Infrastructure Master Plan

For the Town of Parachute

Prepared By:

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Project No.: 0141231.00

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Appendix A Preliminary Opinion of Cost
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I. Executive Summary

A. Purpose

In August, 2009, Farnsworth Group Inc. (FGI) prepared the Water Master Plan for the Town of Parachute (Town). Since then, the Town has expressed an interest in serving new areas, especially the west I-70 Interchange corridor and areas north of the Town. Consequently, the Town determined it was necessary to update the water master plan and develop a new wastewater master plan. The Town contracted with the Farnsworth Group to update the growth projections to evaluate the capital improvement plan and make recommendations for the best mode of long-term operation.

The original water model for the District was created using WaterCad in 2002 and later updated with WaterGEMs in 2009. This master plan update was completed using the software program of WaterGEMs for the water system.

B. Scope

The specific tasks involved in the preparation of the Water Master Plan Update for the Town include:

1. Develop a road map for allocating current and future demands especially to the hydraulic model using the Town's billing records and its GIS maps.
2. System analysis to determine if the Town has significant water loss in the system.
3. Review and analyze the current system model for existing conditions and provide a list of improvements required to maintain service pressures and provide adequate fire protection.
4. Analyze the transmission and distribution system with demand projections for 2020 and 2030.
5. Determine what improvements are required to maintain adequate service pressures and to provide fire protection to developments with city growth areas and existing fire hydrants for the projection years of 2020 and 2030.
6. Determine the storage requirements for all zones for each of the above listed years.
7. Prepare a capital improvement plan in order to assist the Town with the budgeting process.
8. Perform water rate study to identify funding needed to address system operation and improvement

The specific tasks involved in the preparation of the Wastewater Master Plan Update for the Town include:

1. Review and analyze the current system model for current conditions and provide a list of improvements required to serve the development changes.
2. Analyze the sewer system with load projections for 2020 and 2030.
3. Determine preferred locations for future lift station and force mains to minimize long term maintenance and operation costs for projection years of 2020 and 2030.
4. Prepare a capital improvement plan in order to assist the Town with the budgeting process.
5. Perform sewer rate study to identify funding needed to address system operation and improvement.

C. Recommendations

Since the completion of the last master plan the growth in the Town has slowed significantly from the previously projected rates. Consequently, the number of the proposed improvements is reduced from the previous recommendations. Table I-1 shows the proposed water and sewer system improvement projects.

Table I-1: Proposed Water and Sewer System Improvements

Item	Recommended Improvement	Time-Frame	Estimated Cost	Benefits
1	Replace existing 4-inch line in First Street with 8" line	2015	$500,000	Increase system pressure
2	Add 0.5-MG new storage tank to serve Main Zone	When Needed	$1,200,000	Increase treated water supply capacity
3	Add 0.5-MG new storage tank to serve High Zone (North)	When Needed	$1,200,000	Booster storage capacity (North)
3a	Instead of new storage tank to serve High Zone, provide interim PS and pipeline (4a and 5a)	As alternative to item 3	See 4a and 5a below	Less expensive interim solution to 3
4	Add one booster station to serve 0.5-MG High Zone Tank (North)	When Needed	$700,000	Supply water to High Zone (North)
4a	Provide interim PS to feed proposed rodeo site	As alternative to item 4	$350,000	Less expensive interim solution to 4
5	Add 12" pipeline to feed the proposed 0.5-MG storage tank to serve High Zone (North)	When Needed	$2,000,000	Supply water to High Zone (North)
5a	Provide pipeline to proposed rodeo site	As alternative to item 5	$150,000	Less expensive interim solution to 5
6	Add 12" looped pipelines to feed the west I-70 Interchange corridor	When Needed	$2,600,000	Supply water to new development corridor
7	Add 6" dedicated pipeline to feed the existing storage tanks	When Needed	$1,000,000	Improve water quality
7a	Add tank mixing system for the existing storage tanks	As alternative to item 7	$100,000	Less expensive solution to 7
8	Evaluate location and condition of existing water line from the springs	2015	$50,000	Protect and maintain critical supply link
9	Gravity sewer, lift station, force mains to serve west I-70 corridor	When Needed	$2,200,000	Sewer service to new development corridor
10	Gravity sewer along CR 215 (North)	When Needed	$2,200,000	Sewer service to new development corridor
10a	Interim gravity sewer along CR 215 (North)	As alternative to item 10	$250,000	Less expensive interim solution to 10
11	Replace existing dry pit pumps, add emergency generator	When Needed	$450,000	Replace equipment, provide backup

Figure I-1 highlights the locations for the proposed water system improvement projects, Figure I-2 shows proposed interim improvements along CR 215, and Figure I-3 highlights proposed improvements near the west I-70 Interchange corridor.

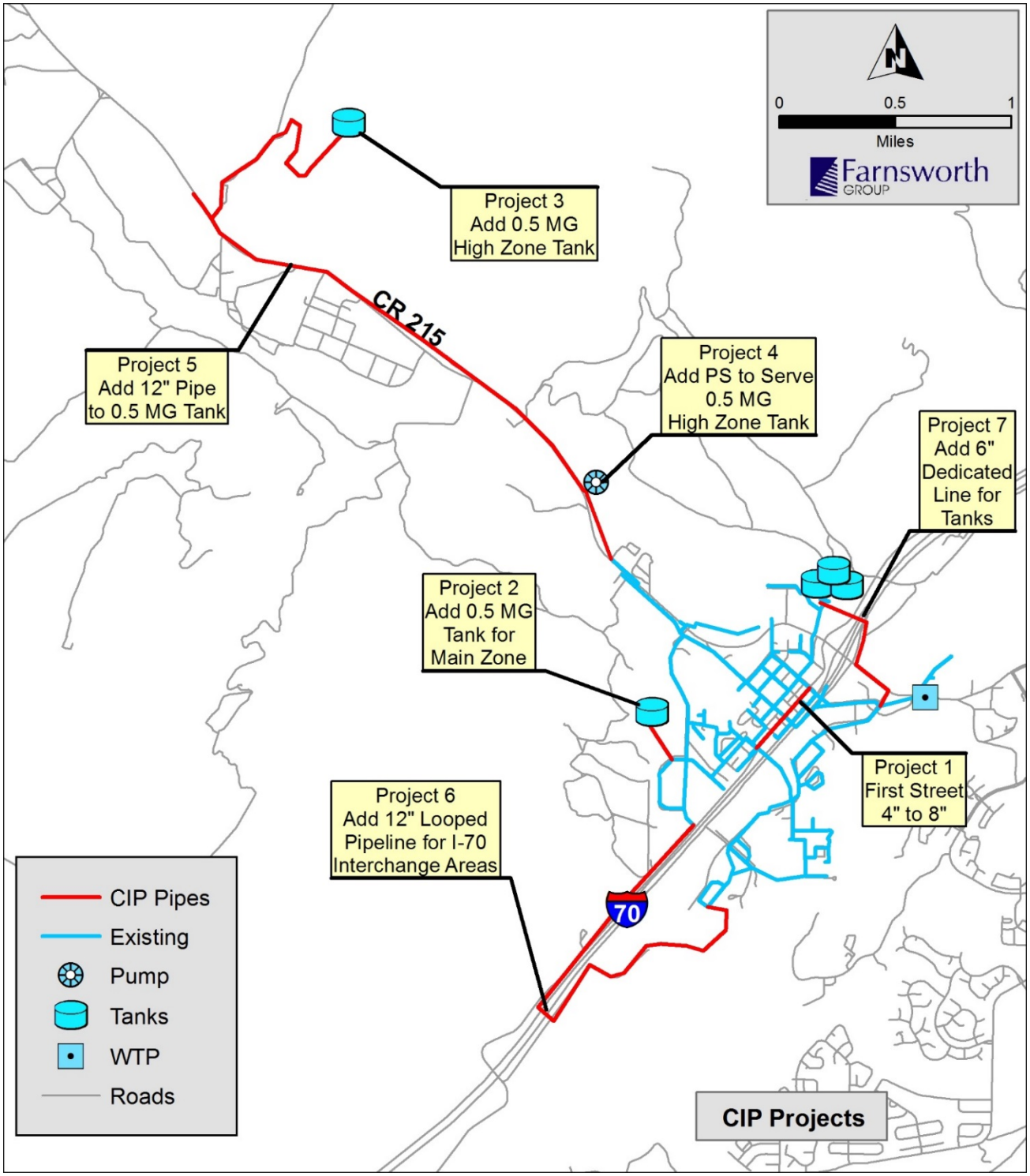


Figure I- 1: Proposed Water System Improvement Projects

Figure I- 2: Proposed Interim North CR 215 Improvements

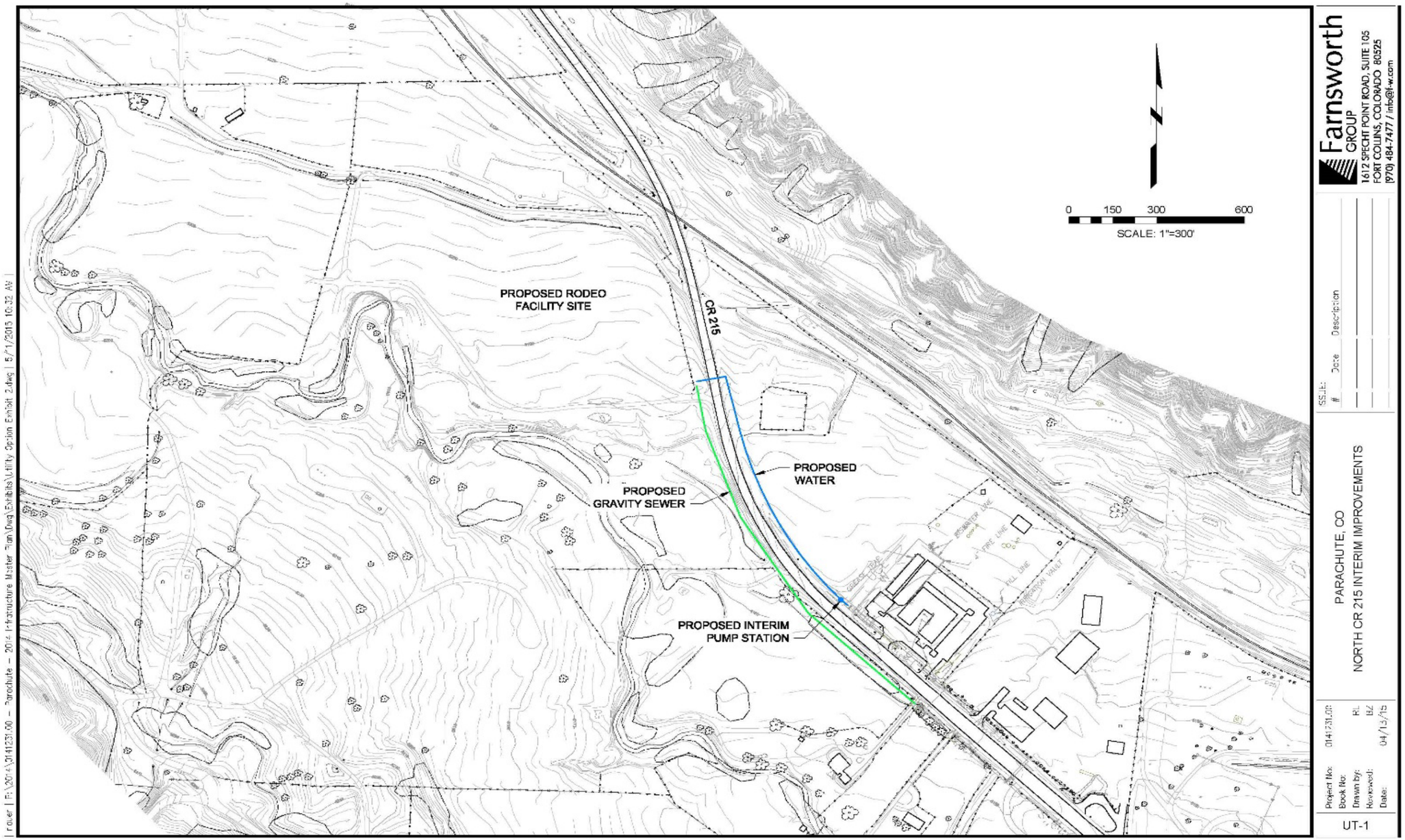
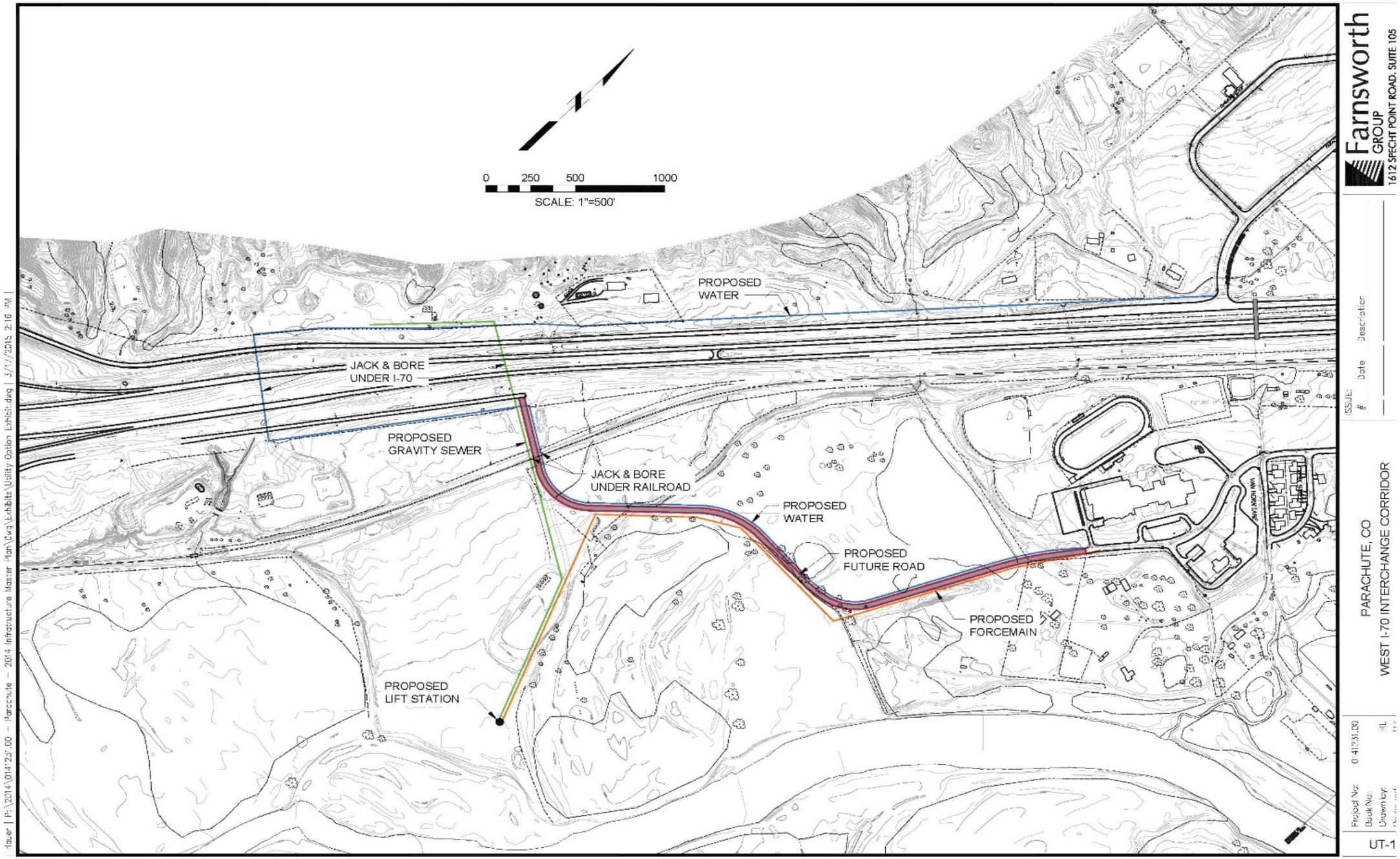


Figure I- 3: Proposed Improvements Near the West I-70 Interchange Corridor



II. Service Area and Population Projections

A. Service Area

The service areas for the Town's water and sewer systems basically coincide with the Town's limits. The Town is presently updating their Comprehensive Plan but, for purposes of this study, a draft land use plan (included as Figure II-1) was provided for the purpose of preparing this report. The service area within the Town is approximately 780 acres. The Town would like to consider extending the service area to the west I-70 Interchange corridor, and to the soda ash plant and the proposed rodeo grounds area on the north.

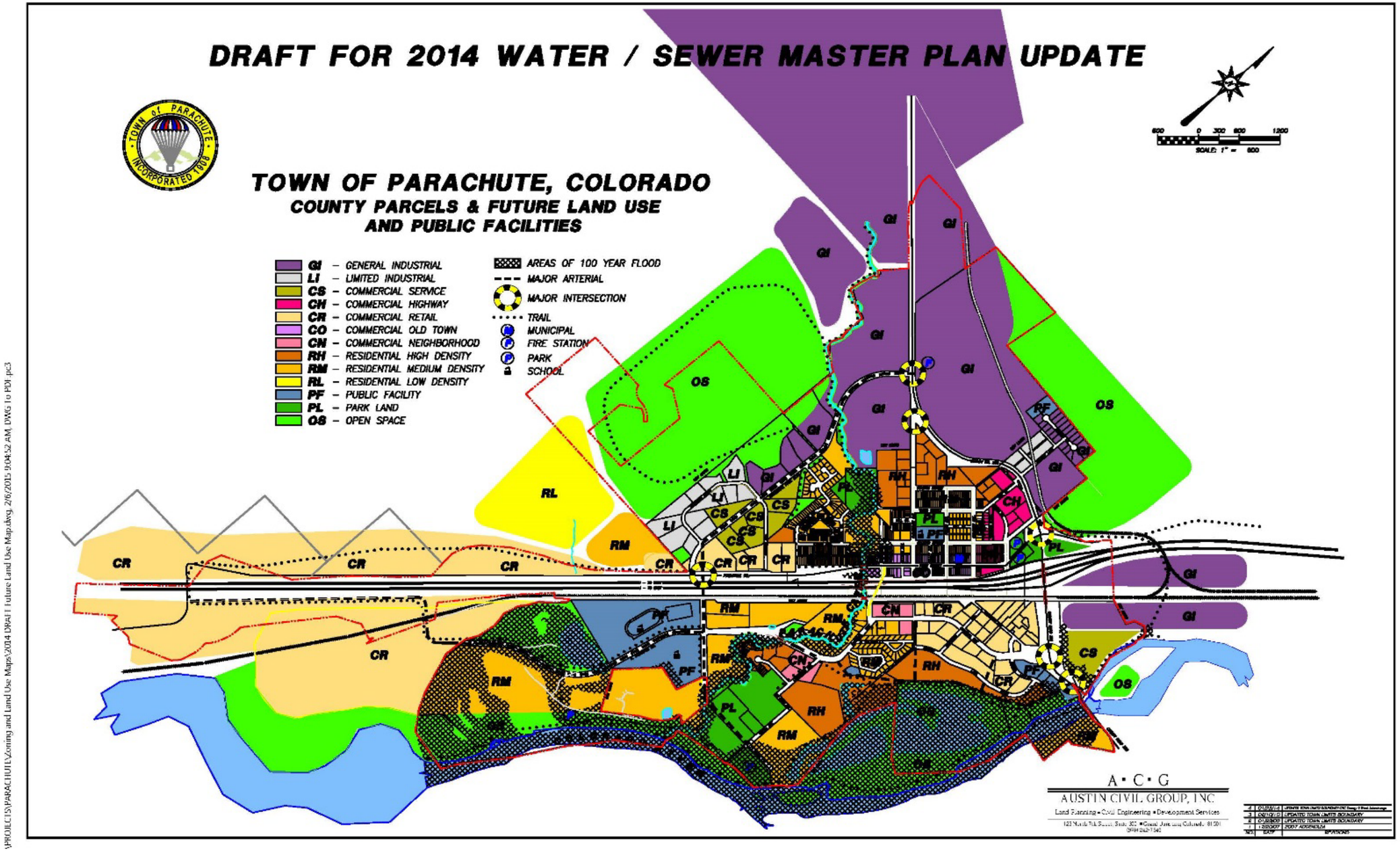


Figure II- 1: **Draft Land Use Plan**

B. Land Use

Land use in much of the Town's service area continues to change from vacant to municipal use. The Town's Master Plan for Land Use indicates the following:

- Population increases between 1980 and 2007 (from 338 to 1360 persons) were more or less steady at about 2% per year.
- Very recent trends involving the exploration and development of natural gas indicated higher potential rate of growth could occur on the order of 4.3 to 6.5 percent per year.
- Approximately 30% of the currently Zoned land in Town is vacant.

In addition, land use projection indicates that most development will occur in and around existing urban centers. The proposed commercial land use is proposed to happen near the west I-70 Interchange corridor.

Based on studies and data from the Town, a growth rate of 2% is proposed as the population projection for this Infrastructure Master Plan. Thus, the population projections for the year of 2020 and 2030, are outlined in the table below:

Table II- 1: Population Projections

Growth Horizon		**Population Projections**	
Growth Horizon	Year	Annual Growth Rate	Population
	2010		1,085 [1]
5-Year	2015	2%	1,198 [2]
10-Year	2020	2%	1,460
20-Year	2030	2%	2,170

Note: 1. Data from Colorado Department of Local Affairs, 2010 Census Data for Colorado.
2. (1,085) x (1+2%)^5 = 1,198.

III. Water Use

A. Water Use Characteristics

Water use parameters are specific to each water distribution system. The parameters that impact the system include: average-day demand, maximum-day demand, peak-hour demand, and fire flow requirements. The average daily consumption is based on the total annual usage and used to determine the raw water supply needs. The max-day demand is used to size the treatment plant, transmission lines, pump stations, and storage tanks. Peak-hour demands are used to size the distribution lines and booster pump stations which do not pump to a tank. Fire flow requirements are used in sizing the distribution lines as well as the storage tanks.

B. Annual Use

The annual water usage, or average daily demand (ADD) in the Parachute potable water system is difficult to determine due to several factors, which are listed below:

- ***Lack of real-time water billing date*** – Not all the customers are metered. The water usage data should be based on the real-time water billing records. The historical data, however, were based on the produced water flow at the water treatment plants. The yearly average flow into the system in 2007 was 198 gallon per minute (gpm), while the same flow data in 2001 was 217 gpm. This represents almost a 10% reduction in annual water usage.
- ***Lack of water loss data –*** Water loss was not considered in the yearly water usage. In this study, historical water usage data and sewer loads should be compared for water loss study.

The current ADD was determined based on the 2014 production flow data provided by the Town. The monthly average daily demand flows are listed in Table III-1.

Table III- 1: Current Average Daily Demand Calculations

Monthly Flow	UF WTP, gpm	MF WTP, gpm	Monthly Average Flow Total, gpm
January, 2014	131	15	146
February, 2014	133	19	152
March, 2014	130	20	150
April, 2014	131	30	161
May, 2014	130	65	194
June, 2014	134	80	214
July, 2014	140	94	234
August, 2014	147	61	208
September, 2014	143	43	186
October,2014	154	20	174
November, 2014	152	14	165
December, 2014	151	17	168
Average Daily Demand			**179**

Based on the data presented in Table III-1, the current yearly average water demand is calculated as 179 gpm or 0.26 mgd.

C. Maximum Daily Demand and Peak Hour Demand

The 2014 maximum daily demand (MDD) and peak hour demand (PHD) demand are calculated based on the peak factors as:

- MDD/ADD factor of 2.1
- PHD/ADD factor of 3.0

Thus, the current MDD is calculated as 179 x 2.1 = 376 gpm or 0.54 mgd; and the 2014 PHD is 179 x 3.0 = 537 gpm or 0.77 mgd.

D. Future Water Demand Projections

The Town of has had a steady population growth of about 2% per year from the 1980's to the year 2000. Therefore, 2% of growth rate per year is used in the study. The population along with projected water demands are presented in Table III-2.

Table III- 2: Future Water Projections

Year	Current (2014)	2020	2030
Population	1198	1460	2170
Average Day Demand (ADD), gpm	179	218	266
Average Day Demand (ADD), mgd	0.26	0.31	0.38
Maximum Day Demand (MDD), gpm	376	458	559
Maximum Day Demand (MDD), mgd	0.54	0.66	0.80
Peak Hour Demand (PHD), gpm	537	655	798
Peak Hour Demand (PHD), mgd	0.77	0.94	1.15

IV. Criteria Used for Water System Analysis

A. Pressures

The goal of the design of a water distribution system is to provide the peak-hour demands while maintaining minimum acceptable pressure. In addition, municipal systems should typically be capable of supplying the average demand on the maximum day, plus the needed fire flows, while maintaining a minimum residual pressure throughout the entire system.

summarizes design pressures used as design criteria from other water utilities in this area.

Table IV- 1: Design Pressures

Entity	Min. Pressure (psi)	Max. Pressure (psi)	Fire Flow Pressure (psi)
Colorado Dept. of Health	35		20
AWWA MOP M32	30	90	20
Denver Water	40	110	
City of Federal Heights	40	100	

The April 2000 issue of AWWA's "Mainstream" presented the results of a survey of 162 utilities in the US and Canada on the minimum and maximum design pressures in the distribution system. The results of that survey are presented in the following figure.

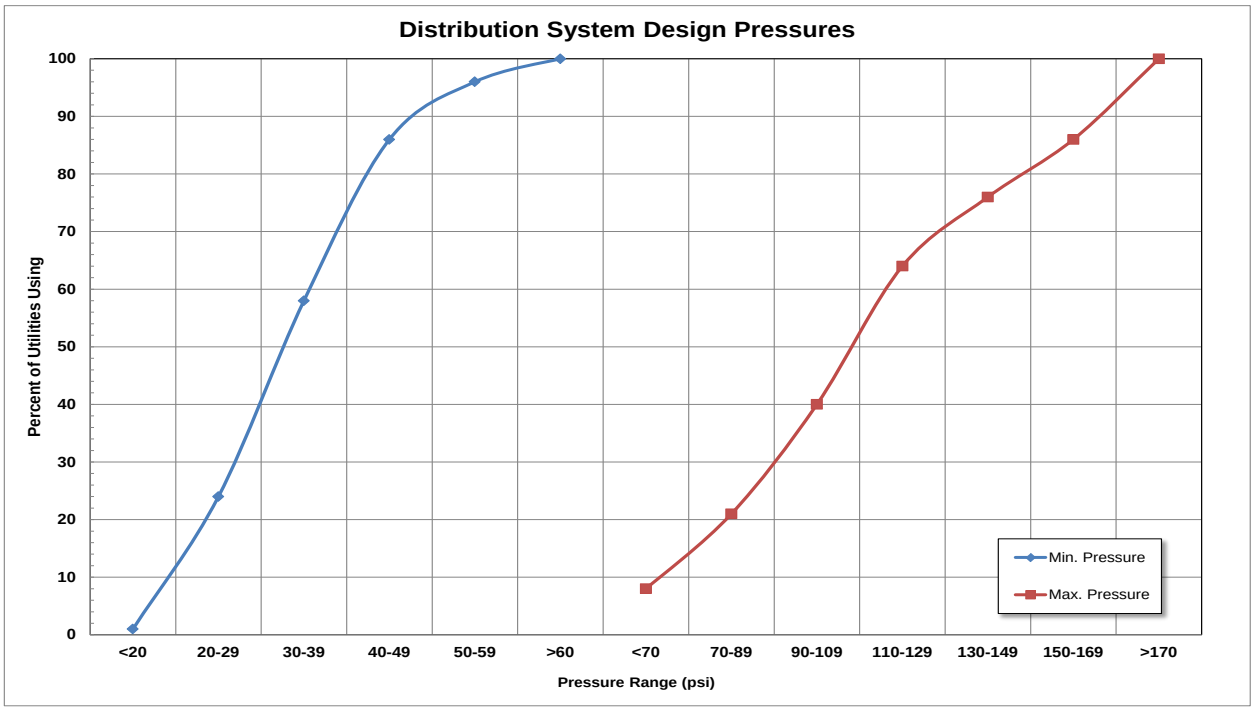


Figure IV- 1: Distribution System Pressure Criteria

From that survey it appears nearly 60% of the utilities use a minimum pressure of 35 psi. Maximum design pressures vary over a wider range with 40% using 100 psi as the maximum, while 90% have a maximum pressure of 170 psi or less. For the purpose of this study, 35 psi will be maintained during the peak-hour conditions and a minimum of 20 psi will be maintained during the maximum day, plus fire flow conditions. The maximum static pressure recommended for direct service is 100 psi. Pressures above this level can cause water heater safety valves to release and can cause leakage problems in older lines. Where static pressures exceed this level, either zone or individual pressure-reducing valves must be installed.

B. Fire Flows

The Insurance Services Office (ISO) has published guidelines for determining the "Needed Fire Flows" based on the type of building zone and the separation between buildings. The Uniform Fire Code (UFC) also specifies minimum residential fire flows, which is generally the guideline used by the fire departments in their reviews. For one- and two-family homes not exceeding two stories in height, the needed residential fire flows are compared in the following table:

Table IV-1: Residential Fire Flows

Building Separation	ISO Needed Fire Flow	NFPA Needed Fire Flow[1]
Over 100'	500 gpm	1,000 gpm
31-100'	750 gpm	1,000 gpm
11-30'	1,000 gpm	1,000 gpm
10' or less	1,500 gpm	1,000 gpm

[1]*For dwellings less than 3,600 square feet.*

For commercial and industrial areas, the needed fire flows are determined for each individual structure from the Commercial Fire Rating Schedule. That schedule considers the size of the building, the type of construction, the proximity to other structures, and the type of occupancy. Typical figures for multi-family dwellings are in the range of 2,500 gpm, while figures for commercial and industrial can be as high as 3,500 gpm or more. The flows can vary widely depending on the type of construction and the presence of fire divisions. Furthermore, the needed fire flows can be substantially reduced by the installation of fire sprinkler systems. The ISO guidelines state that a fully sprinklered building is not used to determine the needed fire flow. Furthermore, the Uniform Fire Code states that the needed fire flow for a fully sprinkled building can be reduced by as much as 75%, but not less than 1,500 gpm. For the purpose of this Master Plan, it has been assumed that large commercial buildings will have sprinkler systems, reducing the fire flows to 2,500 gpm.

The ISO guidelines also specify the required duration of the fire flows. For a fire flow up to 2,500 gpm, the required duration is two hours. For flows up to 3,500 gpm, the required duration is three hours. For this Master Plan, the commercial fire flow of **2,500 gpm** will be modeled for **two hours**.

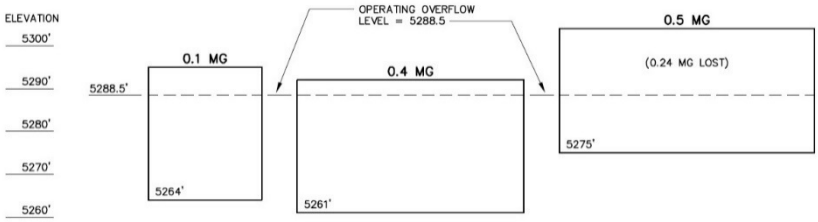
C. Storage Requirements

Storage reservoirs are sized to provide water for emergencies, equalization, and fire flows.

Emergency storage is designed to protect the water supply for the area from emergencies such as equipment failure, line breakage, or electrical power failure. The Colorado Department of Public Health guidelines recommend that emergency storage be equal to the volume of water required to serve the area for one day at average-day demand. For this project, an emergency storage volume equal to **one day at average-day demand** is used.

Equalization storage is used to equalize the hourly fluctuations in the demand during the day, which allows the treatment plant and transmission facilities to operate at average flows rather than operating less efficiently and more expensively at peak flows. For this project, an equalization storage volume equal to **25% of the maximum-day demand** is used for the flows during a 24-hour period.

Storage for fire flow is based on the recommendations of the Insurance Services Office. For this Master Plan, the commercial fire flow of **2,500 gpm** will be modeled for **two hours**.



Because of elevation differences, the three existing tanks are calculated to have 0.1 + 0.4 + (0.5 - 0.24) = 0.76 MG of storage.

D. Main Sizing

The State Health Department criteria recommend that all water mains be sized based on a hydraulic analysis. This analysis is to include the projected demands and minimum pressures. For systems which provide fire protection, the minimum size for mains connected to fire hydrants is six inches (6”). In addition, mains not designed to carry fire flows should not have fire hydrants connected to them. Furthermore, dead-end mains should be minimized by looping whenever practical.

Many communities have adopted development standards that incorporate the above criteria. Typically, those regulations require a minimum main size with larger mains spaced in a grid system. The City of Greeley and the Denver Water Department, for example, require a grid with a 12-inch main every one-half mile with eight-inch mains in the streets within the quarter-section. Such a grid generally provides mains large enough to supply domestic, irrigation, and fire protection flows for typical urban densities.

The American Water Works Association (AWWA) was also consulted for design criteria regarding main sizing. The AWWA[1] defines the following conditions as potentially deficient, or most-limiting:

- velocities greater than 5 ft/sec
- head losses greater than 10 ft/kft, or
- large-diameter pipes (16 in. or greater) having head losses greater than 3 ft/kft

Velocities in pipe segments on the order of 10 ft/sec are tolerable. However, because headloss varies exponentially with velocity, these higher velocities are usually unachievable because of reduced pressures at the point of delivery. This is especially true with smaller diameter pipe where the surface area of the pipe wall has a much greater impact on losses than on larger pipe. Velocities of this magnitude also require special design considerations due to the greater possibility of water hammer.

Additional AWWA recommendations include the following minimum standards for distribution piping in urban areas:

Table IV-2: Minimum Standards Distribution Piping – AWWA[2]

Piping Property	Minimum Standard
Smallest pipes in network	6 in.
Smallest branching pipes (dead ends)	8 in.
Smallest pipes in high value district	8 in.
Smallest pipes on principal streets in central district	12 in.

Obviously, this criterion is not applicable to the entire service area. However, as areas develop to municipal densities the above standards should be adhered to as a minimum. These guidelines have been applied in evaluating the existing system and in developing the proposed improvements. The standards were adhered to as closely as prudently possible. However, sustaining sufficient pressures at all points of delivery throughout the system was the primary objective in the analysis.

For rural areas the following guidelines have been used successfully to determine the approximate capacity of non-looped lines.

Table IV-3: Rural Line Capacities

Line Size	Based on Velocity		Based on Pressure Loss	
	gpm @ Velocity of 2 ft/s	Taps	gpm @ Loss 10 psi/mile	Taps
1.5	11	1	10	1
2	20	5	13	2
2.5	31	11	23	7
3	44	18	38	14
4	78	36	80	37
6	176	120	233	160
8	313	215	375	257
10	488	335	892	611

[1] American Water Works Association, "Distribution Network Analysis for Water Utilities," AWWA Manual of Water Supply Practices M32.

V. Water System Analysis

A. Water Right

The Town draws its water supply from two sources, which are listed as:

- Spring water through membrane treatment located at about one and a half miles northeast of the Town. The water right associated this spring water is 2.0 cfs, which is equivalent to 898 gpm.
- Surface water from the Colorado through an intake and water treatment process. The water right associated with the surface water source is 30 cfs.

The Town has no water right issue for current and future water demands.

B. Water Treatment

The spring water is delivered to the Town's service area from newly-build springs ultrafiltration (UF) water treatment plant (WTP) via gravity. Within the UF WTP, 14 modules of UF are installed with a capacity of 12 gpm per module. Under normal operations, water from the springs is treated at UF WTP at all times. The maximum UF water treatment capacity is 168 gpm.

The second source of water supply is from the Colorado River via pumping and storage tanks. Water is withdrawn from the river through an intake structure near the highway bridge over the river, and treated at a microfiltration (MF) WTP. The MF WTP includes two MEMCOR treatment units. Each of the two units has a capacity of approximately 174 gpm or 0.25 mgd. The total treatment capacity for the MF WTP is 348 gpm.

The combined treatment capacity for UF treatment plant and MF treatment plant is 516 gpm.

C. Transmission Lines

The water distribution system is comprised of 4-inch through 12-inch diameter piping and varies in material: cast iron (CI), asbestos cement (AC), polyvinyl chloride (PVC), and ductile iron (DI). Figure V-1 shows the existing water distribution system.

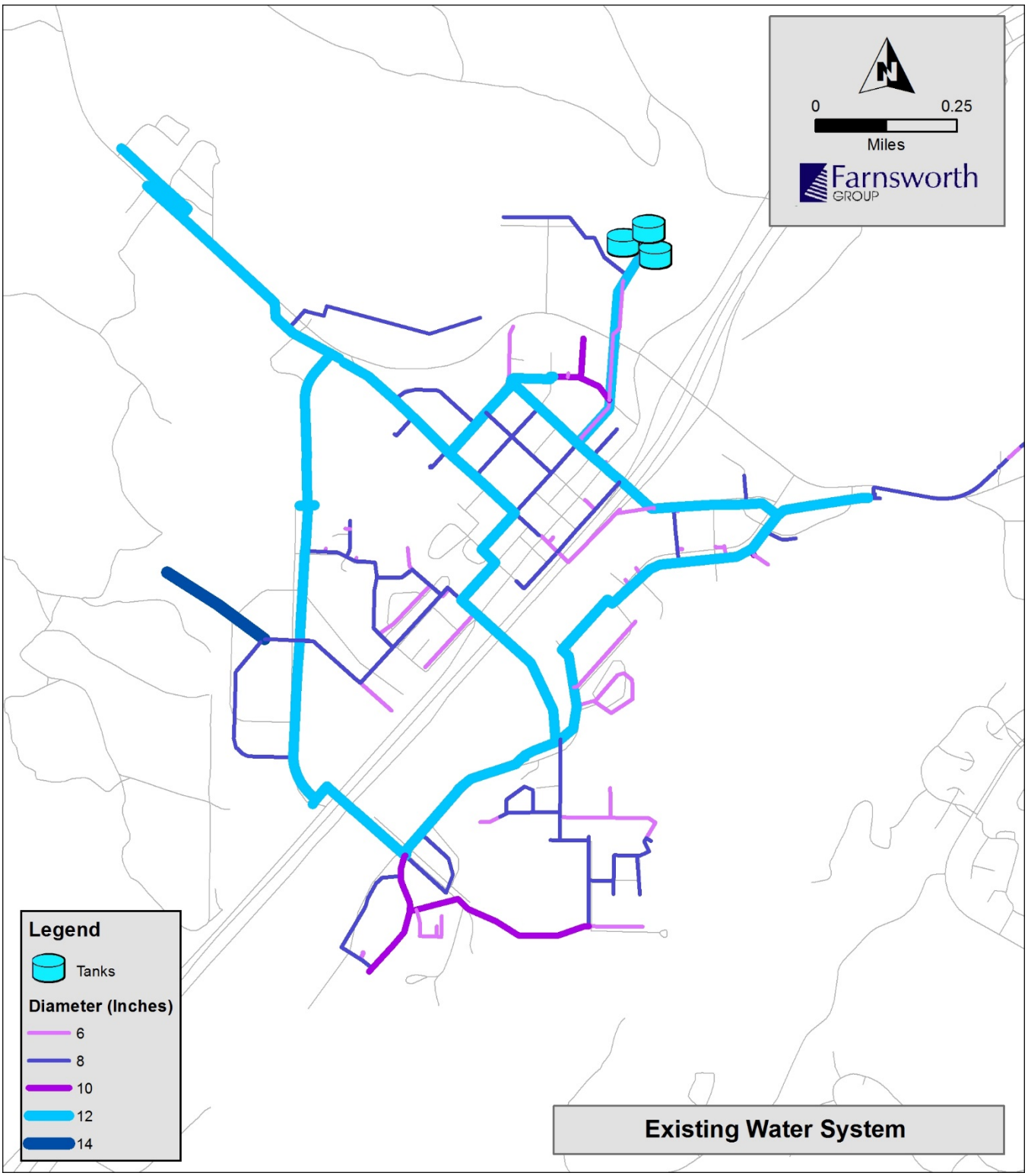


Figure V- 1: Existing Water Distribution System

D. Pressure Zones

There is only one pressure zone for the Town's current water distribution system. In order for the Town to serve the area located north of the Town near the proposed rodeo site and the existing soda ash plant, a new pressure zone is needed and a zone configuration study is required.

E. Zone Configuration

A zone configuration is required for this project in order to serve the area to the north along Highway 215. Using the elevations of the tanks and the pump station pressure settings, the "theoretical" pressure zone configuration can be determined as summarized in the following table.

Table V-1: Zone Service Elevations

Zone Name	Tank Configurations, Feet			Zone Service Elevations, Feet	
	Base Elevation	Height	HWL Elevation	Low	High
Main Zone	5260	40	5300	5050	5200
High Zone	5475	25	5500	5200	5400

1. Current Operation

Right now, the Town' water distribution is operated under one-pressure zone system under the "Normal Operation." This mode of operation involves pumping directly from both MF WTP and UF WTP to the existing three tanks and supply the water to Main Zone. Figure V-2 shows the hydraulic profile for the current mode of operation.

2. Proposed Long-term Operation

Figure V-3 shows the hydraulic profile for the proposed long-term operation mode. The proposed zones are based on the tank elevations and rely on the proposed booster station and transmission lines to a proposed storage tank in High Zone.

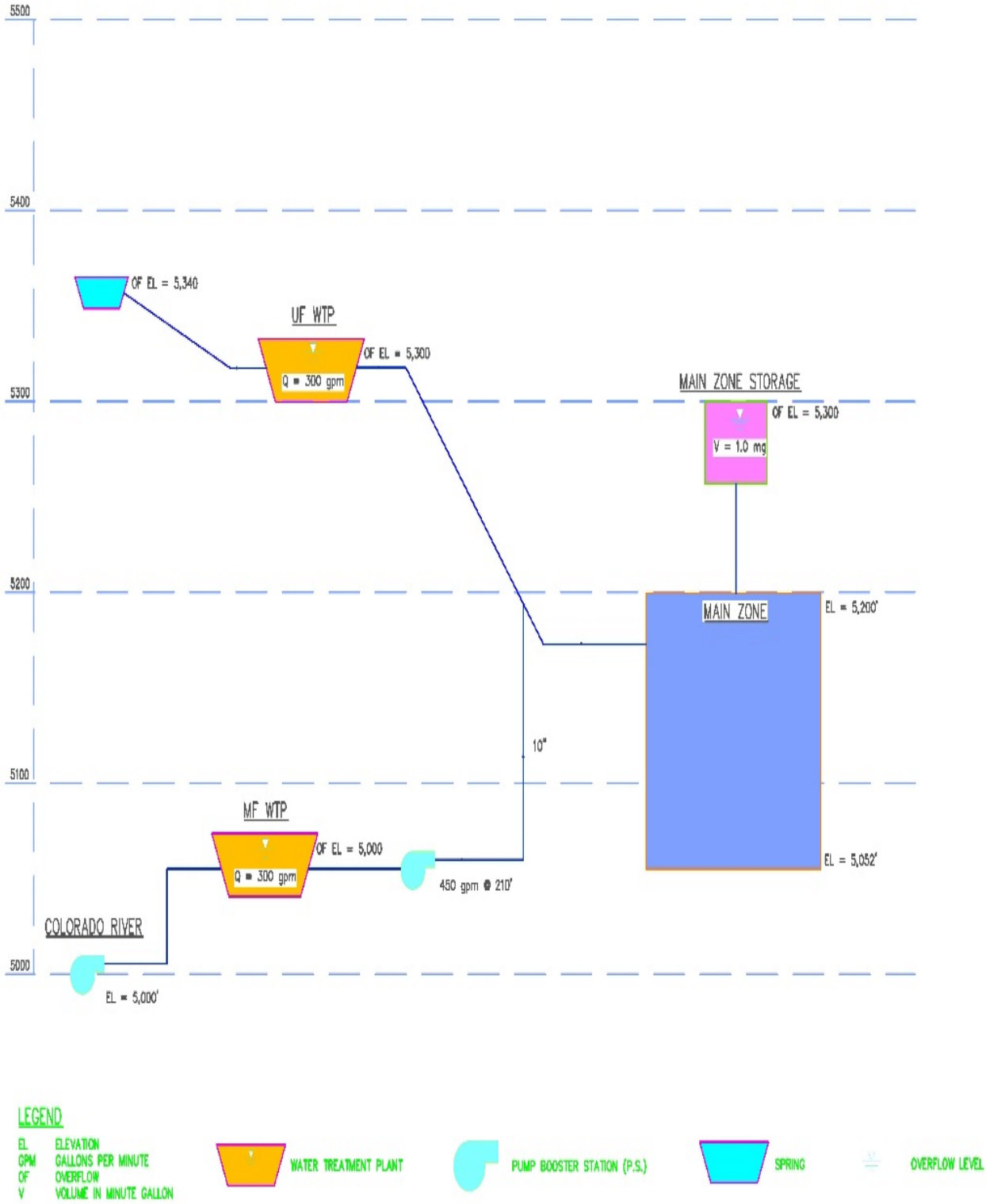


Figure V- 2: Hydraulic Profile for Current Operation Mode

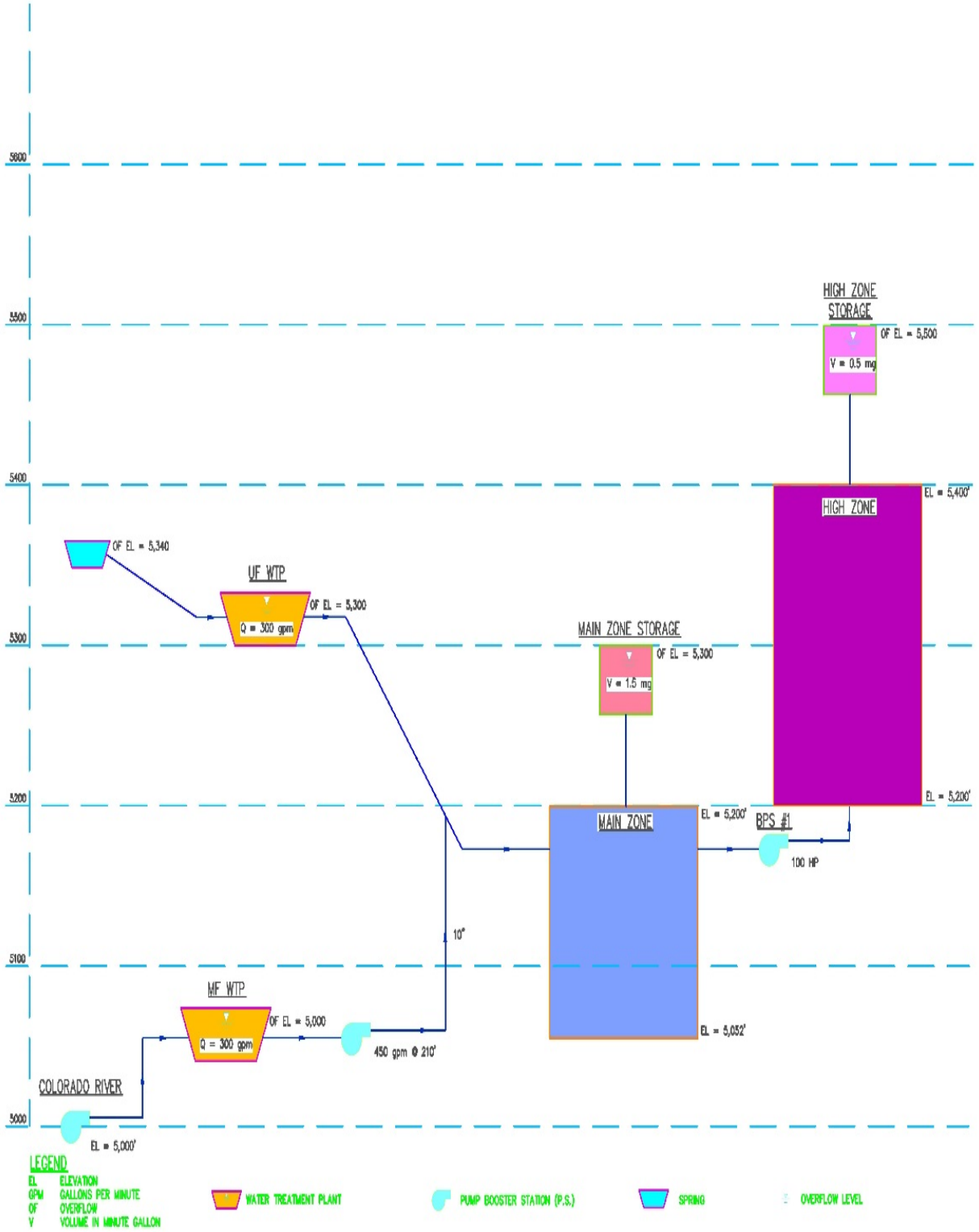


Figure V- 3: Hydraulic Profile for Proposed Long-term Operation Mode

F. Computer Model

1. Model Development

The Town has a hydraulic model for analyzing the water system and ensuring adequate flows to proposed developments. The first hydraulic model was originally prepared by Farnsworth as a part of the 2002 master plan and updated for the 2008 master plan. The original model was created using WaterCad but has since been updated using the WaterGEMs program. This update to the Master Plan will provide the Town with an updated model and the tools needed to maintain the model. Based on the model-ready GIS dataset, the hydraulic model was built through the build-in tool of "Model-Builder", which creates seamless integration between hydraulic model databases with model-ready GIS datasets. Special purpose valves such as pressure-reducing valves (PRVs), and zone isolation valves are verified with district staff.

2. Demand Allocation

Previous master plans have used the Town's AutoCAD map to identify all taps located in a growth area and distribute those taps to the nodes in the model serving each growth area. For systems with large mains and looped lines, this type of analysis is a reasonably accurate way to distribute demands. The current and future water demands were calculated based on the population projections. Those demands were allocated into the hydraulic model, also, through "Model-Builder" based on the geo-coded water accounts.

Table V-2: Projected Average Daily Demands by Pressure Zone

Zone	Demand Allocation, gpm		
	Current	2020	2030
Main Zone	179	218	266
High Zone	0	35 [1]	50 [1]
Total Average Daily Demand	179	253	316

Note:

1. Demand is assigned based on preliminary planning data, and allocated as point demand in the model.

G. Storage

Storage for the Town's service area is provided at three locations. They are listed in Table V-3.

Table V-3: Current Storage Tank Inventory

Storage Tank			Storage Tank Data, Feet			
Model ID	**Name**	**Available Storage**	**Diameter**	**Base Elevation**	**Height**	**HWL Elevation**
T-0.1MG	0.1 MG	0.1 MG	25	5264	32	5295
T-0.4MG	0.4 MG	0.4 MG	48	5261	32	5295
T-0.5MG	0.5 MG	0.26 MG	55	5275	28	5302

The storage tank evaluation results are presented in Table V-4.

Table V-4: Water Storage Tank Evaluation Results

Tank Volume, million gallons	Current	2020	2030
Storage Requirement			
Emergency Storage (ADD)	0.26	0.31	0.38
Equalization Storage (0.25 x MDD)	0.14	0.16	0.20
Fire Flow Storage (2hrs x 2500 gpm)	0.30	0.30	0.30
Total Required Storage	0.69	0.78	0.88
Available Storage (0.1 + 0.4 + 0.26 = 0.76 MG)	0.76	0.76	0.76
Net Available Volume	**0.07**	**(0.02)**	**(0.12)**

H. Water Treatment/Pumping Capacity

Maximum daily demand is used to evaluate the water treatment and pumping capacity. The capacity evaluation results are presented in Table V-5.

Table V-5: Water Treatment/Pumping Capacity Evaluation Results

Water Treatment Capacity, gpm	Current	2020	2030	Notes
Pumping Requirement	376	458	559	No treatment/pumping improvement project is required.
Available Pumping Capacity	516 [1]	516 [1]	516 [1]	
Net Available Volume	**140**	**58**	**(43)**	

Note: 1. Based on MF WTP treatment capacity of 348 gpm; and UF WTP treatment capacity of 168 gpm.

I. Infrastructure Review

The capital improvement projects identified in 2008 Master Plan were reviewed with Town staff. Two specific projects that are not completed but are still necessary to implement, are identified as follows:

- Replacing existing 4-inch line in First Street with 8” line.
- Evaluate location and condition of existing raw water line from the springs.

J. Current Water System Analysis Results

The design pressure range used for distribution system analysis is 40 psi (based on peak hour demand) to 120 psi (based on average daily demand). In addition, water distribution pressure analysis is also evaluated based on maximum daily demand plus available fire flow of 2,500 gpm.

1. Water System Analysis – Under Current PHD Condition

The water distribution system pressure index map under the peak hour demand condition is presented in Figure V-4, on following page.

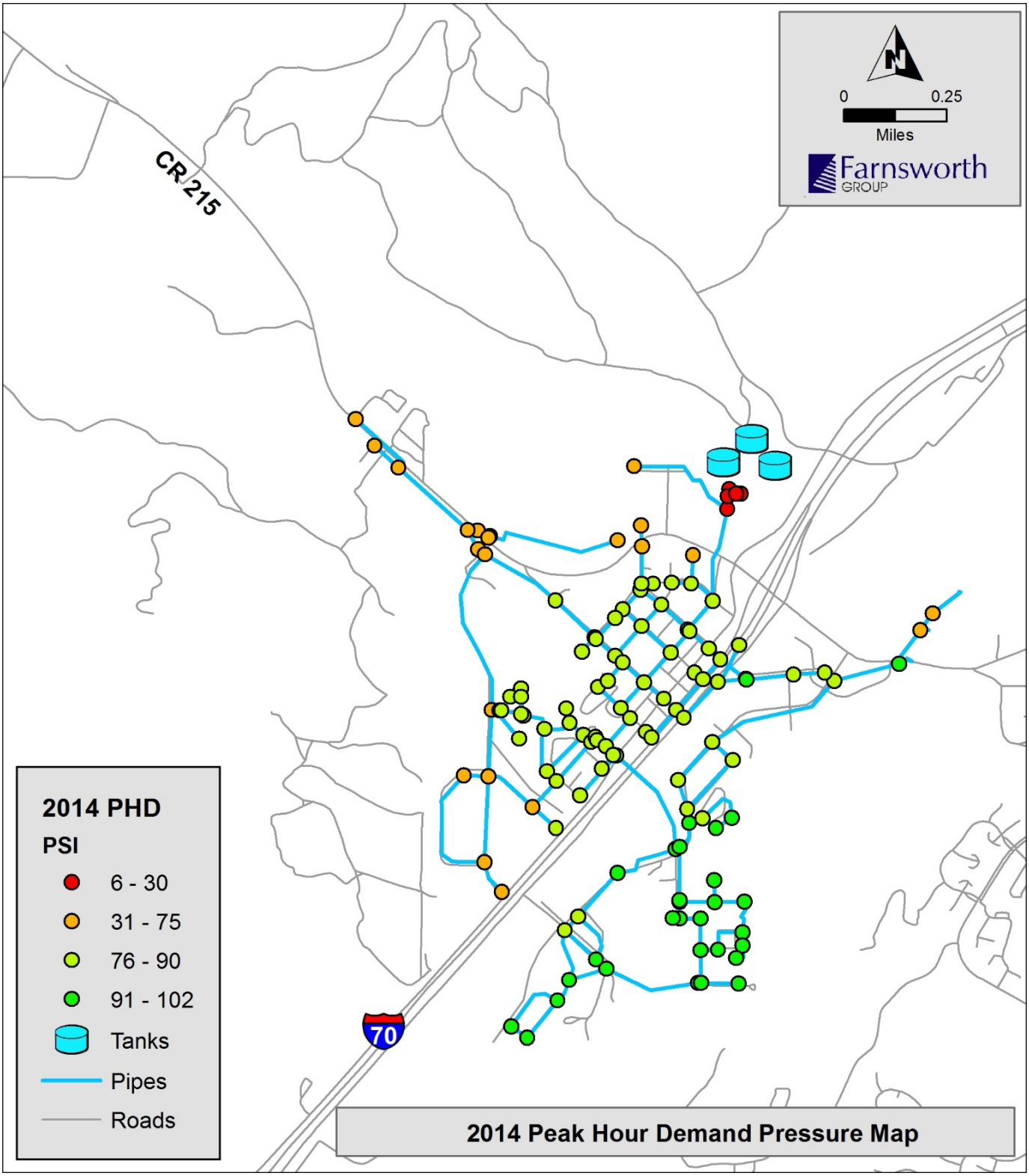


Figure V- 4: 2014 Peak Hour Pressure Index Map

2. Water System Analysis – Under Current ADD Condition

The water distribution system pressure index map under the average daily demand condition is presented in Figure V-5.

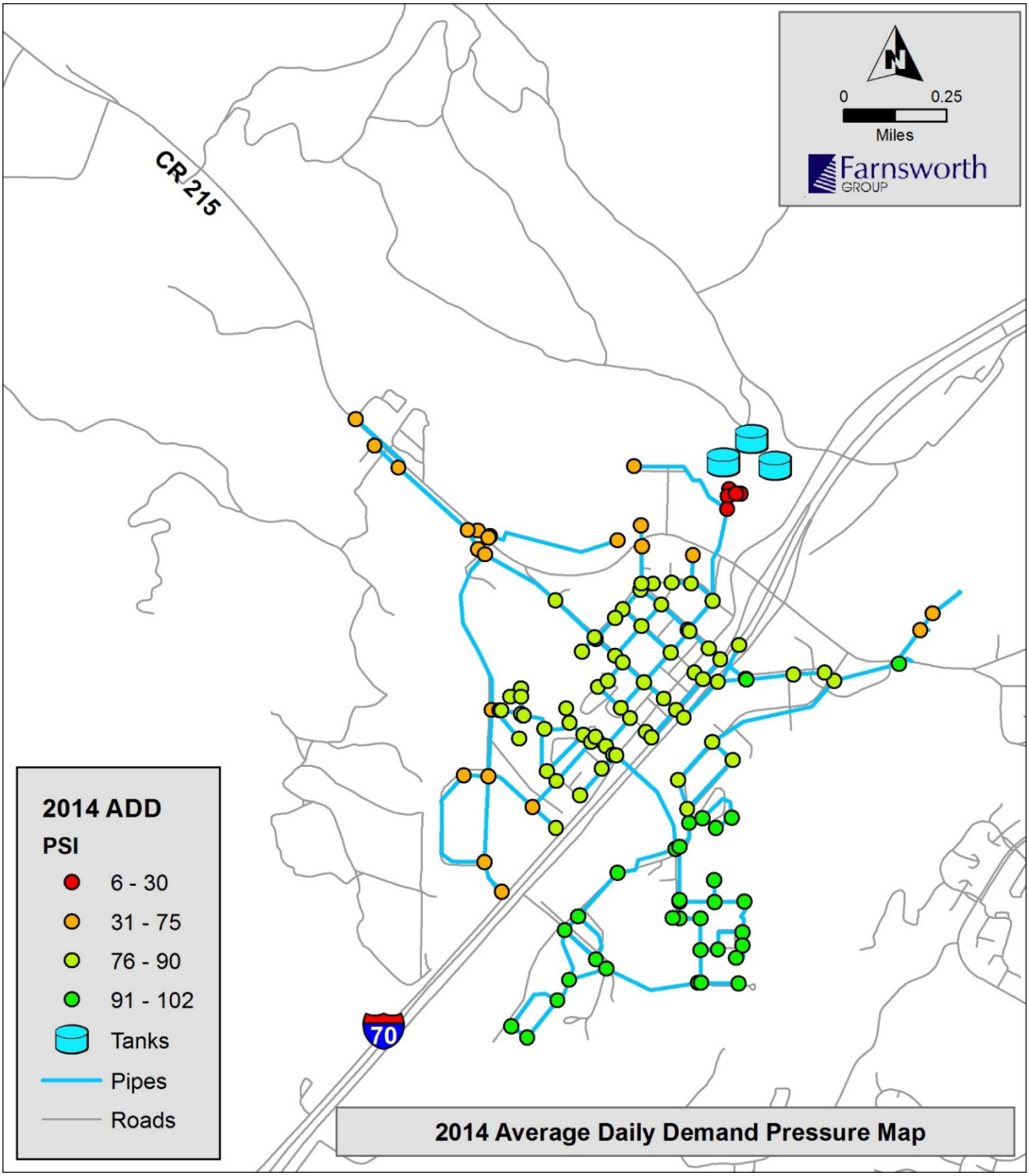


Figure V- 5: 2014 Average Daily Demand Pressure Index Map

3. Water System Analysis – Under Current MDD+2,500 gpm Fire Flow Condition

The current water distribution system can provide up to approximately 1,200 gpm available fire flow while maintaining 20 psi residual pressure. The pressure index map under the maximum daily demand plus 1,200 gpm fire flow condition is presented in Figure V-6.

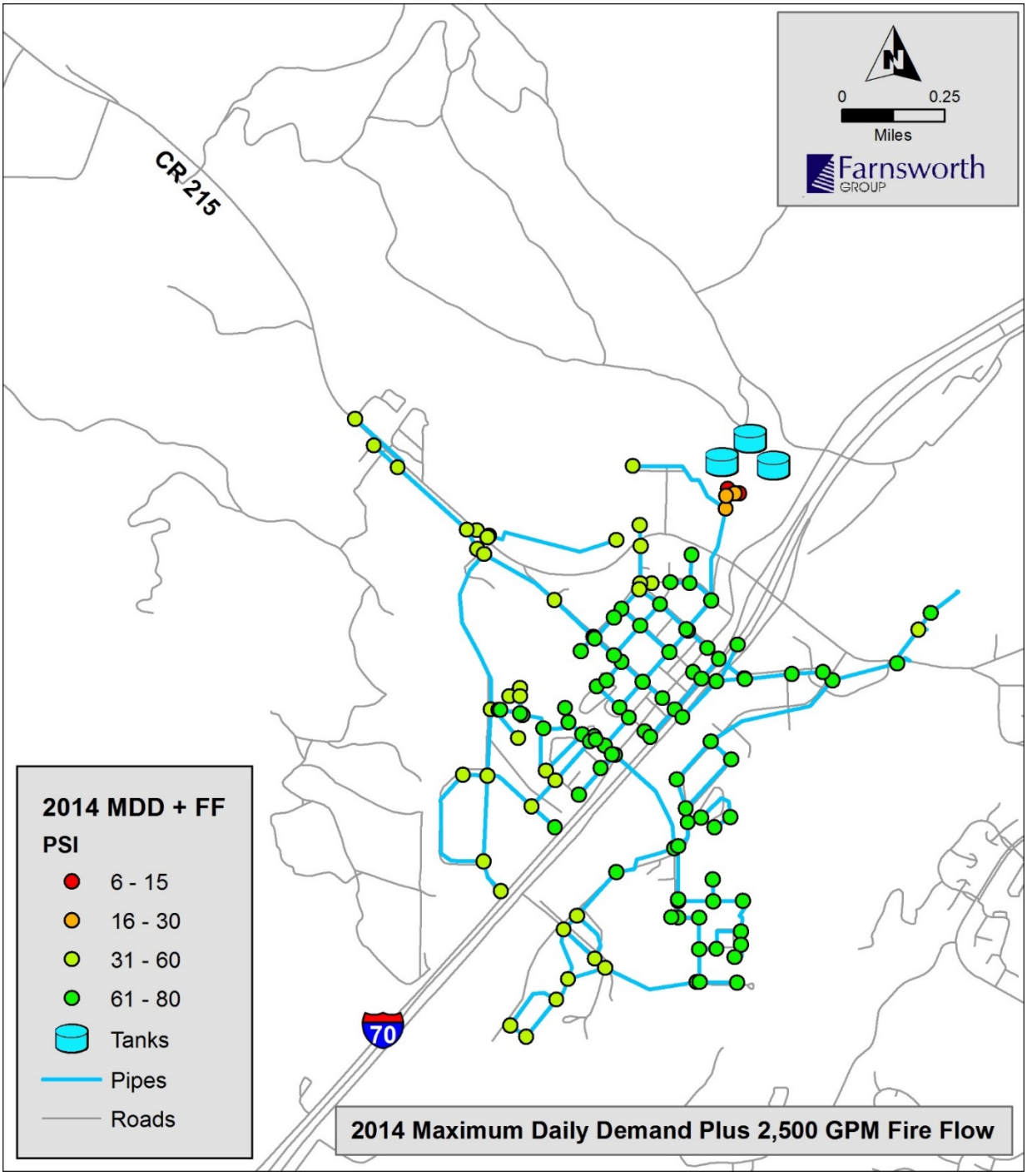


Figure V- 6: 2014 Maximum Daily Demand Plus 2,500 gpm Fire Flow Pressure Index Map

K. 2020 Water System Analysis

The capital improvement projects for the 2020 water system are identified, which are listed as:

- Replacing existing 4-inch line in First Street with 8” line
- Adding 0.5-MG new storage tank to serve Main Zone especially at west I-70 interchange corridor
- Adding 0.5-MG new storage tank to serve High Zone to serve High Zone
- Adding one booster station to feed the newly-added 0.5-MG tank
- Adding 12” pipeline to feed the proposed 0.5-MG storage tank to serve High Zone
- Adding 12” pipeline to loop the west I-70 interchange corridor
- Adding 6” dedicated pipeline to feed the existing storage tanks

The design pressure range used for distribution system analysis is 40 psi (based on peak hour demand) to 120 psi (based on average daily demand). In addition, water distribution pressure analysis is also evaluated based on maximum daily demand plus available fire flow of 2,500 gpm.

1. Water System Analysis – Under 2020 PHD Condition

The water distribution system pressure index map under the peak hour demand condition is presented in Figure V-7, on following page.

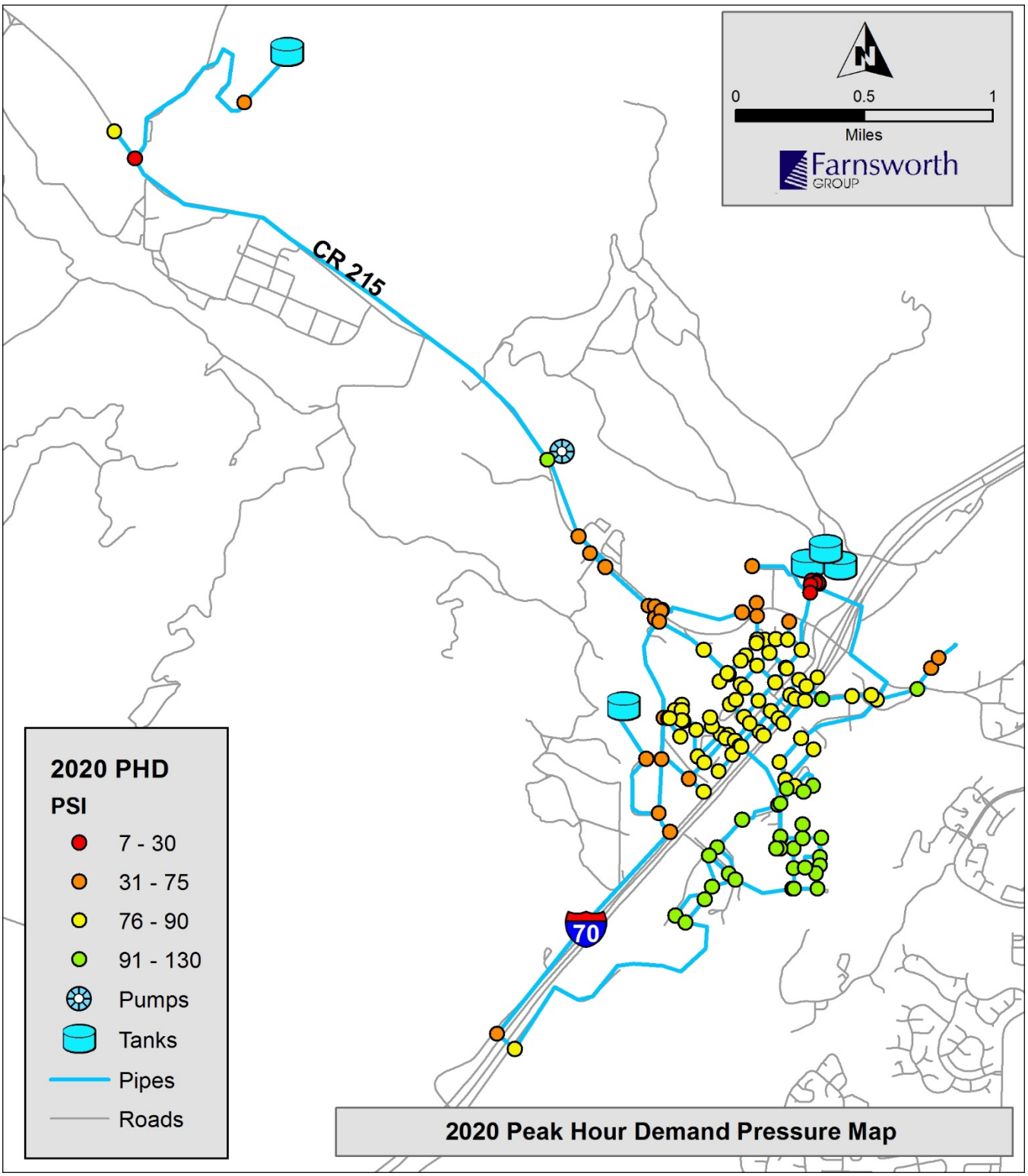


Figure V- 7: 2020 Peak Hour Pressure Index Map

2. Water System Analysis – Under 2020 ADD Condition

The water distribution system pressure index map under the average daily demand condition is presented in Figure V-8.

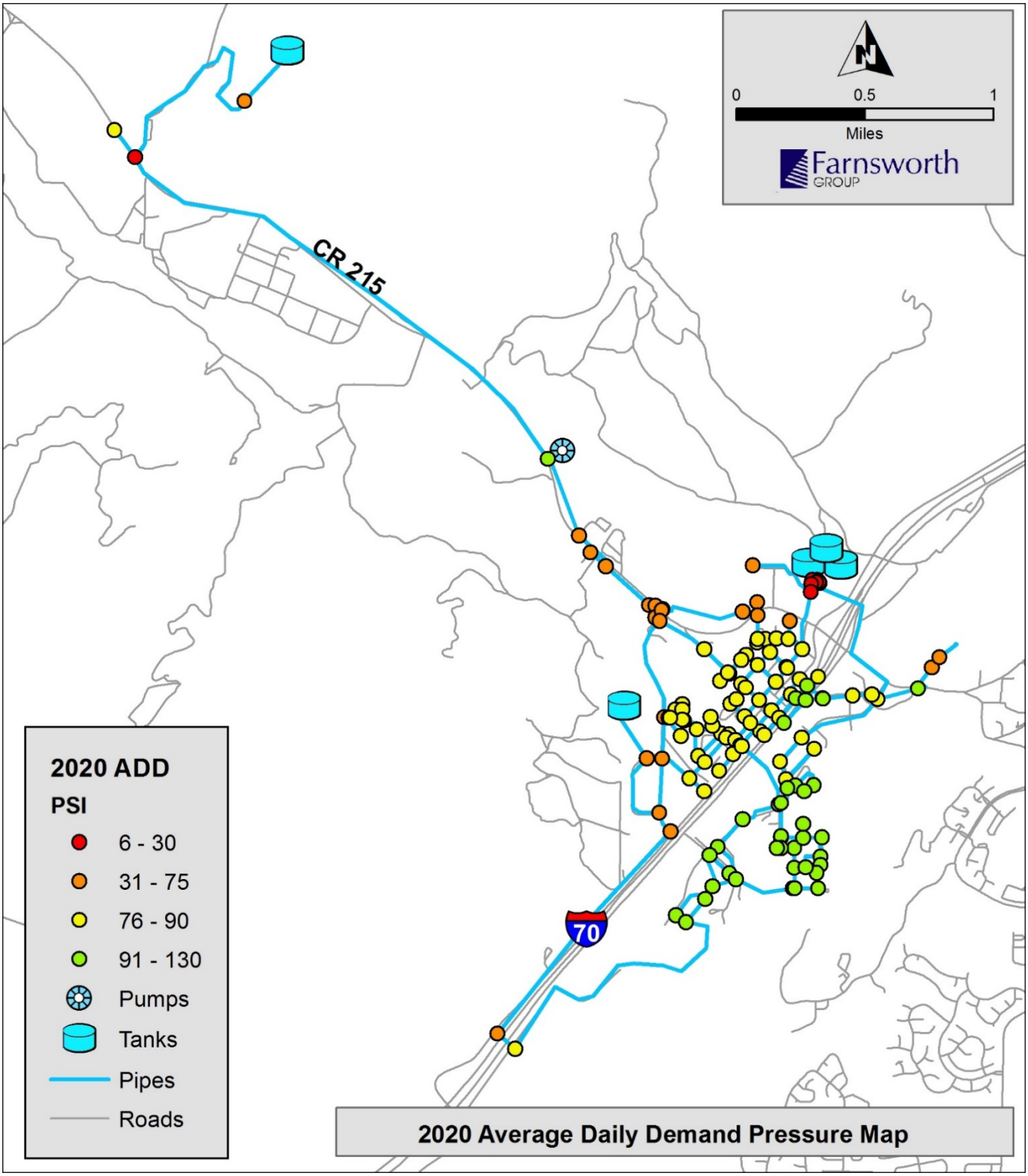


Figure V- 8: 2020 Average Daily Demand Pressure Index Map

3. Water System Analysis – 2020 MDD+2,500 gpm Fire Flow Condition

In order to match the current water system operation conditions, the water distribution system is analyzed under the 2015 MDD plus 2,500 gpm fire flow condition. The pressure index map under the maximum daily demand plus 2,500 gpm fire flow condition is presented in Figure V-9.

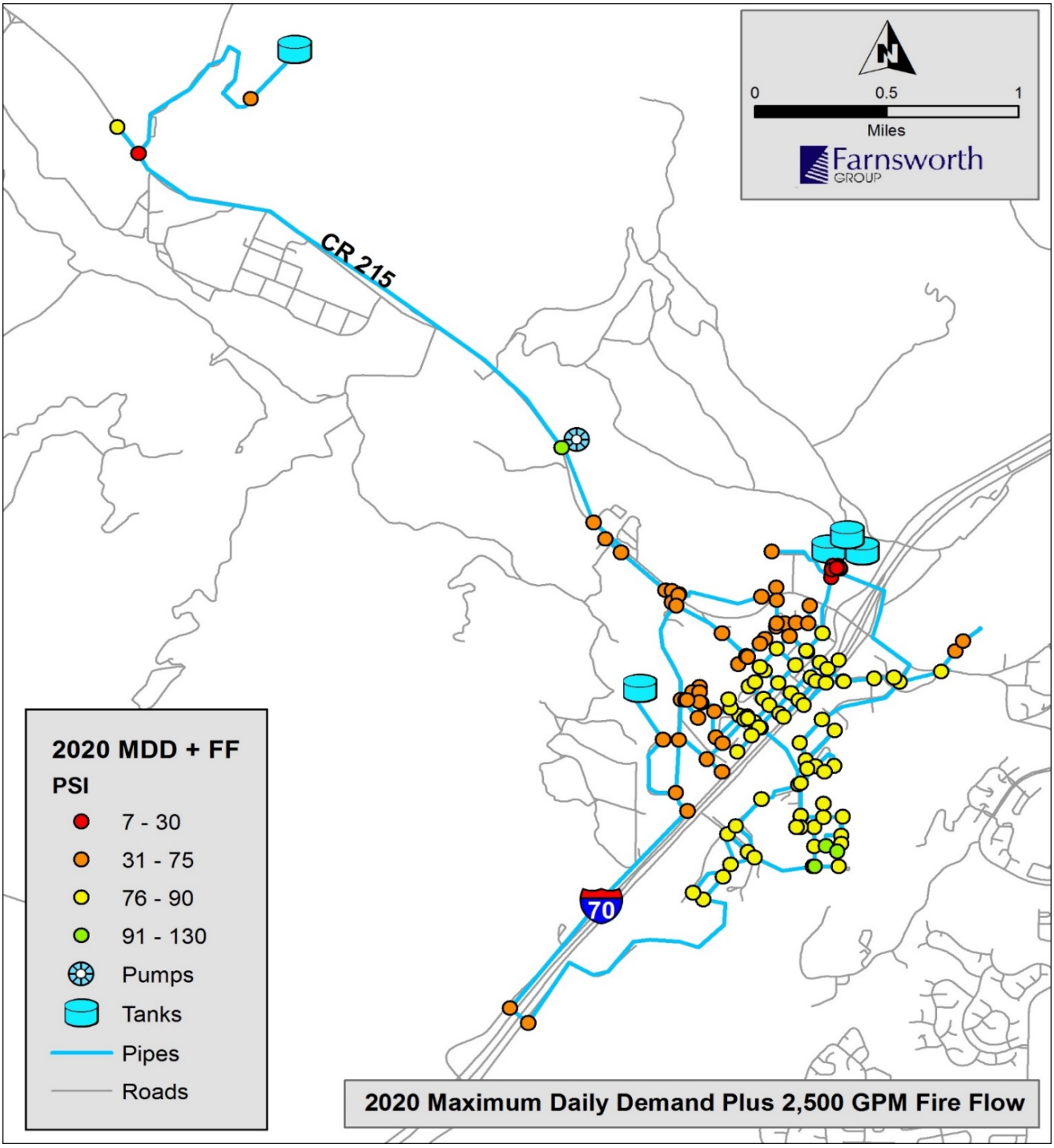


Figure V- 9: 2020 Max Day Demand Plus Fire Flow Pressure Index Map

L. 2030 Water System Analysis

The no capital improvement projects for the 2030 water system is identified. The 2030 water system is analysis based on the design pressure range used for distribution system analysis. In addition, water distribution pressure analysis is also evaluated based on maximum daily demand plus available fire flow of 2,500 gpm.

1. Water System Analysis – Under 2030 PHD Condition

The water distribution system pressure index map under the peak hour demand condition is presented in Figure V-10.

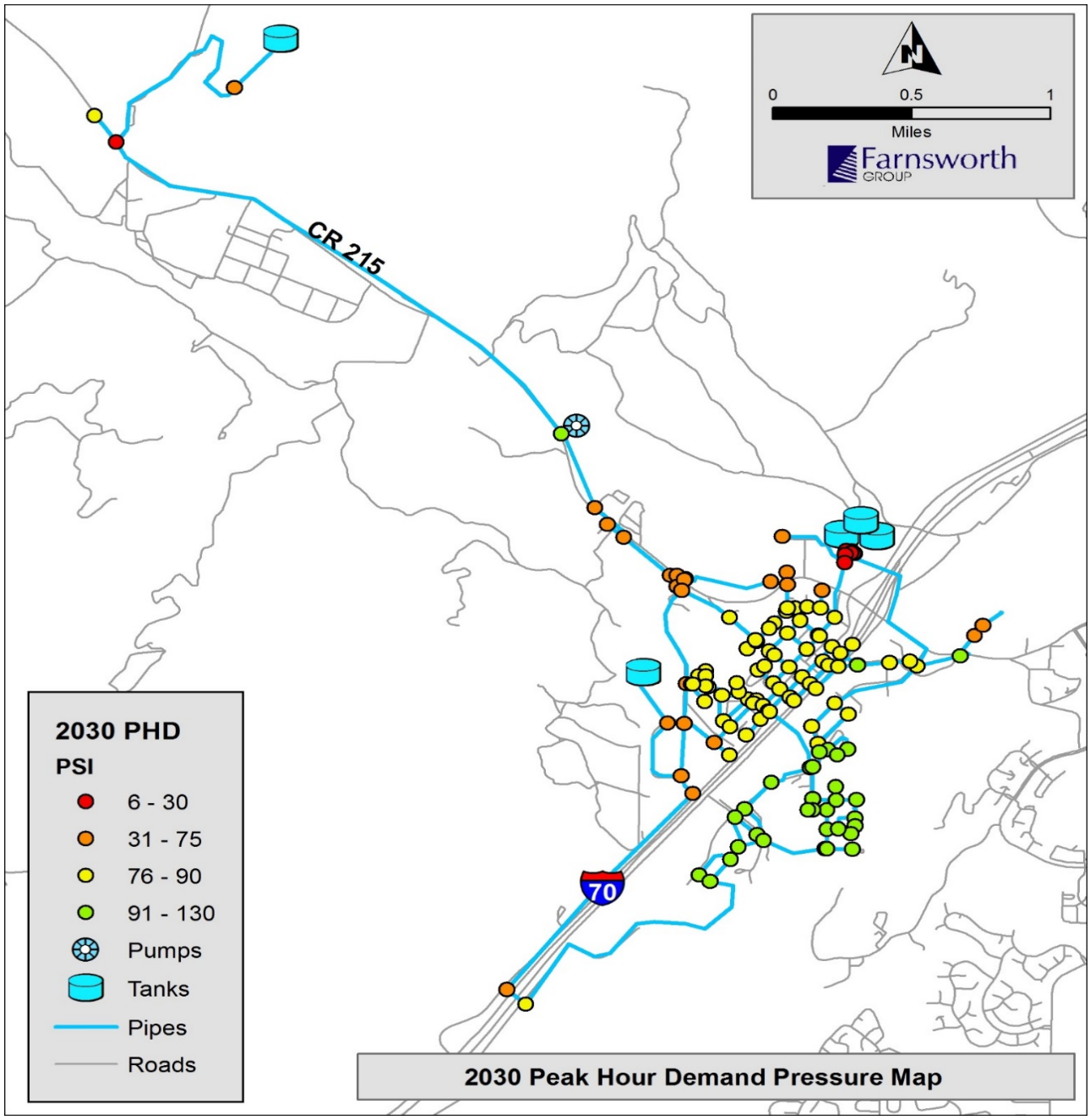


Figure V- 10: 2030 Peak Hour Pressure Index Map

2. Water System Analysis – Under 2030 ADD Condition

The water distribution system pressure index map under the average daily demand condition is presented in Figure V-11.

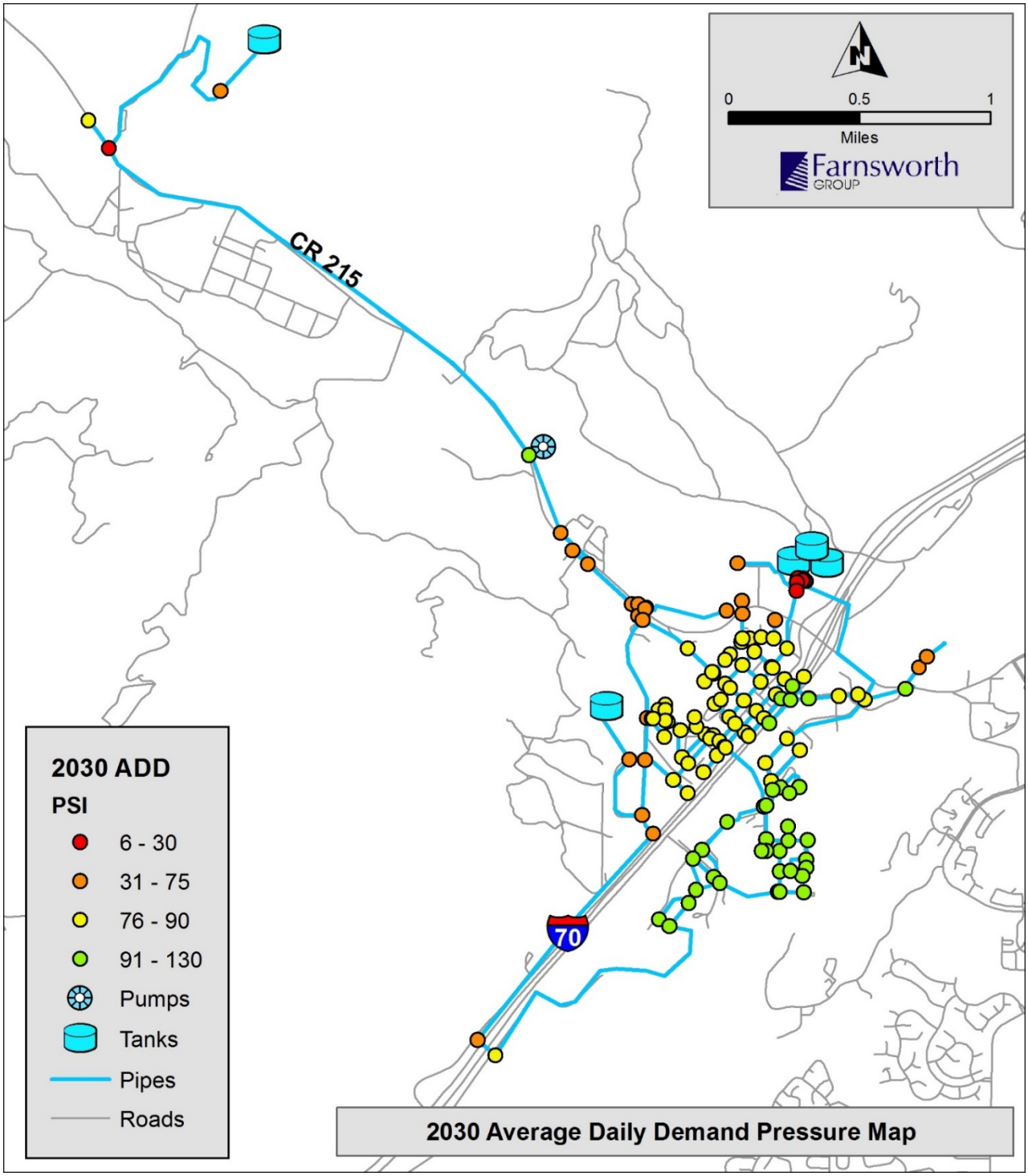


Figure V- 11: 2030 Average Daily Demand Pressure Index Map

3. Water System Analysis – 2030 MDD +2,500 gpm Fire Flow Condition

Like 2015 water system modeling, the water distribution system is analyzed under the 2030 MDD plus 2,500 gpm fire flow condition. The pressure index map under the 2030 maximum daily demand plus 2,500 gpm fire flow condition is presented in Figure V-12.

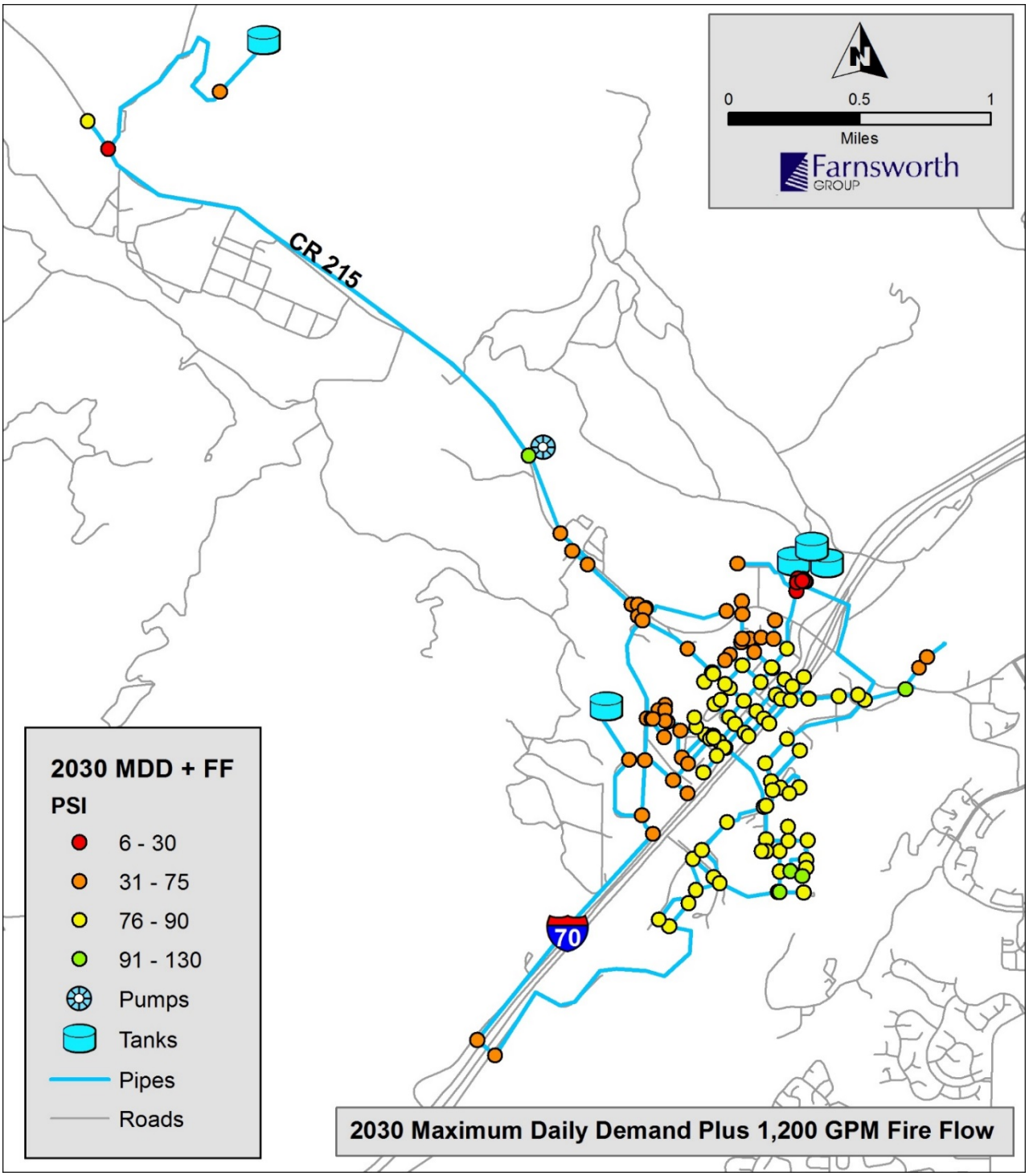


Figure V- 12: 2030 Max Day Demand Plus Fire Flow Pressure Index Map

VI. Proposed Water System Improvements

A. Proposed Capital Improvement Projects

The proposed capital improvement projects for the water system are identified below. Items 3a, 4a, 5a, and 7a are alternative projects to items 3, 4, 5, and 7, respectively.

1. Replace existing 4-inch line in First Street with 8” line.
2. Add 0.5-MG new storage tank to serve Main Zone especially at I-70 interchange corridor.
3. Add 0.5-MG new storage tank to serve High Zone to serve High Zone.

   3a. Instead of new storage tank to serve High Zone, provide interim PS and pipeline (4a and 5a). See Figure VI-1 for proposed north CR 215 interim improvements.

4. Add one booster station to feed the newly-added 0.5-MG tank.

   4a. Provide interim PS to feed proposed rodeo site.

5. Add 12” pipeline to feed the proposed 0.5-MG storage tank to serve High Zone.

   5a. Provide pipeline along CR 215 to proposed rodeo site.

6. Add 12” pipeline to loop the west I-70 Interchange corridor. See Figure VI-2 for proposed west I-70 corridor improvements.
7. Add 6” dedicated pipelines to feed the existing storage tanks.

   7a. Add tank mixing system for the existing storage tanks.

8. Evaluate location and condition of existing raw water line from the springs.

Figure VI- 1: Proposed Interim North CR 215 Improvements

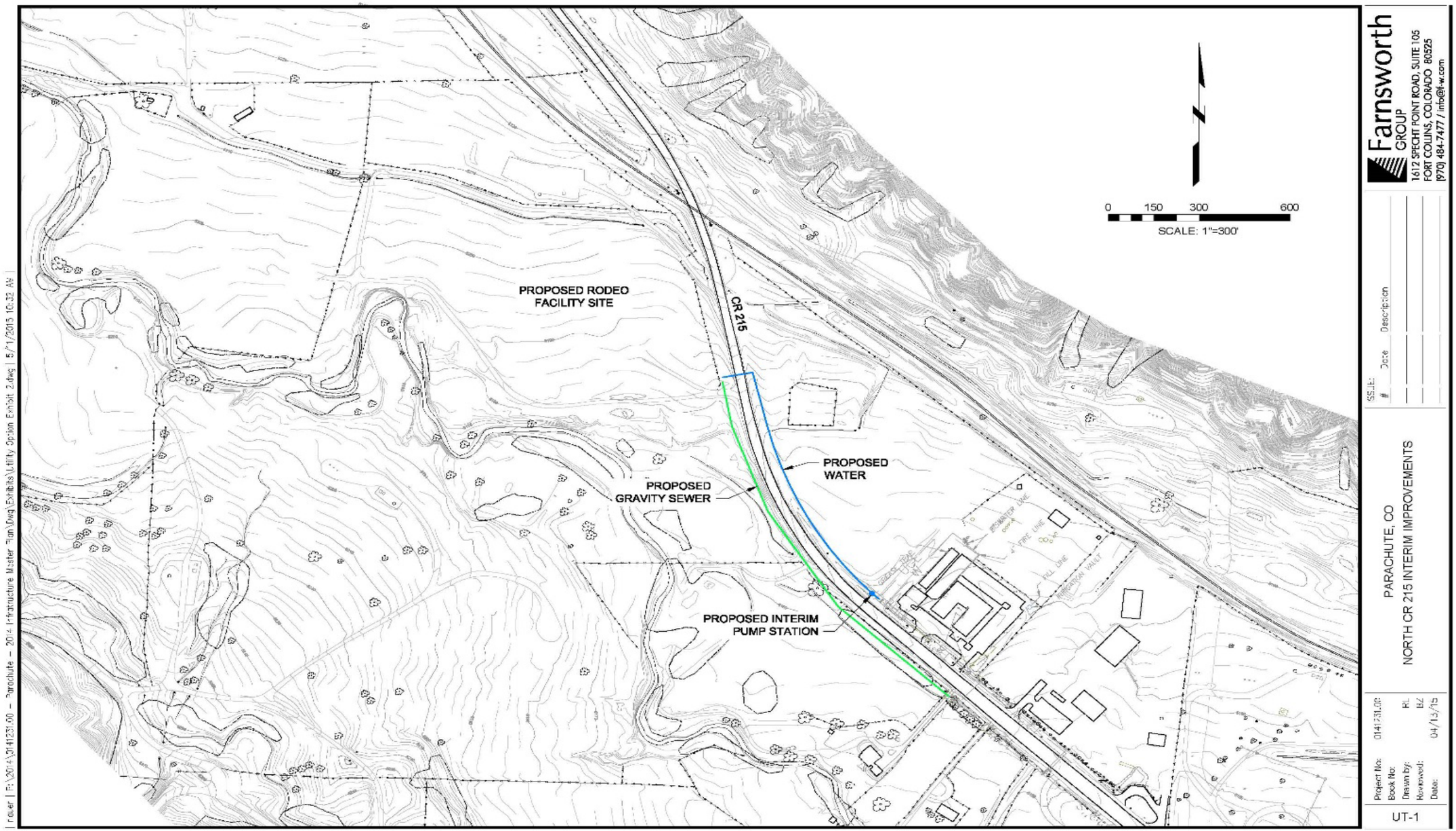
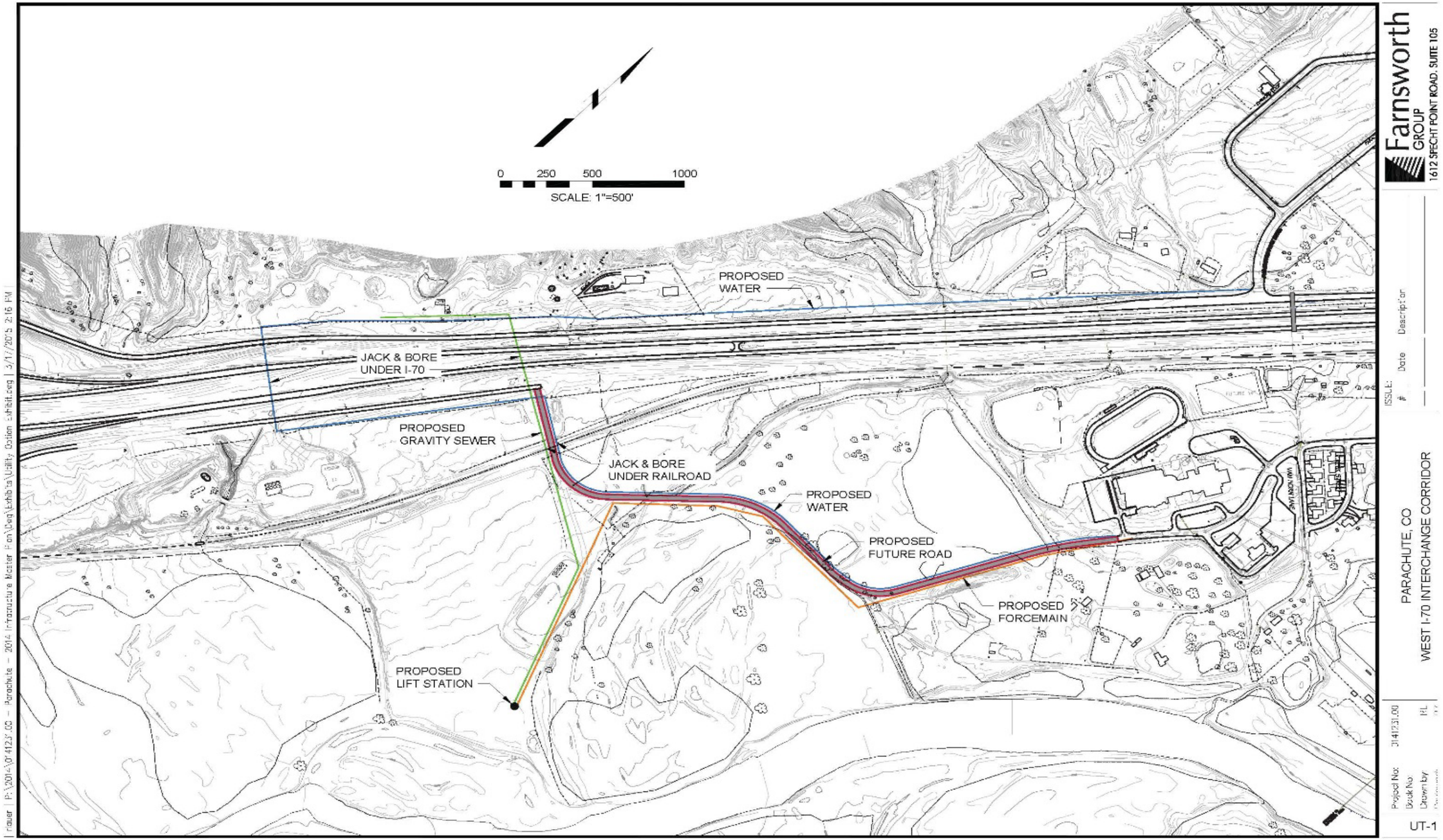


Figure VI- 2: Proposed West I-70 Corridor I



B. Improvement Recommendations

As stated above, the long range improvements projected to be needed to serve the developing areas are shown on Figure VI-3. Cost estimates for these projects, and alternative projects, are included in Appendix A and are summarized in Table VI-1 below.

Table VI-1: Improvements for Future Water System Developments

Item	Recommended Improvement	Time-Frame	Estimated Cost	Benefits
1	Replace existing 4-inch line in First Street with 8" line	2015	$500,000	Increase system pressure
2	Add 0.5-MG new storage tank to serve Main Zone	When Needed	$1,200,000	Increase treated water supply capacity
3	Add 0.5-MG new storage tank to serve High Zone (North)	When Needed	$1,200,000	Booster storage capacity (North)
3a	Instead of new storage tank to serve High Zone, provide interim PS and pipeline (4a and 5a)	As alternative to item 3	See 4a and 5a below	Less expensive interim solution to 3
4	Add one booster station to serve 0.5-MG High Zone Tank (North)	When Needed	$700,000	Supply water to High Zone (North)
4a	Provide interim PS to feed proposed rodeo site	As alternative to item 4	$350,000	Less expensive interim solution to 4
5	Add 12" pipeline to feed the proposed 0.5-MG storage tank to serve High Zone (North)	When Needed	$2,000,000	Supply water to High Zone (North)
5a	Provide pipeline to proposed rodeo site	As alternative to item 5	$150,000	Less expensive interim solution to 5
6	Add 12" looped pipelines to feed the west I-70 Interchange corridor	When Needed	$2,600,000	Supply water to new development corridor
7	Add 6" dedicated pipeline to feed the existing storage tanks	When Needed	$1,000,000	Improve water quality
7a	Add tank mixing system for the existing storage tanks	As alternative to item 7	$100,000	Less expensive solution to 7
8	Evaluate location and condition of existing raw water line from the springs	2015	$50,000	Protect and maintain critical supply link

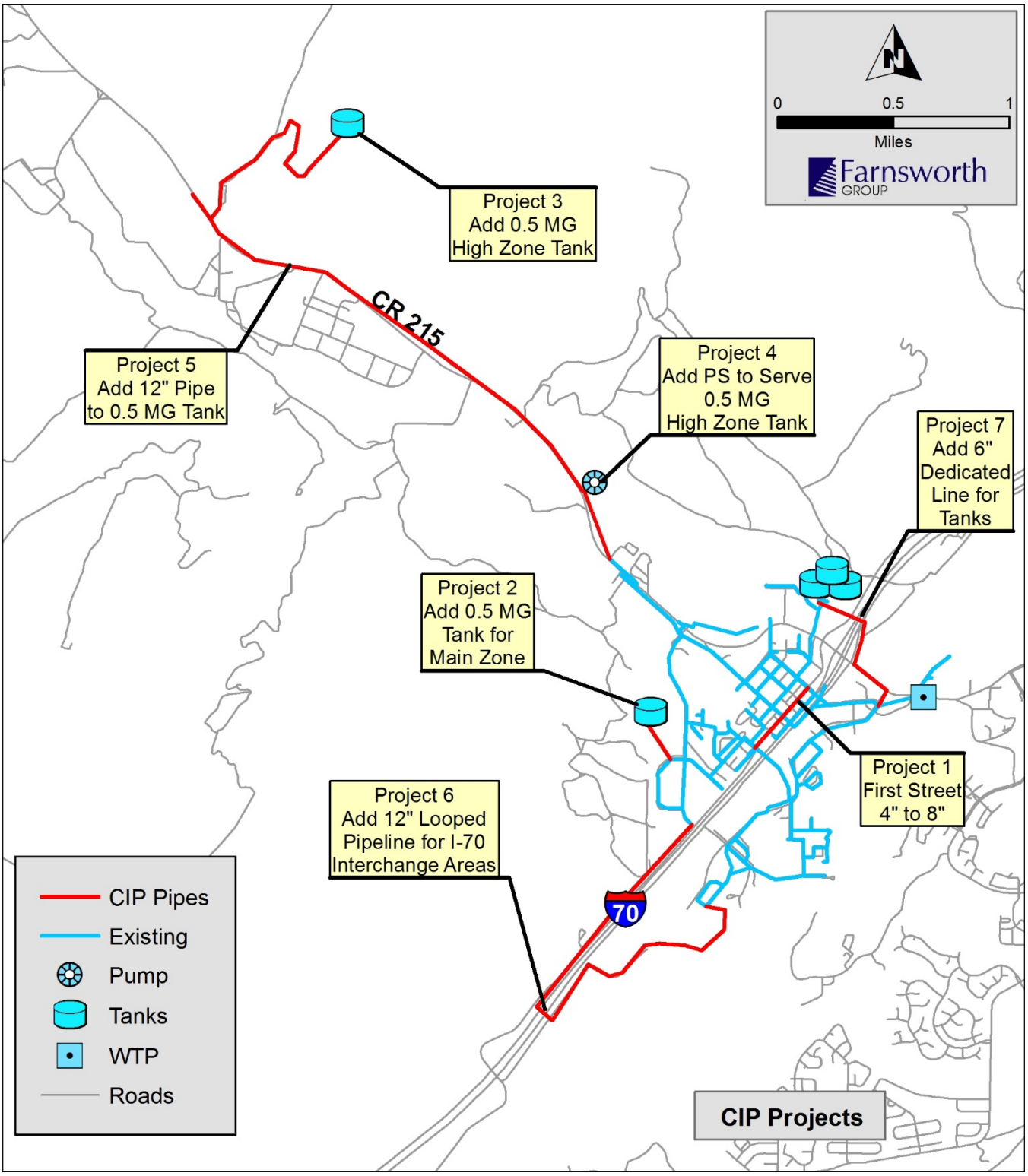


Figure VI- 3: Map of Water System Improvement Projects

VII. Wastewater System Analysis

A. Existing System

The Town's wastewater is collected through a system of primarily 8-inch through 15-inch gravity mains which discharge to a wet well located near Cottonwood Park. Three (3) dry pit pumps then pump the wastewater under the Colorado River to the Battlement Mesa Wastewater Treatment Plant by means of a 6-inch, 8-inch, or 10-inch forcemain. A layout of the Town's existing wastewater system is shown in Figure VII-1.

Information supplied by the Town indicates the dry pit pumps have the characteristics as noted in Table VII-1:

Table VII-1: Characteristics of Existing Wastewater Pumps

Pump	Horsepower	Rated Flow	Total Dynamic Head
A	15 HP	210 gpm	95' TDH
B	30 HP	710 gpm	109' TDH
C	50 HP	1250 gpm	109' TDH

With the largest pump out of service, the existing pump station has an estimated firm capacity of 920 gpm.

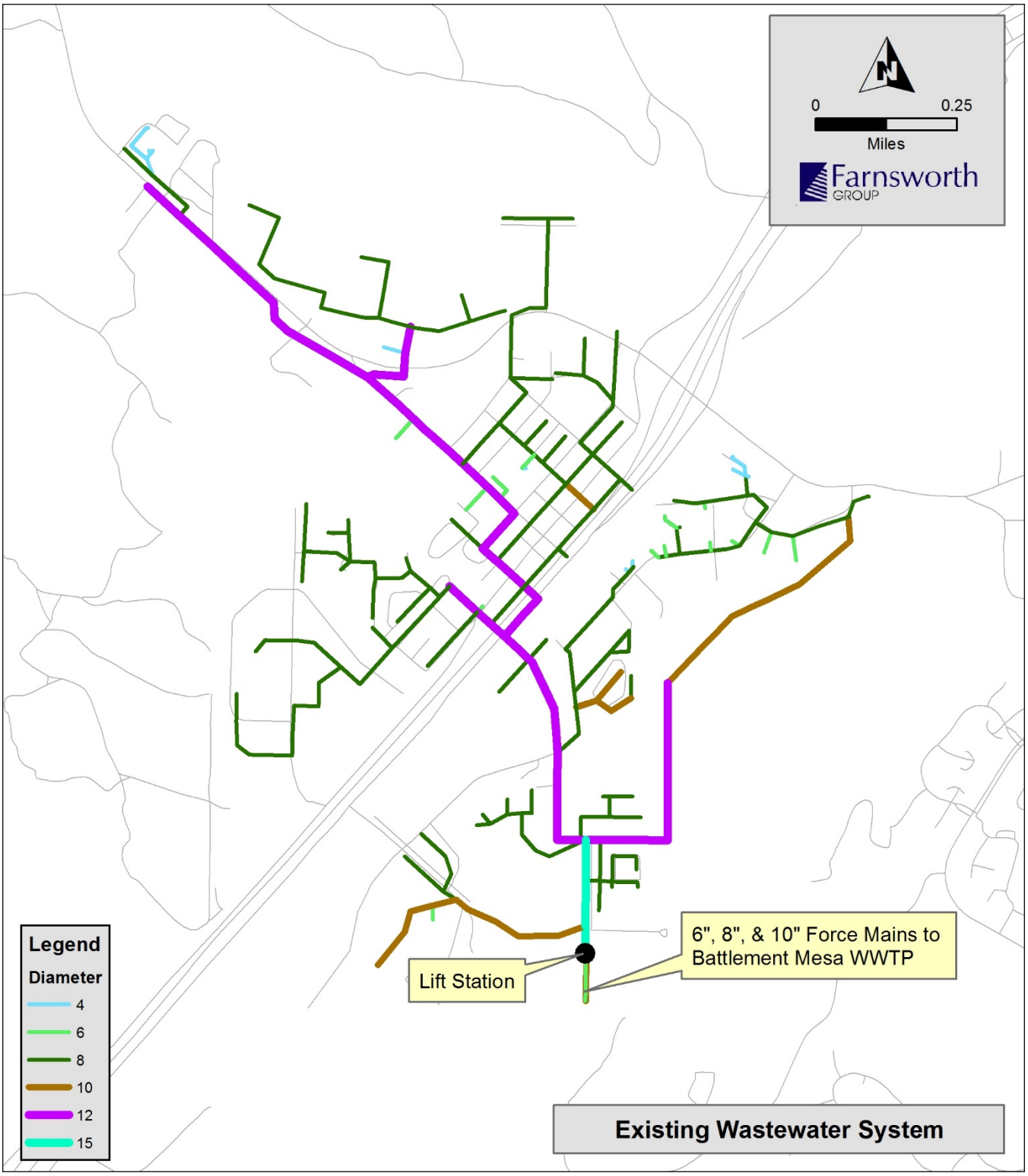


Figure VII- 1: Existing Wastewater System

B. Existing Wastewater System Flows

Current wastewater flows were determined based on 2014 data provided by the town. The monthly average daily wastewater flows, along with the corresponding potable water flows, are listed in Table VII-2. Table VII-2 shows that only 50% of the flow that enters the Parachute potable water system actually goes to the sewer system. This compares to a typical national percentage of about 80%.

Table VII-2 Current Average Daily Flows

Monthly Flow	Flow from WTP's, gpm	Pumped flow to WWTP, gpm	WW flow as % of WTP flow
January, 2014	146	82	56.2%
February, 2014	152	92	60.5%
March, 2014	150	75	50.0%
April, 2014	161	86	53.4%
May, 2014	194	85	43.8%
June, 2014	214	90	42.1%
July, 2014	234	115	49.2%
August, 2014	208	105	50.5%
September, 2014	186	97	52.2%
October, 2014	174	92	52.9%
November, 2014	165	91	55.2%
December, 2014	168	85	50.6%
Average for 2014	**179**	**91**	**50.8%**

C. Future Wastewater Flow Projections

The population projects used for projecting water flows was used to project future wastewater flows. The population along with projected future wastewater flows are presented in Table VII-3.

Table VII-3: Future Wastewater Projections

Year	Current (2014)	2020	2030
Population	1198	1460	2170
Average Day, gpm	91	111	165
Average Day, mgd	0.13	0.16	0.24
Maximum Day,	192	234	347
Maximum Day,	0.28	0.34	0.50
Peak Hour, gpm	274	334	496
Peak Hour, mgd	0.39	0.48	0.71

D. Evaluation of Wastewater System

The existing and projected peak flows are such that the existing infrastructure is adequate to collect and convey wastewater to the Battlement Mesa wastewater treatment plant. The Town should continue efforts to jet, inspect, and reduce infiltration in the existing collection system. The Town should also continue monitoring the condition of the existing dry pit pumps and plan for future replacement.

Improvements proposed for the west I-70 corridor area, as noted previously in Figure VI-2, include a new wastewater lift station. The proposed lift station is a submersible type, similar to the type shown in Figure VII-2.

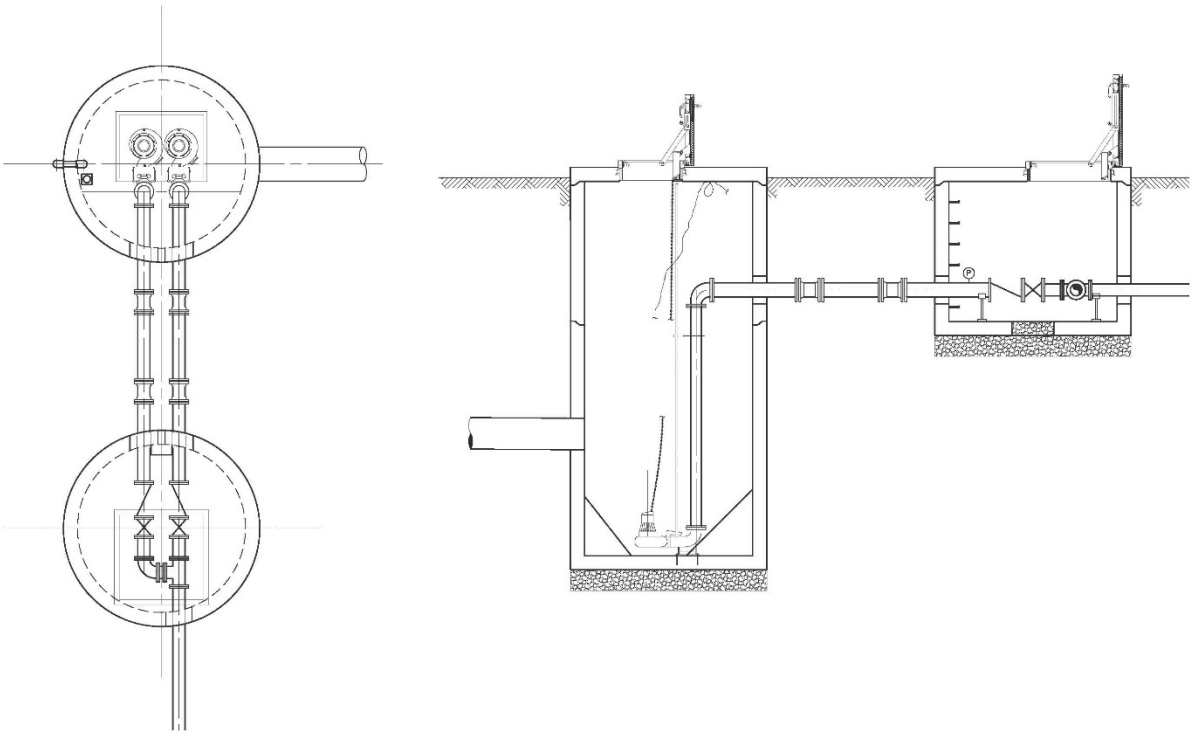


Figure VII- 2: Proposed Submersible Lift Station

VIII. Proposed Wastewater System Improvements

A. Capital Improvement Projects

The proposed capital improvement projects for the wastewater system are identified below. Item 10a is an alternative project to item 10.

9. Gravity sewer, lift station, force mains to serve west I-70 corridor. See Figure VI-2 for proposed west I-70 corridor improvements.

10. Gravity sewer along CR 215 (North).
    10a. Instead of gravity sewer along CR 215, provide interim sewer along CR 215 (North). See Figure VI-1 for proposed north CR 215 interim improvements.

11. Replace existing dry pit pumps.

B. Improvement Recommendations

Cost estimates for future wastewater system improvements, and alternative projects, are included in Appendix A and are summarized in Table VIII-1 below.

Table VIII-1: Improvements for Future Wastewater System Developments

Item	Recommended Improvement	Time-Frame	Estimated Cost	Benefits
9	Gravity sewer, lift station, force mains to serve west I-70 corridor	When Needed	$2,200,000	Sewer service to new development corridor
10	Gravity sewer along CR 215 (North)	When Needed	$2,200,000	Sewer service to new development corridor
10a	Interim gravity sewer along CR 215 (North)	As alternative to item 10	$250,000	Less expensive interim solution to 10
11	Replace existing dry pit pumps, add emergency generator	When Needed	$450,000	Replace equipment, provide backup

IX. Financial Analysis

A. Introduction

The purpose of this financial analysis is to determine the potential impacts to the rate structure as a result of capital improvements recommended in the Master Plan.

Projections of financial operations under existing rates using the 2015 budget are used to determine whether the present charges can meet future revenue requirements. The Town maintain separate Enterprise Funds for the Water Utility and the Wastewater Utility. Within each Fund, the Town should collect enough revenue to pay for the following:

Water Utility

- Water Treatment O&M
- Distribution O&M
- Debt Service Payments

Wastewater Utility

- Wastewater Treatment Contract
- Lift Station O&M
- Collection O&M
- Debt Service Payment

Based on studies and data from the Town, a growth rate of 2% is proposed as the population projection for this Infrastructure Master Plan. Thus, the population projections for the year of 2020 and 2030, are outlined in Table IX-1 below:

Table IX-1: Population Projections

Growth Horizon		Population Projections	
Grow Horizon	Year	Annual Growth Rate	Population
	2010		1,085 [1]
5-Year	2015	2%	1,198 [2]
10-Year	2020	2%	1,460
20-Year	2030	2%	2,170

The existing water rate schedule was adopted on February 5, 2014. Wastewater rates were established in 2007. Customers are charged a rate for based on water a usage. Table IX-2 shows the current rate structure for both water and wastewater.

Table IX-2: Current Water and Wastewater Rates

Water Usage	**Water**			**Wastewater**
Residential Water Usage	In Town Rates	Out of Town Rates	Reduced Rates	All Residential
Minimum 10,000 gallons (Residential non-metered)	$44.95	$47.73	$34.76	$36.08
Next 3,000 gallon (Per 1,000 gallons)	$2.22	$2.28		$3.11
Above 13,000 gallons (Per 1,000 gallons)	$3.78	$3.93		$3.36
Commercial Water Usage	In Town Rates	Out of Town Rates		All Commercial
Minimum 10,000 gallons (Commercial non-metered)	$69.45	$72.23		$36.08
Next 3,000 gallon (Per 1,000 gallons)	$2.22	$2.28		$3.11
Above 13,000 gallons (Per 1,000 gallons)	$3.75	$3.93		$3.36

A copy of the current rate structure can be found in Appendix B. The Town also charges a tap fee for new customers for each EQR. The current tap fee for a both water and sewer is $4,875 for in-town taps. Out of town taps must be approved by the Board of Trustees to assure that adequate facilities are in place to service those request. The current tap fee for out-of-town taps is $5,625.

The 20 year growth projection will increase the population by 972 persons. Assuming 2.5 persons/dwelling unit approximately 380 new taps can be expected. This will produce approximately $1,860,000 for both the water and wastewater utilities.

B. Current Budget

The 2015 Budget for the Town was reviewed to determine where revenues were derived and how expenses were incurred for both the Water and Wastewater Utilities. Tables IX-3 and IX-4 show the summary of revenue and expenses for both Utilities.

Table IX-3: Water Fund Revenue/Expenditure Comparison

	2013 Final	2014 Budget	2014 YTD Actual	2015 Budget
Beginning Fund Balance	$233,504	$185,329	$185,329	$162,938
Total Revenues	$285,403	$400,675	$339,587	$385,550
Total Expenditures	$333,578	$596,698	$361,979	$589,550
Current Revenue/Expenses	($48,175)	($196,203)	($22,391)	($204,000)
Ending Fund Balance	$185,329	($10,694)	$162,938	($41,062)

Table IX-4: Wastewater Fund Revenue/Expenditure Comparison

	2013 Final	2014 Budget	2014 YTD Actual	2015 Budget
Beginning Fund Balance	$75,015	$67,928	$67,918	$57,634
Total Revenues	$221,792	$203,520	$210,777	$242,030
Total Expenditures	$234,575	$271,821	$221,071	$242,030
Current Revenue/Expenses	($12,783)	($68,301)	($10,294)	$0
Ending Fund Balance	$67,928	($373)	$57,634	$57,634

The Water Fund was anticipating a DOLA grant in 2014 in amount of $112,075 and capital project expenditure of $290,403 which would have resulted in a negative ending balance. Evidently the grant and the project did not occur and the fund actually had an ending balance of $162,938. The 2015 Budget projects an increase in revenues of $54,963 and increase in expenditures of $227,571. This primarily is due to a wage increase of $14,949 and a capital project of $120,000. This will result in a negative ending budget of $41,062.

The Wastewater Fund maintains a fairly balanced account with expenditure slightly exceeding revenue which results in declining ending fund balance. For 2015, the Fund project revenues of $242,030 and expenses of $242,030 and an ending balance of $57,635.

C. Capital Project Impact on the Funds

The Master Plan determined that several large capital improvement project may be needed to improve Towns water and wastewater systems or to provide service to new areas that are currently not served. Table IX-1 shows funding sources for each of the proposed Water System improvements recommended in the Master Plan.

Table IX-5: Proposed Water and Sewer System Improvements

Item	Recommended Improvement	Time-Frame	Estimated Cost	Funding Source
1	Replace existing 4-inch line in First Street with 8" line	2015	$500,000	Grant
2	Add 0.5-MG new storage tank to serve Main Zone	When Needed	$1,200,000	Grant
3	Add 0.5-MG new storage tank to serve High Zone (North)	When Needed	$1,200,000	Grant
3a	Instead of new storage tank to serve High Zone, provide interim PS and pipeline (4a and 5a)	As alternative to item 3	See 4a and 5a below	Grant
4	Add one booster station to serve 0.5-MG High Zone Tank (North)	When Needed	$700,000	To be determined
4a	Provide interim PS to feed proposed rodeo site	As alternative to item 4	$350,000	Grant
5	Add 12" pipeline to feed the proposed 0.5-MG storage tank to serve High Zone (North)	When Needed	$2,000,000	To be determined
5a	Provide pipeline to proposed rodeo site	As alternative to item 5	$150,000	Grant
6	Add 12" looped pipelines to feed the west I-70 Interchange corridor	When Needed	$2,600,000	50% Grant 50% DWRF Loan
7	Add 6" dedicated pipeline to feed the existing storage tanks	When Needed	$1,000,000	Grant
7a	Add tank mixing system for the existing storage tanks	As alternative to item 7	$100,000	Grant
8	Evaluate location and condition of existing water line from the springs	2015	$50,000	Grant
9	Gravity sewer, lift station, force mains to serve west I-70 corridor	When Needed	$2,200,000	50% Grant 50% CWRF Loan
10	Gravity sewer along CR 215 (North)	When Needed	$2,200,000	To be determined
10a	Interim gravity sewer along CR 215 (North)	As alternative to item 10	$250,000	Grant
11	Replace existing dry pit pumps, add emergency generator	When Needed	$450,000	Grant

To accomplish all of the projects using current reserves or increasing rates to unrealistic levels was not considered in this analysis. The assumption of the analysis is that the majority of improvements would occur as grants become available. The Town has used this approach on many projects in the past and as long the programs exist, this approach should be continued.

One project of specific interest in this Master Plan has been the proposed water and wastewater service to the West I-70 Interchange corridor. For this analysis, it is assumed that 50% of the funding will come from grants and 50% will come from low interest loan from the State of Colorado Drinking Water Revolving Loan Program or Clean Water Revolving Loan Program. Currently these programs have loans that have 20-year terms and interest rates that range from 2%-4%.

So on the assumption that the majority of the other projects will occur as grant become available, rates would not be impacted significantly assuming that the grant covered the project expenditure. Because the West I-70 Interchange project has some urgency from an economic development perspective, the impact on the rates is analyzed in the following.

1. Water Rate Impact of the West I-70 Interchange Improvements

The proposed project includes and 12-inch water line loop. The project is proposed be funded partially with a grant and partially with a low interest loan. The following are the project specifics.

- Estimated Project Cost - $2,600,000
- Funding
    - 50% Grant - $1,300,000
    - 50% DWRF Loan
- Loan Provisions
    - Principal - $1,300,000
    - Term -20 years
    - Interest- 3.5%
    - Annual P&I Payment – $94,900

For 2015 the Water Fund is projecting a $41,062 deficit at year end. If additional debt is incurred for a water project, rates should be adjusted to not only include the debt service but also the reserves.

Reserves can be established for a number of different purposes. Reserves can be in the form of a replacement fund maintained by the Town or an annual amount generated in excess of cash requirements for operation and maintenance plus debt service. Reserve funds can be used for minor expansions or for replacement of worn out equipment.

Another type of reserve often required for utilities is Debt Service Coverage. Bond covenants may require net revenues (total revenues less O&M) to be equal to a minimum percentage above annual principal and interest requirements of existing and proposed bond payments. Typical coverage requirements range between 10% and 25%.

Parachute has approximately 350 customers. Residential customers are currently billed a flat rate of $44.95 per month for the first 10,000 gallons and then $2.22/1,000 gallons in excess of 10,000 gallons and $3.75/1,000 gallons above 13,000 gallons. Commercial customers are billed the same as residential, except they are charged $69.45 for the first 10,000 gallons. The water use and wastewater flows from the customer classes are summarized in Table IX-6 below.

Table IX-6: Customer Water Use

Customer Group	Water Plant Production	Commercial Customers	Residential Customers	Outside Residential	Total All Customers
No. Users	350	37	299	14	350
Avg. Daily flows (MGD)	0.26	0.10	.15	.01	0.26
Annual Flow (MG)	95	37	56	2	95
Projected 2015 Revenue		$162,000	$160,000	$8,000	$330,000

Currently the Town does not have accurate meter reading on residential water usage. The table was developed by using 2014 meter records of the commercial accounts. The total annual usage for the commercial accounts was approximately 37 MG. The residential customer's volume was established by subtracting the commercial volume from the total volume. Revenues were determined by taking the number of residential customers and the minimum monthly rates of $44.95. The commercial revenue was determining by taking the budget for all customers less the residential revenue.

Revenues must increase to develop a reserve fund and for debt service. Currently the negative end of year balance should be eliminated which would require additional revenues of $41,000. Debt Service will add an additional $95,000 for a total revenue requirement of $136,000.

Table IX-7: New Water Use

Customer Group	Water Plant Production	Commercial Customers	Residential Customers	Outside Residential	Total All Customers
No. Users	350	37	299	14	350
Annual Flow (MG)	95	37	56	2	95
% of Flow	100	39	59	2	
Projected 2015 Revenue		$162,000	$160,000	$8,000	$330,000
% of Revenue		50	48	2	
Projected Revenue Requirement with Reserve and Debt		$233,000	$223,680	$9,320	$466,000
New Rates		**$96.45**	**$62.34**	**$62.34**	

Rates would need to increase 39% to provide the additional revenue for debt service and to establish a reserve fund.

2. Wastewater Rate Impact of the West I-70 Interchange Improvements

The proposed project includes gravity sewer, lift station and force main. The project is proposed be funded partially with a grant and partially with a low interest loan. The following are the project specifics.

- Estimated Project Cost - $2,200,000
- Funding
    - 50% Grant - $1,100,000
    - 50% CWRF Loan
- Loan Provisions
    - Principal - $1,100,000
    - Term -20 years
    - Interest- 3.5%
    - Annual P&I Payment – $76,300

For 2015 the Wastewater Fund is projecting $57,635 balance at year end. If additional debt is incurred for a wastewater project, rates should be adjusted to not only include the debt service but to also maintain the reserves.

Reserves can be established for a number of different purposes. Reserves can be in the form of a replacement fund maintained by the Town or an annual amount generated in excess of cash requirements for operation and maintenance plus debt service. Reserve funds can be used for minor expansions or for replacement of worn out equipment.

Another type of reserve often required for utilities is Debt Service Coverage. Bond covenants may require net revenues (total revenues less O&M) to be equal to a minimum percentage above annual principal and interest requirements of existing and proposed bond payments. Typical coverage requirements range between 10% and 25%.

Parachute has approximately 350 customers. Residential customers are currently billed a flat rate of $36.08 per month for the first 10,000 gallons and then $3.11/1,000gallons in excess of 10,000 gallons and $3.36/1,000 gallons above 13,000 gallons. Commercial customers are billed the same as residential. Copies of the current rate structure are included in Appendix B. The water use and wastewater flows from the customer classes are summarized in Table IX-8 below.

Table IXX-8: Customer Water Use

Customer Group	Water Plant Production	Commercial Customers	Residential Customers	Outside Residential	Total All Customers
No. Users	350	37	299	14	350
Avg. Daily flows (MGD)	0.26	0.10	.15	.01	0.26
Annual Flow (MG)	95	37	56	2	95
Projected 2015 Revenue		$106,513	$129,455	$6,061	$242,030

Wastewater Rates are based on water rates and since the Town does not have accurate meter readings the table was based on the rational in Table IX-4. Revenues were determined by taking the number of residential customers and the minimum monthly rates of $36.08. The commercial revenue was determining by taking the budget for all customers less the residential revenue.

Revenues must increase to develop a reserve fund and for debt service. Debt Service will add an additional $76,000 for a total revenue requirement of $318,030.

Table IX-9: New Wastewater Rates

Customer Group	Water Plant Production	Commercial Customers	Residential Customers	Outside Residential	Total All Customers
No. Users	350	37	299	14	350
Annual Flow (MG)	95	37	56	2	95
% of Flow	100	39	59	2	
Projected 2015 Revenue		$106,513	$129,455	$6,061	$242,030
% of Revenue		50	48	2	
Projected Revenue Requirement with Reserve and Debt		$159,015	$152,654	$6,360	$318,030
New Rates		**$42.55**	**$42.55**	**$42.55**	

Rates would need to increase 18% to provide the additional revenue for debt service and to establish a reserve fund.

APPENDIX A

Preliminary Opinion of Cost

Project Estimates

Preliminary Opinion of Cost
Town of Parachute

Project 1 - Replace existing 4-inch line in First Street with 8" line

Item	Quantity	Unit	Unit Cost	Line Total	Subtotal
General					**$ 10,400**
Temporary traffic control	1	LS	$ 10,000.00	$ 10,000.00	
Stormwater permit and erosion control.	1	LS	$ 400.00	$ 400.00	
Water					**$ 261,200**
Install water main (8" dia. C-900 PVC)	2,000	LF	$ 100.00	$ 200,000.00	
Install gate valve (8")	3	EA	$ 2,500.00	$ 7,500.00	
Install fire hydrant assembly	3	EA	$ 5,400.00	$ 16,200.00	
Reconnect water services	12	EA	$ 1,500.00	$ 18,000.00	
Connect to existing water main (1st & Railroad)	1	EA	$ 4,500.00	$ 4,500.00	
Connect to existing water main (1st & Parachute)	1	EA	$ 2,000.00	$ 2,000.00	
Connect to existing water main (1st & Fisher)	1	EA	$ 3,000.00	$ 3,000.00	
Providing temporary water services	1	LS	$ 10,000.00	$ 10,000.00	
Restoration					**$ 112,000**
Pavement restoration	1	LS	$ 100,000.00	$ 100,000.00	
Landscape restoration	1,000	SY	$ 12.00	$ 12,000.00	
Subtotal - Construction Materials & Installation					**$ 383,600**
Div. 1, Bonding, Mob. / Demob., OH&P	15%				**$ 57,540.00**
Total Construction Cost					**$ 441,140**
Engineering					**$ 44,114.00**
Engineering Design and Construction Fee	1	LS	$ 44,114.00	$ 44,114.00	
Total Project Costs					**$ 485,254**

Preliminary Opinion of Cost
Town of Parachute

Project 2 - Add 0.5MG new storage tank to serve Main

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**3,900**
Temporary traffic control	1	LS	$	3,500.00	$	3,500.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Tank							**$**	**750,000**
Steel tank, vent, piping, foundation and painting	500,000	GAL	$	1.50	$	750,000.00		
Water							**$**	**125,000**
Install water main (12" dia. C-900 PVC)	1,200	LF	$	100.00	$	120,000.00		
Connect to existing water main (Diamond Loop)	1	EA	$	5,000.00	$	5,000.00		
Restoration							**$**	**5,000**
Landscape restoration	1	LS	$	5,000.00	$	5,000.00		
Subtotal - Construction Materials & Installation							**$**	**883,900**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**132,585.00**
Total Construction Cost							**$**	**1,016,485**
Engineering							**$**	**101,648.50**
Engineering Design and Construction Fee	1	LS	$	101,648.50	$	101,648.50		
Total Project Costs							**$**	**1,118,134**

Preliminary Opinion of Cost
Town of Parachute

Project 3 - Add 0.5 MG new storage tank to serve High Zone (North)

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**3,900**
Temporary traffic control	1	LS	$	3,500.00	$	3,500.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Tank							**$**	**750,000**
Steel tank, vent, piping, foundation and painting	500,000	GAL	$	1.50	$	750,000.00		
Water							**$**	**125,000**
Install water main (12" dia. C-900 PVC)	1,200	LF	$	100.00	$	120,000.00		
Connect to water main (CR 215)	1	EA	$	5,000.00	$	5,000.00		
Restoration							**$**	**5,000**
Landscape restoration	1	LS	$	5,000.00	$	5,000.00		
Subtotal - Construction Materials & Installation							**$**	**883,900**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**132,585.00**
Total Construction Cost							**$**	**1,016,485**
Engineering							**$**	**101,648.50**
Engineering Design and Construction Fee	1	LS	$	101,648.50	$	101,648.50		
Total Project Costs							**$**	**1,118,134**

Preliminary Opinion of Cost
Town of Parachute

Project 4 - Add one booster station to serve 0.5 MG High Zone Tank (North)

Item	Quantity	Unit	Unit Cost	Line Total	Subtotal
Booster Station					**$ 535,100**
Site Piping					
12'' Buried PVC	70	LF	$ 100.00	$ 7,000	
12" Gate Valve	2	EA	$ 3,000.00	$ 6,000	
Excavation and Foundation					
Excavation	100	CY	$ 20.00	$ 2,000	
Grade walls	14	CY	$ 500.00	$ 7,000	
Slab on Grade	20	CY	$ 400.00	$ 8,000	
Metal Building					
Metal Building	576	SF	$ 100.00	$ 57,600	
Interior Piping and Pumping Equipment					
High Efficiency Pumps - Vertical Turbines	2	EA	$ 50,000.00	$ 100,000	
12" Piping	1	LS	$ 15,000.00	$ 15,000	
8" Check Valves	2	EA	$ 3,000.00	$ 6,000	
12" BFV	2	EA	$ 2,500.00	$ 5,000	
8" BFV	1	EA	$ 2,000.00	$ 2,000	
6" BFV	1	EA	$ 1,500.00	$ 1,500	
12" Mag Meter	1	LS	$ 5,000.00	$ 5,000	
Air Release valves	2	EA	$ 1,500.00	$ 3,000	
6"surge valve	1	EA	$ 5,000.00	$ 5,000	
Electrical and Mechanical					
VFD starters for pumps	2	EA	$ 15,000.00	$ 30,000	
Building Service and meter	1	LS	$ 25,000.00	$ 25,000	
Controls and instrumentation	1	LS	$ 60,000.00	$ 60,000	
Interior Wiring and Lighting	1	LS	$ 10,000.00	$ 10,000	
Mechanical HVAC Systems	1	LS	$ 55,000.00	$ 55,000	
Emergency Generator	1	LS	$ 125,000.00	$ 125,000	
Subtotal - Construction Materials & Installation					**$ 535,100**
Div. 1, Bonding, Mob. / Demob., OH&P	15%				**$ 80,265**
Total Construction Cost					**$ 615,365**
Engineering					**$ 73,843.80**
Engineering Bidding and Construction Phase	1	LS	$ 73,843.80	$ 73,843.80	
Total Project Costs					**$ 689,209**

Preliminary Opinion of Cost
Town of Parachute

Project 4a - Provide interim PS to feed proposed rodeo site

Item	Quantity	Unit	Unit Cost	Line Total	Subtotal
Booster Station					**$ 244,000**
Site Piping					
12'' Buried PVC	70	LF	$ 100.00	$ 7,000	
12" Gate Valve	2	EA	$ 3,000.00	$ 6,000	
Excavation and Foundation					
Excavation	100	CY	$ 20.00	$ 2,000	
Grade walls	14	CY	$ 500.00	$ 7,000	
Slab on Grade	20	CY	$ 400.00	$ 8,000	
Metal Building					
Metal Building	400	SF	$ 100.00	$ 40,000	
Interior Piping and Pumping Equipment					
Pumps	2	EA	$ 40,000.00	$ 80,000	
Piping/Mechanical	1	LS	$ 15,000.00	$ 15,000	
Electrical and Mechanical					
VFD starters for pumps	2	EA	$ 12,000.00	$ 24,000	
Electrial	1	LS	$ 30,000.00	$ 30,000	
Instrumentation	1	LS	$ 25,000.00	$ 25,000	
Subtotal - Construction Materials & Installation					**$ 244,000**
Div. 1, Bonding, Mob. / Demob., OH&P	15%				**$ 36,600**
Total Construction Cost					**$ 280,600**
Engineering					**$ 33,672.00**
Engineering Bidding and Construction Phase	1	LS	$ 33,672.00	$ 33,672.00	
Total Project Costs					**$ 314,272**

Preliminary Opinion of Cost
Town of Parachute

Project 5 - Add 12" pipeline to feed the proposed 0.5 MG storage tank to serve High Zone (North)

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**10,400**
Temporary traffic control	1	LS	$	10,000.00	$	10,000.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Water							**$**	**1,562,700**
Install water main (12" dia. C-900 PVC)	15,000	LF	$	100.00	$	1,500,000.00		
Install gate valve (12")	6	EA	$	2,500.00	$	15,000.00		
Install fire hydrant assembly	8	EA	$	5,400.00	$	43,200.00		
Connect to water main (at PS)	1	EA	$	4,500.00	$	4,500.00		
Restoration							**$**	**10,000**
Landscape restoration	1	LS	$	10,000.00	$	10,000.00		
Subtotal - Construction Materials & Installation							**$**	**1,583,100**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**237,465.00**
Total Construction Cost							**$**	**1,820,565**
Engineering							**$**	**182,056.50**
Engineering Design and Construction Fee	1	LS	$	182,056.50	$	182,056.50		
Total Project Costs							**$**	**2,002,622**

Preliminary Opinion of Cost
Town of Parachute

Project 5a - Provide 12" pipeline along CR 215 to proposed Rodeo site (North)

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**4,400**
Temporary traffic control	1	LS	$	4,000.00	$	4,000.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Water							**$**	**117,800**
Install water main (12" dia. C-900 PVC)	1,000	LF	$	100.00	$	100,000.00		
Install gate valve (12")	1	EA	$	2,500.00	$	2,500.00		
Install fire hydrant assembly	2	EA	$	5,400.00	$	10,800.00		
Connect to water main (at PS)	1	EA	$	4,500.00	$	4,500.00		
Restoration							**$**	**3,000**
Landscape restoration	1	LS	$	3,000.00	$	3,000.00		
Subtotal - Construction Materials & Installation							**$**	**125,200**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**18,780.00**
Total Construction Cost							**$**	**143,980**
Engineering							**$**	**14,398.00**
Engineering Design and Construction Fee	1	LS	$	14,398.00	$	14,398.00		
Total Project Costs							**$**	**158,378**

Preliminary Opinion of Cost
Town of Parachute

Project 6 - Add 12" looped pipelines to feed the west I-70 Interchange corridor

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**10,400**
Temporary traffic control	1	LS	$	10,000.00	$	10,000.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Water							**$**	**1,990,200**
Install water main (12" dia. C-900 PVC)	12,000	LF	$	100.00	$	1,200,000.00		
Air Release valves	3	EA	$	6,000.00	$	18,000		
Install gate valve (12")	8	EA	$	2,500.00	$	20,000.00		
Install fire hydrant assembly	8	EA	$	5,400.00	$	43,200.00		
Connect to existing water main	2	EA	$	4,500.00	$	9,000.00		
Jack and bore under interstate	600	LF	$	1,000.00	$	600,000.00		
Jack and bore under railroad	100	LF	$	1,000.00	$	100,000.00		
Restoration							**$**	**10,000**
Landscape restoration	1	LS	$	10,000.00	$	10,000.00		
Subtotal - Construction Materials & Installation							**$**	**2,010,600**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**301,590.00**
Total Construction Cost							**$**	**2,312,190**
Engineering							**$**	**231,219.00**
Engineering Design and Construction Fee	1	LS	$	231,219.00	$	231,219.00		
Total Project Costs							**$**	**2,543,409**

Preliminary Opinion of Cost
Town of Parachute

Project 7 - Add 6" dedicated pipeline to feed the existing storage tanks

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**3,900**
Temporary traffic control	1	LS	$	3,500.00	$	3,500.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Water							**$**	**735,000**
Install water main (6" dia. C-900 PVC)	4,000	LF	$	80.00	$	320,000.00		
Install gate valve (6")	4	EA	$	1,500.00	$	6,000.00		
Connect to existing water main	2	EA	$	4,500.00	$	9,000.00		
Jack and bore under interstate	400	LF	$	1,000.00	$	400,000.00		
Restoration							**$**	**5,000**
Landscape restoration	1	LS	$	5,000.00	$	5,000.00		
Subtotal - Construction Materials & Installation							**$**	**743,900**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**111,585.00**
Total Construction Cost							**$**	**855,485**
Engineering							**$**	**85,548.50**
Engineering Design and Construction Fee	1	LS	$	85,548.50	$	85,548.50		
Total Project Costs							**$**	**941,034**

Preliminary Opinion of Cost
Town of Parachute

Project 7a - Tank Mixing System

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
Water							**$**	**75,000**
Grid Bee or Solar Bee Mixing System	3	EA	$	25,000.00	$	75,000.00		
Subtotal - Construction Materials & Installation							**$**	**75,000**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**11,250.00**
Total Construction Cost							**$**	**86,250**
Engineering							**$**	**8,625.00**
Engineering Design and Construction Fee	1	LS	$	8,625.00	$	8,625.00		
Total Project Costs							**$**	**94,875**

Preliminary Opinion of Cost
Town of Parachute

Project 9 - Gravity Sewer, LS, Force mains to serve West I-70 Interchange Corridor

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**5,400**
Temporary traffic control	1	LS	$	5,000.00	$	5,000.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Gravity Sewer, PS, Forcemains							**$**	**1,708,000**
Install 8" gravity sewer	3,000	LF	$	100.00	$	300,000.00		
Manholes	8	EA	$	6,000.00	$	48,000		
Jack and bore under interstate	500	LF	$	1,000.00	$	500,000.00		
Jack and bore under railroad	100	LF	$	1,000.00	$	100,000.00		
Install dual 6" force mains	4,000	LF	$	80.00	$	320,000.00		
Pump Station excavation/structure/mechanical	1	LS	$	350,000.00	$	350,000.00		
Pump Station electrical/controls/instrumentation	1	LS	$	90,000.00	$	90,000.00		
Emergency Generator	1	LS	$	100,000.00	$	100,000.00		
Restoration							**$**	**10,000**
Landscape restoration	1	LS	$	10,000.00	$	10,000.00		
Subtotal - Construction Materials & Installation							**$**	**1,723,400**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**258,510.00**
Total Construction Cost							**$**	**1,981,910**
Engineering							**$**	**198,191.00**
Engineering Design and Construction Fee	1	LS	$	198,191.00	$	198,191.00		
Total Project Costs							**$**	**2,180,101**

Conceptual Opinion of Cost
Town of Parachute

Project 10 - Gravity Sewer along CR215 (North)

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**10,400**
Temporary traffic control	1	LS	$	10,000.00	$	10,000.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Water							**$**	**1,716,000**
Install 8" gravity sewer	15,000	LF	$	100.00	$	1,500,000.00		
Manholes	36	EA	$	6,000.00	$	216,000		
Restoration							**$**	**10,000**
Landscape restoration	1	LS	$	10,000.00	$	10,000.00		
Subtotal - Construction Materials & Installation							**$**	**1,736,400**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**260,460.00**
Total Construction Cost							**$**	**1,996,860**
Engineering							**$**	**199,686.00**
Engineering Design and Construction Fee	1	LS	$	199,686.00	$	199,686.00		
Total Project Costs							**$**	**2,196,546**

Conceptual Opinion of Cost
Town of Parachute

Project 10a - Interim Gravity Sewer along CR 215 (North)

Item	Quantity	Unit		Unit Cost		Line Total		Subtotal
General							**$**	**4,400**
Temporary traffic control	1	LS	$	4,000.00	$	4,000.00		
Stormwater permit and erosion control.	1	LS	$	400.00	$	400.00		
Water							**$**	**164,000**
Install 8" gravity sewer	1,400	LF	$	100.00	$	140,000.00		
Manholes	4	EA	$	6,000.00	$	24,000		
Restoration							**$**	**3,000**
Landscape restoration	1	LS	$	3,000.00	$	3,000.00		
Subtotal - Construction Materials & Installation							**$**	**171,400**
Div. 1, Bonding, Mob. / Demob., OH&P	15%						**$**	**25,710.00**
Total Construction Cost							**$**	**197,110**
Engineering							**$**	**19,711.00**
Engineering Design and Construction Fee	1	LS	$	19,711.00	$	19,711.00		
Total Project Costs							**$**	**216,821**

Preliminary Opinion of Cost
Town of Parachute

Project 11 - Replace existing dry pit pumps

Item	Quantity	Unit	Unit Cost	Line Total	Subtotal
Dry pit pumps					**$ 340,000**
Piping and Pumping Equipment					
Dry pit pumps	3	EA	$ 50,000.00	$ 150,000	
Piping modifications	1	LS	$ 15,000.00	$ 15,000	
Electrical and Instrumentation					
Electrial	1	LS	$ 25,000.00	$ 25,000	
Instrumentation	1	LS	$ 25,000.00	$ 25,000	
Emergency Generator	1	LS	$ 125,000.00	$ 125,000	
Subtotal - Construction Materials & Installation					**$ 340,000**
Div. 1, Bonding, Mob. / Demob., OH&P	15%				**$ 51,000**
Total Construction Cost					**$ 391,000**
Engineering					**$ 46,920.00**
Engineering Bidding and Construction Phase	1	LS	$ 46,920.00	$ 46,920.00	
Total Project Costs					**$ 437,920**

APPENDIX B

Town of Parachute

Water and Wastewater Rates

TOWN OF PARACHUTE
ORDINANCE NO. 576

AN ORDINANCE OF THE TOWN OF PARACHUTE INCREASING CHARGES FOR THE WATER AND WASTEWATER AND GARBAGE ENTERPRISE FUNDS UTILITIES FURNISHED BY THE TOWN OF PARACHUTE

Ordinance 551 water / irrigation / wastewater rate increase
Ordinance 239 established irrigation and water rates
Ordinance 314 changed water tap fees
Ordinance 361 water rate increase, changed sewer tap fee
Ordinance 387 sewer rate increase
Ordinance 414 water / sewer rate increase
Ordinance 432 water / sewer rate increase
Ordinance 468 water / sewer rate increase
Ordinance 475 water rate increase
Ordinance 490 water / sewer rate increase & tap fee increase
Ordinance 507 water / sewer rate increase
Ordinance 533 water / wastewater rate increase

WHEREAS, the Board of Trustees has considered and adopted the 2008 Budget for the Town of Parachute which included revenues and expenditures from water, irrigation and sewer service rate increases, and

WHEREAS, these water, irrigation and sewer rate increases shall become effective on the January 1, 2008 utility billing which will be sent the end of January 2008.

NOW THEREFORE, BE IT ORDAINED BY THE TOWN OF PARACHUTE BOARD OF TRUSTEES

Section 1: Water and Wastewater Rates Within the Corporate Limits: All Customers for water measured through meters and non-metered residential rates, shall be charged by the Town of Parachute Water and Sewer Enterprise Funds at the following rates, which shall be billed monthly:

WATER USAGE	WATER	WASTEWATER
For a minimum of 10,000 gallons *(Residential non-metered)*	$ 31.45	$ 36.08
Next 3,000 gallons *(Per 1,000 gallons)*	$ 2.22	$ 3.11
Above 13,000 gallons *(Per 1,000 gallons)*	$ 3.78	$ 3.36

Section 2: Water and Sewer Rates Outside the Corporate Limits: Customers outside the corporate limits of the Town, shall be charged by the Town of Parachute Water and Sewer Enterprise Funds at the following rates, which shall be billed monthly:

WATER USAGE	WATER	WASTEWATER
For a minimum of 10,000 gallons *(Residential non-metered)*	$ 34.23	$ 39.84
Next 3,000 gallons *(Per 1,000 gallons)*	$ 2.28	$ 3.28
Above 13,000 gallons *(Per 1,000 gallons)*	$ 3.93	$ 3.49

Section 3: Reduced Water and Sewer Rates: Residential customers who have applied and meet the criteria for reduced rates, shall be charged by the Town of Parachute Water and Sewer Enterprise Funds at the following rates, which shall be billed monthly:

WATER USAGE	WATER	WASTEWATER
For a minimum of 10,000 gallons *(Residential non-metered)*	$ 21.26	$ 21.34

Section 4: Reduced Water & Sewer Rate Certification: The reduced water and sewer rates will be charged to users on the Town's system, inside or outside of the corporate limits and meeting the income guidelines as follows.

FAMILY SIZE	FAMILY INCOME NOT TO EXCEED
1 person	$13,520.00 per year
2 persons	16,736.00 per year
3 persons	19,952.00 per year
4 persons	25,476.00 per year
5 persons	28,692.00 per year
6 persons	31,908.00 per year

These guideline will be applied as provided by Section 3 Ordinance No. 232

Section 5: Irrigation Water Rate: Water customers are charged by the Town of Parachute water enterprise fund for irrigation water for yards and gardens on the May through September monthly billing. The reduced rate restrictions are based on water/sewer reduced rate requirements.

IRRIGATION	IRRIGATION REDUCED
$15.75	$13.13

Section 6: Garbage Rate: Garbage customers are charged by the Town of Parachute garbage enterprise fund for contracted garbage collection. Reduced rates are based on the contractors age based discounts.

GARBAGE	GARBAGE REDUCED
$16.80	$15.75

Section 7: Water Tap Fees: The Fee for each EQR unit where both the water tap and all points of water use are within the incorporated limits of the Town is set at $4,875.00. Currently there is a moratorium on out-of-town-taps, if that moratorium was to be lifted the following would apply. All out-of-town-tap applications must be approved by the Board of Trustees and may be required to have a pre-application agreement. Where all points of water uses are outside the corporate limits the tap will be considered an out-of-town-tap at a fee of $5,625.00. Water tap fee revenues are restricted and are deposited into the Water Enterprise Fund Water Capital Equipment and Improvements Account.

Section 8.: Irrigation Tap Fees: The Fees for each unit where both the irrigation tap and all points of irrigation use are within the incorporated limits of the Town is $750.00. The current irrigation system does not serve any out-of-town-taps. Irrigation tap fee revenues are restricted and are deposited into the Water Enterprise Fund Water Capital Equipment and Improvements Account.

Section 9: Wastewater Tap Fees: The Fee for each EQR unit where both the wastewater tap and all points of wastewater use are within the incorporated limits of the Town is set at $4,875.00. Any out-of-town-tap applications would be contingent upon the availability of Town service mains and must be approved by the Board of Trustees and may be required to have a pre-application agreement. Where all points of wastewater uses are outside the corporate limits the tap will be considered an out-of-town-tap at a fee of $5,625.00. Wastewater tap fee revenues are restricted and are deposited into the Wastewater Enterprise Fund Wastewater Capital Equipment and Improvements Account.

INTRODUCED FOR FIRST READING at the regularly scheduled meeting of the Board of Trustees of the Town of Parachute, Colorado, a home rule municipality, on the **08th day of November 2007**.

PASSED, ADOPTED, AND ORDERED PUBLISHED BY TITLE ONLY AT SECOND READING as provided by law by a vote of _____ to _____ of the Board of Trustees of the Town of Parachute, Colorado, at its regular meeting held at the Town of Parachute on the 13th day of December 2007, and approved by the Mayor on the _____ day of December 2007.

BOARD OF TRUSTEES OF THE
TOWN OF PARACHUTE, COLORADO

By _____
Mayor

ATTEST:

_____
Town Clerk

Publication Date:

_____

PUBLIC NOTICE

Public notice is hereby given that on December _____, 2007, the Board of Trustees of the Town of Parachute adopted Ordinance No. 576 entitled:

AN ORDINANCE OF THE TOWN OF PARACHUTE INCREASING CHARGES FOR THE WATER AND SEWER ENTERPRISE FUNDS UTILITIES FURNISHED BY THE TOWN OF PARACHUTE

This ordinance was approved by the Town on December _____, 2007.

Copies of the adopted ordinance are available for inspection at the Town Hall, Parachute, Colorado. This Public Notice is given by order of the Board of Trustees.

Dated this _____ day of December, 2007.

TOWN OF PARACHUTE

_____

Town Clerk

TOWN OF PARACHUTE
ORDINANCE NO. 671

AN ORDINANCE OF THE TOWN OF PARACHUTE, COLORADO AMENDING SECTIONS 9.17.120 AND 9.17.130 OF THE PARACHUTE MUNICIPAL CODE BY INCREASING CHARGES FOR THE WATER ENTERPRISE FUND UTILITIES FURNISHED BY THE TOWN OF PARACHUTE

WHEREAS, the Board of Trustees of the Town of Parachute have reviewed the financial situation of the Water Enterprise Fund; and

WHEREAS, the Board of Trustees desires to improve the financial situation of the Water Enterprise Fund; and

WHEREAS, the water utility fees have not been increased since January 2008; and

WHEREAS, the Board of Trustees has determined to raise the water rates for both residential and commercial customers; and

WHEREAS, these water fee increases shall become effective on the May 2014, utility billing that will be sent the end of May 2014.

NOW THEREFORE, BE IT ORDAINED BY THE TOWN OF PARACHUTE BOARD OF TRUSTEES:

Section 1. Section 9.17.120, Water Service Fees, is hereby amended to read as follows:

9.17.120 Water Service Fees. The charges and bills for the water service shall be as follows:

A. Residential Rates. Customers measured through meters and non-metered residential rates shall be charged as follows:

RESIDENTIAL WATER USAGE	IN TOWN RATES	OUT OF TOWN RATES	REDUCED RATES
For a minimum of 10,000 gallons or residential non-metered	$44.95	$47.73	$34.76
Next 3,000 gallons (Per 1,000 gallons)	$2.22	$2.28	
Above 13,000 gallons (Per 1,000 gallons)	$3.78	$3.93	

B. Commercial Rates. Customers measured through meters and non-metered commercial rates shall be charged as follows:

COMMERCIAL WATER USAGE	IN TOWN RATES	OUT OF TOWN RATES
For a minimum of 10,000 gallons or commercial non-metered	$69.45	$72.23
Next 3,000 gallons (Per 1,000 gallons)	$2.22	$2.28
Above 13,000 gallons (Per 1,000 gallons)	$3.75	$3.93

Section 2. Section 9.17.130, Irrigation Water Service Fees, is hereby amended to read as follows:

9.17.130 Irrigation Water Services Fees. Water customers are charged by the Town water enterprise fund for irrigation water for yards and gardens on the May through September monthly billing. The reduced rate restrictions are based on water/sewer reduced rate requirements.

IRRIGATION WATER USAGE	IRRIGATION REDUCED RATES
$22.50	**$19.88**

Section 3. This Ordinance shall become effective May 1, 2014

INTRODUCED FOR FIRST READING at the regularly scheduled meeting of the Board of Trustees of the Town of Parachute, Colorado, a home rule municipality, on the **13th day of February 2014**.

PASSED, ADOPTED, AND ORDERED PUBLISHED BY TITLE ONLY AT SECOND READING as provided by law by a vote of _____ to _____ of the Board of Trustees of the Town of Parachute, Colorado, at its regular meeting held at the Town of Parachute on the **13th day of March 2014**, and approved by the Mayor on the _____ day of March 2014.

BOARD OF TRUSTEES OF THE
TOWN OF PARACHUTE, COLORADO