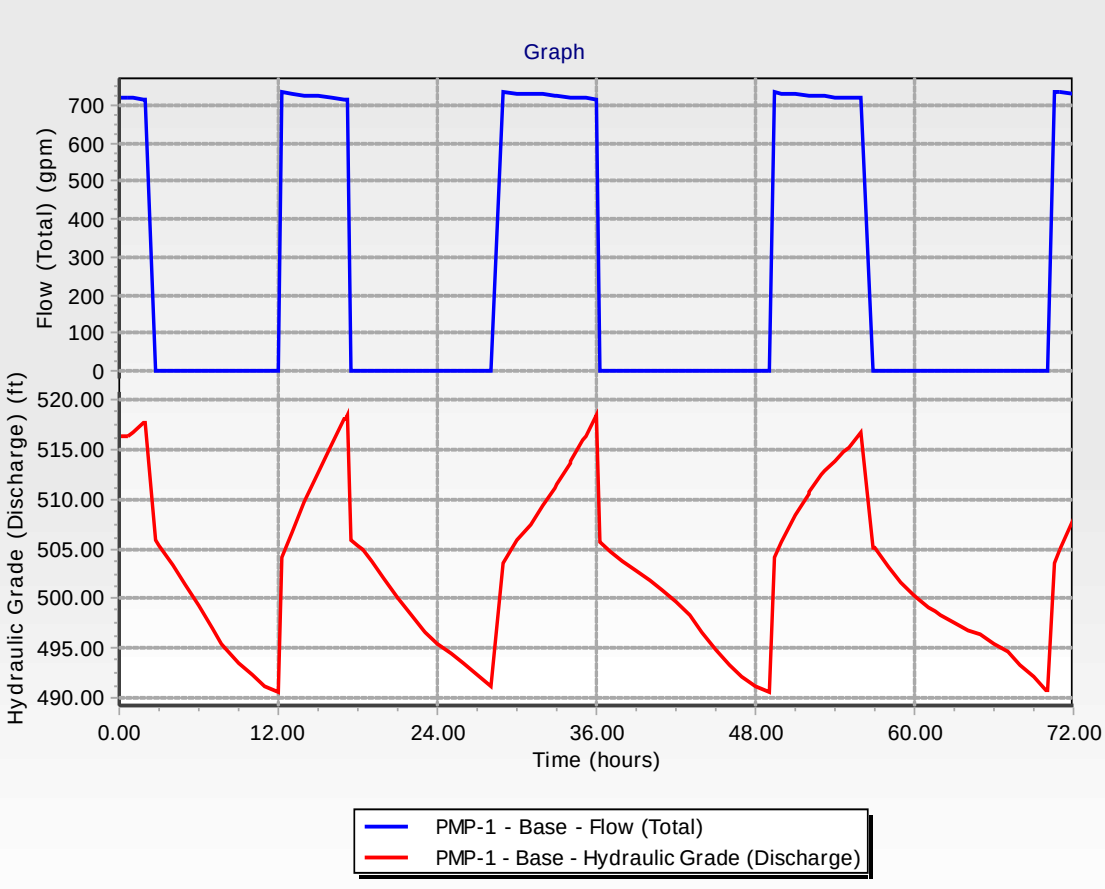
72-HR DURATION SIMULATION

PMP - 1: Charity Church Well

Time (hours)	PMP-1 - Base - Flow (Total) (gpm)	PMP-1 - Base - Hydraulic Grade (Discharge) (ft)
0.00	719	516.28
0.64	719	516.33
1.00	718	516.64
1.88	717	517.65
2.00	717	517.72
2.73	0	505.79
3.00	0	505.33
4.00	0	503.38
5.00	0	501.51
6.00	0	499.25
7.00	0	497.00
7.70	0	495.49
8.00	0	495.10
9.00	0	493.50
10.00	0	492.23
11.00	0	491.22
12.00	0	490.50
12.31	734	504.21
13.00	731	506.57
14.00	727	509.66
15.00	723	512.67
16.00	720	515.46
17.00	716	517.98
17.04	716	518.09
17.24	716	518.54
17.51	0	505.92
18.00	0	505.29
18.36	0	504.84
19.00	0	503.81
20.00	0	501.93
21.00	0	500.03
22.00	0	498.25
23.00	0	496.71
23.11	0	496.56
24.00	0	495.47
25.00	0	494.45
26.00	0	493.46
27.00	0	492.38
28.00	0	491.17
28.92	735	503.46
29.00	735	503.64
30.00	732	505.79
31.00	730	507.41
32.00	727	509.41
32.90	725	511.09
33.00	725	511.45
34.00	722	513.70

Time (hours)	PMP-1 - Base - Flow (Total) (gpm)	PMP-1 - Base - Hydraulic Grade (Discharge) (ft)
34.04	722	513.79
35.00	719	516.00
35.18	718	516.40
36.00	716	518.38
36.26	0	505.76
37.00	0	504.81
38.00	0	503.75
39.00	0	502.77
40.00	0	501.73
41.00	0	500.90
42.00	0	499.68
43.00	0	498.36
43.07	0	498.24
44.00	0	496.60
45.00	0	494.90
46.00	0	493.26
47.00	0	492.20
48.00	0	491.08
49.00	0	490.58
49.40	734	504.04
50.00	732	505.70
51.00	729	508.30
52.00	726	510.44
52.11	726	510.65
53.00	723	512.42
53.26	723	512.90
54.00	722	513.86
54.66	721	514.72
55.00	720	515.23
56.00	718	516.75
56.93	0	505.04
57.00	0	505.03
58.00	0	503.09
59.00	0	501.55
60.00	0	500.25
61.00	0	499.12
61.55	0	498.71
62.00	0	498.29
63.00	0	497.49
64.00	0	496.80
65.00	0	496.34
66.00	0	495.48
67.00	0	494.74
68.00	0	493.30
69.00	0	492.04
69.86	0	490.86
70.00	0	490.71

Time (hours)	PMP-1 - Base - Flow (Total) (gpm)	PMP-1 - Base - Hydraulic Grade (Discharge) (ft)
70.59	735	503.52
71.00	733	504.91
71.01	733	504.94
72.00	729	507.91

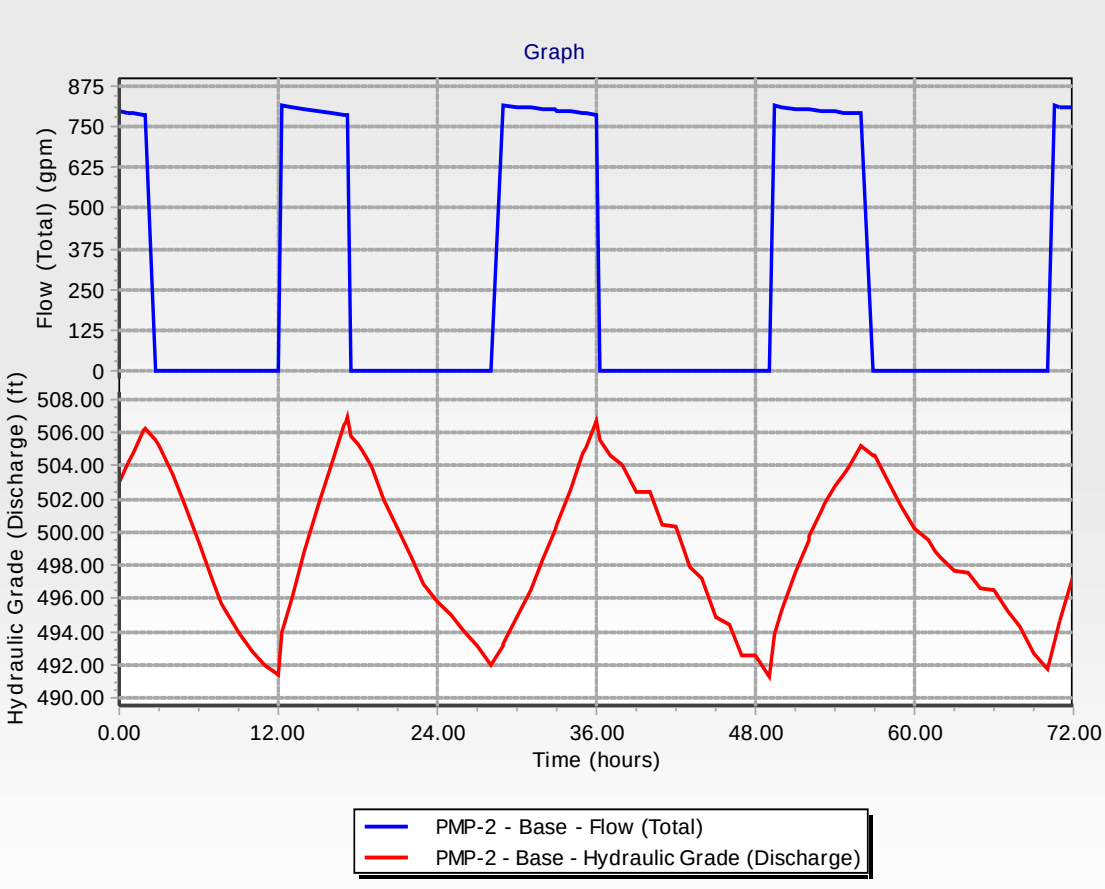


PMP - 2: School Street Well

Time (hours)	PMP-2 - Base - Flow (Total) (gpm)	PMP-2 - Base - Hydraulic Grade (Discharge) (ft)
0.00	795	503.01
0.64	793	504.21
1.00	792	504.77
1.88	789	506.16
2.00	788	506.24
2.73	0	505.57
3.00	0	505.21
4.00	0	503.46
5.00	0	501.62
6.00	0	499.44
7.00	0	497.12
7.70	0	495.73
8.00	0	495.33
9.00	0	493.94
10.00	0	492.78
11.00	0	492.02
12.00	0	491.34
12.31	814	493.91
13.00	810	496.01
14.00	804	498.86
15.00	799	501.56
16.00	793	504.17
17.00	788	506.50
17.04	788	506.60
17.24	787	506.97
17.51	0	505.81
18.00	0	505.30
18.36	0	504.91
19.00	0	503.91
20.00	0	502.01
21.00	0	500.18
22.00	0	498.42
23.00	0	496.89
23.11	0	496.75
24.00	0	495.79
25.00	0	495.00
26.00	0	494.05
27.00	0	493.10
28.00	0	491.97
28.92	816	493.10
29.00	816	493.25
30.00	812	494.87
31.00	809	496.53
32.00	805	498.35
32.90	802	500.07
33.00	801	500.41
34.00	797	502.51

Time (hours)	PMP-2 - Base - Flow (Total) (gpm)	PMP-2 - Base - Hydraulic Grade (Discharge) (ft)
34.04	796	502.60
35.00	792	504.74
35.18	791	505.11
36.00	787	506.74
36.26	0	505.58
37.00	0	504.68
38.00	0	504.04
39.00	0	502.39
40.00	0	502.44
41.00	0	500.44
42.00	0	500.34
43.00	0	497.92
43.07	0	497.92
44.00	0	497.17
45.00	0	494.93
46.00	0	494.42
47.00	0	492.50
48.00	0	492.58
49.00	0	491.28
49.40	814	493.85
50.00	812	495.23
51.00	807	497.53
52.00	803	499.52
52.11	802	499.71
53.00	799	501.28
53.26	798	501.75
54.00	796	502.74
54.66	795	503.44
55.00	794	503.88
56.00	791	505.17
56.93	0	504.61
57.00	0	504.60
58.00	0	502.99
59.00	0	501.65
60.00	0	500.21
61.00	0	499.57
61.55	0	498.79
62.00	0	498.49
63.00	0	497.70
64.00	0	497.56
65.00	0	496.64
66.00	0	496.54
67.00	0	495.23
68.00	0	494.25
69.00	0	492.69
69.86	0	491.90
70.00	0	491.74

Time (hours)	PMP-2 - Base - Flow (Total) (gpm)	PMP-2 - Base - Hydraulic Grade (Discharge) (ft)
70.59	815	493.42
71.00	813	494.65
71.01	813	494.68
72.00	807	497.44

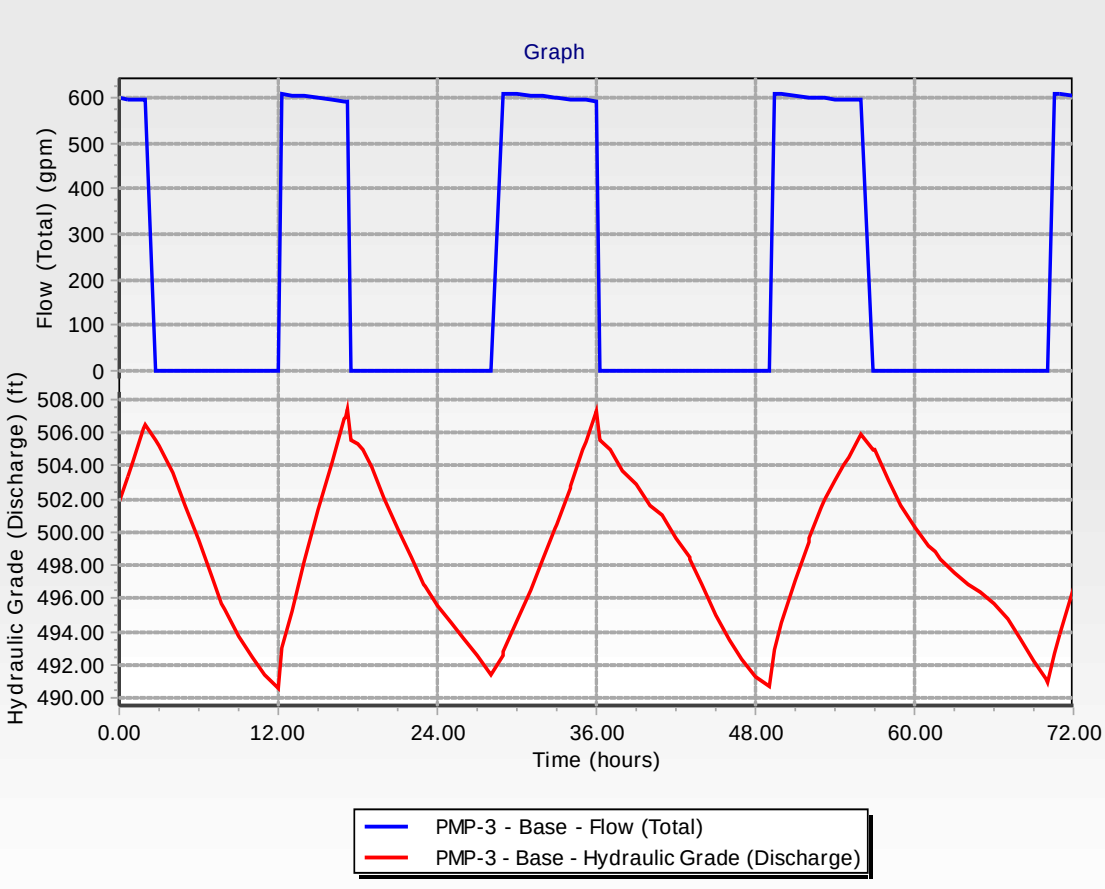


PMP - 3: Peach Orchard Well

Time (hours)	PMP-3 - Base - Flow (Total) (gpm)	PMP-3 - Base - Hydraulic Grade (Discharge) (ft)
0.00	598	501.82
0.64	597	503.41
1.00	596	504.26
1.88	594	506.27
2.00	593	506.44
2.73	0	505.50
3.00	0	505.26
4.00	0	503.57
5.00	0	501.65
6.00	0	499.49
7.00	0	497.20
7.70	0	495.73
8.00	0	495.30
9.00	0	493.69
10.00	0	492.39
11.00	0	491.36
12.00	0	490.60
12.31	608	493.04
13.00	606	495.20
14.00	602	498.29
15.00	599	501.33
16.00	596	504.22
17.00	593	506.87
17.04	593	506.97
17.24	592	507.43
17.51	0	505.60
18.00	0	505.37
18.36	0	504.93
19.00	0	503.94
20.00	0	502.08
21.00	0	500.20
22.00	0	498.42
23.00	0	496.85
23.11	0	496.70
24.00	0	495.59
25.00	0	494.58
26.00	0	493.62
27.00	0	492.55
28.00	0	491.39
28.92	608	492.57
29.00	608	492.73
30.00	606	494.68
31.00	604	496.51
32.00	602	498.42
32.90	600	500.18
33.00	600	500.48
34.00	598	502.70

Time (hours)	PMP-3 - Base - Flow (Total) (gpm)	PMP-3 - Base - Hydraulic Grade (Discharge) (ft)
34.04	597	502.79
35.00	595	505.01
35.18	595	505.41
36.00	592	507.33
36.26	0	505.52
37.00	0	504.93
38.00	0	503.69
39.00	0	502.89
40.00	0	501.66
41.00	0	501.05
42.00	0	499.68
43.00	0	498.50
43.07	0	498.39
44.00	0	496.81
45.00	0	495.03
46.00	0	493.49
47.00	0	492.34
48.00	0	491.26
49.00	0	490.66
49.40	608	492.95
50.00	606	494.51
51.00	604	497.11
52.00	601	499.42
52.11	601	499.65
53.00	599	501.48
53.26	598	501.98
54.00	597	503.15
54.66	596	504.03
55.00	596	504.51
56.00	594	505.95
56.93	0	504.95
57.00	0	504.92
58.00	0	503.17
59.00	0	501.65
60.00	0	500.30
61.00	0	499.19
61.55	0	498.78
62.00	0	498.37
63.00	0	497.56
64.00	0	496.90
65.00	0	496.39
66.00	0	495.67
67.00	0	494.81
68.00	0	493.63
69.00	0	492.19
69.86	0	491.12
70.00	0	490.96

Time (hours)	PMP-3 - Base - Flow (Total) (gpm)	PMP-3 - Base - Hydraulic Grade (Discharge) (ft)
70.59	608	492.64
71.00	607	493.80
71.01	607	493.83
72.00	604	496.65

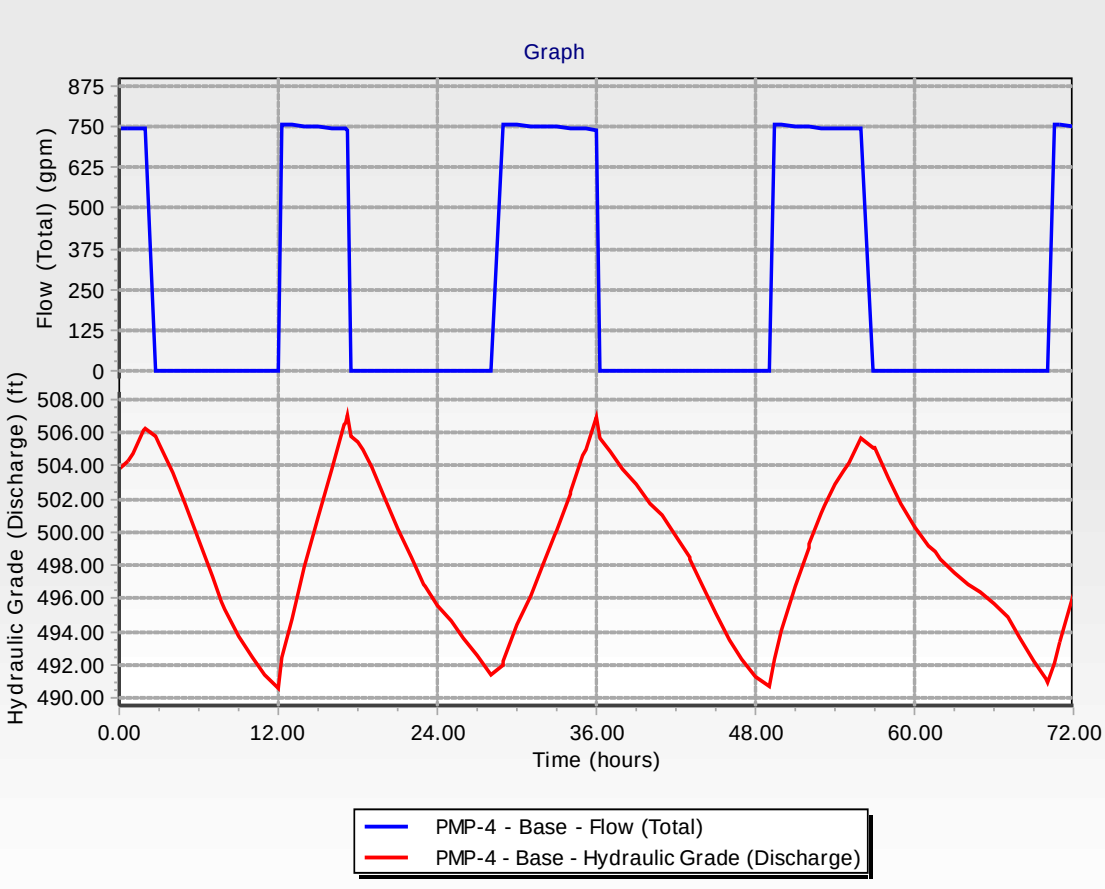


PMP - 4: Lake Harbour Well

Time (hours)	PMP-4 - Base - Flow (Total) (gpm)	PMP-4 - Base - Hydraulic Grade (Discharge) (ft)
0.00	745	503.79
0.64	744	504.25
1.00	744	504.74
1.88	743	506.11
2.00	742	506.28
2.73	0	505.74
3.00	0	505.38
4.00	0	503.60
5.00	0	501.71
6.00	0	499.56
7.00	0	497.27
7.70	0	495.79
8.00	0	495.34
9.00	0	493.72
10.00	0	492.42
11.00	0	491.39
12.00	0	490.63
12.31	757	492.46
13.00	754	494.72
14.00	751	497.86
15.00	748	500.90
16.00	745	503.79
17.00	742	506.46
17.04	742	506.57
17.24	742	507.03
17.51	0	505.84
18.00	0	505.39
18.36	0	504.95
19.00	0	503.97
20.00	0	502.14
21.00	0	500.24
22.00	0	498.46
23.00	0	496.87
23.11	0	496.73
24.00	0	495.61
25.00	0	494.60
26.00	0	493.65
27.00	0	492.58
28.00	0	491.42
28.92	757	492.03
29.00	757	492.21
30.00	755	494.46
31.00	753	496.16
32.00	751	498.06
32.90	749	499.82
33.00	749	500.10
34.00	746	502.31

Time (hours)	PMP-4 - Base - Flow (Total) (gpm)	PMP-4 - Base - Hydraulic Grade (Discharge) (ft)
34.04	746	502.40
35.00	744	504.60
35.18	744	505.01
36.00	742	506.92
36.26	0	505.70
37.00	0	504.90
38.00	0	503.78
39.00	0	502.85
40.00	0	501.77
41.00	0	501.00
42.00	0	499.77
43.00	0	498.51
43.07	0	498.39
44.00	0	496.86
45.00	0	495.09
46.00	0	493.53
47.00	0	492.37
48.00	0	491.26
49.00	0	490.71
49.40	757	492.38
50.00	755	494.06
51.00	752	496.74
52.00	750	499.07
52.11	750	499.30
53.00	748	501.14
53.26	747	501.63
54.00	746	502.87
54.66	745	503.75
55.00	744	504.21
56.00	743	505.63
56.93	0	505.11
57.00	0	505.07
58.00	0	503.21
59.00	0	501.67
60.00	0	500.33
61.00	0	499.22
61.55	0	498.79
62.00	0	498.38
63.00	0	497.57
64.00	0	496.90
65.00	0	496.42
66.00	0	495.65
67.00	0	494.89
68.00	0	493.63
69.00	0	492.26
69.86	0	491.15
70.00	0	490.98

Time (hours)	PMP-4 - Base - Flow (Total) (gpm)	PMP-4 - Base - Hydraulic Grade (Discharge) (ft)
70.59	757	492.10
71.00	756	493.31
71.01	756	493.34
72.00	753	496.23

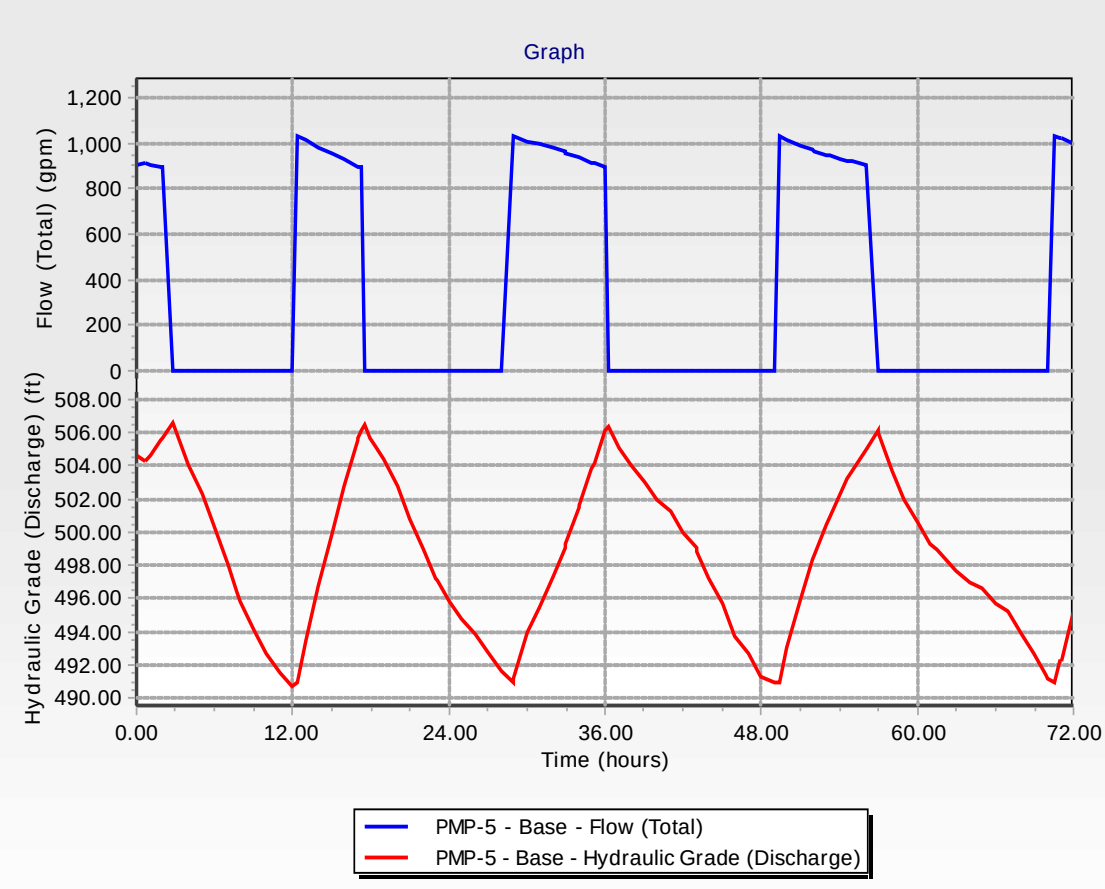


PMP - 5: Old Canton Well

Time (hours)	PMP-5 - Base - Flow (Total) (gpm)	PMP-5 - Base - Hydraulic Grade (Discharge) (ft)
0.00	907	504.60
0.64	910	504.34
1.00	908	504.58
1.88	898	505.52
2.00	896	505.73
2.73	0	506.66
3.00	0	506.07
4.00	0	504.06
5.00	0	502.26
6.00	0	500.32
7.00	0	498.04
7.70	0	496.44
8.00	0	495.84
9.00	0	494.03
10.00	0	492.63
11.00	0	491.51
12.00	0	490.71
12.31	1,034	490.98
13.00	1,012	493.49
14.00	982	496.77
15.00	954	499.84
16.00	925	502.80
17.00	898	505.59
17.04	896	505.70
17.24	892	506.18
17.51	0	506.52
18.00	0	505.66
18.36	0	505.19
19.00	0	504.37
20.00	0	502.73
21.00	0	500.75
22.00	0	498.92
23.00	0	497.19
23.11	0	497.03
24.00	0	495.79
25.00	0	494.74
26.00	0	493.83
27.00	0	492.77
28.00	0	491.68
28.92	1,035	490.91
29.00	1,032	491.15
30.00	1,008	493.93
31.00	994	495.49
32.00	977	497.37
32.90	960	499.11
33.00	958	499.34
34.00	938	501.52

Time (hours)	PMP-5 - Base - Flow (Total) (gpm)	PMP-5 - Base - Hydraulic Grade (Discharge) (ft)
34.04	937	501.62
35.00	916	503.77
35.18	912	504.19
36.00	892	506.11
36.26	0	506.39
37.00	0	505.05
38.00	0	504.02
39.00	0	503.02
40.00	0	501.94
41.00	0	501.21
42.00	0	499.98
43.00	0	499.02
43.07	0	498.88
44.00	0	497.21
45.00	0	495.70
46.00	0	493.73
47.00	0	492.67
48.00	0	491.29
49.00	0	490.89
49.40	1,034	490.96
50.00	1,016	493.03
51.00	990	495.91
52.00	968	498.34
52.11	966	498.57
53.00	948	500.45
53.26	943	500.95
54.00	930	502.32
54.66	921	503.22
55.00	917	503.65
56.00	903	505.02
56.93	0	506.14
57.00	0	505.98
58.00	0	503.67
59.00	0	501.97
60.00	0	500.62
61.00	0	499.29
61.55	0	498.95
62.00	0	498.50
63.00	0	497.66
64.00	0	496.93
65.00	0	496.58
66.00	0	495.66
67.00	0	495.27
68.00	0	493.80
69.00	0	492.66
69.86	0	491.35
70.00	0	491.18

Time (hours)	PMP-5 - Base - Flow (Total) (gpm)	PMP-5 - Base - Hydraulic Grade (Discharge) (ft)
70.59	1,034	490.93
71.00	1,023	492.21
71.01	1,023	492.24
72.00	996	495.22

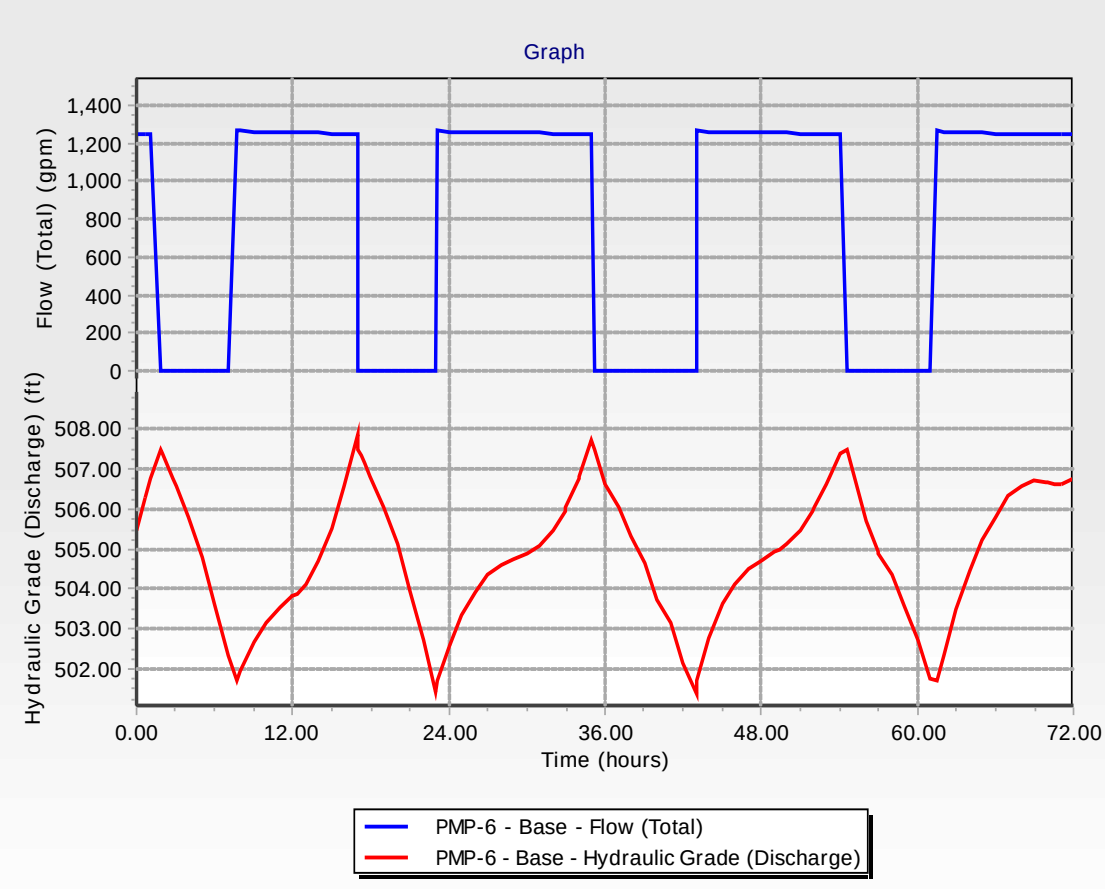


PMP - 6: Hardy Rd Well

Time (hours)	PMP-6 - Base - Flow (Total) (gpm)	PMP-6 - Base - Hydraulic Grade (Discharge) (ft)
0.00	1,251	505.45
0.64	1,249	506.26
1.00	1,247	506.75
1.88	0	507.50
2.00	0	507.39
2.73	0	506.76
3.00	0	506.57
4.00	0	505.79
5.00	0	504.79
6.00	0	503.64
7.00	0	502.29
7.70	1,263	501.70
8.00	1,263	501.93
9.00	1,260	502.65
10.00	1,259	503.15
11.00	1,258	503.51
12.00	1,257	503.80
12.31	1,256	503.87
13.00	1,256	504.12
14.00	1,254	504.68
15.00	1,251	505.49
16.00	1,248	506.56
17.00	1,243	507.88
17.04	0	507.50
17.24	0	507.35
17.51	0	507.17
18.00	0	506.83
18.36	0	506.55
19.00	0	506.03
20.00	0	505.10
21.00	0	503.95
22.00	0	502.71
23.00	0	501.39
23.11	1,263	501.70
24.00	1,261	502.57
25.00	1,258	503.33
26.00	1,256	503.92
27.00	1,255	504.33
28.00	1,254	504.60
28.92	1,254	504.71
29.00	1,254	504.72
30.00	1,253	504.86
31.00	1,252	505.08
32.00	1,251	505.46
32.90	1,250	505.96
33.00	1,249	506.04
34.00	1,247	506.79

Time (hours)	PMP-6 - Base - Flow (Total) (gpm)	PMP-6 - Base - Hydraulic Grade (Discharge) (ft)
34.04	1,247	506.83
35.00	1,244	507.74
35.18	0	507.50
36.00	0	506.61
36.26	0	506.46
37.00	0	506.03
38.00	0	505.30
39.00	0	504.65
40.00	0	503.73
41.00	0	503.11
42.00	0	502.10
43.00	0	501.34
43.07	1,263	501.70
44.00	1,260	502.74
45.00	1,257	503.61
46.00	1,256	504.09
47.00	1,254	504.50
48.00	1,254	504.70
49.00	1,253	504.95
49.40	1,253	504.99
50.00	1,252	505.13
51.00	1,251	505.45
52.00	1,250	505.96
52.11	1,249	506.03
53.00	1,247	506.62
53.26	1,247	506.82
54.00	1,245	507.41
54.66	0	507.50
55.00	0	507.01
56.00	0	505.70
56.93	0	504.93
57.00	0	504.89
58.00	0	504.33
59.00	0	503.56
60.00	0	502.69
61.00	0	501.72
61.55	1,263	501.70
62.00	1,261	502.31
63.00	1,258	503.49
64.00	1,255	504.42
65.00	1,252	505.23
66.00	1,250	505.81
67.00	1,248	506.32
68.00	1,247	506.59
69.00	1,247	506.71
69.86	1,247	506.69
70.00	1,247	506.68

Time (hours)	PMP-6 - Base - Flow (Total) (gpm)	PMP-6 - Base - Hydraulic Grade (Discharge) (ft)
70.59	1,247	506.64
71.00	1,247	506.63
71.01	1,247	506.63
72.00	1,247	506.75

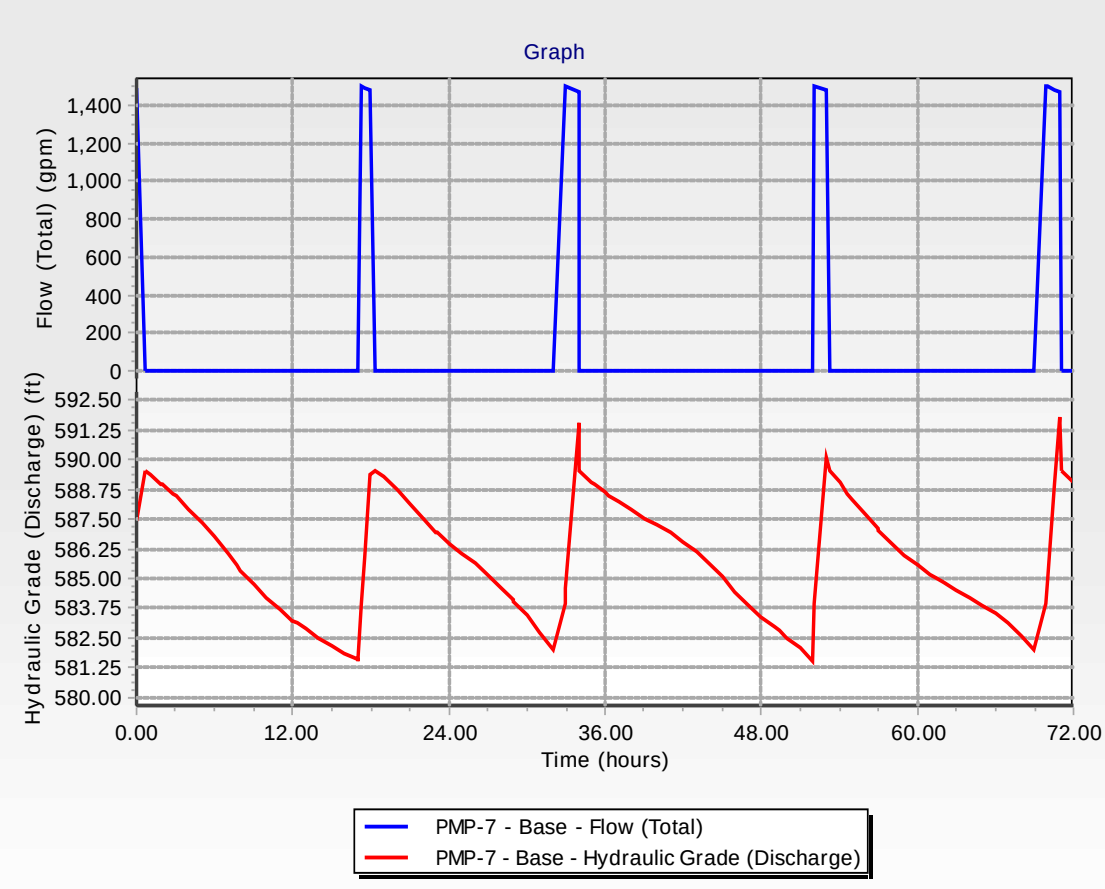


PMP - 7: Western Well

Time (hours)	PMP-7 - Base - Flow (Total) (gpm)	PMP-7 - Base - Hydraulic Grade (Discharge) (ft)
0.00	1,486	587.40
0.64	0	589.50
1.00	0	589.34
1.88	0	588.97
2.00	0	588.91
2.73	0	588.57
3.00	0	588.44
4.00	0	587.93
5.00	0	587.36
6.00	0	586.77
7.00	0	586.04
7.70	0	585.55
8.00	0	585.34
9.00	0	584.73
10.00	0	584.18
11.00	0	583.69
12.00	0	583.26
12.31	0	583.14
13.00	0	582.87
14.00	0	582.54
15.00	0	582.20
16.00	0	581.89
17.00	0	581.58
17.04	0	581.57
17.24	1,500	583.95
17.51	1,492	585.91
18.00	1,478	589.35
18.36	0	589.50
19.00	0	589.24
20.00	0	588.72
21.00	0	588.12
22.00	0	587.53
23.00	0	586.96
23.11	0	586.90
24.00	0	586.47
25.00	0	586.04
26.00	0	585.61
27.00	0	585.13
28.00	0	584.63
28.92	0	584.10
29.00	0	584.05
30.00	0	583.47
31.00	0	582.74
32.00	0	582.04
32.90	1,500	583.92
33.00	1,497	584.64
34.00	1,469	591.55

Time (hours)	PMP-7 - Base - Flow (Total) (gpm)	PMP-7 - Base - Hydraulic Grade (Discharge) (ft)
34.04	0	589.50
35.00	0	589.03
35.18	0	588.95
36.00	0	588.59
36.26	0	588.49
37.00	0	588.21
38.00	0	587.88
39.00	0	587.53
40.00	0	587.23
41.00	0	586.92
42.00	0	586.57
43.00	0	586.17
43.07	0	586.13
44.00	0	585.65
45.00	0	585.04
46.00	0	584.46
47.00	0	583.88
48.00	0	583.39
49.00	0	582.97
49.40	0	582.80
50.00	0	582.54
51.00	0	582.06
52.00	0	581.56
52.11	1,500	583.92
53.00	1,475	590.07
53.26	0	589.50
54.00	0	589.06
54.66	0	588.58
55.00	0	588.33
56.00	0	587.63
56.93	0	587.07
57.00	0	587.03
58.00	0	586.47
59.00	0	585.99
60.00	0	585.55
61.00	0	585.16
61.55	0	584.98
62.00	0	584.83
63.00	0	584.49
64.00	0	584.19
65.00	0	583.87
66.00	0	583.52
67.00	0	583.12
68.00	0	582.61
69.00	0	582.00
69.86	1,500	583.92
70.00	1,496	584.92

Time (hours)	PMP-7 - Base - Flow (Total) (gpm)	PMP-7 - Base - Hydraulic Grade (Discharge) (ft)
70.59	1,479	588.96
71.00	1,468	591.77
71.01	0	589.50
72.00	0	589.01

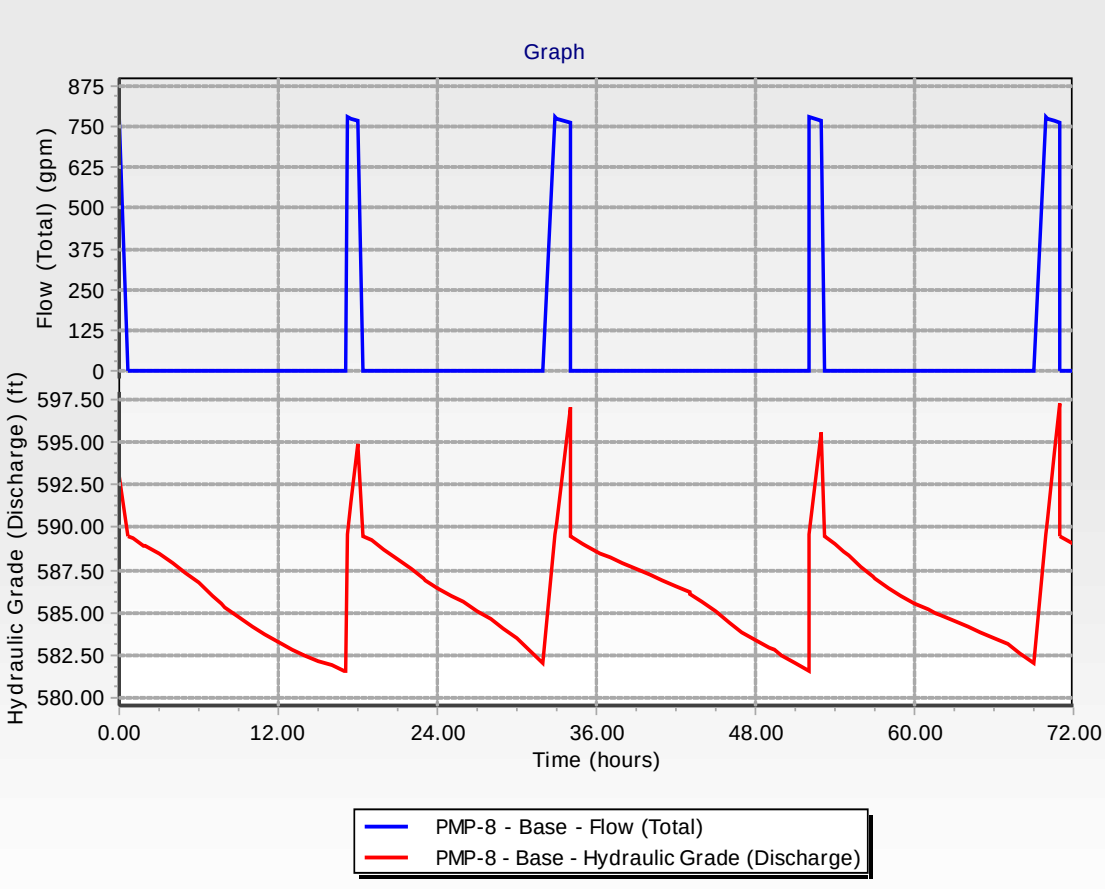


PMP - 8: Samuel's Lane Well

Time (hours)	PMP-8 - Base - Flow (Total) (gpm)	PMP-8 - Base - Hydraulic Grade (Discharge) (ft)
0.00	772	593.00
0.64	0	589.49
1.00	0	589.34
1.88	0	588.96
2.00	0	588.91
2.73	0	588.56
3.00	0	588.43
4.00	0	587.93
5.00	0	587.35
6.00	0	586.76
7.00	0	586.03
7.70	0	585.54
8.00	0	585.34
9.00	0	584.73
10.00	0	584.18
11.00	0	583.69
12.00	0	583.25
12.31	0	583.13
13.00	0	582.87
14.00	0	582.54
15.00	0	582.20
16.00	0	581.89
17.00	0	581.58
17.04	0	581.56
17.24	778	589.63
17.51	774	591.56
18.00	769	594.92
18.36	0	589.49
19.00	0	589.23
20.00	0	588.72
21.00	0	588.11
22.00	0	587.52
23.00	0	586.95
23.11	0	586.90
24.00	0	586.46
25.00	0	586.04
26.00	0	585.61
27.00	0	585.13
28.00	0	584.63
28.92	0	584.10
29.00	0	584.05
30.00	0	583.46
31.00	0	582.73
32.00	0	582.04
32.90	778	589.55
33.00	777	590.26
34.00	765	597.04

Time (hours)	PMP-8 - Base - Flow (Total) (gpm)	PMP-8 - Base - Hydraulic Grade (Discharge) (ft)
34.04	0	589.49
35.00	0	589.03
35.18	0	588.95
36.00	0	588.59
36.26	0	588.49
37.00	0	588.21
38.00	0	587.87
39.00	0	587.53
40.00	0	587.23
41.00	0	586.92
42.00	0	586.56
43.00	0	586.16
43.07	0	586.12
44.00	0	585.65
45.00	0	585.04
46.00	0	584.45
47.00	0	583.88
48.00	0	583.39
49.00	0	582.96
49.40	0	582.79
50.00	0	582.54
51.00	0	582.06
52.00	0	581.55
52.11	778	589.56
53.00	768	595.58
53.26	0	589.49
54.00	0	589.05
54.66	0	588.57
55.00	0	588.32
56.00	0	587.63
56.93	0	587.06
57.00	0	587.02
58.00	0	586.47
59.00	0	585.98
60.00	0	585.54
61.00	0	585.16
61.55	0	584.98
62.00	0	584.83
63.00	0	584.49
64.00	0	584.18
65.00	0	583.87
66.00	0	583.52
67.00	0	583.12
68.00	0	582.60
69.00	0	581.99
69.86	778	589.56
70.00	776	590.54

Time (hours)	PMP-8 - Base - Flow (Total) (gpm)	PMP-8 - Base - Hydraulic Grade (Discharge) (ft)
70.59	769	594.49
71.00	765	597.26
71.01	0	589.49
72.00	0	589.01

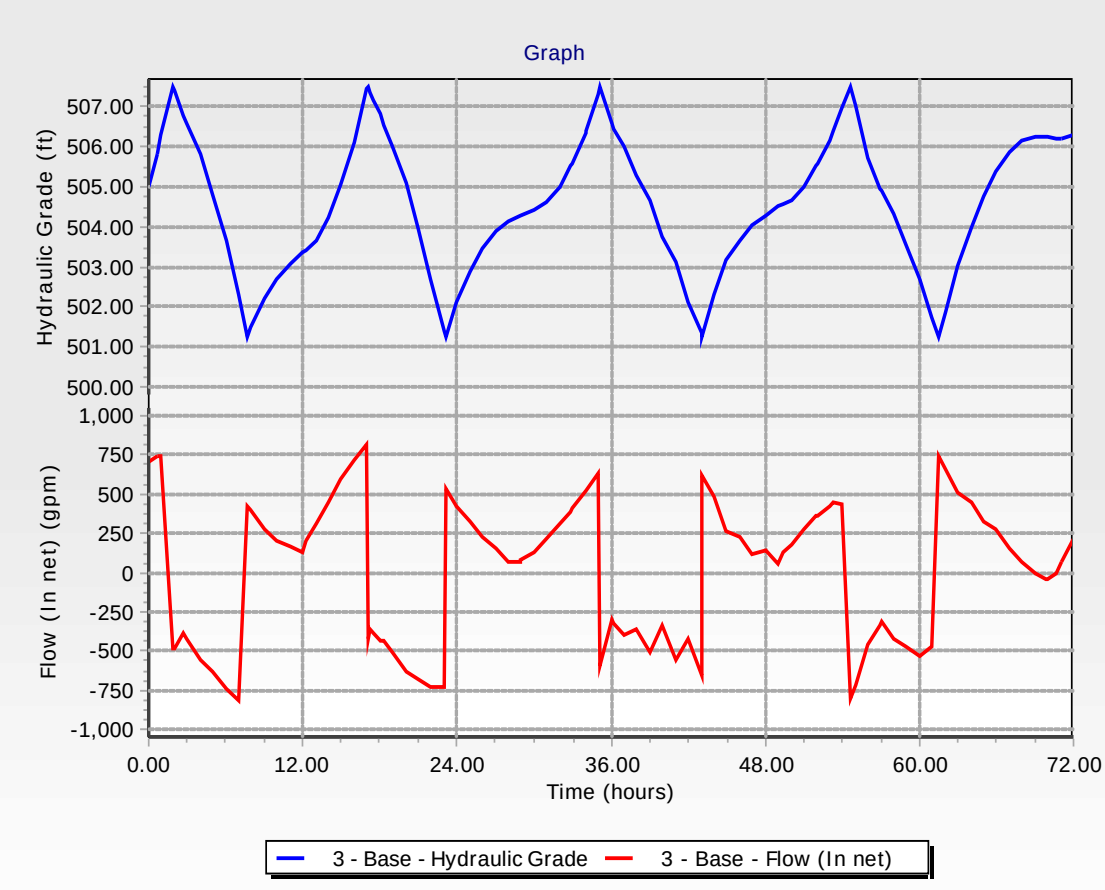


3 - Hardy Rd Tank

Time (hours)	3 - Base - Hydraulic Grade (ft)	3 - Base - Flow (In net) (gpm)
0.00	505.00	708
0.64	505.82	743
1.00	506.31	746
1.88	507.50	-487
2.00	507.39	-480
2.73	506.76	-389
3.00	506.57	-425
4.00	505.79	-553
5.00	504.79	-632
6.00	503.64	-743
7.00	502.29	-816
7.70	501.25	428
8.00	501.48	395
9.00	502.20	275
10.00	502.70	201
11.00	503.06	160
12.00	503.35	130
12.31	503.42	200
13.00	503.67	310
14.00	504.24	447
15.00	505.05	591
16.00	506.12	724
17.00	507.44	811
17.04	507.50	-429
17.24	507.35	-367
17.51	507.17	-383
18.00	506.83	-431
18.36	506.55	-441
19.00	506.03	-515
20.00	505.10	-631
21.00	503.95	-685
22.00	502.71	-726
23.00	501.39	-729
23.11	501.25	536
24.00	502.12	419
25.00	502.88	326
26.00	503.47	227
27.00	503.88	151
28.00	504.16	65
28.92	504.27	70
29.00	504.28	75
30.00	504.41	125
31.00	504.64	209
32.00	505.02	308
32.90	505.52	386
33.00	505.59	414
34.00	506.34	522
34.04	506.38	525

Time (hours)	3 - Base - Hydraulic Grade (ft)	3 - Base - Flow (In net) (gpm)
35.00	507.30	633
35.18	507.50	-596
36.00	506.61	-306
36.26	506.46	-326
37.00	506.03	-399
38.00	505.30	-359
39.00	504.65	-509
40.00	503.73	-338
41.00	503.11	-560
42.00	502.10	-418
43.00	501.34	-654
43.07	501.25	619
44.00	502.29	482
45.00	503.17	261
46.00	503.64	226
47.00	504.05	115
48.00	504.26	136
49.00	504.50	57
49.40	504.55	127
50.00	504.68	177
51.00	505.01	280
52.00	505.51	358
52.11	505.58	365
53.00	506.18	425
53.26	506.38	443
54.00	506.97	440
54.66	507.50	-798
55.00	507.01	-720
56.00	505.70	-455
56.93	504.93	-335
57.00	504.89	-308
58.00	504.33	-427
59.00	503.56	-476
60.00	502.69	-537
61.00	501.72	-470
61.55	501.25	740
62.00	501.86	655
63.00	503.05	512
64.00	503.98	444
65.00	504.78	325
66.00	505.37	279
67.00	505.88	147
68.00	506.14	66
69.00	506.26	-9
69.86	506.25	-39
70.00	506.24	-44
70.59	506.19	-10
71.00	506.19	67

Time (hours)	3 - Base - Hydraulic Grade (ft)	3 - Base - Flow (In net) (gpm)
71.01	506.19	69
72.00	506.31	215

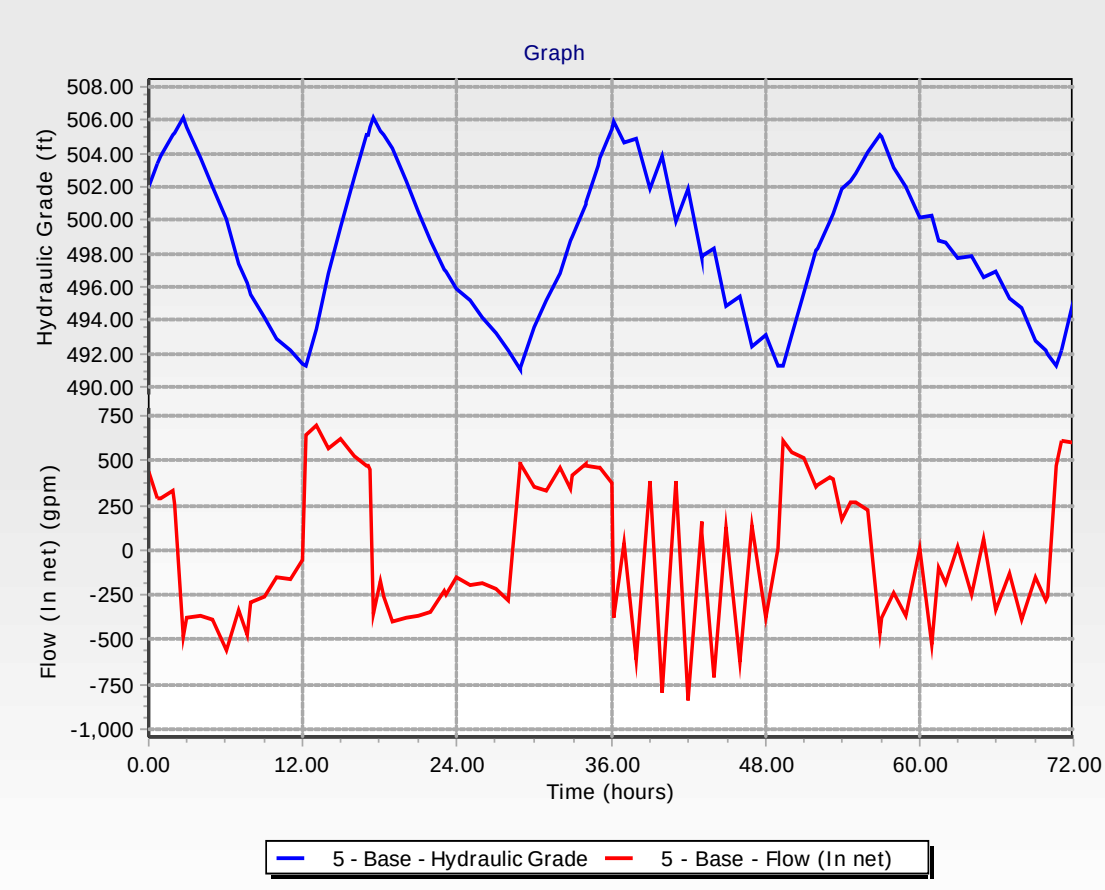


5 - Natchez Trace Tank

Time (hours)	5 - Base - Hydraulic Grade (ft)	5 - Base - Flow (In net) (gpm)
0.00	502.00	437
0.64	503.35	289
1.00	503.85	292
1.88	505.09	332
2.00	505.28	259
2.73	506.20	-488
3.00	505.56	-377
4.00	503.74	-369
5.00	501.96	-389
6.00	500.09	-558
7.00	497.39	-334
7.70	496.26	-474
8.00	495.58	-296
9.00	494.15	-263
10.00	492.88	-151
11.00	492.15	-160
12.00	491.38	-55
12.31	491.30	640
13.00	493.43	698
14.00	496.80	569
15.00	499.55	621
16.00	502.55	521
17.00	505.07	475
17.04	505.17	475
17.24	505.61	445
17.51	506.20	-355
18.00	505.37	-172
18.36	505.07	-262
19.00	504.26	-401
20.00	502.33	-379
21.00	500.50	-367
22.00	498.73	-348
23.00	497.05	-228
23.11	496.93	-243
24.00	495.88	-151
25.00	495.15	-200
26.00	494.19	-188
27.00	493.28	-217
28.00	492.23	-276
28.92	491.01	490
29.00	491.21	479
30.00	493.52	350
31.00	495.21	327
32.00	496.79	464
32.90	498.80	343
33.00	498.97	417
34.00	500.99	479
34.04	501.08	476

Time (hours)	5 - Base - Hydraulic Grade (ft)	5 - Base - Flow (In net) (gpm)
35.00	503.28	465
35.18	503.68	460
36.00	505.50	376
36.26	505.98	-372
37.00	504.65	44
38.00	504.87	-608
39.00	501.93	386
40.00	503.79	-792
41.00	499.97	386
42.00	501.83	-840
43.00	497.78	160
43.07	497.84	99
44.00	498.28	-709
45.00	494.86	122
46.00	495.44	-628
47.00	492.41	136
48.00	493.07	-372
49.00	491.28	5
49.40	491.29	614
50.00	493.06	542
51.00	495.68	517
52.00	498.17	350
52.11	498.35	363
53.00	499.92	408
53.26	500.43	394
54.00	501.83	168
54.66	502.37	265
55.00	502.81	268
56.00	504.10	225
56.93	505.11	-462
57.00	504.96	-381
58.00	503.12	-241
59.00	501.95	-362
60.00	500.21	6
61.00	500.23	-531
61.55	498.83	-101
62.00	498.61	-189
63.00	497.69	20
64.00	497.79	-245
65.00	496.61	63
66.00	496.91	-330
67.00	495.32	-128
68.00	494.70	-393
69.00	492.81	-150
69.86	492.19	-281
70.00	491.99	-257
70.59	491.26	476
71.00	492.21	614

Time (hours)	5 - Base - Hydraulic Grade (ft)	5 - Base - Flow (In net) (gpm)
71.01	492.24	613
72.00	495.16	603

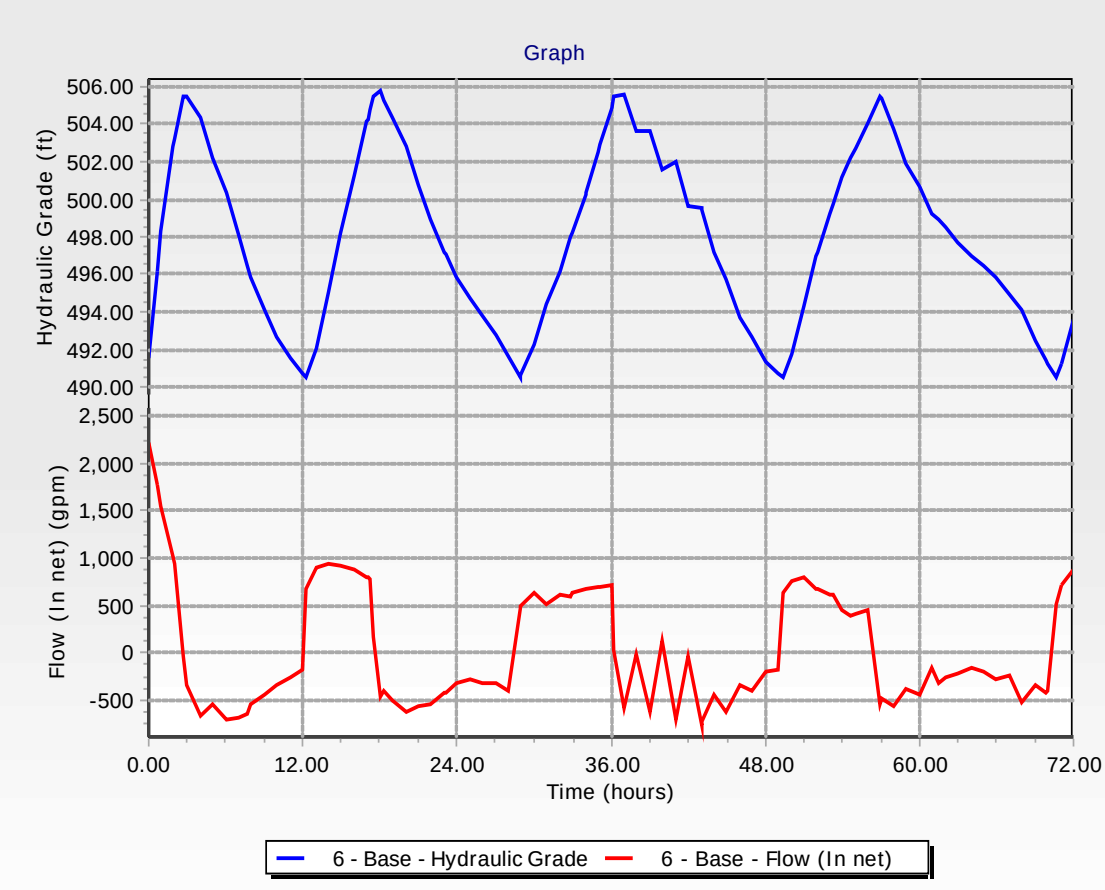


6 - North Park Tank

Time (hours)	6 - Base - Hydraulic Grade (ft)	6 - Base - Flow (In net) (gpm)
0.00	491.50	2,219
0.64	496.19	1,761
1.00	498.31	1,544
1.88	502.81	1,013
2.00	503.21	945
2.73	505.50	-33
3.00	505.47	-327
4.00	504.39	-657
5.00	502.21	-543
6.00	500.41	-708
7.00	498.06	-685
7.70	496.46	-631
8.00	495.84	-540
9.00	494.05	-434
10.00	492.62	-335
11.00	491.50	-251
12.00	490.67	-170
12.31	490.50	681
13.00	492.06	901
14.00	495.05	939
15.00	498.16	929
16.00	501.24	880
17.00	504.16	801
17.04	504.27	798
17.24	504.78	782
17.51	505.50	176
18.00	505.78	-454
18.36	505.24	-398
19.00	504.40	-489
20.00	502.78	-608
21.00	500.76	-547
22.00	498.95	-528
23.00	497.20	-424
23.11	497.04	-420
24.00	495.80	-323
25.00	494.73	-271
26.00	493.83	-324
27.00	492.76	-323
28.00	491.69	-392
28.92	490.50	478
29.00	490.63	497
30.00	492.28	638
31.00	494.40	525
32.00	496.14	610
32.90	497.95	592
33.00	498.16	637
34.00	500.27	687
34.04	500.36	686

Time (hours)	6 - Base - Hydraulic Grade (ft)	6 - Base - Flow (In net) (gpm)
35.00	502.54	708
35.18	502.96	705
36.00	504.88	712
36.26	505.50	28
37.00	505.57	-568
38.00	503.68	-5
39.00	503.67	-627
40.00	501.59	127
41.00	502.01	-706
42.00	499.67	-31
43.00	499.57	-751
43.07	499.38	-724
44.00	497.16	-428
45.00	495.74	-612
46.00	493.71	-326
47.00	492.63	-386
48.00	491.35	-190
49.00	490.72	-166
49.40	490.50	643
50.00	491.78	763
51.00	494.31	797
52.00	496.95	684
52.11	497.20	678
53.00	499.20	620
53.26	499.74	609
54.00	501.23	457
54.66	502.23	402
55.00	502.68	423
56.00	504.08	459
56.93	505.50	-535
57.00	505.38	-482
58.00	503.78	-557
59.00	501.93	-379
60.00	500.67	-428
61.00	499.25	-158
61.55	498.97	-305
62.00	498.51	-260
63.00	497.65	-209
64.00	496.95	-147
65.00	496.47	-184
66.00	495.86	-282
67.00	494.92	-233
68.00	494.15	-524
69.00	492.41	-334
69.86	491.47	-415
70.00	491.27	-394
70.59	490.50	507
71.00	491.19	713

Time (hours)	6 - Base - Hydraulic Grade (ft)	6 - Base - Flow (In net) (gpm)
71.01	491.22	715
72.00	493.56	882

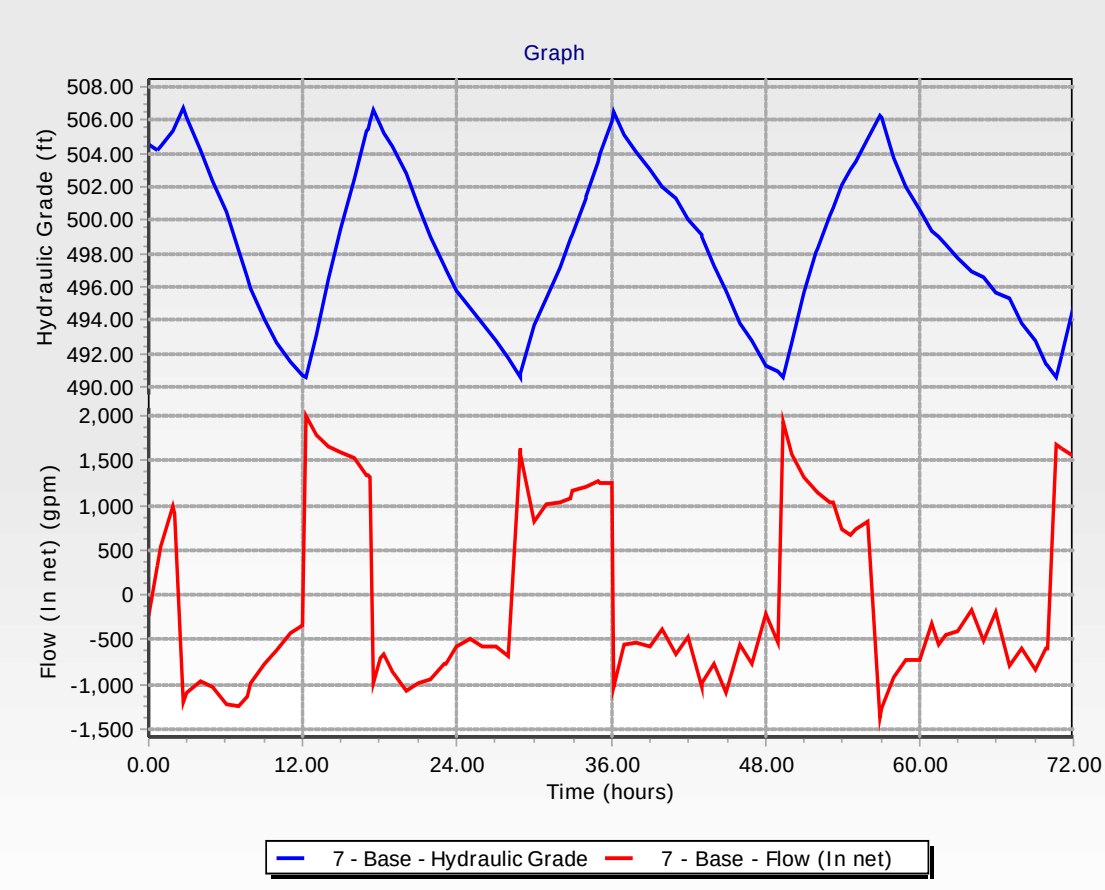


7 - Old Canton Tank

Time (hours)	7 - Base - Hydraulic Grade (ft)	7 - Base - Flow (In net) (gpm)
0.00	504.50	-233
0.64	504.22	333
1.00	504.45	537
1.88	505.33	998
2.00	505.55	902
2.73	506.78	-1,200
3.00	506.18	-1,089
4.00	504.15	-963
5.00	502.35	-1,021
6.00	500.45	-1,222
7.00	498.17	-1,233
7.70	496.55	-1,129
8.00	495.93	-988
9.00	494.08	-762
10.00	492.66	-610
11.00	491.53	-430
12.00	490.72	-339
12.31	490.53	1,992
13.00	493.10	1,784
14.00	496.42	1,658
15.00	499.51	1,597
16.00	502.49	1,523
17.00	505.33	1,343
17.04	505.44	1,340
17.24	505.93	1,317
17.51	506.60	-990
18.00	505.71	-709
18.36	505.23	-666
19.00	504.44	-857
20.00	502.84	-1,074
21.00	500.83	-985
22.00	499.00	-940
23.00	497.24	-773
23.11	497.09	-762
24.00	495.82	-569
25.00	494.76	-482
26.00	493.86	-569
27.00	492.80	-575
28.00	491.73	-685
28.92	490.56	1,625
29.00	490.81	1,566
30.00	493.74	823
31.00	495.27	1,012
32.00	497.16	1,040
32.90	498.89	1,073
33.00	499.10	1,169
34.00	501.28	1,205
34.04	501.38	1,204

Time (hours)	7 - Base - Hydraulic Grade (ft)	7 - Base - Flow (In net) (gpm)
35.00	503.53	1,265
35.18	503.95	1,252
36.00	505.87	1,257
36.26	506.48	-1,020
37.00	505.08	-552
38.00	504.05	-535
39.00	503.05	-586
40.00	501.96	-375
41.00	501.26	-672
42.00	500.00	-477
43.00	499.11	-1,017
43.07	498.97	-991
44.00	497.26	-777
45.00	495.81	-1,098
46.00	493.76	-558
47.00	492.72	-764
48.00	491.30	-204
49.00	490.92	-528
49.40	490.53	1,931
50.00	492.69	1,581
51.00	495.64	1,321
52.00	498.10	1,164
52.11	498.33	1,146
53.00	500.24	1,026
53.26	500.74	1,026
54.00	502.15	740
54.66	503.07	677
55.00	503.50	730
56.00	504.86	827
56.93	506.29	-1,361
57.00	506.12	-1,273
58.00	503.75	-928
59.00	502.01	-721
60.00	500.67	-732
61.00	499.31	-317
61.55	498.98	-546
62.00	498.52	-453
63.00	497.68	-400
64.00	496.93	-176
65.00	496.60	-502
66.00	495.67	-182
67.00	495.33	-799
68.00	493.84	-593
69.00	492.73	-845
69.86	491.38	-601
70.00	491.22	-599
70.59	490.56	1,683
71.00	491.86	1,631

Time (hours)	7 - Base - Hydraulic Grade (ft)	7 - Base - Flow (In net) (gpm)
71.01	491.89	1,629
72.00	494.90	1,552

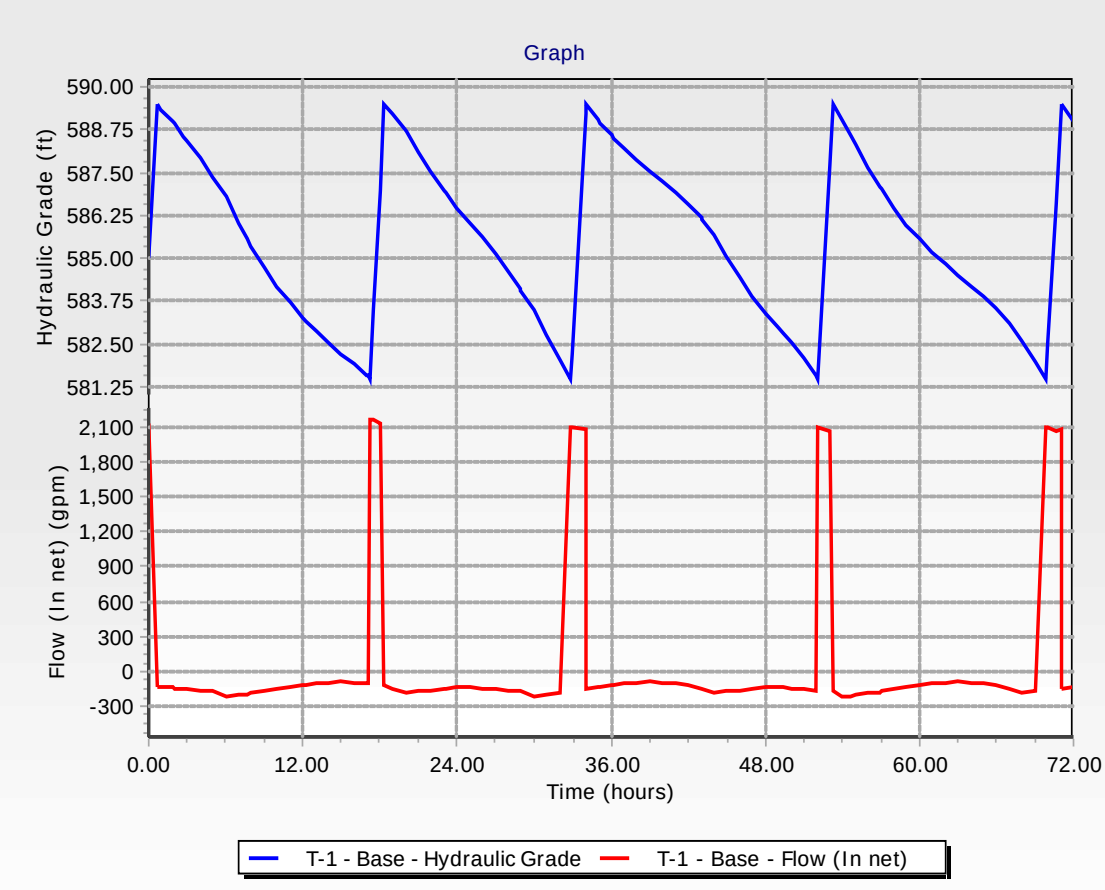


T-1: Western Tank

Time (hours)	T-1 - Base - Hydraulic Grade (ft)	T-1 - Base - Flow (In net) (gpm)
0.00	585.00	2,129
0.64	589.50	-129
1.00	589.35	-129
1.88	588.97	-129
2.00	588.92	-144
2.73	588.57	-144
3.00	588.44	-152
4.00	587.94	-174
5.00	587.36	-177
6.00	586.78	-221
7.00	586.04	-210
7.70	585.55	-210
8.00	585.35	-184
9.00	584.74	-167
10.00	584.18	-147
11.00	583.70	-132
12.00	583.26	-116
12.31	583.14	-116
13.00	582.87	-101
14.00	582.54	-103
15.00	582.20	-91
16.00	581.90	-94
17.00	581.58	-106
17.04	581.57	-106
17.24	581.50	2,171
17.51	583.49	2,160
18.00	586.98	2,126
18.36	589.50	-121
19.00	589.24	-155
20.00	588.73	-184
21.00	588.12	-177
22.00	587.53	-174
23.00	586.96	-147
23.11	586.91	-147
24.00	586.47	-129
25.00	586.04	-129
26.00	585.62	-144
27.00	585.14	-152
28.00	584.64	-174
28.92	584.11	-174
29.00	584.06	-177
30.00	583.47	-221
31.00	582.74	-210
32.00	582.05	-184
32.90	581.50	2,094
33.00	582.22	2,106
34.00	589.20	2,087
34.04	589.50	-147

Time (hours)	T-1 - Base - Hydraulic Grade (ft)	T-1 - Base - Flow (In net) (gpm)
35.00	589.03	-132
35.18	588.96	-132
36.00	588.59	-116
36.26	588.49	-116
37.00	588.21	-101
38.00	587.88	-103
39.00	587.54	-91
40.00	587.23	-94
41.00	586.92	-106
42.00	586.57	-121
43.00	586.17	-155
43.07	586.13	-155
44.00	585.66	-184
45.00	585.05	-177
46.00	584.46	-174
47.00	583.89	-147
48.00	583.40	-129
49.00	582.97	-129
49.40	582.80	-129
50.00	582.54	-144
51.00	582.06	-152
52.00	581.56	-174
52.11	581.50	2,104
53.00	587.72	2,066
53.26	589.50	-177
54.00	589.07	-221
54.66	588.58	-221
55.00	588.34	-210
56.00	587.64	-184
56.93	587.07	-184
57.00	587.03	-167
58.00	586.48	-147
59.00	585.99	-132
60.00	585.55	-116
61.00	585.17	-101
61.55	584.98	-101
62.00	584.83	-103
63.00	584.49	-91
64.00	584.19	-94
65.00	583.87	-106
66.00	583.52	-121
67.00	583.12	-155
68.00	582.61	-184
69.00	582.00	-177
69.86	581.50	2,101
70.00	582.51	2,098
70.59	586.60	2,075
71.00	589.43	2,086

Time (hours)	T-1 - Base - Hydraulic Grade (ft)	T-1 - Base - Flow (In net) (gpm)
71.01	589.50	-147
72.00	589.02	-129



BASE WATER CONSUMPTION DEMAND
MOTORIZED FLOW CONTROL VALVES ACTIVE

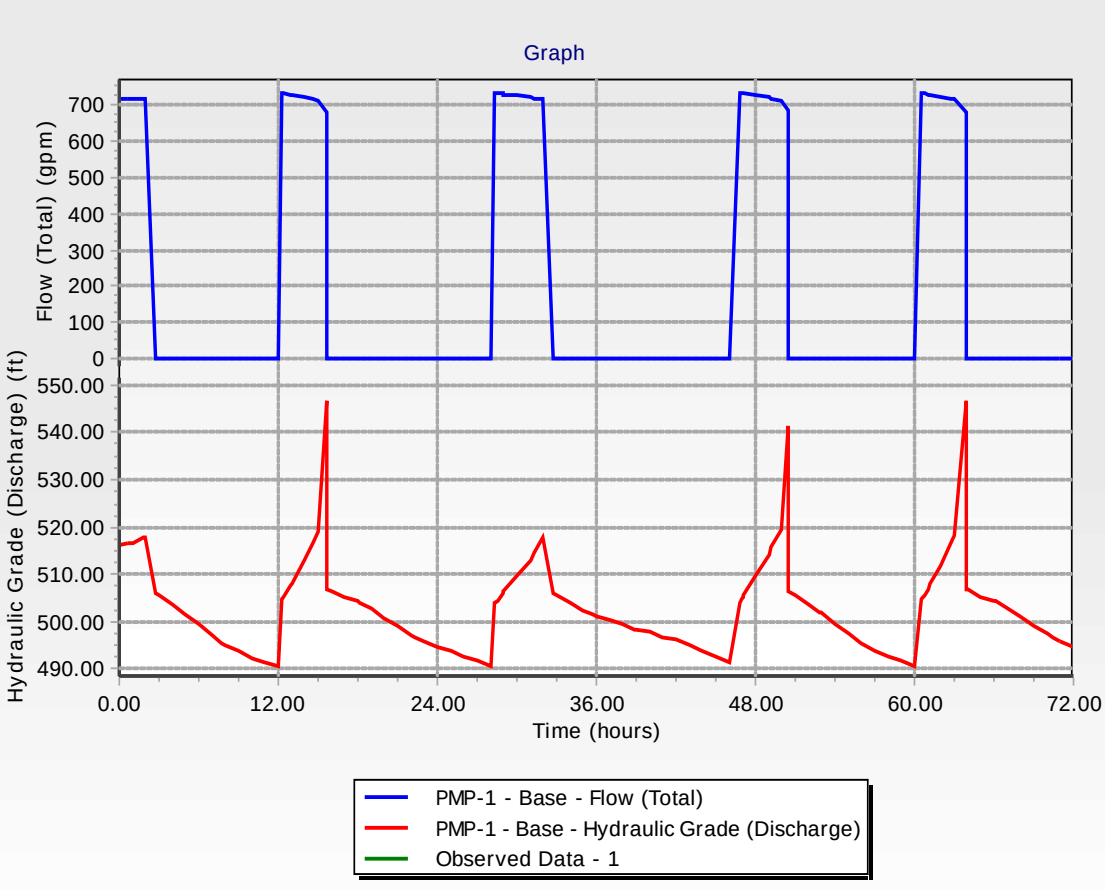
HYDRAULIC MODEL 72-HR DURATION SIMULATION

PMP - 1: Charity Church Well

Time (hours)	PMP-1 - Base - Flow (Total) (gpm)	PMP-1 - Base - Hydraulic Grade (Discharge) (ft)
0.00	719	516.28
0.64	719	516.33
1.00	718	516.64
1.88	717	517.65
2.00	717	517.72
2.73	0	505.79
3.00	0	505.33
4.00	0	503.38
5.00	0	501.51
6.00	0	499.25
7.00	0	497.00
7.70	0	495.49
8.00	0	495.10
9.00	0	493.50
10.00	0	492.23
11.00	0	491.22
12.00	0	490.50
12.31	733	504.57
12.42	733	505.03
12.97	730	507.59
13.00	729	507.97
14.00	723	512.66
14.58	718	516.53
15.00	715	519.06
15.67	681	546.76
15.69	0	506.78
16.00	0	506.37
17.00	0	505.10
18.00	0	504.10
18.08	0	504.03
19.00	0	502.61
20.00	0	500.81
21.00	0	498.92
22.00	0	497.12
22.33	0	496.60
23.00	0	495.66
24.00	0	494.44
25.00	0	493.61
26.00	0	492.53
27.00	0	491.65
28.00	0	490.37
28.35	735	503.75
28.54	734	504.42
28.90	732	505.92
29.00	731	506.28
30.00	727	509.59
31.00	723	513.05

Time (hours)	PMP-1 - Base - Flow (Total) (gpm)	PMP-1 - Base - Hydraulic Grade (Discharge) (ft)
31.31	721	514.64
32.00	717	517.79
32.68	0	505.97
33.00	0	505.52
34.00	0	503.70
35.00	0	502.28
35.72	0	501.39
36.00	0	501.15
37.00	0	500.15
38.00	0	499.26
38.93	0	498.34
39.00	0	498.34
40.00	0	497.67
41.00	0	496.64
42.00	0	496.16
43.00	0	494.90
44.00	0	493.79
45.00	0	492.29
46.00	0	491.07
46.85	735	503.77
47.00	733	504.67
47.07	733	504.93
47.15	732	505.51
48.00	727	509.49
49.00	722	513.91
49.18	719	515.73
50.00	714	519.53
50.43	688	541.39
50.44	0	506.35
51.00	0	505.45
52.00	0	503.61
52.87	0	501.98
53.00	0	501.73
54.00	0	499.49
55.00	0	497.24
55.94	0	495.24
56.00	0	495.34
57.00	0	493.71
58.00	0	492.38
59.00	0	491.46
60.00	0	490.60
60.54	733	504.62
60.78	732	505.62
61.00	731	506.75
61.20	729	507.90
62.00	724	511.68
62.80	718	516.61

Time (hours)	PMP-1 - Base - Flow (Total) (gpm)	PMP-1 - Base - Hydraulic Grade (Discharge) (ft)
63.00	716	517.98
63.86	681	546.93
63.88	0	506.78
64.00	0	506.60
65.00	0	505.23
66.00	0	504.24
66.15	0	504.11
67.00	0	502.82
68.00	0	500.99
69.00	0	499.10
70.00	0	497.30
70.46	0	496.56
71.00	0	495.84
72.00	0	494.63

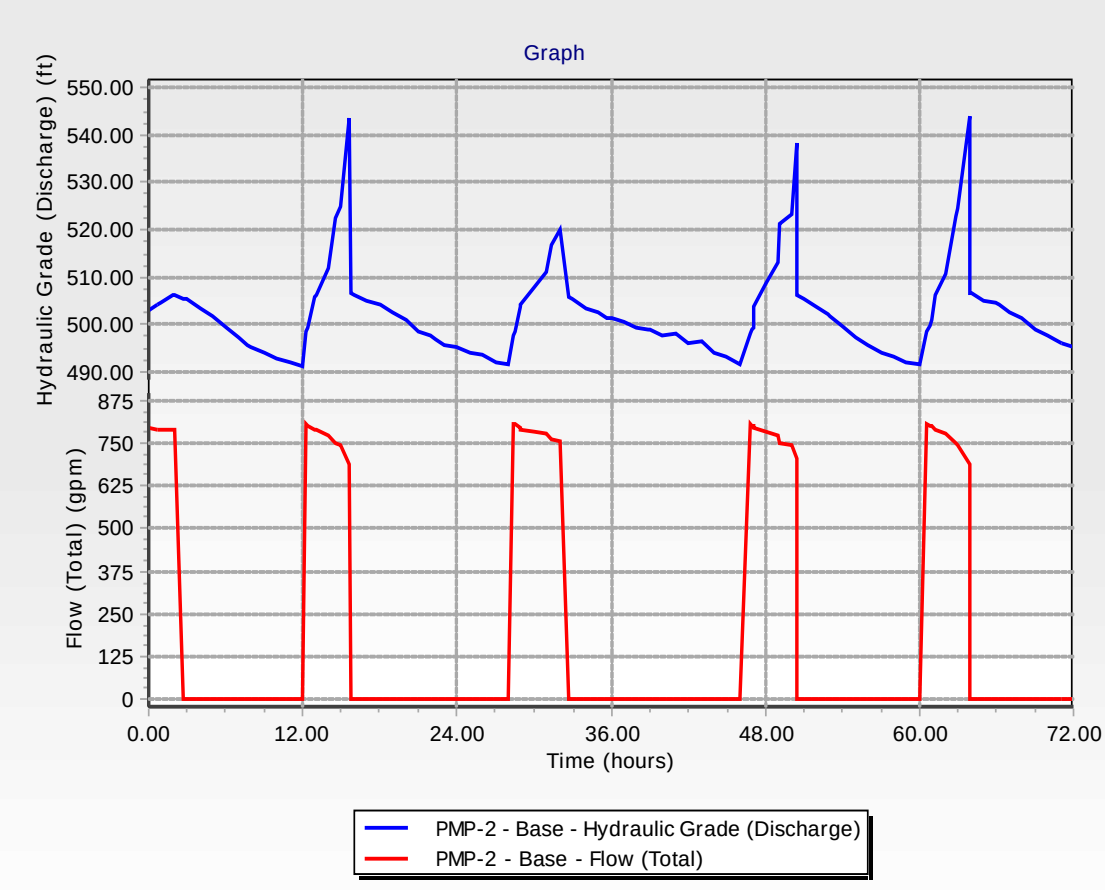


PMP - 2: School Street Well

Time (hours)	PMP-2 - Base - Hydraulic Grade (Discharge) (ft)	PMP-2 - Base - Flow (Total) (gpm)
0.00	503.01	795
0.64	504.21	793
1.00	504.77	792
1.88	506.16	789
2.00	506.24	788
2.73	505.57	0
3.00	505.21	0
4.00	503.46	0
5.00	501.62	0
6.00	499.44	0
7.00	497.12	0
7.70	495.73	0
8.00	495.33	0
9.00	493.94	0
10.00	492.78	0
11.00	492.02	0
12.00	491.34	0
12.31	498.51	805
12.42	499.15	804
12.97	505.90	789
13.00	506.40	788
14.00	511.77	776
14.58	522.63	750
15.00	524.89	744
15.67	543.66	691
15.69	506.70	0
16.00	506.31	0
17.00	505.02	0
18.00	504.36	0
18.08	504.25	0
19.00	502.40	0
20.00	501.14	0
21.00	498.67	0
22.00	497.62	0
22.33	496.91	0
23.00	495.83	0
24.00	495.20	0
25.00	493.94	0
26.00	493.62	0
27.00	492.19	0
28.00	491.47	0
28.35	497.75	807
28.54	498.61	805
28.90	503.81	794
29.00	504.21	793
30.00	507.83	785
31.00	511.22	777

Time (hours)	PMP-2 - Base - Hydraulic Grade (Discharge) (ft)	PMP-2 - Base - Flow (Total) (gpm)
31.31	516.81	764
32.00	519.87	757
32.68	505.85	0
33.00	505.45	0
34.00	503.51	0
35.00	502.70	0
35.72	501.38	0
36.00	501.27	0
37.00	500.38	0
38.00	499.30	0
38.93	498.79	0
39.00	498.77	0
40.00	497.62	0
41.00	498.01	0
42.00	496.28	0
43.00	496.29	0
44.00	494.21	0
45.00	493.28	0
46.00	491.82	0
46.85	497.97	806
47.00	498.96	804
47.07	499.38	803
47.15	503.77	794
48.00	508.54	783
49.00	513.15	773
49.18	521.31	753
50.00	523.44	748
50.43	538.41	707
50.44	506.22	0
51.00	505.39	0
52.00	503.76	0
52.87	502.01	0
53.00	501.80	0
54.00	499.74	0
55.00	497.31	0
55.94	495.56	0
56.00	495.64	0
57.00	493.98	0
58.00	493.19	0
59.00	491.96	0
60.00	491.75	0
60.54	498.66	805
60.78	499.87	802
61.00	501.11	800
61.20	506.40	788
62.00	510.73	778
62.80	522.92	749

Time (hours)	PMP-2 - Base - Hydraulic Grade (Discharge) (ft)	PMP-2 - Base - Flow (Total) (gpm)
63.00	524.34	746
63.86	543.98	690
63.88	506.70	0
64.00	506.53	0
65.00	505.01	0
66.00	504.60	0
66.15	504.37	0
67.00	502.67	0
68.00	501.28	0
69.00	498.89	0
70.00	497.77	0
70.46	496.80	0
71.00	496.04	0
72.00	495.21	0

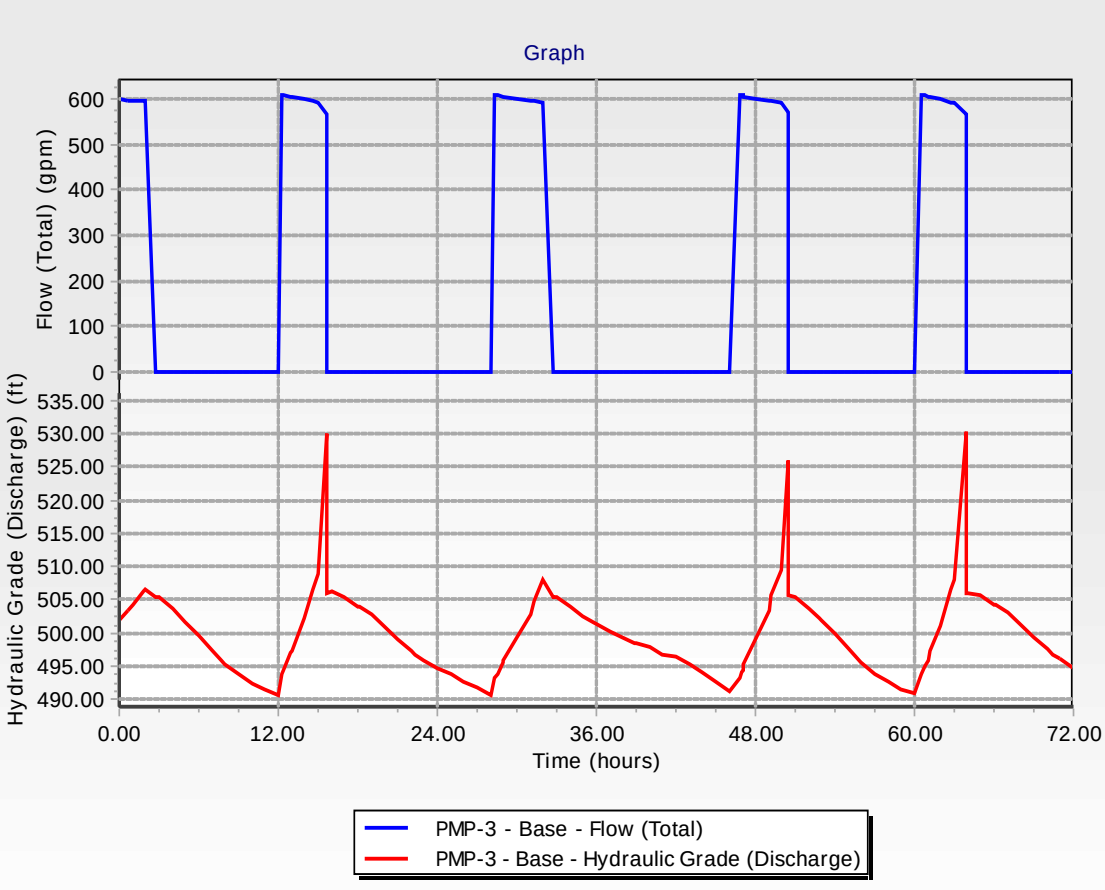


PMP - 3: Peach Orchard Well

Time (hours)	PMP-3 - Base - Flow (Total) (gpm)	PMP-3 - Base - Hydraulic Grade (Discharge) (ft)
0.00	598	501.82
0.64	597	503.41
1.00	596	504.26
1.88	594	506.27
2.00	593	506.44
2.73	0	505.50
3.00	0	505.26
4.00	0	503.57
5.00	0	501.65
6.00	0	499.49
7.00	0	497.20
7.70	0	495.73
8.00	0	495.30
9.00	0	493.69
10.00	0	492.39
11.00	0	491.36
12.00	0	490.60
12.31	607	493.79
12.42	607	494.24
12.97	604	497.03
13.00	603	497.35
14.00	598	502.09
14.58	593	506.50
15.00	591	509.01
15.67	565	530.19
15.69	0	506.10
16.00	0	506.12
17.00	0	505.36
18.00	0	503.96
18.08	0	503.95
19.00	0	502.79
20.00	0	500.99
21.00	0	499.01
22.00	0	497.32
22.33	0	496.79
23.00	0	495.80
24.00	0	494.58
25.00	0	493.71
26.00	0	492.73
27.00	0	491.77
28.00	0	490.64
28.35	608	493.25
28.54	607	493.87
28.90	605	495.57
29.00	605	495.94
30.00	601	499.34
31.00	597	502.85

Time (hours)	PMP-3 - Base - Flow (Total) (gpm)	PMP-3 - Base - Hydraulic Grade (Discharge) (ft)
31.31	595	504.76
32.00	592	507.86
32.68	0	505.53
33.00	0	505.42
34.00	0	503.85
35.00	0	502.37
35.72	0	501.47
36.00	0	501.25
37.00	0	500.23
38.00	0	499.32
38.93	0	498.42
39.00	0	498.40
40.00	0	497.70
41.00	0	496.75
42.00	0	496.24
43.00	0	495.12
44.00	0	493.99
45.00	0	492.54
46.00	0	491.26
46.85	608	493.28
47.00	607	494.02
47.07	607	494.28
47.15	606	495.13
48.00	602	498.99
49.00	597	503.47
49.18	594	505.74
50.00	590	509.55
50.43	571	525.88
50.44	0	505.74
51.00	0	505.52
52.00	0	503.77
52.87	0	502.11
53.00	0	501.87
54.00	0	499.75
55.00	0	497.43
55.94	0	495.50
56.00	0	495.55
57.00	0	493.90
58.00	0	492.55
59.00	0	491.58
60.00	0	490.74
60.54	607	493.83
60.78	606	494.80
61.00	605	495.84
61.20	603	497.31
62.00	599	501.12
62.80	593	506.61

Time (hours)	PMP-3 - Base - Flow (Total) (gpm)	PMP-3 - Base - Hydraulic Grade (Discharge) (ft)
63.00	592	507.96
63.86	565	530.33
63.88	0	506.11
64.00	0	506.08
65.00	0	505.54
66.00	0	504.11
66.15	0	504.09
67.00	0	502.97
68.00	0	501.18
69.00	0	499.19
70.00	0	497.49
70.46	0	496.74
71.00	0	495.98
72.00	0	494.77

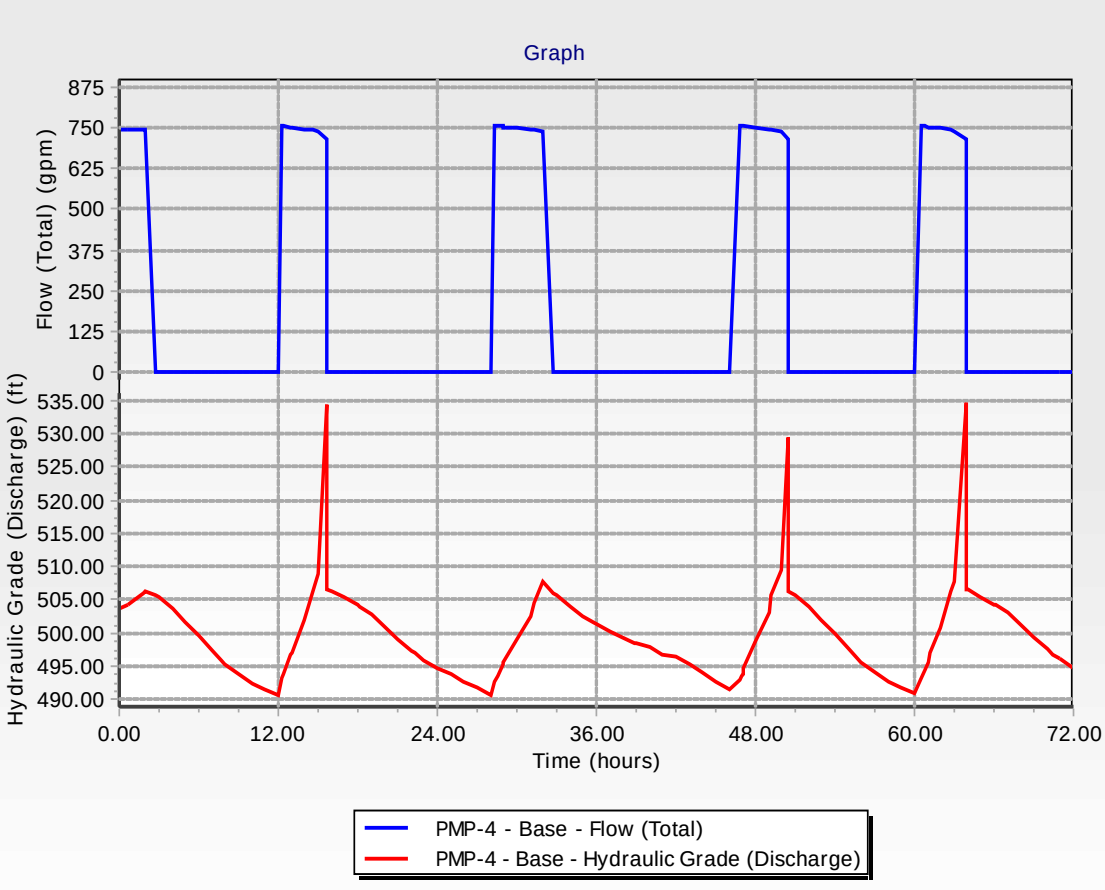


PMP - 4: Lake Harbour Well

Time (hours)	PMP-4 - Base - Flow (Total) (gpm)	PMP-4 - Base - Hydraulic Grade (Discharge) (ft)
0.00	745	503.79
0.64	744	504.25
1.00	744	504.74
1.88	743	506.11
2.00	742	506.28
2.73	0	505.74
3.00	0	505.38
4.00	0	503.60
5.00	0	501.71
6.00	0	499.56
7.00	0	497.27
7.70	0	495.78
8.00	0	495.34
9.00	0	493.72
10.00	0	492.42
11.00	0	491.39
12.00	0	490.63
12.31	756	493.25
12.42	755	493.73
12.97	752	496.62
13.00	752	496.94
14.00	747	501.76
14.58	742	506.28
15.00	740	508.80
15.67	713	534.46
15.69	0	506.54
16.00	0	506.30
17.00	0	505.25
18.00	0	504.11
18.08	0	504.07
19.00	0	502.78
20.00	0	501.05
21.00	0	499.08
22.00	0	497.36
22.33	0	496.83
23.00	0	495.82
24.00	0	494.60
25.00	0	493.74
26.00	0	492.74
27.00	0	491.82
28.00	0	490.65
28.35	756	492.73
28.54	756	493.39
28.90	754	495.17
29.00	753	495.54
30.00	750	499.08
31.00	746	502.60

Time (hours)	PMP-4 - Base - Flow (Total) (gpm)	PMP-4 - Base - Hydraulic Grade (Discharge) (ft)
31.31	744	504.56
32.00	741	507.67
32.68	0	505.91
33.00	0	505.58
34.00	0	503.85
35.00	0	502.42
35.72	0	501.50
36.00	0	501.26
37.00	0	500.24
38.00	0	499.34
38.93	0	498.44
39.00	0	498.42
40.00	0	497.72
41.00	0	496.77
42.00	0	496.26
43.00	0	495.14
44.00	0	494.04
45.00	0	492.57
46.00	0	491.31
46.85	756	492.76
47.00	756	493.52
47.07	755	493.79
47.15	754	494.68
48.00	750	498.63
49.00	746	503.17
49.18	743	505.53
50.00	739	509.39
50.43	718	529.50
50.44	0	506.19
51.00	0	505.57
52.00	0	503.81
52.87	0	502.16
53.00	0	501.92
54.00	0	499.81
55.00	0	497.50
55.94	0	495.55
56.00	0	495.59
57.00	0	493.93
58.00	0	492.58
59.00	0	491.61
60.00	0	490.75
60.54	756	493.31
60.78	755	494.32
61.00	754	495.38
61.20	752	496.89
62.00	748	500.77
62.80	742	506.38

Time (hours)	PMP-4 - Base - Flow (Total) (gpm)	PMP-4 - Base - Hydraulic Grade (Discharge) (ft)
63.00	741	507.73
63.86	713	534.62
63.88	0	506.54
64.00	0	506.43
65.00	0	505.39
66.00	0	504.27
66.15	0	504.17
67.00	0	502.98
68.00	0	501.23
69.00	0	499.25
70.00	0	497.53
70.46	0	496.78
71.00	0	496.00
72.00	0	494.79

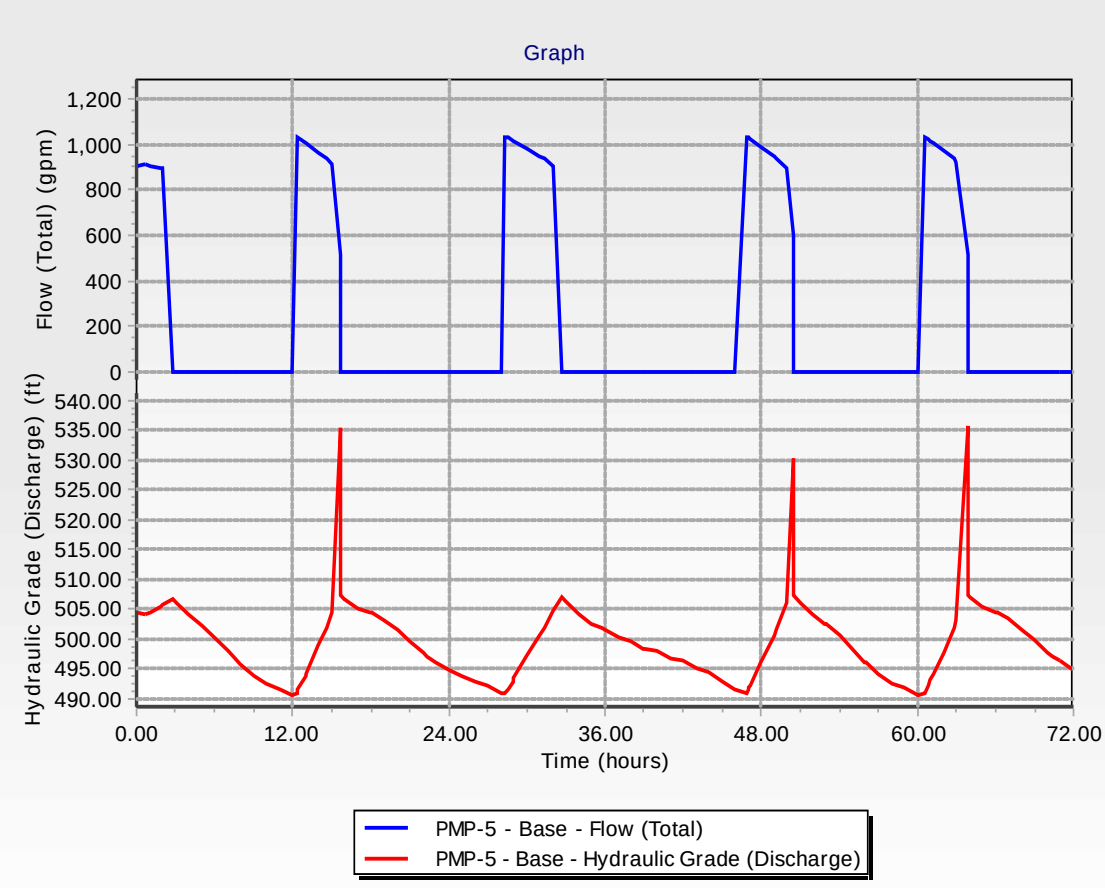


PMP - 5: Old Canton Well

Time (hours)	PMP-5 - Base - Flow (Total) (gpm)	PMP-5 - Base - Hydraulic Grade (Discharge) (ft)
0.00	907	504.60
0.64	910	504.34
1.00	908	504.58
1.88	898	505.52
2.00	896	505.73
2.73	0	506.66
3.00	0	506.07
4.00	0	504.06
5.00	0	502.26
6.00	0	500.32
7.00	0	498.04
7.70	0	496.44
8.00	0	495.84
9.00	0	494.03
10.00	0	492.63
11.00	0	491.51
12.00	0	490.71
12.31	1,033	491.08
12.42	1,029	491.55
12.97	1,008	493.96
13.00	1,006	494.13
14.00	962	498.90
14.58	934	501.90
15.00	909	504.39
15.67	516	535.48
15.69	0	507.41
16.00	0	506.83
17.00	0	505.29
18.00	0	504.54
18.08	0	504.43
19.00	0	503.19
20.00	0	501.48
21.00	0	499.80
22.00	0	497.67
22.33	0	497.20
23.00	0	496.17
24.00	0	494.70
25.00	0	493.95
26.00	0	492.83
27.00	0	492.11
28.00	0	490.81
28.35	1,034	490.95
28.54	1,028	491.63
28.90	1,016	493.01
29.00	1,013	493.41
30.00	978	497.28
31.00	945	500.74

Time (hours)	PMP-5 - Base - Flow (Total) (gpm)	PMP-5 - Base - Hydraulic Grade (Discharge) (ft)
31.31	933	501.95
32.00	904	504.90
32.68	0	507.18
33.00	0	506.39
34.00	0	504.26
35.00	0	502.62
35.72	0	501.85
36.00	0	501.45
37.00	0	500.35
38.00	0	499.54
38.93	0	498.51
39.00	0	498.47
40.00	0	497.95
41.00	0	496.78
42.00	0	496.54
43.00	0	495.23
44.00	0	494.50
45.00	0	492.78
46.00	0	491.62
46.85	1,034	490.95
47.00	1,029	491.56
47.07	1,027	491.82
47.15	1,023	492.21
48.00	989	495.97
49.00	947	500.54
49.18	937	501.56
50.00	893	505.99
50.43	598	530.43
50.44	0	507.36
51.00	0	506.08
52.00	0	504.28
52.87	0	502.74
53.00	0	502.49
54.00	0	500.52
55.00	0	498.31
55.94	0	496.13
56.00	0	496.03
57.00	0	494.32
58.00	0	492.73
59.00	0	491.79
60.00	0	490.78
60.54	1,033	491.12
60.78	1,024	492.15
61.00	1,015	493.12
61.20	1,007	494.06
62.00	972	497.90
62.80	933	501.96

Time (hours)	PMP-5 - Base - Flow (Total) (gpm)	PMP-5 - Base - Hydraulic Grade (Discharge) (ft)
63.00	921	503.19
63.86	513	535.65
63.88	0	507.41
64.00	0	507.18
65.00	0	505.42
66.00	0	504.65
66.15	0	504.46
67.00	0	503.43
68.00	0	501.67
69.00	0	499.96
70.00	0	497.85
70.46	0	497.19
71.00	0	496.32
72.00	0	494.91

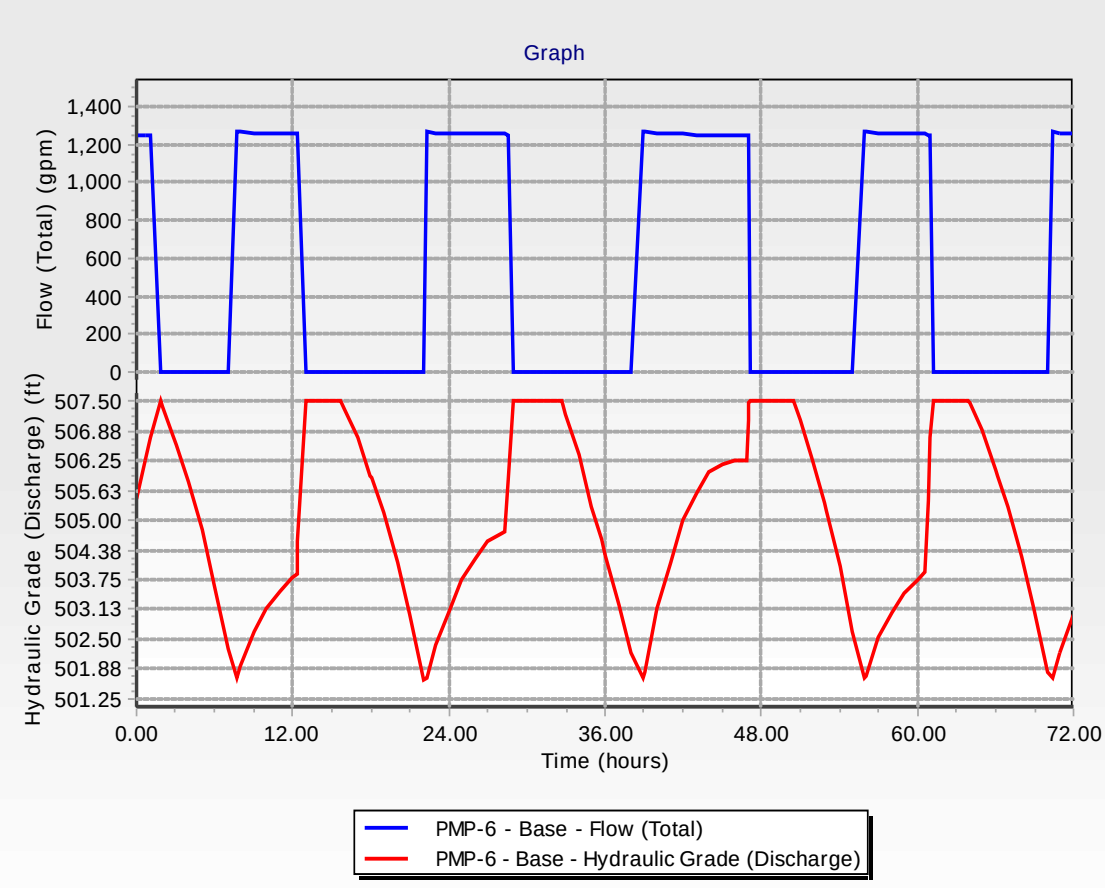


PMP - 6: Hardy Rd Well

Time (hours)	PMP-6 - Base - Flow (Total) (gpm)	PMP-6 - Base - Hydraulic Grade (Discharge) (ft)
0.00	1,251	505.45
0.64	1,249	506.26
1.00	1,247	506.75
1.88	0	507.50
2.00	0	507.39
2.73	0	506.76
3.00	0	506.57
4.00	0	505.79
5.00	0	504.79
6.00	0	503.64
7.00	0	502.29
7.70	1,263	501.70
8.00	1,263	501.93
9.00	1,260	502.65
10.00	1,259	503.15
11.00	1,258	503.51
12.00	1,257	503.80
12.31	1,256	503.87
12.42	1,254	504.55
12.97	0	507.50
13.00	0	507.50
14.00	0	507.50
14.58	0	507.50
15.00	0	507.50
15.67	0	507.50
15.69	0	507.50
16.00	0	507.34
17.00	0	506.74
18.00	0	505.93
18.08	0	505.87
19.00	0	505.17
20.00	0	504.10
21.00	0	503.01
22.00	0	501.66
22.33	1,263	501.70
23.00	1,261	502.36
24.00	1,259	503.12
25.00	1,257	503.76
26.00	1,255	504.20
27.00	1,254	504.55
28.00	1,254	504.73
28.35	1,253	504.75
28.54	1,250	505.84
28.90	0	507.50
29.00	0	507.50
30.00	0	507.50
31.00	0	507.50

Time (hours)	PMP-6 - Base - Flow (Total) (gpm)	PMP-6 - Base - Hydraulic Grade (Discharge) (ft)
31.31	0	507.50
32.00	0	507.50
32.68	0	507.50
33.00	0	507.23
34.00	0	506.36
35.00	0	505.28
35.72	0	504.58
36.00	0	504.27
37.00	0	503.21
38.00	0	502.21
38.93	1,263	501.70
39.00	1,263	501.81
40.00	1,259	503.16
41.00	1,256	504.10
42.00	1,253	505.01
43.00	1,251	505.55
44.00	1,249	506.03
45.00	1,249	506.18
46.00	1,249	506.27
46.85	1,249	506.23
47.00	1,246	507.11
47.07	1,245	507.48
47.15	0	507.50
48.00	0	507.50
49.00	0	507.50
49.18	0	507.50
50.00	0	507.50
50.43	0	507.50
50.44	0	507.50
51.00	0	507.11
52.00	0	506.25
52.87	0	505.36
53.00	0	505.21
54.00	0	504.02
55.00	0	502.66
55.94	1,263	501.70
56.00	1,263	501.75
57.00	1,261	502.54
58.00	1,259	503.05
59.00	1,258	503.46
60.00	1,257	503.75
60.54	1,256	503.90
60.78	1,251	505.40
61.00	1,247	506.75
61.20	0	507.50
62.00	0	507.50
62.80	0	507.50

Time (hours)	PMP-6 - Base - Flow (Total) (gpm)	PMP-6 - Base - Hydraulic Grade (Discharge) (ft)
63.00	0	507.50
63.86	0	507.50
63.88	0	507.50
64.00	0	507.44
65.00	0	506.89
66.00	0	506.03
66.15	0	505.93
67.00	0	505.30
68.00	0	504.25
69.00	0	503.16
70.00	0	501.82
70.46	1,263	501.70
71.00	1,262	502.22
72.00	1,259	503.03

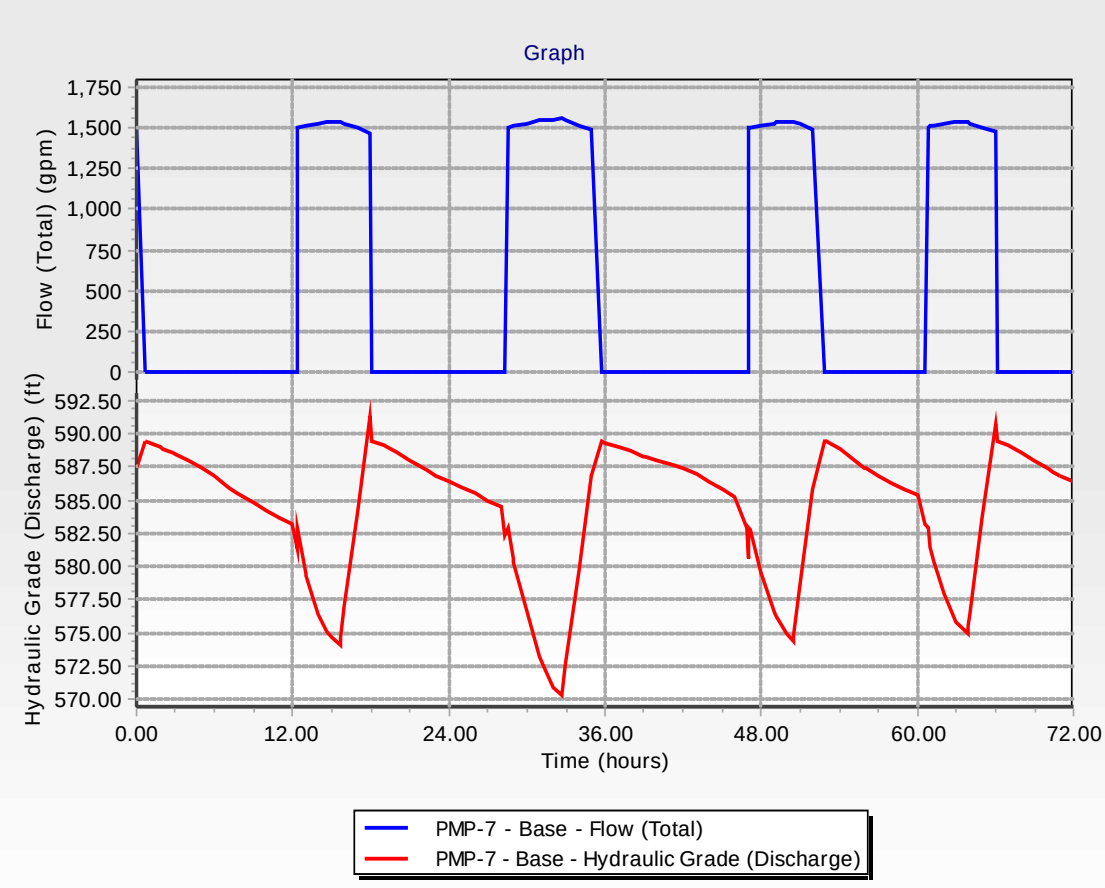


PMP - 7: Western Well

Time (hours)	PMP-7 - Base - Flow (Total) (gpm)	PMP-7 - Base - Hydraulic Grade (Discharge) (ft)
0.00	1,486	587.40
0.64	0	589.50
1.00	0	589.34
1.88	0	588.97
2.00	0	588.91
2.73	0	588.57
3.00	0	588.44
4.00	0	587.93
5.00	0	587.36
6.00	0	586.77
7.00	0	586.04
7.70	0	585.55
8.00	0	585.34
9.00	0	584.73
10.00	0	584.18
11.00	0	583.69
12.00	0	583.26
12.31	0	581.29
12.42	1,504	582.97
12.97	1,519	579.38
13.00	1,519	579.29
14.00	1,531	576.37
14.58	1,536	575.11
15.00	1,538	574.63
15.67	1,540	574.11
15.69	1,538	574.62
16.00	1,529	576.92
17.00	1,499	584.19
18.00	1,470	591.29
18.08	0	589.50
19.00	0	589.13
20.00	0	588.61
21.00	0	588.00
22.00	0	587.42
22.33	0	587.23
23.00	0	586.84
24.00	0	586.36
25.00	0	585.93
26.00	0	585.50
27.00	0	585.02
28.00	0	584.52
28.35	0	582.40
28.54	1,504	582.95
28.90	1,513	580.64
29.00	1,515	580.26
30.00	1,530	576.53
31.00	1,544	573.15

Time (hours)	PMP-7 - Base - Flow (Total) (gpm)	PMP-7 - Base - Hydraulic Grade (Discharge) (ft)
31.31	1,548	572.33
32.00	1,554	570.87
32.68	1,556	570.33
33.00	1,547	572.62
34.00	1,517	579.74
35.00	1,488	586.81
35.72	0	589.50
36.00	0	589.38
37.00	0	588.99
38.00	0	588.66
38.93	0	588.34
39.00	0	588.32
40.00	0	588.01
41.00	0	587.70
42.00	0	587.35
43.00	0	586.95
44.00	0	586.43
45.00	0	585.83
46.00	0	585.24
46.85	0	582.85
47.00	0	580.64
47.07	1,504	582.98
47.15	1,505	582.74
48.00	1,518	579.55
49.00	1,530	576.58
49.18	1,532	576.19
50.00	1,537	574.91
50.43	1,539	574.34
50.44	1,537	574.83
51.00	1,521	578.81
52.00	1,492	585.85
52.87	0	589.49
53.00	0	589.42
54.00	0	588.83
55.00	0	588.10
55.94	0	587.45
56.00	0	587.41
57.00	0	586.80
58.00	0	586.24
59.00	0	585.76
60.00	0	585.32
60.54	0	583.22
60.78	1,504	582.98
61.00	1,510	581.44
61.20	1,514	580.44
62.00	1,524	578.01
62.80	1,532	576.07

Time (hours)	PMP-7 - Base - Flow (Total) (gpm)	PMP-7 - Base - Hydraulic Grade (Discharge) (ft)
63.00	1,533	575.82
63.86	1,537	575.00
63.88	1,535	575.51
64.00	1,531	576.38
65.00	1,501	583.67
66.00	1,472	590.78
66.15	0	589.50
67.00	0	589.16
68.00	0	588.64
69.00	0	588.03
70.00	0	587.45
70.46	0	587.18
71.00	0	586.87
72.00	0	586.39

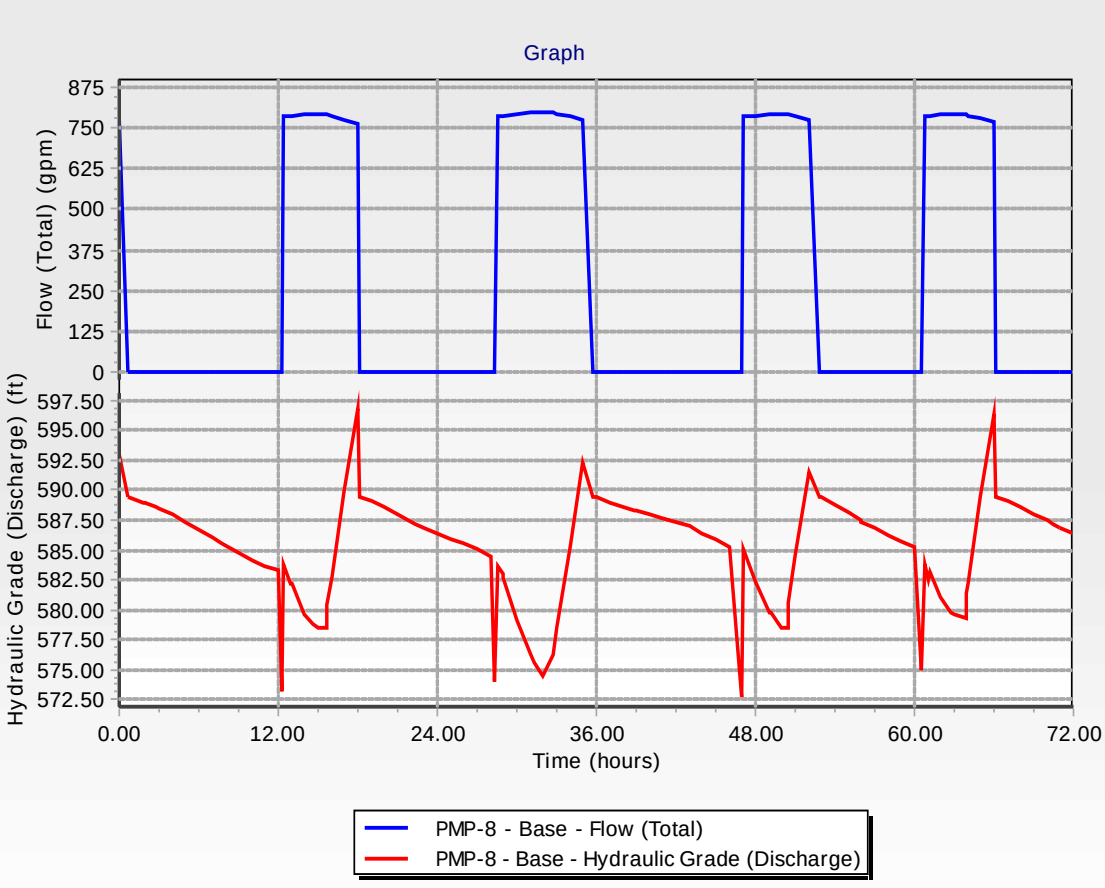


PMP - 8: Samuel's Lane Well

Time (hours)	PMP-8 - Base - Flow (Total) (gpm)	PMP-8 - Base - Hydraulic Grade (Discharge) (ft)
0.00	772	593.00
0.64	0	589.49
1.00	0	589.34
1.88	0	588.96
2.00	0	588.91
2.73	0	588.56
3.00	0	588.43
4.00	0	587.93
5.00	0	587.35
6.00	0	586.76
7.00	0	586.03
7.70	0	585.54
8.00	0	585.34
9.00	0	584.73
10.00	0	584.18
11.00	0	583.69
12.00	0	583.25
12.31	0	573.19
12.42	787	583.81
12.97	789	582.13
13.00	789	582.11
14.00	793	579.55
14.58	794	578.77
15.00	794	578.42
15.67	794	578.43
15.69	792	580.47
16.00	788	582.73
17.00	777	589.87
18.00	765	596.82
18.08	0	589.49
19.00	0	589.12
20.00	0	588.61
21.00	0	588.00
22.00	0	587.41
22.33	0	587.22
23.00	0	586.84
24.00	0	586.35
25.00	0	585.93
26.00	0	585.50
27.00	0	585.02
28.00	0	584.51
28.35	0	574.00
28.54	787	583.68
28.90	788	583.05
29.00	788	582.69
30.00	793	579.19
31.00	798	576.17

Time (hours)	PMP-8 - Base - Flow (Total) (gpm)	PMP-8 - Base - Hydraulic Grade (Discharge) (ft)
31.31	798	575.63
32.00	800	574.43
32.68	798	576.18
33.00	794	578.45
34.00	784	585.48
35.00	773	592.41
35.72	0	589.49
36.00	0	589.37
37.00	0	588.99
38.00	0	588.66
38.93	0	588.34
39.00	0	588.32
40.00	0	588.01
41.00	0	587.70
42.00	0	587.35
43.00	0	586.94
44.00	0	586.43
45.00	0	585.82
46.00	0	585.23
46.85	0	574.50
47.00	0	572.69
47.07	787	583.85
47.15	785	585.11
48.00	789	582.35
49.00	793	579.72
49.18	793	579.69
50.00	794	578.50
50.43	794	578.43
50.44	791	580.64
51.00	786	584.55
52.00	775	591.45
52.87	0	589.49
53.00	0	589.42
54.00	0	588.82
55.00	0	588.09
55.94	0	587.44
56.00	0	587.40
57.00	0	586.79
58.00	0	586.24
59.00	0	585.75
60.00	0	585.32
60.54	0	574.95
60.78	787	583.87
61.00	788	582.56
61.20	788	583.20
62.00	791	581.06
62.80	793	579.69

Time (hours)	PMP-8 - Base - Flow (Total) (gpm)	PMP-8 - Base - Hydraulic Grade (Discharge) (ft)
63.00	793	579.54
63.86	793	579.30
63.88	790	581.35
64.00	789	582.21
65.00	778	589.36
66.00	766	596.31
66.15	0	589.49
67.00	0	589.15
68.00	0	588.64
69.00	0	588.03
70.00	0	587.44
70.46	0	587.18
71.00	0	586.87
72.00	0	586.38

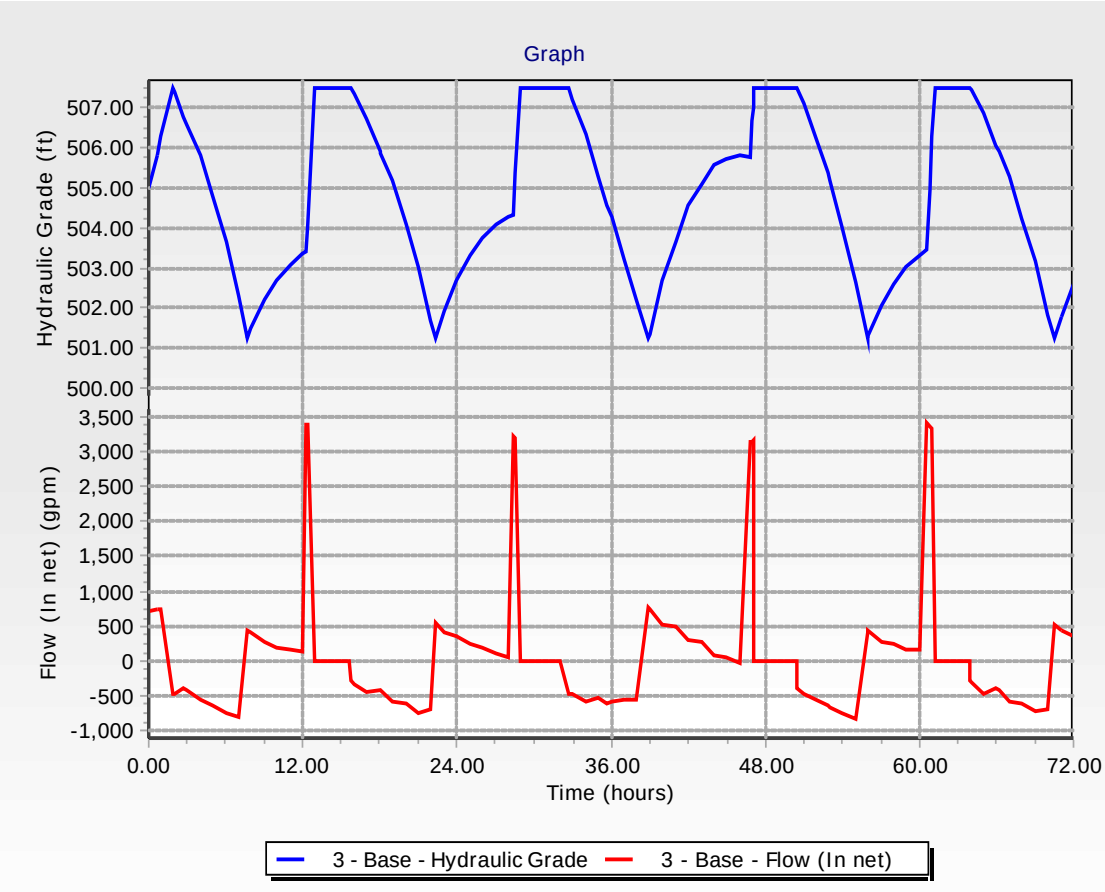


3 - Hardy Rd Tank

Time (hours)	3 - Base - Hydraulic Grade (ft)	3 - Base - Flow (In net) (gpm)
0.00	505.00	708
0.64	505.82	743
1.00	506.31	746
1.88	507.50	-487
2.00	507.39	-480
2.73	506.76	-389
3.00	506.57	-425
4.00	505.79	-553
5.00	504.79	-632
6.00	503.64	-743
7.00	502.29	-816
7.70	501.25	428
8.00	501.48	395
9.00	502.20	275
10.00	502.70	201
11.00	503.06	160
12.00	503.35	130
12.31	503.42	3,386
12.42	504.10	3,395
12.97	507.50	0
13.00	507.50	0
14.00	507.50	0
14.58	507.50	0
15.00	507.50	0
15.67	507.50	0
15.69	507.50	-275
16.00	507.34	-331
17.00	506.74	-450
18.00	505.93	-408
18.08	505.87	-418
19.00	505.17	-591
20.00	504.10	-600
21.00	503.01	-739
22.00	501.66	-688
22.33	501.25	542
23.00	501.91	419
24.00	502.67	354
25.00	503.31	242
26.00	503.75	196
27.00	504.11	95
28.00	504.28	39
28.35	504.30	3,229
28.54	505.40	3,200
28.90	507.50	0
29.00	507.50	0
30.00	507.50	0
31.00	507.50	0
31.31	507.50	0

Time (hours)	3 - Base - Hydraulic Grade (ft)	3 - Base - Flow (In net) (gpm)
32.00	507.50	0
32.68	507.50	-462
33.00	507.23	-479
34.00	506.36	-594
35.00	505.28	-531
35.72	504.58	-615
36.00	504.27	-585
37.00	503.21	-555
38.00	502.21	-569
38.93	501.25	757
39.00	501.35	747
40.00	502.71	521
41.00	503.66	499
42.00	504.56	301
43.00	505.11	261
44.00	505.58	87
45.00	505.74	47
46.00	505.83	-23
46.85	505.79	3,153
47.00	506.67	3,139
47.07	507.04	3,172
47.15	507.50	0
48.00	507.50	0
49.00	507.50	0
49.18	507.50	0
50.00	507.50	0
50.43	507.50	0
50.44	507.50	-383
51.00	507.11	-474
52.00	506.25	-563
52.87	505.36	-651
53.00	505.21	-657
54.00	504.02	-746
55.00	502.66	-831
55.94	501.25	420
56.00	501.30	433
57.00	502.08	281
58.00	502.59	231
59.00	503.01	157
60.00	503.30	153
60.54	503.45	3,427
60.78	504.95	3,373
61.00	506.31	3,332
61.20	507.50	0
62.00	507.50	0
62.80	507.50	0
63.00	507.50	0
63.86	507.50	0

Time (hours)	3 - Base - Hydraulic Grade (ft)	3 - Base - Flow (In net) (gpm)
63.88	507.50	-275
64.00	507.44	-300
65.00	506.89	-474
66.00	506.03	-386
66.15	505.93	-409
67.00	505.30	-576
68.00	504.25	-604
69.00	503.16	-733
70.00	501.82	-690
70.46	501.25	529
71.00	501.77	444
72.00	502.58	357

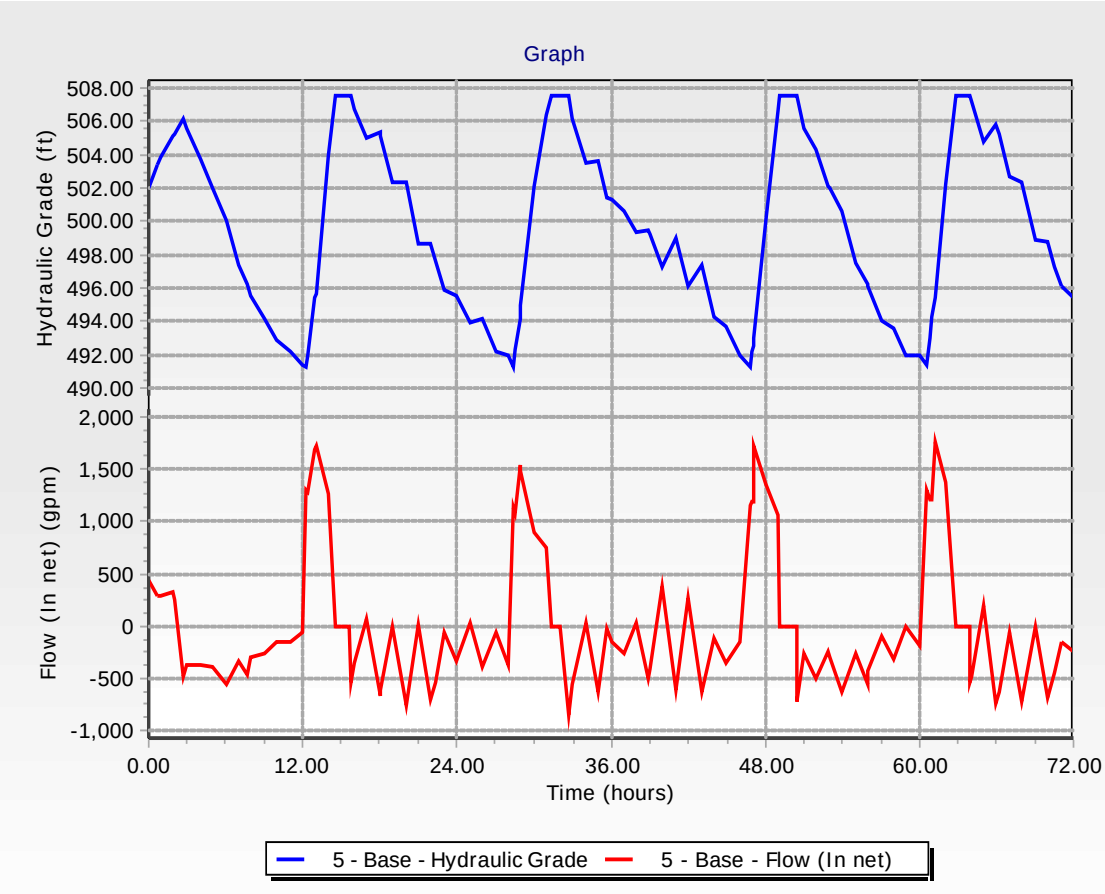


5 - Natchez Trace Tank

Time (hours)	5 - Base - Hydraulic Grade (ft)	5 - Base - Flow (In net) (gpm)
0.00	502.00	437
0.64	503.35	289
1.00	503.85	292
1.88	505.09	332
2.00	505.28	259
2.73	506.20	-488
3.00	505.56	-377
4.00	503.74	-369
5.00	501.96	-389
6.00	500.09	-558
7.00	497.39	-334
7.70	496.26	-474
8.00	495.58	-296
9.00	494.15	-263
10.00	492.88	-151
11.00	492.15	-160
12.00	491.38	-55
12.31	491.30	1,302
12.42	491.99	1,274
12.97	495.38	1,690
13.00	495.62	1,731
14.00	503.98	1,266
14.58	507.50	0
15.00	507.50	0
15.67	507.50	0
15.69	507.50	-545
16.00	506.67	-353
17.00	504.97	76
18.00	505.34	-662
18.08	505.08	-608
19.00	502.38	-8
20.00	502.34	-764
21.00	498.65	12
22.00	498.71	-712
22.33	497.57	-532
23.00	495.85	-59
24.00	495.57	-342
25.00	493.92	39
26.00	494.10	-389
27.00	492.23	-65
28.00	491.91	-375
28.35	491.28	1,129
28.54	492.30	1,079
28.90	494.18	1,544
29.00	494.94	1,484
30.00	502.10	888
31.00	506.38	744
31.31	507.50	0

Time (hours)	5 - Base - Hydraulic Grade (ft)	5 - Base - Flow (In net) (gpm)
32.00	507.50	0
32.68	507.50	-860
33.00	506.16	-556
34.00	503.48	23
35.00	503.59	-633
35.72	501.38	-26
36.00	501.35	-158
37.00	500.59	-269
38.00	499.29	26
38.93	499.41	-504
39.00	499.23	-413
40.00	497.23	373
41.00	499.03	-612
42.00	496.08	267
43.00	497.37	-638
44.00	494.29	-123
45.00	493.69	-362
46.00	491.94	-161
46.85	491.28	1,160
47.00	492.14	1,186
47.07	492.51	1,182
47.15	492.97	1,721
48.00	500.07	1,351
49.00	506.59	1,061
49.18	507.50	0
50.00	507.50	0
50.43	507.50	0
50.44	507.50	-727
51.00	505.55	-260
52.00	504.29	-505
52.87	502.17	-250
53.00	502.01	-298
54.00	500.57	-637
55.00	497.50	-270
55.94	496.28	-561
56.00	496.11	-430
57.00	494.03	-104
58.00	493.53	-325
59.00	491.96	-4
60.00	491.94	-194
60.54	491.44	1,293
60.78	492.95	1,214
61.00	494.25	1,200
61.20	495.39	1,765
62.00	502.23	1,373
62.80	507.50	0
63.00	507.50	0
63.86	507.50	0

Time (hours)	5 - Base - Hydraulic Grade (ft)	5 - Base - Flow (In net) (gpm)
63.88	507.50	-545
64.00	507.18	-489
65.00	504.83	203
66.00	505.80	-745
66.15	505.25	-632
67.00	502.67	-64
68.00	502.36	-723
69.00	498.87	-15
70.00	498.80	-693
70.46	497.27	-439
71.00	496.12	-146
72.00	495.42	-247

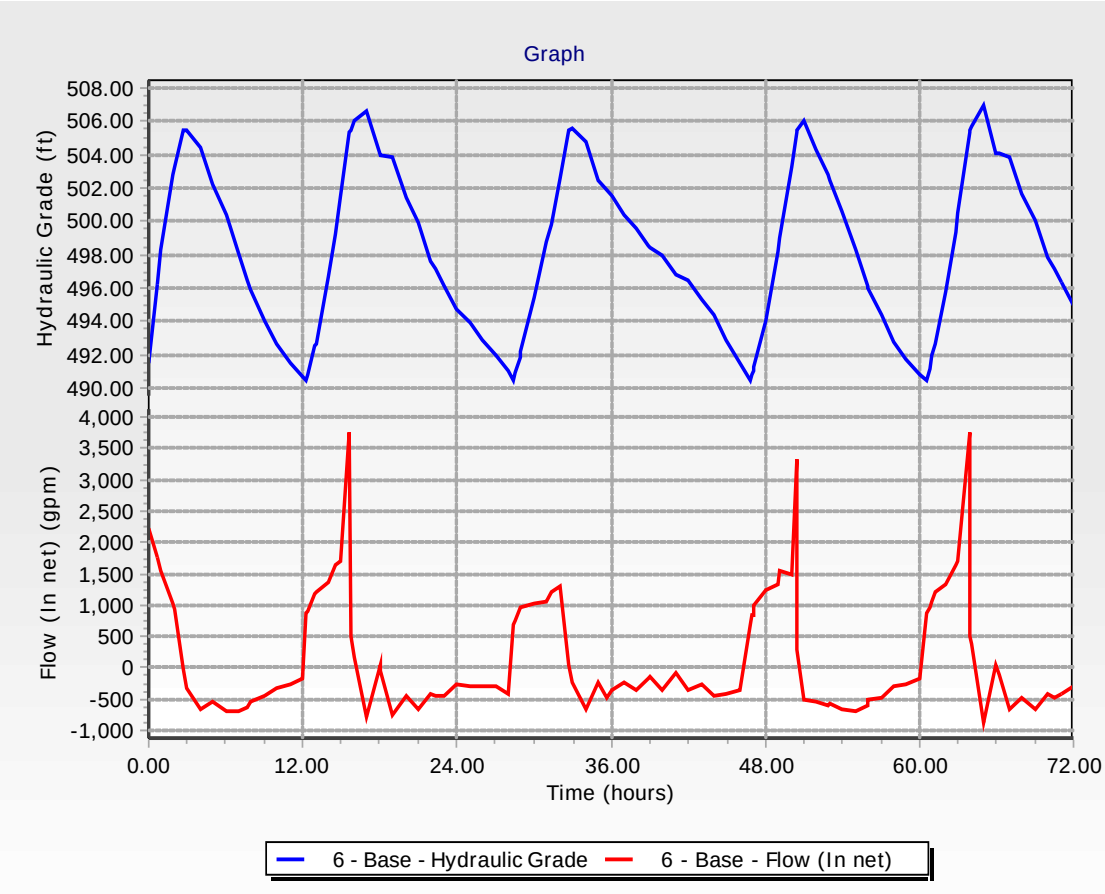


6 - North Park Tank

Time (hours)	6 - Base - Hydraulic Grade (ft)	6 - Base - Flow (In net) (gpm)
0.00	491.50	2,219
0.64	496.19	1,761
1.00	498.31	1,544
1.88	502.81	1,013
2.00	503.21	945
2.73	505.50	-33
3.00	505.47	-327
4.00	504.39	-657
5.00	502.21	-543
6.00	500.41	-708
7.00	498.06	-685
7.70	496.46	-631
8.00	495.84	-540
9.00	494.05	-434
10.00	492.62	-335
11.00	491.50	-251
12.00	490.67	-170
12.31	490.50	871
12.42	490.82	911
12.97	492.48	1,173
13.00	492.60	1,222
14.00	496.65	1,370
14.58	499.27	1,643
15.00	501.57	1,686
15.67	505.33	3,748
15.69	505.50	514
16.00	506.03	160
17.00	506.56	-793
18.00	503.94	41
18.08	503.95	-37
19.00	503.83	-741
20.00	501.38	-451
21.00	499.88	-676
22.00	497.64	-409
22.33	497.19	-459
23.00	496.17	-438
24.00	494.72	-251
25.00	493.89	-291
26.00	492.92	-295
27.00	491.94	-290
28.00	490.98	-417
28.35	490.50	682
28.54	490.92	757
28.90	491.83	964
29.00	492.15	975
30.00	495.39	1,013
31.00	498.74	1,057
31.31	499.83	1,207

Time (hours)	6 - Base - Hydraulic Grade (ft)	6 - Base - Flow (In net) (gpm)
32.00	502.59	1,294
32.68	505.50	29
33.00	505.53	-245
34.00	504.72	-674
35.00	502.48	-228
35.72	501.94	-486
36.00	501.49	-348
37.00	500.34	-228
38.00	499.58	-354
38.93	498.49	-179
39.00	498.45	-142
40.00	497.98	-367
41.00	496.76	-77
42.00	496.51	-365
43.00	495.30	-277
44.00	494.38	-457
45.00	492.87	-407
46.00	491.52	-363
46.85	490.50	690
47.00	490.85	830
47.07	491.03	854
47.15	491.26	994
48.00	494.07	1,249
49.00	498.21	1,327
49.18	499.00	1,556
50.00	503.24	1,497
50.43	505.39	3,334
50.44	505.50	290
51.00	506.03	-516
52.00	504.32	-540
52.87	502.77	-588
53.00	502.51	-584
54.00	500.58	-674
55.00	498.34	-704
55.94	496.15	-597
56.00	496.03	-507
57.00	494.35	-484
58.00	492.74	-302
59.00	491.74	-276
60.00	490.83	-184
60.54	490.50	885
60.78	491.21	963
61.00	491.92	1,056
61.20	492.61	1,209
62.00	495.82	1,338
62.80	499.35	1,644
63.00	500.47	1,688
63.86	505.31	3,763

Time (hours)	6 - Base - Hydraulic Grade (ft)	6 - Base - Flow (In net) (gpm)
63.88	505.50	514
64.00	505.70	394
65.00	507.01	-882
66.00	504.09	51
66.15	504.11	-98
67.00	503.84	-675
68.00	501.60	-474
69.00	500.03	-666
70.00	497.82	-416
70.46	497.19	-486
71.00	496.32	-417
72.00	494.94	-282

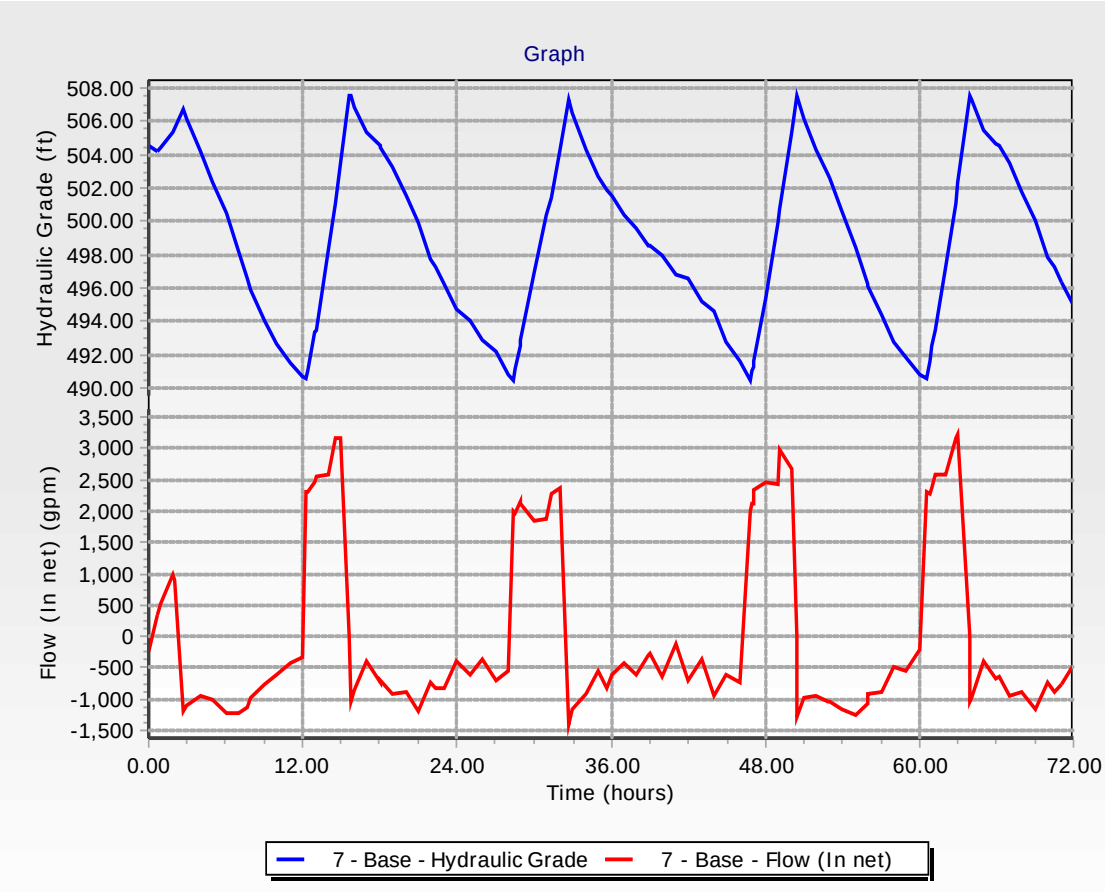


7 - Old Canton Tank

Time (hours)	7 - Base - Hydraulic Grade (ft)	7 - Base - Flow (In net) (gpm)
0.00	504.50	-233
0.64	504.22	333
1.00	504.45	537
1.88	505.33	998
2.00	505.55	902
2.73	506.78	-1,200
3.00	506.18	-1,089
4.00	504.15	-963
5.00	502.35	-1,021
6.00	500.45	-1,222
7.00	498.17	-1,233
7.70	496.55	-1,129
8.00	495.93	-988
9.00	494.08	-762
10.00	492.66	-609
11.00	491.53	-430
12.00	490.72	-339
12.31	490.53	2,290
12.42	491.00	2,290
12.97	493.35	2,469
13.00	493.49	2,559
14.00	498.26	2,576
14.58	501.03	3,163
15.00	503.53	3,167
15.67	507.50	0
15.69	507.50	-1,030
16.00	506.90	-855
17.00	505.30	-383
18.00	504.59	-738
18.08	504.48	-703
19.00	503.27	-921
20.00	501.55	-876
21.00	499.92	-1,181
22.00	497.72	-732
22.33	497.26	-829
23.00	496.23	-815
24.00	494.71	-387
25.00	493.99	-617
26.00	492.84	-368
27.00	492.15	-704
28.00	490.84	-535
28.35	490.49	1,994
28.54	491.19	1,972
28.90	492.51	2,136
29.00	492.92	2,122
30.00	496.88	1,855
31.00	500.34	1,888
31.31	501.43	2,273

Time (hours)	7 - Base - Hydraulic Grade (ft)	7 - Base - Flow (In net) (gpm)
32.00	504.35	2,369
32.68	507.35	-1,398
33.00	506.51	-1,164
34.00	504.34	-908
35.00	502.65	-547
35.72	501.91	-811
36.00	501.49	-600
37.00	500.37	-424
38.00	499.58	-611
38.93	498.53	-319
39.00	498.48	-265
40.00	497.99	-647
41.00	496.78	-105
42.00	496.58	-716
43.00	495.25	-356
44.00	494.58	-950
45.00	492.81	-614
46.00	491.67	-745
46.85	490.49	2,007
47.00	491.06	2,132
47.07	491.32	2,133
47.15	491.64	2,340
48.00	495.37	2,462
49.00	499.96	2,424
49.18	500.77	2,978
50.00	505.33	2,683
50.43	507.50	0
50.44	507.50	-1,290
51.00	506.16	-969
52.00	504.35	-933
52.87	502.84	-1,053
53.00	502.58	-1,045
54.00	500.64	-1,174
55.00	498.45	-1,264
55.94	496.24	-1,067
56.00	496.11	-924
57.00	494.39	-877
58.00	492.75	-500
59.00	491.82	-558
60.00	490.78	-209
60.54	490.57	2,297
60.78	491.61	2,286
61.00	492.55	2,354
61.20	493.42	2,565
62.00	497.26	2,581
62.80	501.09	3,177
63.00	502.30	3,226
63.86	507.50	0

Time (hours)	7 - Base - Hydraulic Grade (ft)	7 - Base - Flow (In net) (gpm)
63.88	507.50	-1,030
64.00	507.27	-983
65.00	505.44	-398
66.00	504.70	-686
66.15	504.50	-627
67.00	503.51	-946
68.00	501.74	-892
69.00	500.08	-1,171
70.00	497.90	-743
70.46	497.26	-882
71.00	496.37	-773
72.00	494.93	-454



T - 1: Western Tank

Time (hours)	T-1 - Base - Hydraulic Grade (ft)	T-1 - Base - Flow (In net) (gpm)
0.00	585.00	2,129
0.64	589.50	-129
1.00	589.35	-129
1.88	588.97	-129
2.00	588.92	-144
2.73	588.57	-144
3.00	588.44	-152
4.00	587.94	-174
5.00	587.36	-177
6.00	586.78	-221
7.00	586.04	-210
7.70	585.55	-210
8.00	585.35	-184
9.00	584.74	-167
10.00	584.18	-147
11.00	583.70	-132
12.00	583.26	-116
12.31	583.14	-4,464
12.42	581.50	-2,204
12.97	577.47	-947
13.00	577.38	-901
14.00	574.39	-691
14.58	573.07	-349
15.00	572.58	-248
15.67	572.03	326
15.69	572.04	2,239
16.00	574.38	2,223
17.00	581.75	2,170
18.00	588.94	2,115
18.08	589.50	-121
19.00	589.13	-155
20.00	588.62	-184
21.00	588.01	-177
22.00	587.42	-174
22.33	587.23	-174
23.00	586.85	-147
24.00	586.36	-129
25.00	585.93	-129
26.00	585.51	-144
27.00	585.03	-152
28.00	584.52	-174
28.35	584.32	-4,556
28.54	581.50	-2,253
28.90	578.80	-1,156
29.00	578.41	-1,143
30.00	574.62	-1,043
31.00	571.17	-838
31.31	570.30	-655

Time (hours)	T-1 - Base - Hydraulic Grade (ft)	T-1 - Base - Flow (In net) (gpm)
32.00	568.81	-474
32.68	567.74	2,170
33.00	570.05	2,174
34.00	577.26	2,154
35.00	584.40	2,129
35.72	589.50	-132
36.00	589.38	-116
37.00	588.99	-101
38.00	588.66	-103
38.93	588.34	-103
39.00	588.32	-91
40.00	588.02	-94
41.00	587.70	-106
42.00	587.35	-121
43.00	586.95	-155
44.00	586.44	-184
45.00	585.83	-177
46.00	585.24	-174
46.85	584.76	-4,537
47.00	582.45	-4,413
47.07	581.50	-2,182
47.15	580.92	-1,157
48.00	577.64	-916
49.00	574.60	-718
49.18	574.18	-476
50.00	572.88	-418
50.43	572.28	26
50.44	572.28	2,184
51.00	576.31	2,155
52.00	583.46	2,093
52.87	589.50	-174
53.00	589.42	-177
54.00	588.84	-221
55.00	588.11	-210
55.94	587.46	-210
56.00	587.41	-184
57.00	586.80	-167
58.00	586.25	-147
59.00	585.76	-132
60.00	585.32	-116
60.54	585.12	-4,518
60.78	581.50	-2,181
61.00	579.89	-2,068
61.20	578.55	-933
62.00	576.06	-765
62.80	574.04	-371
63.00	573.79	-299
63.86	572.93	302

Time (hours)	T-1 - Base - Hydraulic Grade (ft)	T-1 - Base - Flow (In net) (gpm)
63.88	572.95	2,234
64.00	573.84	2,226
65.00	581.22	2,173
66.00	588.42	2,118
66.15	589.50	-121
67.00	589.16	-155
68.00	588.65	-184
69.00	588.04	-177
70.00	587.45	-174
70.46	587.19	-174
71.00	586.88	-147
72.00	586.39	-129