

Water System Master Plan

Town of Yampa, Colorado
2011

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ATTACHMENTS

Town of Yampa Water Rights Investigation, Prepared by Resource Engineering, Inc., April 21, 2010

Town of Yampa Water Quality Report, Prepared by McBride Water, September 10, 2010

1. INTRODUCTION

The Town of Yampa water system provides service to all residential and commercial structures throughout the town as well as a handful of customers outside the corporate limits. This Water System Master Plan (WSMP) is intended to serve as a foundation for the Town's continued efforts toward ensuring a safe, reliable drinking water supply. It provides a comprehensive review of the needs, desires and statutory requirements of this utility and develops an action plan for achieving these through assisting the Town in making wise decisions about facility and non-facility improvements, operations and service delivery that are consistent with the overall direction of the Town.

The Plan also serves to provide a basis for verification of the water system's compliance with the capacity requirements of the federal Safe Drinking Water Act, as amended in 1996, including the technical, managerial and financial capacity to remain in compliance with local, state and federal regulations. Of particular current note, the General Assembly of the State of Colorado enacted House Bill 08-1141 to amend the Colorado Revised Statutes for the purpose of ensuring adequate water supply for proposed developments being approved by local governments as a water supply entity. Such a determination of adequacy by the Town would be enabled, in part, by a water supply plan that:

- Has been reviewed and updated, if appropriate, within the previous ten years by the governing board of the water supply entity;
- Has a minimum twenty-year planning horizon;
- Lists the water conservation measures, if any, that may be implemented within the service area;
- Lists the water demand measure, if any, that may be implemented within the development;
- Includes a general description of the water supply entity's water obligations;
- Includes a general description of the water supply entity's water supplies; and
- Is on file with the local government

This Plan is intended to satisfy the above House Bill 08-1141 requirements, should the Town entertain an application for water service to a proposed development within ten years of adoption or review and updating.

The level of complexity of a water system master plan is typically commensurate with the level of complexity of the system and the community's rate of growth. It was identified by the Town that a good starting point toward this effort would be an update of its previous water system master plan, an Evaluation of Existing Municipal Water Facilities, April 1981, which provided recommended system improvements needed over a 10-year planning period. Because the 1981 plan recommended the addition of a new water storage tank, which has not yet been constructed, the WSMP includes elements of an updated preliminary engineering report needed for Colorado Department of Public Health and Environment (CDPHE) approval of this tank, as well as for eligibility for potential funding sources for the construction of the tank.

The Town's development of this WSMP has been enabled through the award of a Water Activity grant from the Colorado Water Supply Reserve Account. The decision to approve the grant request was made by the Colorado Water Conservation Board (CWCB) following approval by the Yampa-White River Basin Roundtable, and was based upon application findings that small communities such as Yampa should be assisted with funding to overcome

economic constraints for addressing water issues. The grant also includes funding for the design of storage tank upgrades.

2. EXECUTIVE SUMMARY

The Town of Yampa continues to demonstrate the adequate management, operation, maintenance and monitoring compliance of its public water system, provided that it continues to follow its master planning recommendations and update its plans on a regular basis.

3. PLANNING CONDITIONS

3.1 *Planning Area*

The Town of Yampa is located in the southern portion of Routt County, Colorado and lies within Sections 10 and 15 of Township 2 North, Range 85 West of the Sixth Principal meridian. The Town is situated at an elevation of approximately 7,880 feet above sea level. The Bear River flows northeast from the mountains of the Flat Tops Wilderness Area, through the southeast corner of the Town to its confluence with Phillips Creek. From here, it continues as the Yampa River. Colorado State Highway 131 and the Union Pacific Railroad run parallel through the northeastern corner of the Town (see Vicinity Map, Appendix A).

Incorporated in 1906 and named for the abundant local plant, Yampa is considered the gateway to recreational opportunities in the Flat Tops. The local economy is based upon the Town's proximity to surrounding land uses, including tourism, ranching, timber and mining. The current water system service area includes the municipal boundaries of the Town, which were mapped in 1998 as a part of a boundary survey plat and topographic mapping effort. This mapping is utilized herein as the basis for the water distribution system mapping (see Overall Water System Map, Appendix B).

3.2 *Related Plans*

The Town's November 1997 Master Plan developed three growth scenarios for consideration by the community and, following presentation of a Preferred Scenario to the Town Board, was adopted as its guiding document for decisions concerning growth, land use, development activity and municipal services. While emphasizing the Town's unique character, the Preferred Scenario is also intended to achieve sustainable economic growth and identifies several Future Annexation Areas, including the planned residential area to the west of the Snowden Subdivision, the US Forest Service Yampa Ranger District site, the existing triangular residential and commercial area along Highway 131, and an alternate commercial development site also along Highway 131 (see Overall Water System Map, Appendix B). For the purposes of this WSMP, the future water service area will be considered to include all Future Annexation Areas of the Preferred Scenario.

The Routt County Master Plan, adopted April 3, 2003, identifies the Town of Yampa as a designated Growth Center and includes the following among its development policies to "protect the viability of the County's agricultural lands, critical wildlife areas, and rural character, locate new urban development and compatible uses within Growth Centers as reflected in the appropriate sub-area plan":

- New residential, commercial and industrial developments and uses should occur within the vicinity of designated growth centers and in compliance with the adopted comprehensive plans of those areas.
- Routt County supports infill development and redevelopment within the boundaries of growth centers.
- Residential densities should generally decrease as the distance from Growth Centers increase.

3.2.1 Environmental Character

The Town's boundary survey shows that the corporate limits encompass approximately 156 acres of land situated primarily on the valley floor and at the toe of rising terrain to the southwest. The underlying geology is generally described as a quaternary alluvial formation, characterized by unconsolidated stream and floodplain deposits. Soils are generally classified as deep, well-drained and moderately permeable; however, small areas of poorly drained and slowly permeable soils also exist. Area vegetation consists of grasses and hay crops associated with the surrounding large ranches and grazing lands, mountain shrubs and sagebrush of the uplands and hillsides, and cottonwood and willow trees along the river riparian corridors. There is an abundance of wildlife in the area, including elk, mule deer, and sharptail and sage grouse. The climate is summarized by an average annual precipitation of 16.4 inches, an average monthly minimum temperature of 6.8° F in January, and an average monthly maximum temperature of 77.5° F in July.

3.2.2 Population

The US Census Bureau's most recent decennial census resulted in a total population of 429 in the year 2010. The 2009 population of Yampa was estimated by Town officials at 519 residents. The previous decennial census resulted in a total population of 443 in the year 2000.

3.3 Neighboring Water Systems

In an effort to address opportunities for coordinated planning and potential impacts to neighboring water supplies it is important to identify such systems. In the case of the Town of Yampa, the nearest public water system is 6 miles away, in Phippsburg.

The Bird and Nickell irrigation ditches flow through the southwest and southeast sections of the Town, respectively. These systems deliver irrigation water primarily to agricultural lands beyond the Town boundary limits. Some Town residents do apparently have water rights on the ditches but most are not currently irrigating with ditch water.

3.4 Growth Areas and Population Trends

The 1997 Master Plan projected a population of 491 by the year 2010 and its Preferred Scenario of land use and growth reflected objectives for achieving an ultimate population of 500 residents through the in-fill of existing vacant lots and the annexation of targeted areas adjacent to the Town. Town officials have indicated that growth is likely to continue due to Yampa's location between the resort communities of Steamboat Springs and Vail, which puts it within commuting distance from these areas of higher living costs.

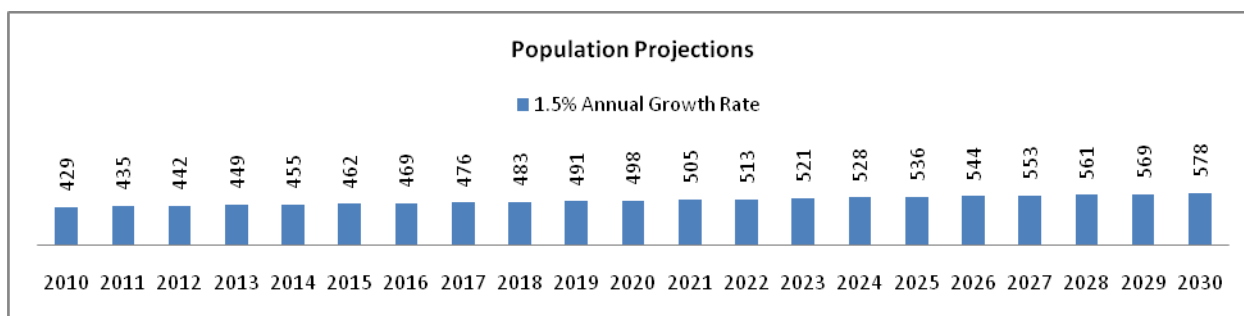
The 2003 Routt County Master Plan projections for population are based upon forecasts produced annually by the Colorado State Demography Office. The 2010 version of these forecasts shows a projected population of 47,997 for the entire county in the year 2040,

representing an average annual growth rate of 2.4% since 2010. The actual growth rate realized in the period since the completion of the 1997 Master Plan is calculated at 1.1% (assuming a current population for Yampa of 429). However, a recent average annual growth rate since the 2010 census is calculated at -0.3%. Other studies have identified similar ranges of projected growth rates while a lower-end rate of 1.5% has been used in Colorado's 2004 Statewide Water Supply Initiative, which has been an adopted standard for water right analyses (see attached Town of Yampa Water Rights Investigation). For the purposes of this WSMP, a 1.5% annual growth rate is used to reflect an historically declining growth rate and direction provided by the Town, in accordance with its goal for maintaining a relatively low but constant growth rate.

3.4.1 Planning Horizon

The WSMP is intended to be a "living document", continually providing guidance to decision makers. A typical planning period for such plans is 20 years, whereby the first 6 year period should be fairly predictable, allowing for an improvement schedule and financial program. The subsequent 14 year period is less predictable, which suggests a recommended update of the WSP every 5 to 6 years. Applying an annual growth rate of 1.5% results in population projections through the 20-year planning period as shown in Figure 3.4.1.

Figure 3.4.1



3.5 Existing Water Source of Supply

The Town of Yampa currently withdraws water from a single horizontal groundwater well located approximately 2 miles to the southwest, along Routt County Rd. No. 7 (see Overall Water System Map, Appendix B). The well is estimated to have a sustained yield of approximately 600 gallons per minute (gpm). A master meter measures the flow of water produced at the treatment facilities from the supply well (see Water Treatment Storage and Treatment Facilities Schematic, Appendix C). Records from this meter are summarized and water rights and water quality are discussed in the attached reports.

The Colorado Rural Water Association has twice named the Town's water the tastiest in the state, in 2005 and 2010. This award is based on a blind taste test at the association's annual conference and judges taste, color and odor.

The water usage and loss spreadsheets provided by the Town for 2000 through 2009 show a significant reduction in water loss beginning in 2005. Town officials have indicated that, during 2005, the amount of leakage was reduced by replacing service lines to several residences. One of these was apparently leaking approximately 60,000 gpd from at least September 2004

through 2005. Further leakages have been reduced by replacing the water services to mobile homes in the Huffstetler Trailer Park in May and June 2008.

4. DESCRIPTION OF EXISTING WATER SUPPLY SOURCES AND FACILITIES

4.1 *Service Area Features*

The Town's water service area features include its source of supply at the infiltration gallery and raw water supply line; the water treatment facility, including storage tank; a connecting treated water transmission main; and the distribution mains of the service area (see Overall Water System Map, Appendix B). The entire service area is fed by gravity from the source and consists of a single pressure zone.

4.2 *Regulatory Authority Review*

The Town of Yampa water system is a public water system (Public Water System ID No. CO0154900) operated under the requirements of the Colorado Primary Drinking Water Regulations. CDPHE's Water Quality Control Division is tasked with performing sanitary surveys of such systems every five years, with certain exceptions. According to the state regulations, the "sanitary survey includes, but is not limited to an onsite review of the water source(s) (identifying sources of contamination by using results of source water assessments or other relevant information where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water".

The Division's most recent survey was conducted August 3, 2010 and results of the survey were reported to the Town November 30, 2010. The only significant deficiency requiring immediate action involves the determination of the horizontal groundwater well being in a location that causes it to be impacted by contamination. The survey states that this deficiency is based upon cited standard design criteria for fencing to keep grazing livestock out of the area and recommends investigating further mitigating potential contamination or influence of manure waste on the well. The Town has provided CDPHE with a written response to the survey, indicating that it will be working with the landowner of the well site to protect the infiltration gallery.

The 2010 sanitary survey also identified minor deficiencies requiring corrective action. These have each been or are being addressed by Town personnel and include mostly system operation and maintenance planning recommendations. However, a source observation report item identifies the potential for the infiltration gallery groundwater well being reclassified as being under the direct influence of surface water, based upon its buried depth and proximity to surface water. A subsequent notice of evaluation of the source as a "conditional groundwater" classification was issued by CDPHE February 14, 2011, formally requesting additional water quality monitoring data from the Town. The Town has begun collection and reporting of this data in accordance with CDPHE's specific testing recommendations. (A December 8, 2004 Source Water Assessment Report by CDPHE rated the source susceptibility to potential contamination as Moderately Low.)

4.3 Facilities

4.3.1 Raw Water Infiltration Gallery

The infiltration gallery consists essentially of a horizontal groundwater well that was originally constructed with 300 lineal feet (lf) of 10-inch diameter perforated corrugated metal pipe (CMP) in 1978. Following identification of an enlargement of the gallery as its highest priority in its 1981 water system master plan, the Town added 200 lf of 12-inch perforated CMP in series with the existing section of pipe that same year (see Enlargement of Raw Water Supply Facilities as-built drawing, Appendix D). Each section of the gallery includes a monitoring well for observing groundwater depths, and presumably monitoring the hydraulic performance of the gallery; however, such observations have been infrequent. The last known flow test of the facility was conducted following completion of the 1981 expansion at an extended period rate of 800 gpm.

4.3.2 Water Treatment Facility

Originally built as a sedimentation and filtration plant for treating a surface water diversion from the adjacent Bear River, the facility was converted in 1978 to treat and store raw water from the infiltration gallery. The existing concrete sedimentation tanks were covered with a concrete roof slab and additional covered concrete tankage was constructed immediately adjacent to the original structure, creating the current treated water storage capacity of approximately 100,000 gallons. Simultaneous revisions to the plant piping and headworks allowed for the relocation of the chlorine addition point and improved contact time, for disinfection of the raw water prior to entering the storage tank. The entire tank structure was covered with a wood-framed protective roof system in 1995, in order to protect the concrete cover from further spalling. This addition created new storage space, which is currently used for the gas chlorination equipment, point of injection and supplies. The Town is also currently using this space for the caustic soda storage and liquid feed pre-treatment system used to reduce corrosion of water service piping and household plumbing systems, which is a potential source of copper and lead contaminants in the system.

The hydraulic capacity of the treatment facility is limited by the 4-inch diameter float control (altitude) valve. The 1981 water system master plan recommended that this valve be replaced with a 6-inch version and proposed an increase in capacity from 600 to 800 gpm for this improvement. The replacement valve is currently on hand with the Town but has not been installed.

4.3.3 Treated Water Storage Tank

The 100,000-gallon rectangular, below-grade, concrete tank at the site of the treatment plant is the only storage facility in the Town water system. It was originally constructed as a sedimentation basin, was covered in 1978, and has since been further modified to include a hypalon liner for eliminating leakage. In order to prevent groundwater from compromising the installation of the liner through external pressure during emptying of the tank, three well points are used for temporary pumping of the groundwater to waste.

4.3.4 Water Distribution System

The water distribution system is generally laid out along the Town's street grid and is connected to the treated water storage tank by a 10-inch diameter cast iron transmission line (see Overall Water System Map, Appendix B) that was constructed in 1974. The 1981 water system master plan identified system leakage as a significant source of water loss and placed a high priority on continued program of water main improvements. The system now consists of approximately

18,000 lineal feet of 6 and 8-inch diameter ductile iron and PVC pipe, constructed between 1978 and 1983 to replace smaller diameter, shallow-bury steel pipes dating to approximately 1940. These projects also typically included the replacement of older, shallow service lines and meters have been installed on all service connections since the completion of the 1981 plan.

The vast majority of pipes within the distribution system are considered to be in good condition; however, some small sections of older 4 and 6-inch diameter steel or cast iron pipe still remain. These pipes, along with older private service lines, are generally thought to be in poor condition and are often buried too shallow for reliable freeze protection. According to Town officials, the 7,500 lineal foot, 10-inch diameter transmission line is prone to failures about every other year, apparently due to inadequate bedding of the brittle cast iron pipe. A program of semi-annual leak detection surveys is maintained by the Town in an effort to continually reduce water losses. As leaking service lines are discovered, repairs are made as soon as possible. The last such survey was completed in 2009. Unfortunately, due to its relative inaccessibility, leaks in the transmission main cannot be detected.

4.4 Financial Status and Users

4.4.1 Water Billing Structure and Connection Fees

The Town's current water billing structure includes a base rate of \$28.60/month for each equivalent residential unit (ERU), for both residential and commercial. This base rate includes 5,000 gallons of usage for the months of September through April and 15,000 gallons of usage for the months of May through August. Water usage over the base volume is charged at \$1.65 per thousand-gallon increment. The base rate has increased three times since the \$17.50/month figure implemented in 1999 while the base volumes have essentially remained constant during this period.

The Town currently provides water service outside the town limits to the U.S. Forest Service Yampa Ranger District complex, a portion of Cordova's Trailer Park, and two other residences. These customers are billed 150% of the in-town service rates. In 1997 the Town Board implemented a policy that no new water services would be provided to out-of-town properties unless annexed.

New water service connection, or tap, fees in effect since 1999 are as follows:

- ¾-inch \$ 1,500
- 1-inch \$ 2,625
- 1¼-inch \$ 4,125
- 1½-inch \$ 6,000
- 2-inch \$10,500

4.4.2 Capital Expenditures

The Town's Water/Sewer Fund accounting includes water system reserve funds set aside from revenues for covering the costs of emergency repairs and scheduled replacement of system components and equipment. Other capital improvement projects have typically been funded through a combination of sources, including reserves and revenue bonds. The Town's only outstanding bond is scheduled to be retired in 2014. Funding opportunities for future improvements also include state and federal grant and loan programs.

5. WATER SYSTEM HYDRAULIC ANALYSIS AND CAPACITY EVALUATION

The Town's 1981 water system master plan utilized a computer-based system analysis to evaluate the capacity of the distribution pipe network. This included a fire flow simulation for determining theoretical capacities throughout the system, before and after then-proposed improvement projects. Fire hydrant flow tests were then completed to field-test the results, in order to calibrate the computer modeling. Since then, nearly all of the then-recommended water main replacement projects have been completed. These replacements were required for improving fire flow capabilities to all areas of the Town, as well as to complete the upgrade of essentially all of the original system pipe materials that were known to be leaking.

Currently, water distribution system modeling software is available that is much more robust in its computing capabilities and features. One such commercial program, WaterCAD, was utilized for this plan to analyze the Town's system. WaterCAD numerical computations are based on research conducted by the U.S. Environmental Protection Agency Drinking Water Research Division. The program includes two modes of analysis – Steady-State Network Hydraulics and Extended Period Simulation – and organizes pipe networks into the following categories of system elements for modeling purposes¹:

- Pipes – Transport water from one location (or node) to another.
- Junctions/Nodes – Specific points, or nodes, in the system at which an event of interest is occurring. This includes points where pipes intersect, where there are major demands on the system such as a large industry, a cluster of houses, or a fire hydrant, or critical points in the system where pressures are important for analysis purposes.
- Reservoirs and Tanks – Boundary nodes with a known hydraulic grade that define the initial hydraulic grades for any computational cycle. They form the baseline hydraulic constraints used to determine the condition of all other nodes during system operation. Boundary nodes are elements such as tanks, reservoirs and pressure sources.
- Pumps – Represented as nodes. Their purpose is to provide energy to the system and raise the water pressure.
- Valves – Mechanical devices used to stop or control the flow through a pipe, or to control the pressure in the pipe upstream or downstream of the valve. They result in a loss of energy in the system.

The layout for the base water distribution model, including pipe diameter and material, was imported from the CAD (Computer Aided Design or Drafting) version of the Town's Water System Map into WaterCAD to represent a physical approximation of the actual system. Nodes were placed at all pipe intersections and at fire hydrant lateral connections to the mains. Isolation valves are not included but could be added in the future to simulate desired operational scenarios. The existing 100,000-gallon treated water storage tank is simulated by a model Tank element of similar dimensions to the Town's, at an approximate base elevation of 8,045.5 feet above sea level, based upon as-constructed drawings of the 1977 tank cover and modifications project and interpolation of USGS topographic mapping of the area.

The water distribution system model consists of pipe segments which were converted from CAD line and polyline entities. These are drawn without typical fitting angle points and instead

¹ WaterCAD User's Guide, Haestad Methods, Inc., Waterbury, CT, 2002.

generally parallel the roadways for graphical purposes. Pipe junctions exist at every pipe intersection and terminus, including at fire hydrant locations.

5.1 Existing Water System

Several model scenarios were developed for the purpose of analyzing the Steady State hydraulic performance of the existing water distribution system. These included a base scenario with an average daily demand alternative applied to nodes representing an actual distribution of service connection water use records, and another with a maximum day Demand alternative applied to these same nodes. A multiplier was determined to represent the ratio between average daily and annual maximum day demands.

Other scenarios were developed to determine whether the existing water distribution system is able to meet fire flow demands while maintaining various pressure constraints. Automatic Fire Flow analyses were completed for a group of selected nodes representing all of the existing fire hydrants in the system. The associated fire flow alternatives for each of these scenarios are based upon minimum and upper limit flows of 1,000 and 2,000 gpm, respectively, for each of the hydrants, and each of these fire flows was applied by adding it to a demand alternative baseline of maximum day flows. A minimum residual pressure of 20 psi and a minimum zone pressure of 5 psi were established as further criteria for the fire flow analyses (see Water System Hydraulic Analysis Results, Appendix E).

In addition to the Automatic Fire Flow analyses, Steady State analyses were completed for scenarios representing a 1,500-gpm hydrant fire flow at the distribution system's most distant hydrant. This scenario was also based upon adding the fire flow demand to the maximum day flows (see Water System Hydraulic Analysis Results, Appendix E).

5.2 Future Water System

Model scenarios similar to those used for analyzing the existing water system were developed for a future condition representing buildout of the Town and expansion of the distribution system in the future water service areas and with projected demands identified in the attached Water Rights Investigation. In addition to these improvements, three alternative sites were identified with Town personnel for a new water storage tank and included in the model for comparative analyses of the scenarios (see Water System Hydraulic Analysis Results, Appendix E).

6. WATER CONSERVATION

The attached Town of Yampa Water Rights Investigation indicates that the Town's average winter (in-building) water usage figure of 130 gallons per capita/day (gpcd) is not exceptionally different from that of similarly aged systems and higher-elevation communities. The Town's ongoing leak detection surveys and efforts to improve water mains have resulted in significant reductions in water losses. However, there are also opportunities for reduction of water demands through implementation of the following examples of strategies and policies:

- Minimize the amount of water needed on public green spaces, streetscapes and commercial areas to incorporate xeriscaping techniques, low water use landscapes, and drought-resistant vegetation.

- Develop design guidelines in order to limit the amount of turf areas allowed in public landscapes and allow bluegrass turf only where necessary in recreational areas.
- Develop design guidelines in order to specify the use of high efficiency irrigation systems and evapotranspiration controllers in all irrigated areas.
- Develop design guidelines in order to stipulate water-efficient fixtures and appliances, including toilets, urinals, showerheads, and faucets in both commercial and residential buildings.
- Pursue options for the development and operation of separate untreated raw water sources, such as existing irrigation canals, for supplies that could reduce the Town's irrigation demand on both public and private property, thereby potentially reducing the annual amount of water needed from the Town's treated water supply.
- Support continued water main distribution and service line leak identification.
- Support dissemination of information regarding water use efficiency measures, through public education, customer water audits, and water-saving demonstrations.
- Support water rate structures and billing systems designed to encourage water conservation.
- Support regulatory measures designed to encourage water conservation.
- Support incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures.
- Support steps to develop, implement, monitor, review, and revise a Water Conservation Plan that outlines how the Town will improve water efficiency over the long-term.
- Commit to creating a "climate ready" community through such measures as planning and designing for a general increase in drought and flooding by reducing water use, minimizing the need for irrigation and promoting effective stormwater management.
- Support steps to develop, implement, monitor, review, and revise a Drought Mitigation Plan that addresses the curtailment measures and actions needed in an emergency to prepare, monitor, and mitigate the effects of a forecasted or existing drought; or equipment malfunction.
- Support establishment of a Drought Planning Advisory group that combines entities and stakeholders that can influence preparation and implementation.
- Support development of an on-going public education and awareness program related to water supply, water conservation and drought preparedness.

7. RECOMMENDATIONS

The following recommendations have been divided into Project and Non-Project Actions and prioritized by Town officials, based upon analyses provided in this WSMP and personal observations and experience with the ongoing management, operation and maintenance of the Town's water system. The actual order and timing for implementing these proposed regulatory and system planning tasks and infrastructure improvements are subject to change due to available funding, actual growth rates, changing regulatory requirements and planning updates.

7.1 Project Actions

7.1.1 Treated Water Storage Tank

The Town's 1981 water system master plan identified additional storage of treated water as the top priority for future water system projects. A subsequent Preliminary Engineering Report for a

Treated Water Storage Tank, August 2001, and an October 2008 Update of the original Opinion of Probable Construction Costs have advanced the Town's efforts for completing this project on the then-identified tank site of the Palmer property.

Recent discussions between Town officials and adjacent property owners have identified two additional potential sites, including the Fish & Cross site and the United States Forest Service site. Preliminary investigations show that each of the three sites provides the necessary elevation and proximity to the Town's existing distribution system for providing the identified benefits of increased fire flow and storage, reduction of peak demands, redundancy, and improved distribution system hydraulic capacity. A further update of the Opinion of Probable Construction Costs has been completed to reflect the additional tank sites and current estimated unit costs for tank options of similar size and materials. However, no subsurface geotechnical or other on-site investigations have been completed to identify potential design constraints. A summary of these budget costs is shown in Figure 7.1.1 for the itemized estimates provided in Appendix F.

Figure 7.1.1

Town of Yampa Summary of Construction Budgets for Various Tank Options June 2011 Update				
Site No. 2 (Palmer Property)				
Tank Material	Size Gallons	Status	Construction Budget (rounded)	Total Cost per Gallon
Steel	250,000	New	\$907,756	\$3.63
Steel	300,000	New	\$996,881	\$3.32
Steel	250,000	Used	\$676,319	\$2.71
Concrete	250,000	New	\$1,141,006	\$4.56
Site No.3 (USFS Property)				
Tank Material	Size Gallons	Status	Construction Budget (rounded)	Total Cost per Gallon
Steel	250,000	New	\$968,890	\$3.88
Steel	300,000	New	\$960,435	\$3.20
Steel	250,000	Used	\$534,579	\$2.14
Concrete	250,000	New	\$999,266	\$4.00
Site No.4 (Fish and Cross Ranch Property)				
Tank Material	Size Gallons	Status	Construction Budget (rounded)	Total Cost per Gallon
Steel	250,000	New	\$1,190,840	\$4.76
Steel	300,000	New	\$1,279,965	\$4.27
Steel	250,000	Used	\$959,403	\$3.84
Concrete	250,000	New	\$1,424,090	\$5.70

Figure 7.1.1, cont'd.

NOTES:

- 1 Budget does not include cost of land and utility easement acquisition for the tank site and associated survey and plat work.
- 2 Utility easement is required along north side of USFS parcel to allow placement of water line.

The Town's Water Activity grant for funding the development of this WSMP also includes funding for the design of storage tank upgrades, based upon the assumptions of the original engineering report. It is recommended that the Town use the comparative construction budget costs and other considerations, including property acquisition and access, for analyzing the three alternative tank sites and continuing discussions with the property owners. The results of these efforts may then be used as a basis for deciding which site to use for completing the tank design.

7.1.2 Water Main Replacements and Inter-Connections

The Town's 1981 Evaluation of Existing Municipal Water Facilities recommended five water main projects for improving fire flows, eliminating dead ends, and providing additional distribution system network connections for reducing service interruptions. All but one of these of these projects has since been completed – an eight-inch loop from Moffat Avenue along the east Town boundary to the south Town boundary, connecting with the 10-inch transmission main in County Road 7. The 1981 plan assigned this project a low priority and identified its construction as a possible developer-borne cost. This and other areas of future growth modeled in the hydraulic analyses of Chapter 5 should continue to be considered by the Town for extensions of and benefits to the existing distribution system.

7.1.3 Water System Facilities Replacement

As the Town's water system facilities continue to age, the expected remaining life of materials and components will continue to diminish, resulting in potential emergency repairs. It is recommended that the Town continue to identify, schedule, and budget for such replacements, similar to what was done for its successful 2010 Gate Valve Replacement Project. Ongoing maintenance plans, including leak detection and valve exercising will facilitate these efforts.

7.2 Non-Project Actions

7.2.1 Source Water Protection

The November 30, 2010 CDPHE sanitary survey report cited design criteria for fencing to keep grazing livestock out of the infiltration gallery area and recommended further investigations for further mitigating potential contamination or influence of manure waste on this horizontal groundwater well. The Town should continue working with the landowner to secure the control of land uses at the well site. The Town may also wish to pursue a source protection area under a Municipal Watershed Protection Ordinance as allowed under state law.

It is also recommended that the Town monitor potential regulatory implications to both water supply and wastewater treatment through the triennial CDPHE process described in the attached Water Quality Report.

7.2.2 Source Groundwater Classification

The November 30, 2010 CDPHE sanitary survey report also recommended corrective actions for minor system deficiencies that are continuing to be addressed by Town personnel, including the collection and reporting of water quality monitoring data needed by CDPHE to further evaluate the Town's well as a source groundwater classification. Should this evaluation determine the source to be under the influence of surface water, filtration and disinfection process upgrades to the Town's treatment facilities will be required. In the interim, funding for the planning, design and construction of these potential water treatment plant improvements should be pursued in order to meet the schedule of any resulting compliance orders by the state.

7.2.3 Water Supply Availability

The attached Water Rights Investigation provides recommendations for securing sufficient physical and legal water supply to meet existing and future water demands. These improvements should be implemented by the Town with assistance from legal counsel and consultants as required.

7.2.4 Water Conservation Planning

Development of a Water Conservation Plan, including concepts and generally accepted municipal water conservation measures, is identified in Chapter 6, Water Conservation. Although the Town of Yampa is not required to submit and adopt such a plan as defined by the Colorado Water Conservation Act, the Colorado Water Conservation Board does provide useful plan development guidance and review through the Office of Water Conservation and Drought Planning.

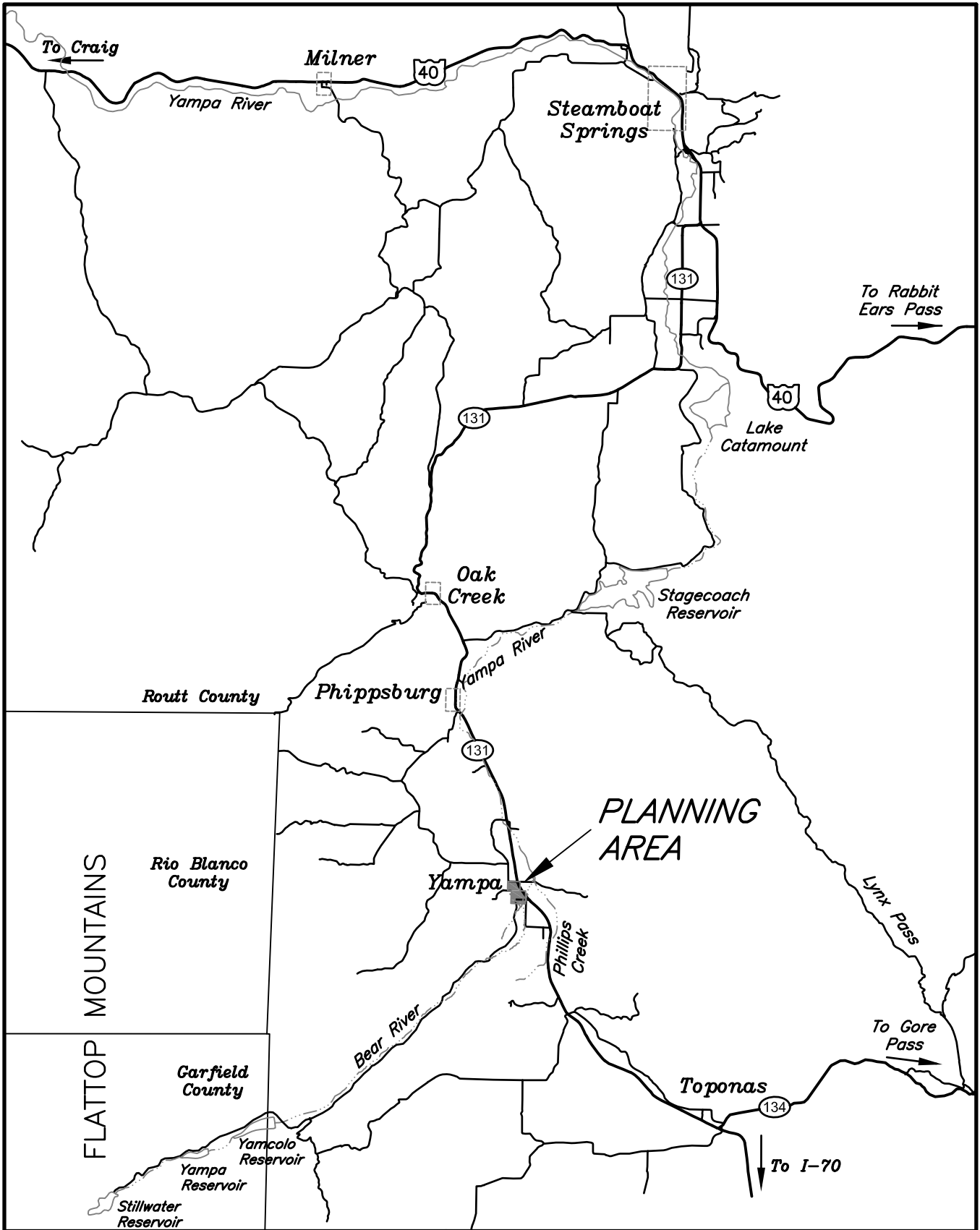
7.2.5 Master Planning Updates

Because the 20-year typical planning horizon for a WSMP tends to be less predictable for the latter part of the period, it is recommended that the plan be updated every 5 to 6 years. Future upgrades should include such additional areas of interest as determined by the Town and may incorporate such tasks as hydraulic model calibration, including existing tank and other facilities survey, and peak-day and peak-hour flow rate evaluations. The Town should also consider updating its 1997 Master Plan.

Appendix A

Vicinity Map

I:\03653.0088 Yampa Water Facilities Plan Update\Planning-Prelim Design\Drawings\Yampa vicinity map.dwg, VICINITY MAP, 6/23/2011 3:29:46 PM, Letter, 1:1



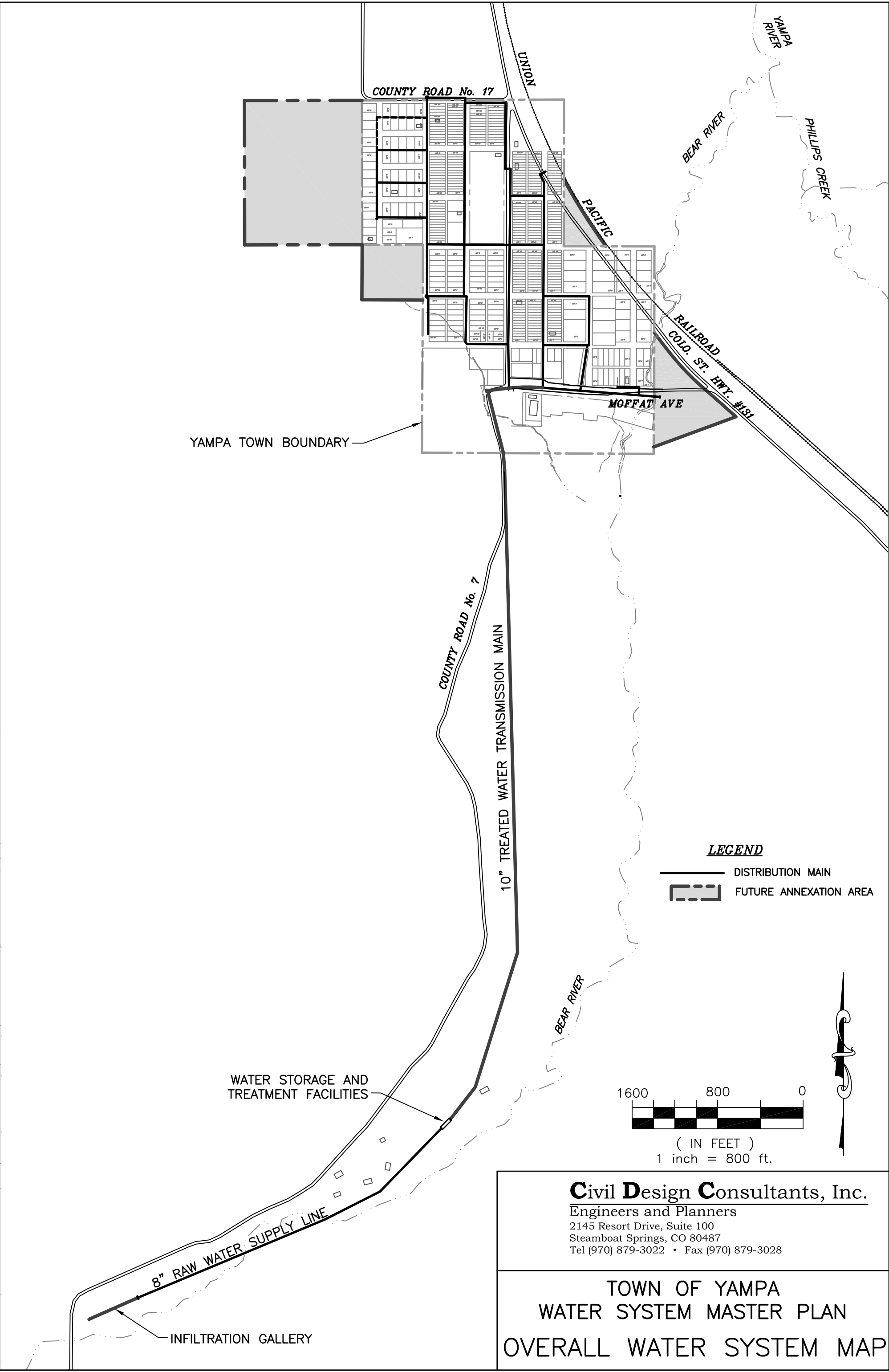
Civil Design Consultants, Inc.
Engineers and Planners
2145 Resort Drive, Suite 100
Steamboat Springs, CO 80487
Tel (970) 879-3022 • Fax (970) 879-3028

**TOWN OF YAMPA
WATER SYSTEM MASTER PLAN
VICINITY MAP**

Appendix B

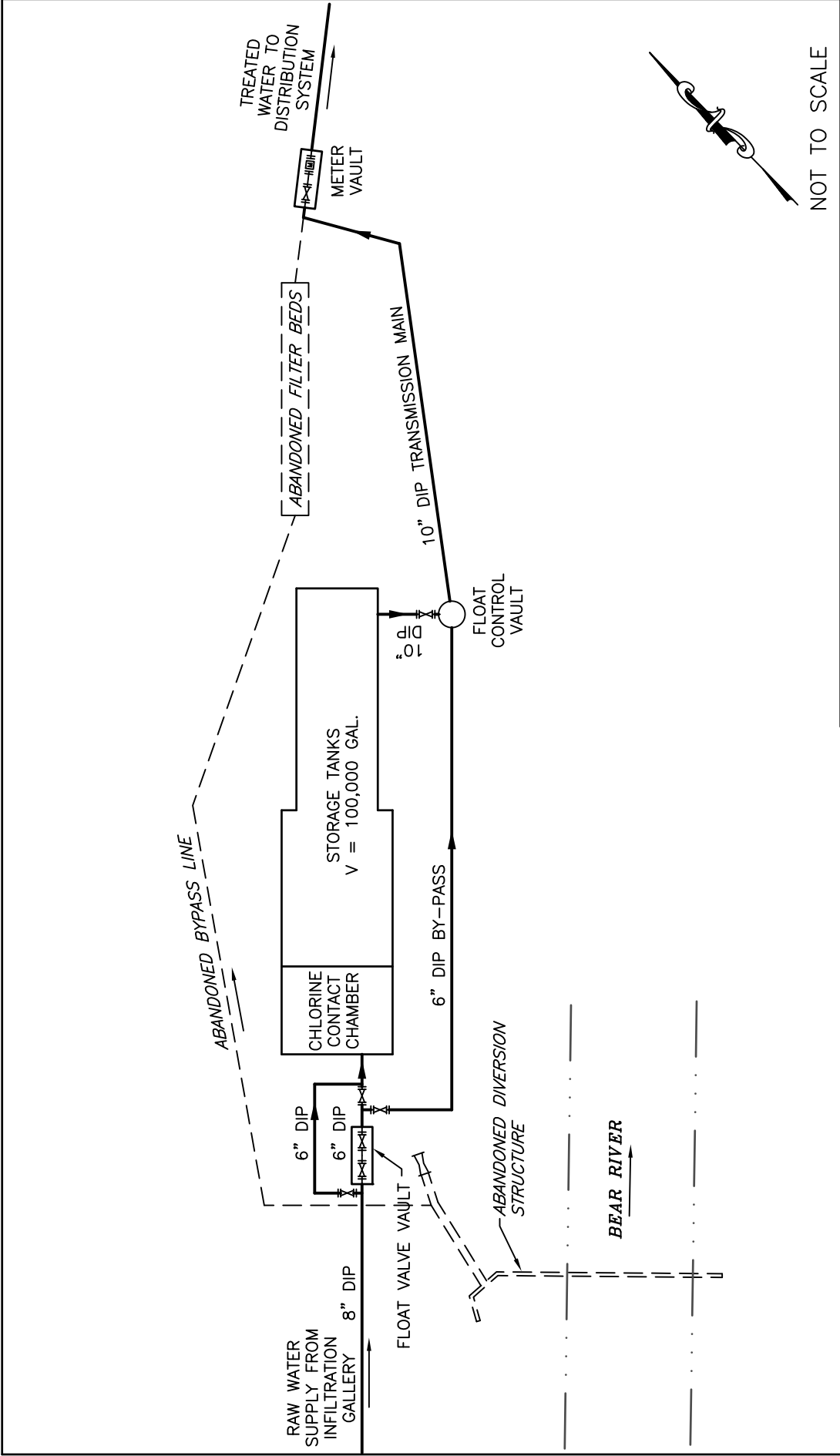
Overall Water System Map

I:\0353\008B_Yampa Water Facilities_Plan_Hydro\Planning_Prelim_Design\Drawings\CDC-YAMPABASE.dwg OVERALL SYSTEM 6/23/2011 3:17:02 PM Tpkldh 1x1



Appendix C

Water Storage and Treatment Facilities Schematic



Civil Design Consultants, Inc.

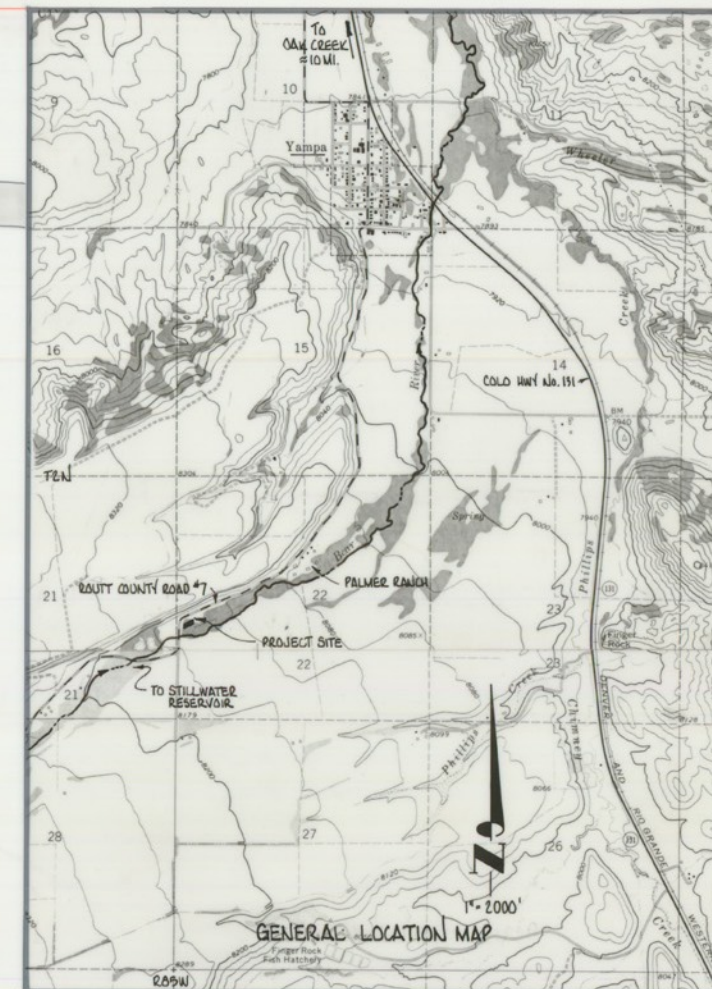
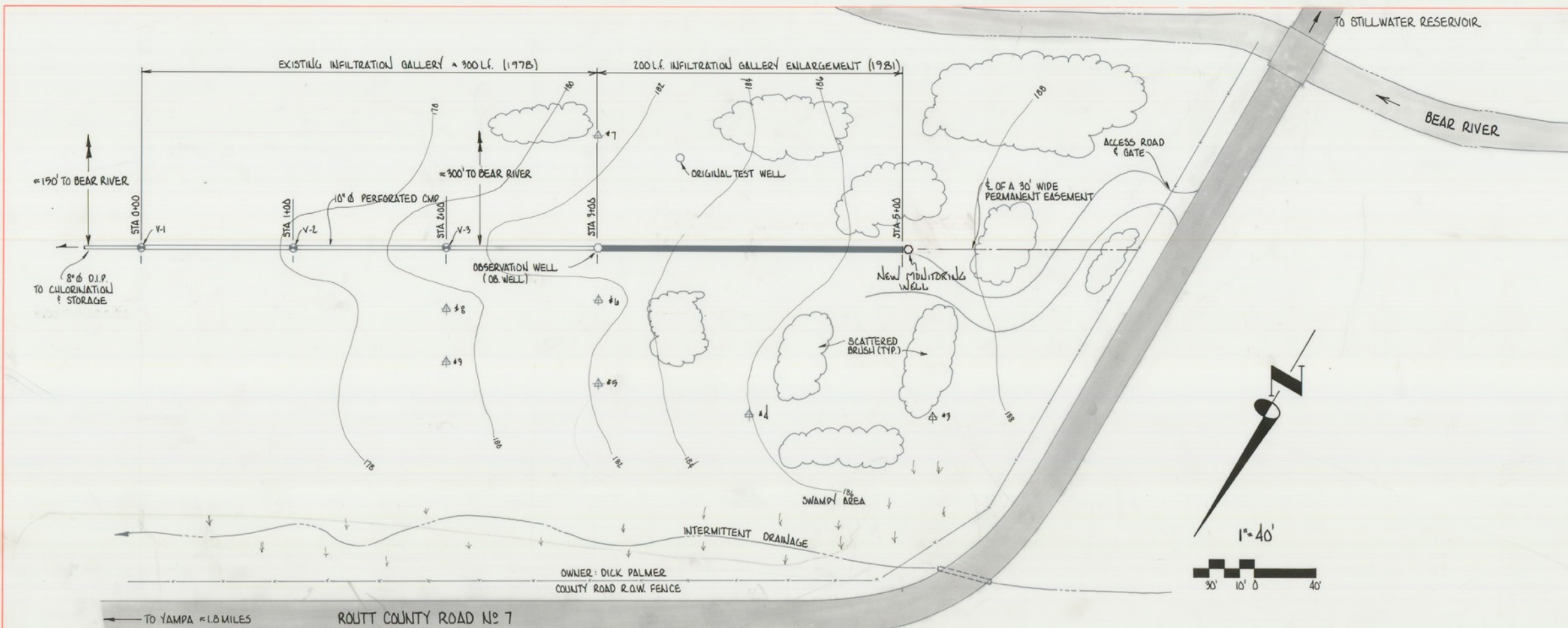
Engineers and Planners
 First Financial Center, 2145 Resort Drive, Suite 100
 Steamboat Springs, CO 80487
 Tel (970) 879-3022 • Fax (970) 879-3028

TOWN OF YAMPA WATER SYSTEM MASTER PLAN WATER STORAGE AND TREATMENT FACILITIES SCHEMATIC

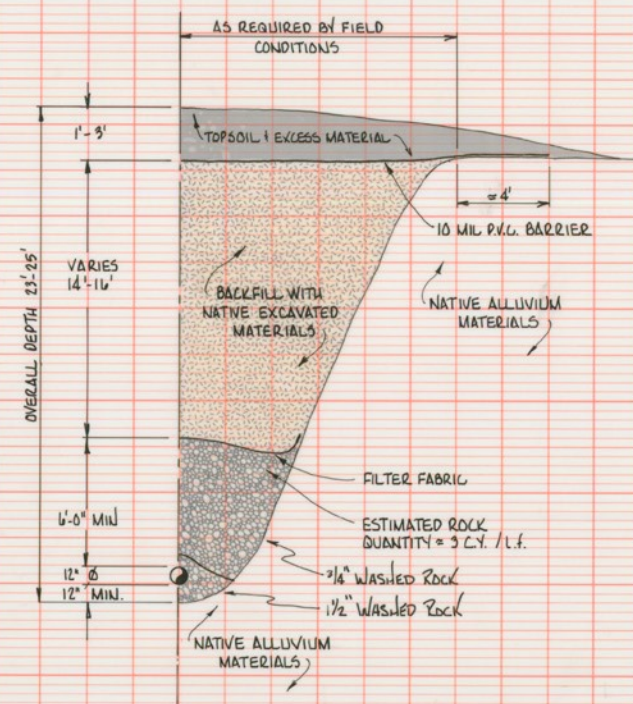
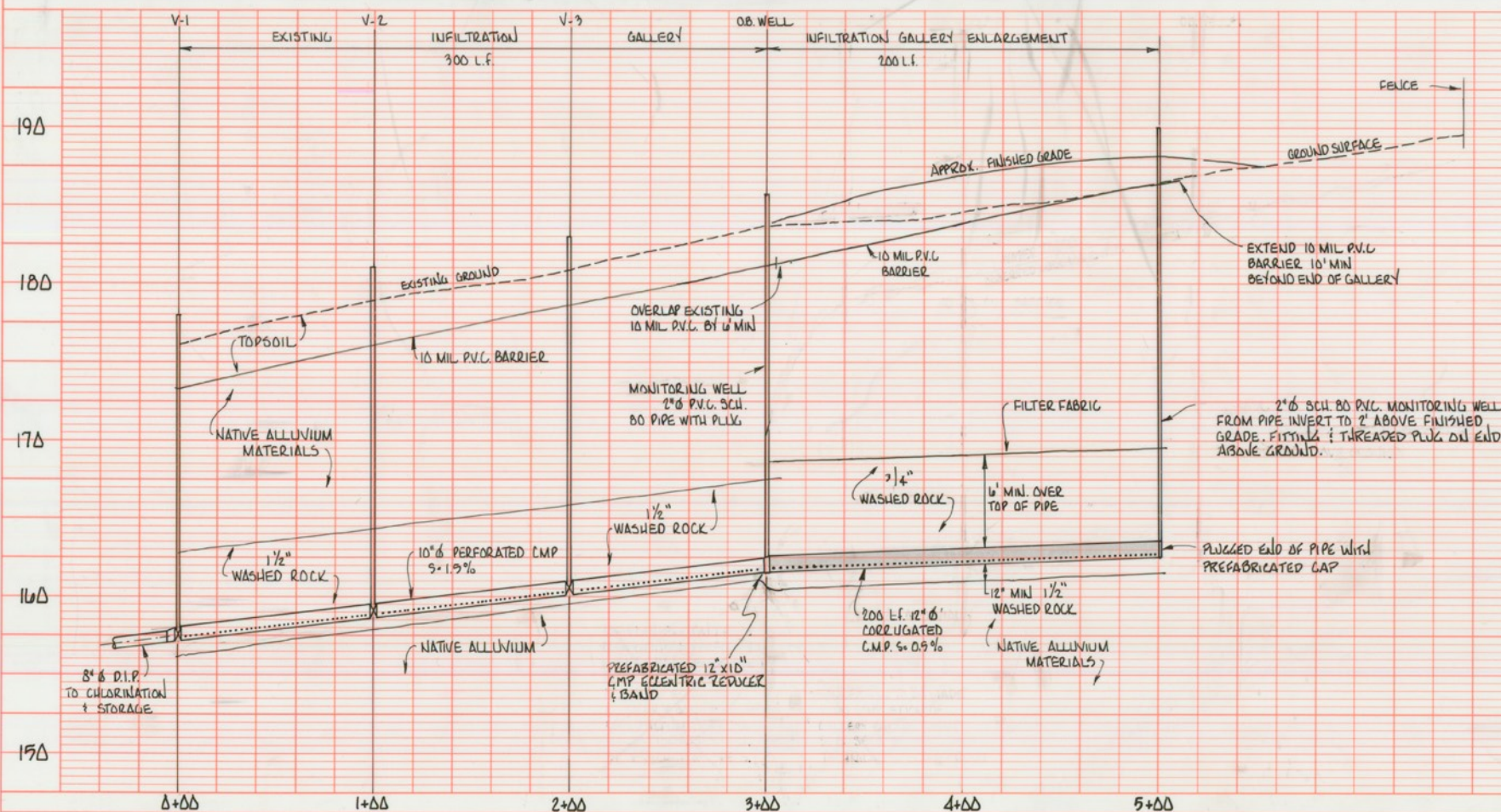
Appendix D

Enlargement of Raw Water Supply Facilities As-Built Drawing

PLAN	DATE	
	BY	
	REVISION	
	NO.	



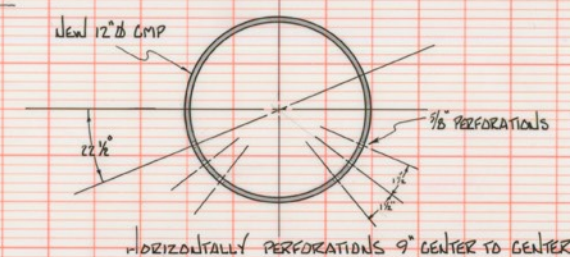
PROFILE	DATE	
	BY	
	REVISION	
	NO.	



TYPICAL SECTION THRU ENLARGEMENT

SCALES
PLAN 1"=40'
HORIZONTAL 1"=40'
VERTICAL 1"=5'
SECTION NONE

TYPICAL PERFORATION DETAIL
SCALE: 1"=1/2'



AS-BUILT DRAWING

NOTE: THIS DRAWING SHOWS THE APPROXIMATE RELATIVE LOCATIONS, DEPTHS AND ELEVATIONS OF THE FACILITIES DESCRIBED IN THE TITLE BLOCK AS THEY WERE CONSTRUCTED. THE INFORMATION SHOWN HEREIN REFLECTS A COMPILATION OF FIELD NOTES FROM THE CONSTRUCTION CONTRACTOR AND THE CONSTRUCTION INSPECTOR. IT IS PROVIDED ONLY AS A CONVENIENCE TO AID IN FUTURE LOCATION OF THE FACILITIES AND AS AN INVENTORYING AND PLANNING TOOL. IT IS NOT A CERTIFIED SURVEY MAP. EXACT LOCATIONS, DEPTHS AND ELEVATIONS SHOULD BE OBTAINED THROUGH FIELD VERIFICATION.

Project No. 353-9

Drawing No.

Drawn: C.P.S. / J.D.

Scale: NOTED



TOWN OF YAMPA

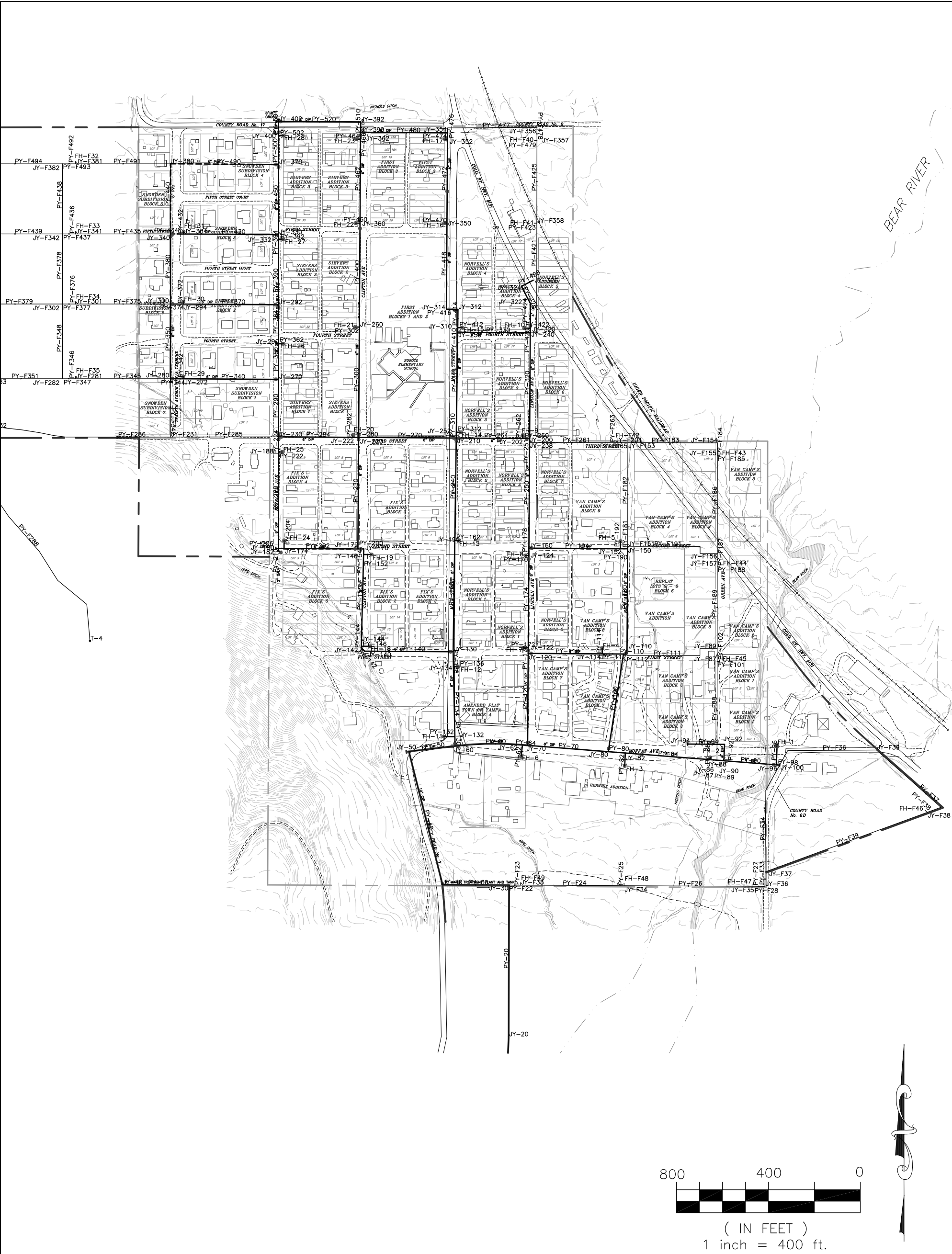
AS-BUILT DRAWING
ENLARGEMENT OF RAW WATER
SUPPLY FACILITIES

DISMUKE & DISMUKE
ENGINEERING - SURVEYING

Revised: JANUARY 82 Date: 28 AUGUST 1981

Appendix E

Water System Hydraulic Analysis Results



Civil Design Consultants, Inc.
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TOWN OF YAMPA
WATER SYSTEM MASTER PLAN
HYDRAULIC ANALYSIS MAP

Scenario: Modified Base re: 4"+ diameter pipes only, Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
FH-1	Zone - 1	3	true	true	1,000.00	1,137.73	1,000.00	1,137.73	20.00	20.01	5.00	23.52	JY-100	N/A	0.41	JY-10
FH-2	Zone - 1	3	true	true	1,000.00	1,222.93	1,000.00	1,222.93	20.00	20.02	5.00	19.49	FH-1	N/A	0.41	JY-10
FH-3	Zone - 1	3	true	true	1,000.00	1,246.98	1,000.00	1,246.98	20.00	20.02	5.00	18.66	JY-40	N/A	0.40	JY-10
FH-4	Zone - 1	3	true	true	1,000.00	1,314.21	1,000.00	1,314.21	20.00	20.03	5.00	15.27	JY-40	N/A	0.40	JY-10
FH-5	Zone - 1	3	true	true	1,000.00	1,334.71	1,000.00	1,334.71	20.00	20.03	5.00	14.21	JY-40	N/A	0.40	JY-10
FH-6	Zone - 1	3	true	true	1,000.00	1,278.30	1,000.00	1,278.30	20.00	20.03	5.00	17.10	JY-40	N/A	0.40	JY-10
FH-7	Zone - 1	3	true	true	1,000.00	1,341.21	1,000.00	1,341.21	20.00	20.04	5.00	13.87	JY-40	N/A	0.40	JY-10
FH-8	Zone - 1	3	true	true	1,000.00	1,383.06	1,000.00	1,383.06	20.00	20.05	5.00	11.67	JY-40	N/A	0.40	JY-10
FH-9	Zone - 1	3	true	true	1,000.00	1,421.96	1,000.00	1,421.96	20.00	20.06	5.00	9.58	JY-40	N/A	0.40	JY-10
FH-10	Zone - 1	3	true	true	1,000.00	1,338.30	1,000.00	1,338.30	20.00	20.03	5.00	14.03	JY-40	N/A	0.40	JY-10
FH-11	Zone - 1	3	true	true	1,000.00	1,302.77	1,000.00	1,302.77	20.00	20.03	5.00	15.87	JY-40	N/A	0.40	JY-10
FH-12	Zone - 1	3	true	true	1,000.00	1,300.24	1,000.00	1,300.24	20.00	20.03	5.00	15.98	JY-40	N/A	0.40	JY-10
FH-13	Zone - 1	3	true	true	1,000.00	1,348.52	1,000.00	1,348.52	20.00	20.04	5.00	13.49	JY-40	N/A	0.40	JY-10
FH-14	Zone - 1	3	true	true	1,000.00	1,423.42	1,000.00	1,423.42	20.00	20.06	5.00	9.50	JY-40	N/A	0.40	JY-10
FH-15	Zone - 1	3	true	true	1,000.00	1,460.50	1,000.00	1,460.50	20.00	20.07	5.00	7.46	JY-40	N/A	0.40	JY-10
FH-16	Zone - 1	3	true	true	1,000.00	1,487.63	1,000.00	1,487.63	20.00	20.08	5.00	5.94	JY-40	N/A	0.39	JY-10
FH-17	Zone - 1	17	true	true	1,000.00	1,499.28	1,000.00	1,499.28	20.00	21.24	5.00	5.28	JY-40	N/A	0.39	JY-10
FH-18	Zone - 1	3	true	true	1,000.00	1,223.31	1,000.00	1,223.31	20.00	20.02	5.00	19.82	JY-40	N/A	0.41	JY-10
FH-19	Zone - 1	3	true	true	1,000.00	1,281.16	1,000.00	1,281.16	20.00	20.03	5.00	16.95	JY-40	N/A	0.40	JY-10
FH-20	Zone - 1	3	true	true	1,000.00	1,382.06	1,000.00	1,382.06	20.00	20.05	5.00	11.72	JY-40	N/A	0.40	JY-10
FH-21	Zone - 1	3	true	true	1,000.00	1,356.87	1,000.00	1,356.87	20.00	20.04	5.00	13.06	JY-40	N/A	0.40	JY-10
FH-22	Zone - 1	3	true	true	1,000.00	1,408.09	1,000.00	1,408.09	20.00	20.05	5.00	10.33	JY-40	N/A	0.40	JY-10
FH-23	Zone - 1	3	true	true	1,000.00	1,498.57	1,000.00	1,498.57	20.00	20.08	5.00	5.32	JY-40	N/A	0.39	JY-10
FH-24	Zone - 1	3	true	true	1,000.00	1,243.35	1,000.00	1,243.35	20.00	20.02	5.00	18.83	JY-40	N/A	0.40	JY-10
FH-25	Zone - 1	3	true	true	1,000.00	1,328.76	1,000.00	1,328.76	20.00	20.04	5.00	14.52	JY-40	N/A	0.40	JY-10
FH-26	Zone - 1	3	true	true	1,000.00	1,339.59	1,000.00	1,339.59	20.00	20.04	5.00	13.96	JY-40	N/A	0.40	JY-10
FH-27	Zone - 1	3	true	true	1,000.00	1,391.19	1,000.00	1,391.19	20.00	20.05	5.00	11.24	JY-40	N/A	0.40	JY-10
FH-28	Zone - 1	3	true	true	1,000.00	1,468.50	1,000.00	1,468.50	20.00	20.07	5.00	7.01	JY-40	N/A	0.40	JY-10
FH-29	Zone - 1	3	true	true	1,000.00	1,316.07	1,000.00	1,316.07	20.00	20.03	5.00	15.17	JY-40	N/A	0.40	JY-10
FH-30	Zone - 1	3	true	true	1,000.00	1,364.20	1,000.00	1,364.20	20.00	20.04	5.00	12.67	JY-40	N/A	0.40	JY-10
FH-31	Zone - 1	3	true	true	1,000.00	1,392.03	1,000.00	1,392.03	20.00	20.05	5.00	11.19	JY-40	N/A	0.40	JY-10
JY-4	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-5	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-10	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-20	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-30	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-40	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Title: Town of Yampa

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Civil Design Consultants Inc

© Bentley Systems, Inc. Haestad Methods Solution Center Watertown, CT 06795 USA +1-203-755-1666

Project Engineer: Randy Sackett

WaterCAD v7.0 [07.00.061.00]

Page 1 of 4

Scenario: Modified Base re: 4"+ diameter pipes only, Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-50	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-60	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-62	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-70	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-80	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-82	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-86	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-88	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-90	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-92	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-94	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-96	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-100	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-110	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-112	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-114	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-120	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-122	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-124	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-130	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-132	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-134	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-140	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-142	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-144	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-146	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-150	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-152	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-160	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-170	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-172	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-174	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-180	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-182	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-188	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-190	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-200	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Modified Base re: 4"+ diameter pipes only, Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-202	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-210	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-220	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-222	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-230	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-238	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-240	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-250	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-252	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-260	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-270	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-272	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-280	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-290	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-292	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-294	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-300	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-310	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-312	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-314	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-320	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-322	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-324	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-326	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-330	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-332	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-334	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-340	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-350	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-352	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-354	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-360	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-362	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-370	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-380	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-390	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-392	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Title: Town of Yampa

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Project Engineer: Randy Sackett

WaterCAD v7.0 [07.00.061.00]

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Scenario: Modified Base re: 4"+ diameter pipes only, Automatic Fire Flow Analysis
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-400	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-402	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Extended Period Analysis: 19.00 hr / 24.00

Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
FH-1	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	30.01
FH-2	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	30.88
FH-3	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	30.88
FH-4	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.21	34.70
FH-5	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.26	38.62
FH-6	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.72	30.16
FH-7	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.13	33.80
FH-8	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.69	36.64
FH-9	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.60	40.06
FH-10	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.65	43.55
FH-11	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.28	31.27
FH-12	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.17	32.09
FH-13	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.06	35.50
FH-14	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.25	39.91
FH-15	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,956.10	43.31
FH-16	7,847.00	Zone - 1	Demand	0.00	Fixed	0.00	7,953.13	45.92
FH-17	7,840.00	Zone - 1	Demand	1,000.00	Fire	1,000.00	7,950.33	47.74
FH-18	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.29	31.71
FH-19	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.81	34.96
FH-20	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.25	39.48
FH-21	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,954.02	43.28
FH-22	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.83	46.65
FH-23	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,951.87	48.83
FH-24	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.25	34.29
FH-25	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,954.78	38.41
FH-26	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,953.29	41.66
FH-27	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.74	45.32
FH-28	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.13	48.51
FH-29	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,953.21	42.06
FH-30	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.98	44.12
FH-31	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.73	46.18
JY-4	8,082.00	Zone - 2	Demand	0.00	Fixed	0.00	8,078.74	-1.41
JY-5	8,068.00	Zone - 2	Demand	0.00	Fixed	0.00	8,067.38	-0.27
JY-10	8,050.00	Zone - 2	Demand	0.00	Fixed	0.00	8,050.30	0.13
JY-20	7,925.00	Zone - 1	Demand	0.00	Fixed	0.00	7,986.11	26.44
JY-30	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,978.70	29.72
JY-40	7,920.00	Zone - 1	Demand	0.00	Fixed	0.00	7,975.45	23.99
JY-50	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.74	32.34
JY-60	7,894.00	Zone - 1	Demand	1.78	Composite	1.68	7,966.47	31.36
JY-62	7,895.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.72	30.60
JY-70	7,895.00	Zone - 1	Demand	13.95	Composite	5.99	7,965.66	30.57
JY-80	7,894.00	Zone - 1	Demand	3.57	Composite	7.95	7,965.38	30.88
JY-82	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	30.88
JY-86	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	30.88
JY-88	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	30.88
JY-90	7,894.00	Zone - 1	Demand	4.15	Residential	10.36	7,965.37	30.88
JY-92	7,893.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	31.31
JY-94	7,892.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	31.74
JY-96	7,894.00	Zone - 1	Demand	3.39	Composite	4.94	7,965.37	30.88
JY-100	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.37	30.88
JY-110	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.19	34.69
JY-112	7,884.00	Zone - 1	Demand	11.90	Composite	28.57	7,964.21	34.70
JY-114	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.21	34.70
JY-120	7,886.00	Zone - 1	Demand	4.19	Composite	9.51	7,964.21	33.84

Extended Period Analysis: 19.00 hr / 24.00

Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-122	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.13	33.80
JY-124	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.69	36.64
JY-130	7,885.00	Zone - 1	Demand	9.49	Composite	16.25	7,958.87	31.96
JY-132	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.28	31.27
JY-134	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.17	32.09
JY-140	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.39	31.75
JY-142	7,884.00	Zone - 1	Demand	1.96	Residential	4.90	7,957.31	31.72
JY-144	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.29	31.71
JY-146	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.81	34.96
JY-150	7,874.00	Zone - 1	Demand	3.16	Residential	7.91	7,963.32	38.64
JY-152	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.26	38.62
JY-160	7,877.00	Zone - 1	Demand	6.82	Composite	11.38	7,962.58	37.03
JY-170	7,874.00	Zone - 1	Demand	4.23	Composite	9.52	7,955.72	35.36
JY-172	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.64	35.32
JY-174	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.25	34.29
JY-180	7,876.00	Zone - 1	Demand	3.79	Residential	9.47	7,955.22	34.28
JY-182	7,877.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.22	33.84
JY-188	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,954.78	38.41
JY-190	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.06	35.50
JY-200	7,866.00	Zone - 1	Demand	5.71	Residential	14.26	7,959.84	40.60
JY-202	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.60	40.06
JY-210	7,865.00	Zone - 1	Demand	24.07	Composite	19.20	7,957.31	39.94
JY-220	7,864.00	Zone - 1	Demand	6.91	Residential	17.27	7,955.29	39.50
JY-222	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.25	39.48
JY-230	7,866.00	Zone - 1	Demand	4.81	Composite	5.08	7,954.71	38.38
JY-238	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.94	40.64
JY-240	7,858.00	Zone - 1	Demand	16.62	Composite	7.76	7,957.65	43.11
JY-250	7,856.00	Zone - 1	Demand	7.22	Composite	9.81	7,956.22	43.36
JY-252	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.25	39.91
JY-260	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,954.02	43.28
JY-270	7,860.00	Zone - 1	Demand	5.08	Residential	12.70	7,953.54	40.47
JY-272	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,953.21	42.06
JY-280	7,856.00	Zone - 1	Demand	5.71	Residential	14.26	7,953.17	42.04
JY-290	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,953.29	41.66
JY-292	7,854.00	Zone - 1	Demand	4.59	Residential	11.48	7,953.01	42.84
JY-294	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.98	44.12
JY-300	7,852.00	Zone - 1	Demand	5.08	Residential	12.70	7,952.97	43.69
JY-310	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,956.10	43.31
JY-312	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.63	43.97
JY-314	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,955.34	43.84
JY-320	7,858.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.65	43.11
JY-322	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.65	43.98
JY-324	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.65	45.71
JY-326	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.65	44.84
JY-330	7,847.00	Zone - 1	Demand	3.12	Residential	7.80	7,952.72	45.74
JY-332	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.74	45.32
JY-334	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.73	46.18
JY-340	7,846.00	Zone - 1	Demand	3.25	Residential	8.13	7,952.73	46.18
JY-350	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,953.13	46.35
JY-352	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,950.98	48.02
JY-354	7,840.00	Zone - 1	Demand	2.54	Residential	6.35	7,951.04	48.04
JY-360	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.83	46.65
JY-362	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,951.87	48.83
JY-370	7,842.00	Zone - 1	Demand	4.46	Residential	11.14	7,952.40	47.77

Scenario: Modified Base re: 4"+ diameter pipes only, Existing Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-380	7,841.00	Zone - 1	Demand	5.08	Residential	12.70	7,952.56	48.26
JY-390	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,951.79	48.80
JY-392	7,838.00	Zone - 1	Demand	3.79	Residential	9.47	7,951.81	49.24
JY-400	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,952.13	48.51
JY-402	7,840.00	Zone - 1	Demand	0.62	Residential	1.56	7,952.00	48.46

Scenario: Modified Base re: 4"+ diameter pipes only, Existing Max. Daily Demand + 1,000-gpm Fire Flow

Extended Period Analysis: 19.00 hr / 24.00

Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-92	71.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,965.37	7,965.37	0.00	0.00
PY-426	84.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,957.65	7,957.65	0.00	0.00
PY-424	107.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,957.65	7,957.65	0.00	0.00
PY-94	160.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,965.37	7,965.37	0.00	0.00
PY-420	20.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,957.65	7,957.65	0.00	0.00
PY-428	58.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,957.65	7,957.65	0.00	0.00
PY-440	305.00	6.1	PVC	140.0	1974	false	0.00	Open	80.97	0.89	7,952.73	7,952.56	0.17	0.57
PY-466	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-195.61	1.95	7,951.79	7,951.87	0.08	2.64
PY-360	155.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	151.55	1.51	7,953.54	7,953.29	0.25	1.64
PY-500	126.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	175.55	1.75	7,952.40	7,952.13	0.27	2.16
PY-112	93.00	6.4	Ductile Iron	130.0	1984	false	0.00	Open	-6.00	0.06	7,964.21	7,964.21	0.00	0.01
PY-110	15.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	163.47	1.63	7,964.21	7,964.19	0.03	1.89
PY-462	365.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-195.61	1.95	7,951.87	7,952.83	0.96	2.64
PY-116	322.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-6.00	0.06	7,964.21	7,964.21	0.00	0.00
PY-144	6.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-234.75	2.34	7,957.29	7,957.31	0.02	3.66
PY-290	250.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	266.47	2.66	7,954.71	7,953.54	1.17	4.68
PY-194	398.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-155.56	1.55	7,962.58	7,963.26	0.69	1.73
PY-190	32.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-155.56	1.55	7,963.26	7,963.32	0.06	1.72
PY-200	25.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-225.23	2.25	7,955.64	7,955.72	0.09	3.42
PY-138	65.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-584.24	5.83	7,958.87	7,960.17	1.30	20.02
PY-504	62.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	175.55	1.75	7,952.13	7,952.00	0.13	2.16
PY-224	66.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	118.94	1.19	7,954.78	7,954.71	0.07	1.05
PY-374	56.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-27.76	0.28	7,952.97	7,952.98	0.00	0.07
PY-370	414.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-27.76	0.28	7,952.98	7,953.01	0.03	0.07
PY-430	413.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	13.91	0.14	7,952.73	7,952.72	0.01	0.02
PY-206	24.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-128.41	1.28	7,955.22	7,955.25	0.03	1.22
PY-202	321.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-128.41	1.28	7,955.25	7,955.64	0.39	1.21
PY-450	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	118.42	1.18	7,952.72	7,952.40	0.32	1.04
PY-350	325.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	87.95	0.88	7,953.17	7,952.97	0.20	0.60
PY-380	305.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	103.01	1.03	7,952.97	7,952.73	0.25	0.80
PY-260	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-354.29	3.53	7,959.60	7,959.84	0.24	7.93
PY-400	452.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-195.61	1.95	7,952.83	7,954.02	1.19	2.64
PY-394	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	112.31	1.12	7,952.74	7,952.72	0.02	0.93
PY-280	25.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	152.62	1.52	7,955.29	7,955.25	0.04	1.66
PY-434	57.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	13.91	0.14	7,952.73	7,952.73	0.00	0.03
PY-4	15.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	1,200.57	11.97	8,051.50	8,050.36	1.14	75.98
PY-300	480.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-195.61	1.95	7,954.02	7,955.29	1.27	2.64

Scenario: Modified Base re: 4"+ diameter pipes only, Existing Max. Daily Demand + 1,000-gpm Fire Flow

Extended Period Analysis: 19.00 hr / 24.00

Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-230	485.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-96.82	0.97	7,955.29	7,955.64	0.35	0.72
PY-270	425.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	268.68	2.68	7,957.31	7,955.29	2.02	4.75
PY-344	55.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-102.22	1.02	7,953.17	7,953.21	0.04	0.79
PY-340	415.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-102.22	1.02	7,953.21	7,953.54	0.33	0.79
PY-364	170.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	151.55	1.51	7,953.29	7,953.01	0.28	1.65
PY-134	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-584.24	5.83	7,960.17	7,966.28	6.11	20.02
PY-210	6.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,955.22	7,955.22	0.00	0.00
PY-220	420.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	118.94	1.19	7,955.22	7,954.78	0.44	1.05
PY-154	24.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-234.75	2.34	7,955.72	7,955.81	0.09	3.70
PY-150	399.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-234.75	2.34	7,955.81	7,957.29	1.48	3.70
PY-264	289.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-354.29	3.53	7,957.31	7,959.60	2.29	7.93
PY-390	285.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	112.31	1.12	7,953.01	7,952.74	0.27	0.94
PY-284	323.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-152.62	1.52	7,954.71	7,955.25	0.54	1.67
PY-320	460.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	269.05	2.68	7,959.84	7,957.65	2.19	4.76
PY-82	57.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	0.00	0.00	7,965.37	7,965.37	0.00	0.00
PY-222	18.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,954.78	7,954.78	0.00	0.00
PY-172	20.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	0.00	0.00	7,964.13	7,964.13	0.00	0.00
PY-342	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,953.21	7,953.21	0.00	0.00
PY-470	12.00	6.4	Ductile Iron	130.0	1979	false	0.00	Open	0.00	0.00	7,953.13	7,953.13	0.00	0.00
PY-152	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,955.81	7,955.81	0.00	0.00
PY-302	20.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,954.02	7,954.02	0.00	0.00
PY-464	20.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,951.87	7,951.87	0.00	0.00
PY-474	12.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-1,000.00	9.97	7,950.33	7,950.98	0.65	54.16
PY-180	458.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-163.47	1.63	7,963.32	7,964.19	0.87	1.89
PY-86	10.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,965.37	7,965.37	0.00	0.00
PY-114	25.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,964.21	7,964.21	0.00	0.00
PY-140	385.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-239.65	2.39	7,957.39	7,958.87	1.48	3.84
PY-62	50.00	6.4	Ductile Iron	130.0	1981	false	0.00	Open	0.00	0.00	7,965.72	7,965.72	0.00	0.00
PY-142	21.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	239.65	2.39	7,957.39	7,957.31	0.08	3.84
PY-262	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,959.60	7,959.60	0.00	0.00
PY-136	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,960.17	7,960.17	0.00	0.00
PY-192	33.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,963.26	7,963.26	0.00	0.00
PY-422	27.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,957.65	7,957.65	0.00	0.00
PY-490	470.00	6.4	PVC	140.0	1974	false	0.00	Open	68.27	0.68	7,952.56	7,952.40	0.15	0.33
PY-282	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,955.25	7,955.25	0.00	0.00
PY-392	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,952.74	7,952.74	0.00	0.00
PY-412	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,956.10	7,956.10	0.00	0.00

Scenario: Modified Base re: 4"+ diameter pipes only, Existing Max. Daily Demand + 1,000-gpm Fire Flow

Extended Period Analysis: 19.00 hr / 24.00

Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-96	89.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,965.37	7,965.37	0.00	0.00
PY-100	430.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	198.05	1.98	7,965.38	7,964.21	1.16	2.70
PY-204	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,955.25	7,955.25	0.00	0.00
PY-176	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,962.69	7,962.69	0.00	0.00
PY-330	316.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-261.29	2.61	7,956.22	7,957.65	1.42	4.51
PY-432	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,952.73	7,952.73	0.00	0.00
PY-312	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,957.25	7,957.25	0.00	0.00
PY-362	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,953.29	7,953.29	0.00	0.00
PY-162	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,958.06	7,958.06	0.00	0.00
PY-502	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,952.13	7,952.13	0.00	0.00
PY-146	38.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,957.29	7,957.29	0.00	0.00
PY-132	48.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	0.00	0.00	7,966.28	7,966.28	0.00	0.00
PY-460	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,952.83	7,952.83	0.00	0.00
PY-372	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,952.98	7,952.98	0.00	0.00
PY-3	809.00	8.5	Ductile Iron	130.0	0	false	0.00	Open	1,200.57	6.87	8,067.38	8,051.50	15.88	19.63
PY-2	579.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,200.57	6.87	8,078.74	8,067.38	11.37	19.63
PY-1	1,898.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,200.57	6.87	8,116.00	8,078.74	37.26	19.63
PY-87	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	15.30	0.09	7,965.37	7,965.37	0.00	0.00
PY-414	80.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-646.22	3.61	7,955.63	7,956.10	0.47	5.88
PY-178	32.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-493.41	2.76	7,962.58	7,962.69	0.11	3.57
PY-174	402.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-493.41	2.76	7,962.69	7,964.13	1.44	3.57
PY-89	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	15.30	0.09	7,965.37	7,965.37	0.00	0.02
PY-84	370.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	15.30	0.09	7,965.37	7,965.37	0.00	0.01
PY-251	18.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-637.60	3.56	7,959.84	7,959.94	0.10	5.75
PY-416	50.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-646.22	3.61	7,955.34	7,955.63	0.29	5.89
PY-250	459.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-637.60	3.56	7,959.94	7,962.58	2.64	5.74
PY-476	27.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	353.78	1.98	7,951.04	7,950.98	0.05	1.94
PY-472	365.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-646.22	3.61	7,950.98	7,953.13	2.15	5.89
PY-510	45.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-164.52	0.92	7,951.79	7,951.81	0.02	0.47
PY-90	229.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	4.94	0.03	7,965.37	7,965.37	0.00	0.00
PY-480	378.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	360.13	2.01	7,951.79	7,951.04	0.75	1.99
PY-418	375.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-646.22	3.61	7,953.13	7,955.34	2.21	5.89
PY-310	25.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-394.75	2.21	7,957.25	7,957.31	0.06	2.36
PY-410	20.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-646.22	3.61	7,956.10	7,956.22	0.12	5.91
PY-314	435.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-394.75	2.21	7,956.22	7,957.25	1.03	2.36
PY-160	485.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	328.34	1.83	7,958.87	7,958.06	0.81	1.68
PY-130	40.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-584.24	3.26	7,966.28	7,966.47	0.20	4.88

Scenario: Modified Base re: 4"+ diameter pipes only, Existing Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-240	445.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	328.34	1.83	7,958.06	7,957.31	0.75	1.68
PY-520	357.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	173.99	0.97	7,952.00	7,951.81	0.19	0.52
PY-170	24.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-493.41	2.76	7,964.13	7,964.21	0.09	3.56
PY-120	400.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-496.92	2.78	7,964.21	7,965.66	1.45	3.62
PY-98	15.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,965.37	7,965.37	0.00	0.00
PY-80	75.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	15.30	0.09	7,965.38	7,965.37	0.00	0.01
PY-70	352.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	221.30	1.24	7,965.66	7,965.38	0.28	0.81
PY-10	5,719.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,310.13	5.25	7,986.11	8,050.30	64.20	11.23
PY-50	202.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,310.13	5.25	7,966.47	7,968.74	2.27	11.23
PY-20	660.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,310.13	5.25	7,978.70	7,986.11	7.41	11.23
PY-5	5.00	10.1	Cast iron	120.0	1974	false	0.00	Open	1,310.13	5.25	8,050.36	8,050.30	0.06	11.23
PY-30	289.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,310.13	5.25	7,975.45	7,978.70	3.24	11.23
PY-40	598.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,310.13	5.25	7,968.74	7,975.45	6.71	11.22
PY-64	22.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-724.22	2.64	7,965.66	7,965.72	0.06	2.60
PY-60	294.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-724.22	2.64	7,965.72	7,966.47	0.76	2.57

Scenario: Future Tank #2 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
FH-1	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	30.29	5.00	43.52	JY-F37	N/A	0.43	JY-10
FH-2	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	46.20	5.00	46.55	JY-F37	N/A	0.43	JY-10
FH-3	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	36.83	5.00	47.04	JY-82	N/A	0.43	JY-10
FH-4	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	39.31	5.00	43.79	JY-114	N/A	0.43	JY-10
FH-5	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	43.77	5.00	48.35	JY-F35	N/A	0.43	JY-10
FH-6	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	40.63	5.00	49.02	JY-F35	N/A	0.43	JY-10
FH-7	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	45.63	5.00	48.51	FH-F47	N/A	0.43	JY-10
FH-8	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	47.87	5.00	48.47	JY-F35	N/A	0.43	JY-10
FH-9	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	48.82	5.00	48.63	FH-F47	N/A	0.43	JY-10
FH-10	Zone - 1	3	true	true	1,000.00	2,883.74	1,000.00	2,883.74	20.00	20.06	5.00	24.12	JY-320	N/A	0.43	JY-10
FH-11	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	41.90	5.00	49.41	JY-20	N/A	0.43	JY-10
FH-12	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	34.17	5.00	37.75	JY-134	N/A	0.43	JY-10
FH-13	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	36.31	5.00	39.89	JY-190	N/A	0.43	JY-10
FH-14	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	44.25	5.00	43.17	FH-18	N/A	0.43	JY-10
FH-15	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	43.84	5.00	43.56	FH-18	N/A	0.43	JY-10
FH-16	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	44.67	5.00	43.20	FH-18	N/A	0.43	JY-10
FH-17	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	48.60	5.00	42.71	JY-182	N/A	0.43	JY-10
FH-18	Zone - 1	3	true	true	1,000.00	2,680.81	1,000.00	2,680.81	20.00	20.05	5.00	25.58	JY-144	N/A	0.43	JY-10
FH-19	Zone - 1	3	true	true	1,000.00	2,852.84	1,000.00	2,852.84	20.00	20.07	5.00	25.79	JY-146	N/A	0.43	JY-10
FH-20	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	32.31	5.00	33.93	JY-182	N/A	0.43	JY-10
FH-21	Zone - 1	3	true	true	1,000.00	2,796.46	1,000.00	2,796.46	20.00	20.06	5.00	23.21	JY-260	N/A	0.43	JY-10
FH-22	Zone - 1	3	true	true	1,000.00	2,936.89	1,000.00	2,936.89	20.00	20.07	5.00	23.52	JY-360	N/A	0.43	JY-10
FH-23	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	40.68	5.00	39.92	JY-182	N/A	0.43	JY-10
FH-24	Zone - 1	3	true	true	1,000.00	2,600.98	1,000.00	2,600.98	20.00	20.05	5.00	24.87	JY-174	N/A	0.43	JY-10
FH-25	Zone - 1	3	true	true	1,000.00	2,972.65	1,000.00	2,972.65	20.00	20.09	5.00	23.27	JY-188	N/A	0.43	JY-10
FH-26	Zone - 1	3	true	true	1,000.00	2,785.74	1,000.00	2,785.74	20.00	20.08	5.00	23.37	JY-290	N/A	0.43	JY-10
FH-27	Zone - 1	3	true	true	1,000.00	2,905.64	1,000.00	2,905.64	20.00	20.10	5.00	23.64	JY-332	N/A	0.43	JY-10
FH-28	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	32.19	5.00	34.87	JY-F285	N/A	0.43	JY-10
FH-29	Zone - 1	3	true	true	1,000.00	2,794.36	1,000.00	2,794.36	20.00	20.09	5.00	21.82	JY-272	N/A	0.43	JY-10
FH-30	Zone - 1	3	true	true	1,000.00	2,859.49	1,000.00	2,859.49	20.00	20.09	5.00	21.90	JY-294	N/A	0.43	JY-10
FH-31	Zone - 1	3	true	true	1,000.00	2,921.04	1,000.00	2,921.04	20.00	20.10	5.00	21.80	JY-334	N/A	0.43	JY-10
FH-F32	Zone - 1	3	true	true	1,000.00	2,899.65	1,000.00	2,899.65	20.00	20.09	5.00	21.78	JY-F381	N/A	0.43	JY-10
FH-F33	Zone - 1	3	true	true	1,000.00	2,975.79	1,000.00	2,975.79	20.00	20.11	5.00	19.66	JY-F285	N/A	0.43	JY-10
FH-F34	Zone - 1	3	true	true	1,000.00	2,913.10	1,000.00	2,913.10	20.00	20.10	5.00	21.68	JY-F285	N/A	0.43	JY-10
FH-F35	Zone - 1	3	true	true	1,000.00	2,843.19	1,000.00	2,843.19	20.00	20.10	5.00	21.72	JY-F281	N/A	0.43	JY-10
FH-F36	Zone - 1	3	true	true	1,000.00	2,776.63	1,000.00	2,776.63	20.00	20.09	5.00	21.64	JY-F284	N/A	0.43	JY-10
FH-F37	Zone - 1	3	true	true	1,000.00	2,865.79	1,000.00	2,865.79	20.00	20.10	5.00	21.74	JY-F303	N/A	0.43	JY-10

Scenario: Future Tank #2 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
FH-F38	Zone - 1	3	true	true	1,000.00	2,926.00	1,000.00	2,926.00	20.00	20.10	5.00	20.61	JY-F285	N/A	0.43	JY-10
FH-F39	Zone - 1	3	true	true	1,000.00	2,921.97	1,000.00	2,921.97	20.00	20.10	5.00	21.22	JY-F285	N/A	0.43	JY-10
FH-F40	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	46.31	5.00	43.42	FH-18	N/A	0.43	JY-10
FH-F41	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	42.27	5.00	43.98	FH-18	N/A	0.43	JY-10
FH-F42	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	53.36	5.00	48.43	JY-F35	N/A	0.43	JY-10
FH-F43	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	51.06	5.00	48.33	JY-F35	N/A	0.43	JY-10
FH-F44	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	50.13	5.00	48.22	JY-F35	N/A	0.43	JY-10
FH-F45	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	48.06	5.00	47.82	FH-F47	N/A	0.43	JY-10
FH-F46	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	33.98	5.00	35.95	JY-F38	N/A	0.43	JY-10
FH-F47	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	38.37	5.00	40.16	JY-F35	N/A	0.43	JY-10
FH-F48	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	44.28	5.00	46.08	JY-F34	N/A	0.43	JY-10
FH-F49	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	49.82	5.00	47.44	JY-20	N/A	0.43	JY-10
JY-4	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-5	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-10	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-20	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-30	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-40	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-50	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-60	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-62	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-70	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-80	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-82	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-86	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-88	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-90	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-92	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-94	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-96	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-100	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-110	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-112	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-114	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-120	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-122	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-124	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #2 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-130	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-132	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-134	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-140	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-142	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-144	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-146	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-150	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-152	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-160	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-170	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-172	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-174	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-180	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-182	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-188	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-190	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-200	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-202	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-210	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-220	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-222	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-230	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-238	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-240	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-250	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-252	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-260	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-270	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-272	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-280	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-290	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-292	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-294	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-300	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-310	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-312	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #2 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-314	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-320	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-322	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-324	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-326	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-330	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-332	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-334	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-340	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-350	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-352	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-354	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-360	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-362	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-370	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-380	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-390	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-392	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-400	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-402	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F33	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F34	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F35	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F36	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F37	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F38	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F39	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F87	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F89	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F151	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F153	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F154	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F155	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F156	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F157	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F201	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F281	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #2 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-F282	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F283	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F284	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F285	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F301	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F302	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F303	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F304	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F341	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F342	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F343	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F344	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F356	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F357	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F358	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F381	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F382	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F383	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F384	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
FH-1	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.89	31.10
FH-2	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.57
FH-3	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.53
FH-4	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.09	35.52
FH-5	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.33	39.51
FH-6	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	30.66
FH-7	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.04	34.63
FH-8	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.27	37.76
FH-9	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.63	41.81
FH-10	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.69	44.43
FH-11	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.58
FH-12	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.82	33.24
FH-13	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,961.39	36.94
FH-14	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.82	41.46
FH-15	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.62	44.83
FH-16	7,847.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.18	48.10
FH-17	7,840.00	Zone - 1	Demand	1,000.00	Fire	1,000.00	7,956.50	50.40
FH-18	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.85	33.25
FH-19	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.86	36.71
FH-20	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.50	41.32
FH-21	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.83	45.35
FH-22	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.16	48.96
FH-23	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.63	51.32
FH-24	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.47	36.11
FH-25	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.14	40.30
FH-26	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.11	43.75
FH-27	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	47.53
FH-28	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.69	50.92
FH-29	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.95	44.11
FH-30	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.89	46.25
FH-31	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.86	48.40
FH-F32	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.86	50.56
FH-F33	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	48.40
FH-F34	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.88	45.81
FH-F35	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.89	44.08
FH-F36	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.88	44.08
FH-F37	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	45.81
FH-F38	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	48.40
FH-F39	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	50.56
FH-F40	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.11	51.53
FH-F41	7,849.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.77	47.49
FH-F42	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.89	43.22
FH-F43	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.24	43.80
FH-F44	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.55	39.18
FH-F45	7,885.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.19	35.13
FH-F46	7,900.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.37	29.58
FH-F47	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,969.14	25.59
FH-F48	7,905.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.10	28.60
FH-F49	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.69	27.12
JY-4	8,082.00	Zone - 2	Demand	0.00	Fixed	0.00	8,078.81	-1.38
JY-5	8,068.00	Zone - 2	Demand	0.00	Fixed	0.00	8,067.46	-0.23
JY-10	8,050.00	Zone - 2	Demand	0.00	Fixed	0.00	8,050.41	0.18
JY-20	7,925.00	Zone - 1	Demand	0.00	Fixed	0.00	7,980.88	24.18
JY-30	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.86	27.20

Title: Town of Yampa

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Civil Design Consultants Inc

Haestad Methods Solution Center Watertown, CT 06795 USA

Project Engineer: Randy Sackett

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Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-40	7,920.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.33	22.21
JY-50	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.18	32.10
JY-60	7,894.00	Zone - 1	Demand	1.78	Composite	1.68	7,967.12	31.63
JY-62	7,895.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.10
JY-70	7,895.00	Zone - 1	Demand	13.95	Composite	5.99	7,966.85	31.09
JY-80	7,894.00	Zone - 1	Demand	3.57	Composite	7.95	7,966.84	31.52
JY-82	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.53
JY-86	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.57
JY-88	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.58
JY-90	7,894.00	Zone - 1	Demand	4.15	Residential	10.36	7,967.08	31.62
JY-92	7,893.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.08	32.05
JY-94	7,892.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.08	32.49
JY-96	7,894.00	Zone - 1	Demand	3.39	Composite	4.94	7,967.89	31.97
JY-100	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.94	31.99
JY-110	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.08	35.51
JY-112	7,884.00	Zone - 1	Demand	11.90	Composite	28.57	7,966.09	35.52
JY-114	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.09	35.52
JY-120	7,886.00	Zone - 1	Demand	4.19	Composite	9.51	7,966.09	34.65
JY-122	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.04	34.63
JY-124	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.27	37.76
JY-130	7,885.00	Zone - 1	Demand	9.49	Composite	16.25	7,961.93	33.28
JY-132	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.58
JY-134	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.82	33.24
JY-140	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.92	33.28
JY-142	7,884.00	Zone - 1	Demand	1.96	Residential	4.90	7,960.87	33.26
JY-144	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.85	33.25
JY-146	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.86	36.71
JY-150	7,874.00	Zone - 1	Demand	3.16	Residential	7.91	7,965.34	39.52
JY-152	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.33	39.51
JY-160	7,877.00	Zone - 1	Demand	6.82	Composite	11.38	7,965.21	38.16
JY-170	7,874.00	Zone - 1	Demand	4.23	Composite	9.52	7,959.80	37.12
JY-172	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.74	37.10
JY-174	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.47	36.11
JY-180	7,876.00	Zone - 1	Demand	3.79	Residential	9.47	7,959.45	36.10
JY-182	7,877.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.45	35.67
JY-188	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.14	40.30
JY-190	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,961.39	36.94
JY-200	7,866.00	Zone - 1	Demand	5.71	Residential	14.26	7,963.92	42.37
JY-202	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.63	41.81
JY-210	7,865.00	Zone - 1	Demand	24.07	Composite	19.20	7,960.89	41.49
JY-220	7,864.00	Zone - 1	Demand	6.91	Residential	17.27	7,959.53	41.33
JY-222	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.50	41.32
JY-230	7,866.00	Zone - 1	Demand	4.81	Composite	5.08	7,959.10	40.28
JY-238	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.07	42.43
JY-240	7,858.00	Zone - 1	Demand	16.62	Composite	7.76	7,959.69	44.00
JY-250	7,856.00	Zone - 1	Demand	7.22	Composite	9.81	7,959.67	44.85
JY-252	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.82	41.46
JY-260	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.83	45.35
JY-270	7,860.00	Zone - 1	Demand	5.08	Residential	12.70	7,958.26	42.51
JY-272	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.95	44.11
JY-280	7,856.00	Zone - 1	Demand	5.71	Residential	14.26	7,957.91	44.09
JY-290	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.11	43.75
JY-292	7,854.00	Zone - 1	Demand	4.59	Residential	11.48	7,957.95	44.97
JY-294	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.89	46.25

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-300	7,852.00	Zone - 1	Demand	5.08	Residential	12.70	7,957.89	45.81
JY-310	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.62	44.83
JY-312	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.39	45.60
JY-314	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.25	45.54
JY-320	7,858.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.69	44.00
JY-322	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.69	44.86
JY-324	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.69	46.59
JY-326	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.69	45.73
JY-330	7,847.00	Zone - 1	Demand	3.12	Residential	7.80	7,957.86	47.96
JY-332	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	47.53
JY-334	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.86	48.40
JY-340	7,846.00	Zone - 1	Demand	3.25	Residential	8.13	7,957.86	48.40
JY-350	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.18	48.54
JY-352	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.15	50.68
JY-354	7,840.00	Zone - 1	Demand	2.54	Residential	6.35	7,957.27	50.74
JY-360	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.16	48.96
JY-362	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.63	51.32
JY-370	7,842.00	Zone - 1	Demand	4.46	Residential	11.14	7,957.77	50.09
JY-380	7,841.00	Zone - 1	Demand	5.08	Residential	12.70	7,957.84	50.55
JY-390	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.58	51.31
JY-392	7,838.00	Zone - 1	Demand	3.79	Residential	9.47	7,957.59	51.74
JY-400	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.69	50.92
JY-402	7,840.00	Zone - 1	Demand	0.62	Residential	1.56	7,957.65	50.90
JY-F33	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.69	27.12
JY-F34	7,905.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.10	28.60
JY-F35	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,969.14	25.59
JY-F36	7,909.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.95	25.94
JY-F37	7,908.00	Zone - 1	Demand	4.94	Non-Residential	0.49	7,968.72	26.27
JY-F38	7,900.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.37	29.58
JY-F39	7,895.00	Zone - 1	Demand	1.38	Composite	2.01	7,968.16	31.65
JY-F87	7,885.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.19	35.13
JY-F89	7,884.00	Zone - 1	Demand	1.30	Residential	3.25	7,966.09	35.52
JY-F151	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.34	39.52
JY-F153	7,866.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.01	42.84
JY-F154	7,864.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.21	43.79
JY-F155	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.24	43.80
JY-F156	7,874.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.47	39.57
JY-F157	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.55	39.18
JY-F201	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.89	43.22
JY-F281	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.89	44.08
JY-F282	7,856.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.88	44.08
JY-F283	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.88	44.08
JY-F284	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.88	44.08
JY-F285	7,856.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.88	44.08
JY-F301	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.88	45.81
JY-F302	7,852.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.88	45.81
JY-F303	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	45.81
JY-F304	7,852.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.87	45.81
JY-F341	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	48.40
JY-F342	7,846.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.87	48.40
JY-F343	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	48.40
JY-F344	7,846.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.87	48.40
JY-F356	7,839.00	Zone - 1	Demand	6.81	Composite	3.18	7,958.01	51.49
JY-F357	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.11	51.53

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-F358	7,849.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.77	47.49
JY-F381	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.86	50.56
JY-F382	7,841.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.87	50.56
JY-F383	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.87	50.56
JY-F384	7,841.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.87	50.56

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-420	20.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.69	7,959.69	0.00	0.00
PY-94	160.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,967.08	7,967.08	0.00	0.00
PY-424	107.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.69	7,959.69	0.00	0.00
PY-428	58.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.69	7,959.69	0.00	0.00
PY-92	71.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,967.08	7,967.08	0.00	0.00
PY-426	84.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.69	7,959.69	0.00	0.00
PY-440	305.00	6.1	PVC	140.0	1974	false	0.00	Open	30.31	0.33	7,957.86	7,957.84	0.03	0.09
PY-344	55.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-98.19	0.98	7,957.91	7,957.95	0.04	0.74
PY-364	170.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	111.86	1.12	7,958.11	7,957.95	0.16	0.94
PY-340	415.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-98.19	0.98	7,957.95	7,958.26	0.31	0.74
PY-264	289.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-390.84	3.90	7,960.89	7,963.63	2.75	9.51
PY-150	399.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-189.86	1.89	7,959.86	7,960.85	1.00	2.50
PY-400	452.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.52	1.42	7,958.16	7,958.83	0.66	1.47
PY-260	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-390.84	3.90	7,963.63	7,963.92	0.29	9.51
PY-284	323.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-130.75	1.30	7,959.10	7,959.50	0.40	1.25
PY-390	285.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	60.18	0.60	7,957.95	7,957.87	0.08	0.30
PY-154	24.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-189.86	1.89	7,959.80	7,959.86	0.06	2.50
PY-320	460.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	383.68	3.83	7,963.92	7,959.69	4.23	9.19
PY-466	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.52	1.42	7,957.58	7,957.63	0.04	1.46
PY-462	365.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.52	1.42	7,957.63	7,958.16	0.54	1.47
PY-116	322.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-11.13	0.11	7,966.09	7,966.09	0.00	0.01
PY-360	155.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	111.86	1.12	7,958.26	7,958.11	0.15	0.94
PY-374	56.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-40.21	0.40	7,957.89	7,957.89	0.01	0.14
PY-370	414.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-40.21	0.40	7,957.89	7,957.95	0.06	0.14
PY-290	250.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	222.75	2.22	7,959.10	7,958.26	0.84	3.36
PY-134	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-475.22	4.74	7,962.82	7,966.98	4.17	13.66
PY-210	6.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,959.45	7,959.45	0.00	0.00
PY-220	420.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	97.08	0.97	7,959.45	7,959.14	0.30	0.72
PY-110	15.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	116.66	1.16	7,966.09	7,966.08	0.02	1.01
PY-144	6.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-189.86	1.89	7,960.85	7,960.87	0.02	2.52
PY-500	126.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	92.83	0.93	7,957.77	7,957.69	0.08	0.66
PY-112	93.00	6.4	Ductile Iron	130.0	1984	false	0.00	Open	-11.13	0.11	7,966.09	7,966.09	0.00	0.01
PY-F353	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.88	7,957.88	0.00	0.00
PY-F479	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.11	7,958.11	0.00	0.00
PY-F423	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.77	7,958.77	0.00	0.00
PY-F436	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.87	7,957.87	0.00	0.00
PY-F442	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.87	7,957.87	0.00	0.00

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-F383	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.87	7,957.87	0.00	0.00
PY-F376	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.88	7,957.88	0.00	0.00
PY-F101	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,966.19	7,966.19	0.00	0.00
PY-F25	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,971.10	7,971.10	0.00	0.00
PY-F23	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,972.69	7,972.69	0.00	0.00
PY-F27	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,969.14	7,969.14	0.00	0.00
PY-F38	11.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,968.37	7,968.37	0.00	0.00
PY-F188	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,965.55	7,965.55	0.00	0.00
PY-F185	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,965.24	7,965.24	0.00	0.00
PY-F263	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,964.89	7,964.89	0.00	0.00
PY-300	480.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.52	1.42	7,958.83	7,959.53	0.70	1.47
PY-230	485.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-73.79	0.74	7,959.53	7,959.74	0.21	0.43
PY-270	425.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	216.76	2.16	7,960.89	7,959.53	1.36	3.19
PY-380	305.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	27.36	0.27	7,957.89	7,957.86	0.02	0.07
PY-394	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	60.18	0.60	7,957.87	7,957.86	0.01	0.29
PY-450	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	60.46	0.60	7,957.86	7,957.77	0.09	0.30
PY-350	325.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	28.89	0.29	7,957.91	7,957.89	0.02	0.08
PY-280	25.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	130.75	1.30	7,959.53	7,959.50	0.03	1.25
PY-F493	56.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-25.91	0.26	7,957.86	7,957.87	0.00	0.06
PY-F346	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.89	7,957.89	0.00	0.00
PY-F495	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.87	7,957.87	0.00	0.00
PY-F491	414.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-25.91	0.26	7,957.84	7,957.86	0.03	0.06
PY-434	57.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	8.08	0.08	7,957.86	7,957.86	0.00	0.01
PY-4	15.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	1,199.46	11.96	8,051.61	8,050.47	1.14	75.85
PY-F492	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,957.86	7,957.86	0.00	0.00
PY-430	413.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	8.08	0.08	7,957.86	7,957.86	0.00	0.01
PY-152	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,959.86	7,959.86	0.00	0.00
PY-432	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,957.86	7,957.86	0.00	0.00
PY-342	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,957.95	7,957.95	0.00	0.00
PY-330	316.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-26.64	0.27	7,959.67	7,959.69	0.02	0.07
PY-204	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,959.47	7,959.47	0.00	0.00
PY-470	12.00	6.4	Ductile Iron	130.0	1979	false	0.00	Open	0.00	0.00	7,958.18	7,958.18	0.00	0.00
PY-502	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,957.69	7,957.69	0.00	0.00
PY-140	385.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-194.76	1.94	7,960.92	7,961.93	1.01	2.62
PY-362	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,958.11	7,958.11	0.00	0.00
PY-312	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,960.82	7,960.82	0.00	0.00
PY-86	10.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,966.98	7,966.98	0.00	0.00

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-372	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,957.89	7,957.89	0.00	0.00
PY-132	48.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	0.00	0.00	7,966.98	7,966.98	0.00	0.00
PY-460	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,958.16	7,958.16	0.00	0.00
PY-172	20.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	0.00	0.00	7,966.04	7,966.04	0.00	0.00
PY-474	12.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	1,000.00	9.97	7,956.50	7,957.15	0.65	54.16
PY-302	20.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,958.83	7,958.83	0.00	0.00
PY-222	18.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,959.14	7,959.14	0.00	0.00
PY-176	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,965.27	7,965.27	0.00	0.00
PY-114	25.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,966.09	7,966.09	0.00	0.00
PY-464	20.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,957.63	7,957.63	0.00	0.00
PY-180	458.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-150.02	1.50	7,965.34	7,966.08	0.74	1.61
PY-162	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,961.39	7,961.39	0.00	0.00
PY-190	32.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-61.75	0.62	7,965.33	7,965.34	0.01	0.31
PY-224	66.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	97.08	0.97	7,959.14	7,959.10	0.05	0.72
PY-194	398.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-61.75	0.62	7,965.21	7,965.33	0.12	0.31
PY-504	62.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	92.83	0.93	7,957.69	7,957.65	0.04	0.66
PY-200	25.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-180.34	1.80	7,959.74	7,959.80	0.06	2.27
PY-62	50.00	6.4	Ductile Iron	130.0	1981	false	0.00	Open	0.00	0.00	7,966.87	7,966.87	0.00	0.00
PY-202	321.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-106.55	1.06	7,959.47	7,959.74	0.27	0.86
PY-136	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,962.82	7,962.82	0.00	0.00
PY-206	24.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-106.55	1.06	7,959.45	7,959.47	0.02	0.85
PY-262	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,963.63	7,963.63	0.00	0.00
PY-192	33.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,965.33	7,965.33	0.00	0.00
PY-392	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,957.87	7,957.87	0.00	0.00
PY-146	38.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,960.85	7,960.85	0.00	0.00
PY-490	470.00	6.4	PVC	140.0	1974	false	0.00	Open	43.51	0.43	7,957.84	7,957.77	0.07	0.14
PY-100	430.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	156.37	1.56	7,966.84	7,966.09	0.75	1.74
PY-282	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,959.50	7,959.50	0.00	0.00
PY-96	89.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,967.89	7,967.89	0.00	0.00
PY-138	65.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-475.22	4.74	7,961.93	7,962.82	0.89	13.66
PY-422	27.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,959.69	7,959.69	0.00	0.00
PY-142	21.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	194.76	1.94	7,960.92	7,960.87	0.05	2.60
PY-412	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,959.62	7,959.62	0.00	0.00
PY-82	57.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	0.00	0.00	7,966.87	7,966.87	0.00	0.00
PY-2	579.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,199.46	6.86	8,078.81	8,067.46	11.35	19.60
PY-1	1,898.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,199.46	6.86	8,116.00	8,078.81	37.19	19.60
PY-3	809.00	8.5	Ductile Iron	130.0	0	false	0.00	Open	1,199.46	6.86	8,067.46	8,051.61	15.85	19.60

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-89	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-478.95	2.68	7,966.98	7,967.08	0.10	3.37
PY-520	357.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	91.27	0.51	7,957.65	7,957.59	0.06	0.16
PY-87	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-128.27	0.72	7,966.98	7,966.98	0.01	0.29
PY-251	18.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-788.79	4.41	7,963.92	7,964.07	0.15	8.52
PY-250	459.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-404.10	2.26	7,964.07	7,965.21	1.13	2.47
PY-130	40.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-475.22	2.66	7,966.98	7,967.12	0.13	3.32
PY-90	229.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-489.31	2.73	7,967.08	7,967.89	0.81	3.52
PY-80	75.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-128.27	0.72	7,966.84	7,966.87	0.02	0.29
PY-240	445.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	264.22	1.48	7,961.39	7,960.89	0.50	1.12
PY-178	32.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-353.74	1.98	7,965.21	7,965.27	0.06	1.94
PY-70	352.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	36.05	0.20	7,966.85	7,966.84	0.01	0.03
PY-416	50.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.93	2.44	7,959.25	7,959.39	0.14	2.84
PY-160	485.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	264.22	1.48	7,961.93	7,961.39	0.54	1.12
PY-310	25.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-419.10	2.34	7,960.82	7,960.89	0.07	2.64
PY-510	45.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-81.80	0.46	7,957.58	7,957.59	0.01	0.13
PY-84	370.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-128.27	0.72	7,966.87	7,966.98	0.11	0.30
PY-472	365.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.93	2.44	7,957.15	7,958.18	1.04	2.84
PY-476	27.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	564.07	3.15	7,957.27	7,957.15	0.12	4.58
PY-174	402.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-353.74	1.98	7,965.27	7,966.04	0.77	1.93
PY-120	400.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-352.12	1.97	7,966.09	7,966.85	0.76	1.91
PY-170	24.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-353.74	1.98	7,966.04	7,966.09	0.05	1.93
PY-98	15.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-494.25	2.76	7,967.89	7,967.94	0.05	3.58
PY-414	80.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.93	2.44	7,959.39	7,959.62	0.23	2.84
PY-410	20.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.93	2.44	7,959.62	7,959.67	0.06	2.83
PY-418	375.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.93	2.44	7,958.18	7,959.25	1.06	2.84
PY-480	378.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	224.32	1.25	7,957.58	7,957.27	0.31	0.83
PY-314	435.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-419.10	2.34	7,959.67	7,960.82	1.15	2.64
PY-F421	504.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.28	1.93	7,959.69	7,958.77	0.92	1.83
PY-F439	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-7.20	0.04	7,957.87	7,957.87	0.00	0.00
PY-F437	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.17	0.11	7,957.87	7,957.87	0.00	0.01
PY-F435	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.17	0.11	7,957.86	7,957.87	0.00	0.01
PY-F443	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-7.20	0.04	7,957.87	7,957.87	0.00	0.00
PY-F478	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.28	1.93	7,958.11	7,958.01	0.10	1.83
PY-F354	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	22.77	0.13	7,957.88	7,957.88	0.00	0.01
PY-F352	52.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	22.77	0.13	7,957.88	7,957.88	0.00	0.01
PY-F425	360.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.28	1.93	7,958.77	7,958.11	0.66	1.83
PY-F37	439.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	168.75	0.93	7,968.37	7,968.16	0.21	0.48

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-F39	752.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	168.75	0.93	7,968.72	7,968.37	0.36	0.48
PY-F261	372.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	384.68	2.12	7,964.89	7,964.07	0.81	2.19
PY-F22	49.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.75	2.74	7,972.86	7,972.69	0.17	3.51
PY-F28	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.75	2.74	7,969.14	7,968.95	0.20	3.52
PY-F26	557.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.75	2.74	7,971.10	7,969.14	1.96	3.51
PY-F24	451.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.75	2.74	7,972.69	7,971.10	1.59	3.52
PY-F189	359.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	314.07	1.73	7,966.09	7,965.55	0.54	1.50
PY-F102	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	350.68	1.94	7,966.19	7,966.09	0.10	1.84
PY-F88	429.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	350.68	1.94	7,966.98	7,966.19	0.79	1.84
PY-F187	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	314.07	1.73	7,965.55	7,965.47	0.08	1.50
PY-F265	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	384.68	2.12	7,965.01	7,964.89	0.12	2.19
PY-F184	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	178.90	0.99	7,965.24	7,965.21	0.03	0.53
PY-F186	425.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	178.90	0.99	7,965.47	7,965.24	0.23	0.53
PY-F348	325.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-27.39	0.15	7,957.88	7,957.88	0.01	0.02
PY-F477	411.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-346.11	1.91	7,957.27	7,958.01	0.74	1.80
PY-F182	451.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	212.28	1.17	7,965.34	7,965.01	0.33	0.73
PY-F438	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.58	0.11	7,957.87	7,957.87	0.00	0.01
PY-F378	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-36.42	0.20	7,957.87	7,957.88	0.01	0.03
PY-F356	325.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-17.90	0.10	7,957.87	7,957.88	0.00	0.01
PY-F181	11.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	80.36	0.44	7,965.34	7,965.34	0.00	0.13
PY-F34	480.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	327.51	1.81	7,968.72	7,967.94	0.78	1.63
PY-F33	63.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.75	2.74	7,968.95	7,968.72	0.22	3.51
PY-F36	458.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-166.74	0.92	7,967.94	7,968.16	0.21	0.47
PY-F183	390.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	175.65	0.97	7,965.21	7,965.01	0.20	0.51
PY-F191	420.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	131.92	0.73	7,965.47	7,965.34	0.13	0.30
PY-F111	428.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-33.36	0.18	7,966.08	7,966.09	0.01	0.02
PY-F384	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-28.15	0.16	7,957.87	7,957.87	0.01	0.02
PY-F347	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	55.04	0.30	7,957.89	7,957.88	0.00	0.06
PY-F345	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	55.04	0.30	7,957.91	7,957.89	0.02	0.06
PY-F496	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-11.20	0.06	7,957.87	7,957.87	0.00	0.00
PY-F382	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	15.13	0.08	7,957.87	7,957.87	0.00	0.00
PY-F379	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	15.13	0.08	7,957.88	7,957.87	0.00	0.01
PY-F375	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	29.04	0.16	7,957.89	7,957.88	0.01	0.02
PY-F351	362.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	22.77	0.13	7,957.88	7,957.88	0.00	0.01
PY-F444	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-16.08	0.09	7,957.87	7,957.87	0.00	0.01
PY-F377	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	29.04	0.16	7,957.88	7,957.88	0.00	0.02
PY-F494	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-11.20	0.06	7,957.87	7,957.87	0.00	0.00

Scenario: Future Tank #2 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-30	289.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.06	3.49	7,971.33	7,972.86	1.52	5.27
PY-5	5.00	10.1	Cast iron	120.0	1974	false	0.00	Open	1,367.81	5.48	8,050.47	8,050.41	0.06	12.21
PY-40	598.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.06	3.49	7,968.18	7,971.33	3.15	5.27
PY-20	660.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,367.81	5.48	7,972.86	7,980.88	8.02	12.16
PY-10	5,719.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,367.81	5.48	7,980.88	8,050.41	69.53	12.16
PY-50	202.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.06	3.49	7,967.12	7,968.18	1.06	5.27
PY-60	294.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-394.16	1.44	7,966.87	7,967.12	0.25	0.83
PY-64	22.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-394.16	1.44	7,966.85	7,966.87	0.02	0.84
PY-F31	1,017.00	12.6	Ductile Iron	130.0	2010	false	0.00	Tempo	0.00	0.00	7,971.33	8,046.00	0.00	0.00

Scenario: Future Tank #3 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
FH-1	Zone - 1	3	true	true	1,000.00	2,892.89	1,000.00	2,892.89	20.00	20.05	5.00	31.07	FH-F47	N/A	0.41	JY-10
FH-2	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	35.09	5.00	32.00	JY-40	N/A	0.41	JY-10
FH-3	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	26.67	5.00	32.12	JY-40	N/A	0.41	JY-10
FH-4	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	31.06	5.00	32.62	JY-40	N/A	0.41	JY-10
FH-5	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	37.23	5.00	33.18	JY-40	N/A	0.41	JY-10
FH-6	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	30.42	5.00	31.83	JY-40	N/A	0.41	JY-10
FH-7	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	37.45	5.00	32.67	JY-40	N/A	0.41	JY-10
FH-8	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	41.45	5.00	33.25	JY-40	N/A	0.41	JY-10
FH-9	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	47.41	5.00	34.67	JY-40	N/A	0.42	JY-10
FH-10	Zone - 1	3	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	21.05	5.00	25.46	JY-320	N/A	0.42	JY-10
FH-11	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	31.36	5.00	31.65	JY-40	N/A	0.41	JY-10
FH-12	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	35.79	5.00	35.94	JY-40	N/A	0.42	JY-10
FH-13	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	42.45	5.00	36.39	JY-40	N/A	0.42	JY-10
FH-14	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	51.31	5.00	36.67	JY-40	N/A	0.42	JY-10
FH-15	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	51.56	5.00	37.19	JY-40	N/A	0.42	JY-10
FH-16	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	53.35	5.00	37.70	JY-40	N/A	0.42	JY-10
FH-17	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	58.33	5.00	38.17	JY-40	N/A	0.42	JY-10
FH-18	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	24.16	5.00	30.97	JY-144	N/A	0.42	JY-10
FH-19	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	42.71	5.00	42.44	JY-20	N/A	0.42	JY-10
FH-20	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	52.84	5.00	40.66	JY-20	N/A	0.42	JY-10
FH-21	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	28.50	5.00	32.08	JY-260	N/A	0.42	JY-10
FH-22	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	32.61	5.00	36.19	JY-360	N/A	0.42	JY-10
FH-23	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	53.39	5.00	39.15	JY-20	N/A	0.42	JY-10
FH-24	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	60.62	5.00	49.79	JY-20	N/A	0.43	JY-10
FH-25	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	50.73	5.00	43.73	JY-20	N/A	0.42	JY-10
FH-26	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	32.16	5.00	35.92	JY-290	N/A	0.42	JY-10
FH-27	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	35.35	5.00	39.12	JY-332	N/A	0.42	JY-10
FH-28	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	47.62	5.00	39.69	JY-20	N/A	0.42	JY-10
FH-29	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	31.90	5.00	33.87	JY-272	N/A	0.42	JY-10
FH-30	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	34.10	5.00	36.08	JY-294	N/A	0.42	JY-10
FH-31	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	36.42	5.00	38.21	JY-334	N/A	0.42	JY-10
FH-F32	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	35.37	5.00	37.16	JY-F381	N/A	0.42	JY-10
FH-F33	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	38.93	5.00	38.59	JY-F285	N/A	0.42	JY-10
FH-F34	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	36.44	5.00	38.20	JY-F285	N/A	0.42	JY-10
FH-F35	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	33.60	5.00	35.39	JY-F281	N/A	0.42	JY-10
FH-F36	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	30.43	5.00	32.22	JY-F284	N/A	0.42	JY-10
FH-F37	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	34.33	5.00	36.12	JY-F303	N/A	0.42	JY-10

Scenario: Future Tank #3 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
FH-F38	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	36.80	5.00	37.57	JY-F285	N/A	0.42	JY-10
FH-F39	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	36.49	5.00	38.03	JY-F285	N/A	0.42	JY-10
FH-F40	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	54.57	5.00	37.67	JY-40	N/A	0.42	JY-10
FH-F41	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	49.49	5.00	37.37	JY-40	N/A	0.42	JY-10
FH-F42	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	47.72	5.00	33.43	JY-40	N/A	0.41	JY-10
FH-F43	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	44.40	5.00	33.16	JY-40	N/A	0.41	JY-10
FH-F44	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	42.64	5.00	32.92	JY-40	N/A	0.41	JY-10
FH-F45	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	39.02	5.00	32.50	JY-40	N/A	0.41	JY-10
FH-F46	Zone - 1	3	true	true	1,000.00	2,992.21	1,000.00	2,992.21	20.00	20.05	5.00	22.02	JY-F38	N/A	0.41	JY-10
FH-F47	Zone - 1	3	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	22.91	5.00	24.70	JY-F35	N/A	0.41	JY-10
FH-F48	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	26.48	5.00	28.27	JY-F34	N/A	0.41	JY-10
FH-F49	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	30.03	5.00	29.49	JY-20	N/A	0.41	JY-10
JY-4	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-5	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-10	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-20	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-30	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-40	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-50	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-60	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-62	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-70	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-80	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-82	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-86	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-88	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-90	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-92	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-94	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-96	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-100	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-110	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-112	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-114	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-120	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-122	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-124	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Title: Town of Yampa

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Project Engineer: Randy Sackett

WaterCAD v7.0 [07.00.061.00]

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Scenario: Future Tank #3 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-130	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-132	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-134	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-140	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-142	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-144	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-146	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-150	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-152	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-160	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-170	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-172	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-174	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-180	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-182	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-188	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-190	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-200	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-202	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-210	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-220	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-222	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-230	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-238	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-240	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-250	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-252	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-260	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-270	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-272	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-280	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-290	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-292	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-294	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-300	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-310	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-312	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #3 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-314	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-320	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-322	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-324	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-326	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-330	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-332	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-334	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-340	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-350	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-352	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-354	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-360	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-362	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-370	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-380	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-390	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-392	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-400	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-402	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F33	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F34	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F35	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F36	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F37	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F38	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F39	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F87	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F89	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F151	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F153	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F154	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F155	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F156	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F157	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F201	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F281	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #3 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-F282	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F283	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F284	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F285	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F301	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F302	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F303	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F304	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F341	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F342	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F343	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F344	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F356	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F357	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F358	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F381	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F382	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F383	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F384	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
FH-1	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.79	31.06
FH-2	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.53
FH-3	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.76	31.48
FH-4	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.99	35.47
FH-5	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.23	39.47
FH-6	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.77	30.62
FH-7	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.94	34.59
FH-8	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.17	37.71
FH-9	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.53	41.76
FH-10	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.59	44.39
FH-11	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.88	31.53
FH-12	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.72	33.19
FH-13	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,961.28	36.90
FH-14	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.72	41.41
FH-15	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.51	44.78
FH-16	7,847.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.08	48.06
FH-17	7,840.00	Zone - 1	Demand	1,000.00	Fire	1,000.00	7,956.39	50.36
FH-18	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.75	33.21
FH-19	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.75	36.67
FH-20	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.40	41.27
FH-21	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.72	45.31
FH-22	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.06	48.91
FH-23	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.52	51.28
FH-24	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.36	36.07
FH-25	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.04	40.25
FH-26	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.01	43.70
FH-27	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	47.49
FH-28	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.58	50.87
FH-29	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.85	44.06
FH-30	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.79	46.20
FH-31	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	48.35
FH-F32	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	50.52
FH-F33	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	48.35
FH-F34	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.77	45.76
FH-F35	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.78	44.04
FH-F36	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.77	44.03
FH-F37	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.77	45.76
FH-F38	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	48.36
FH-F39	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	50.52
FH-F40	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.01	51.49
FH-F41	7,849.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.67	47.45
FH-F42	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.79	43.17
FH-F43	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.14	43.76
FH-F44	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.45	39.13
FH-F45	7,885.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.09	35.08
FH-F46	7,900.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.26	29.53
FH-F47	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,969.04	25.54
FH-F48	7,905.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.00	28.56
FH-F49	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.59	27.08
JY-4	8,082.00	Zone - 2	Demand	0.00	Fixed	0.00	8,078.77	-1.40
JY-5	8,068.00	Zone - 2	Demand	0.00	Fixed	0.00	8,067.41	-0.25
JY-10	8,050.00	Zone - 2	Demand	0.00	Fixed	0.00	8,050.35	0.15
JY-20	7,925.00	Zone - 1	Demand	0.00	Fixed	0.00	7,980.79	24.14
JY-30	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.76	27.15

Title: Town of Yampa

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Civil Design Consultants Inc

Haestad Methods Solution Center Watertown, CT 06795 USA

Project Engineer: Randy Sackett

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Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-40	7,920.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.23	22.17
JY-50	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.08	32.05
JY-60	7,894.00	Zone - 1	Demand	1.78	Composite	1.68	7,967.02	31.59
JY-62	7,895.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.77	31.05
JY-70	7,895.00	Zone - 1	Demand	13.95	Composite	5.99	7,966.75	31.04
JY-80	7,894.00	Zone - 1	Demand	3.57	Composite	7.95	7,966.74	31.47
JY-82	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.76	31.48
JY-86	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.53
JY-88	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.88	31.53
JY-90	7,894.00	Zone - 1	Demand	4.15	Residential	10.36	7,966.98	31.58
JY-92	7,893.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	32.01
JY-94	7,892.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	32.44
JY-96	7,894.00	Zone - 1	Demand	3.39	Composite	4.94	7,967.79	31.92
JY-100	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.84	31.95
JY-110	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.98	35.47
JY-112	7,884.00	Zone - 1	Demand	11.90	Composite	28.57	7,965.99	35.47
JY-114	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.99	35.47
JY-120	7,886.00	Zone - 1	Demand	4.19	Composite	9.51	7,965.99	34.61
JY-122	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.94	34.59
JY-124	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.17	37.71
JY-130	7,885.00	Zone - 1	Demand	9.49	Composite	16.25	7,961.83	33.24
JY-132	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.88	31.53
JY-134	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.72	33.19
JY-140	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.82	33.24
JY-142	7,884.00	Zone - 1	Demand	1.96	Residential	4.90	7,960.77	33.21
JY-144	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.75	33.21
JY-146	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.75	36.67
JY-150	7,874.00	Zone - 1	Demand	3.16	Residential	7.91	7,965.24	39.47
JY-152	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.23	39.47
JY-160	7,877.00	Zone - 1	Demand	6.82	Composite	11.38	7,965.10	38.12
JY-170	7,874.00	Zone - 1	Demand	4.23	Composite	9.52	7,959.69	37.08
JY-172	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.64	37.05
JY-174	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.36	36.07
JY-180	7,876.00	Zone - 1	Demand	3.79	Residential	9.47	7,959.34	36.06
JY-182	7,877.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.34	35.63
JY-188	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.04	40.25
JY-190	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,961.28	36.90
JY-200	7,866.00	Zone - 1	Demand	5.71	Residential	14.26	7,963.82	42.32
JY-202	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.53	41.76
JY-210	7,865.00	Zone - 1	Demand	24.07	Composite	19.20	7,960.78	41.44
JY-220	7,864.00	Zone - 1	Demand	6.91	Residential	17.27	7,959.43	41.29
JY-222	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.40	41.27
JY-230	7,866.00	Zone - 1	Demand	4.81	Composite	5.08	7,958.99	40.23
JY-238	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.97	42.39
JY-240	7,858.00	Zone - 1	Demand	16.62	Composite	7.76	7,959.59	43.95
JY-250	7,856.00	Zone - 1	Demand	7.22	Composite	9.81	7,959.57	44.81
JY-252	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.72	41.41
JY-260	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.72	45.31
JY-270	7,860.00	Zone - 1	Demand	5.08	Residential	12.70	7,958.15	42.47
JY-272	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.85	44.06
JY-280	7,856.00	Zone - 1	Demand	5.71	Residential	14.26	7,957.81	44.05
JY-290	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.01	43.70
JY-292	7,854.00	Zone - 1	Demand	4.59	Residential	11.48	7,957.85	44.93
JY-294	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.79	46.20

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-300	7,852.00	Zone - 1	Demand	5.08	Residential	12.70	7,957.78	45.77
JY-310	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.51	44.78
JY-312	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.28	45.55
JY-314	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.14	45.49
JY-320	7,858.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.59	43.95
JY-322	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.59	44.82
JY-324	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.59	46.55
JY-326	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.59	45.68
JY-330	7,847.00	Zone - 1	Demand	3.12	Residential	7.80	7,957.76	47.92
JY-332	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	47.49
JY-334	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	48.35
JY-340	7,846.00	Zone - 1	Demand	3.25	Residential	8.13	7,957.76	48.35
JY-350	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.08	48.49
JY-352	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.04	50.64
JY-354	7,840.00	Zone - 1	Demand	2.54	Residential	6.35	7,957.17	50.69
JY-360	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.06	48.91
JY-362	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.52	51.28
JY-370	7,842.00	Zone - 1	Demand	4.46	Residential	11.14	7,957.66	50.04
JY-380	7,841.00	Zone - 1	Demand	5.08	Residential	12.70	7,957.73	50.50
JY-390	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.48	51.26
JY-392	7,838.00	Zone - 1	Demand	3.79	Residential	9.47	7,957.48	51.70
JY-400	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.58	50.87
JY-402	7,840.00	Zone - 1	Demand	0.62	Residential	1.56	7,957.54	50.85
JY-F33	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.59	27.08
JY-F34	7,905.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.00	28.56
JY-F35	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,969.04	25.54
JY-F36	7,909.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.84	25.89
JY-F37	7,908.00	Zone - 1	Demand	4.94	Non-Residential	0.49	7,968.62	26.23
JY-F38	7,900.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.26	29.53
JY-F39	7,895.00	Zone - 1	Demand	1.38	Composite	2.01	7,968.06	31.61
JY-F87	7,885.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.09	35.08
JY-F89	7,884.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.99	35.47
JY-F151	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.24	39.47
JY-F153	7,866.00	Zone - 1	Demand	1.30	Residential	3.25	7,964.91	42.79
JY-F154	7,864.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.11	43.74
JY-F155	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.14	43.76
JY-F156	7,874.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.36	39.53
JY-F157	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.45	39.13
JY-F201	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.79	43.17
JY-F281	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.78	44.04
JY-F282	7,856.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.78	44.03
JY-F283	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.77	44.03
JY-F284	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.77	44.03
JY-F285	7,856.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.77	44.03
JY-F301	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.77	45.76
JY-F302	7,852.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.77	45.76
JY-F303	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.77	45.76
JY-F304	7,852.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.77	45.76
JY-F341	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	48.35
JY-F342	7,846.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.76	48.35
JY-F343	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	48.36
JY-F344	7,846.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.76	48.36
JY-F356	7,839.00	Zone - 1	Demand	6.81	Composite	3.18	7,957.90	51.44
JY-F357	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.01	51.49

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-F358	7,849.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.67	47.45
JY-F381	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	50.52
JY-F382	7,841.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.76	50.52
JY-F383	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.76	50.52
JY-F384	7,841.00	Zone - 1	Demand	1.95	Residential	4.88	7,957.76	50.52

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-420	20.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.01	0.00	7,959.59	7,959.59	0.00	0.00
PY-94	160.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,966.98	7,966.98	0.00	0.00
PY-424	107.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	-0.01	0.00	7,959.59	7,959.59	0.00	0.00
PY-428	58.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	-0.00	0.00	7,959.59	7,959.59	0.00	0.00
PY-92	71.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	-0.01	0.00	7,966.98	7,966.98	0.00	0.00
PY-426	84.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.59	7,959.59	0.00	0.00
PY-440	305.00	6.1	PVC	140.0	1974	false	0.00	Open	30.30	0.33	7,957.76	7,957.73	0.03	0.09
PY-344	55.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-98.20	0.98	7,957.81	7,957.85	0.04	0.74
PY-364	170.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	111.88	1.12	7,958.01	7,957.85	0.16	0.94
PY-340	415.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-98.21	0.98	7,957.85	7,958.15	0.31	0.74
PY-264	289.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-390.91	3.90	7,960.78	7,963.53	2.75	9.51
PY-150	399.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-189.89	1.89	7,959.75	7,960.75	1.00	2.50
PY-400	452.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.53	1.42	7,958.06	7,958.72	0.66	1.47
PY-260	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-390.91	3.90	7,963.53	7,963.82	0.29	9.51
PY-284	323.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-130.78	1.30	7,958.99	7,959.40	0.40	1.25
PY-390	285.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	60.18	0.60	7,957.85	7,957.76	0.08	0.30
PY-154	24.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-189.88	1.89	7,959.69	7,959.75	0.06	2.50
PY-320	460.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	383.74	3.83	7,963.82	7,959.59	4.23	9.19
PY-466	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.52	1.42	7,957.48	7,957.52	0.04	1.46
PY-462	365.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.52	1.42	7,957.52	7,958.06	0.54	1.47
PY-116	322.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-11.13	0.11	7,965.99	7,965.99	0.00	0.01
PY-360	155.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	111.88	1.12	7,958.15	7,958.01	0.15	0.94
PY-374	56.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-40.21	0.40	7,957.78	7,957.79	0.01	0.15
PY-370	414.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-40.22	0.40	7,957.79	7,957.85	0.06	0.14
PY-290	250.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	222.79	2.22	7,958.99	7,958.15	0.84	3.36
PY-134	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-475.31	4.74	7,962.72	7,966.88	4.17	13.66
PY-210	6.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,959.34	7,959.34	0.00	0.00
PY-220	420.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	97.09	0.97	7,959.34	7,959.04	0.30	0.72
PY-110	15.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	116.69	1.16	7,965.99	7,965.98	0.02	1.04
PY-144	6.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-189.90	1.89	7,960.75	7,960.77	0.02	2.52
PY-500	126.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	92.78	0.93	7,957.66	7,957.58	0.08	0.66
PY-112	93.00	6.4	Ductile Iron	130.0	1984	false	0.00	Open	-11.14	0.11	7,965.99	7,965.99	0.00	0.02
PY-F353	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.01	0.00	7,957.77	7,957.77	0.00	0.00
PY-F479	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,958.01	7,958.01	0.00	0.00
PY-F423	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,958.67	7,958.67	0.00	0.00
PY-F436	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,957.76	7,957.76	0.00	0.00
PY-F442	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,957.76	7,957.76	0.00	0.00

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-F383	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,957.77	7,957.77	0.00	0.00
PY-F376	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.01	0.00	7,957.77	7,957.77	0.00	0.00
PY-F101	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,966.09	7,966.09	0.00	0.00
PY-F25	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,971.00	7,971.00	0.00	0.00
PY-F23	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,972.59	7,972.59	0.00	0.00
PY-F27	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,969.04	7,969.04	0.00	0.00
PY-F38	11.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,968.26	7,968.26	0.00	0.00
PY-F188	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,965.45	7,965.45	0.00	0.00
PY-F185	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,965.14	7,965.14	0.00	0.00
PY-F263	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.01	0.00	7,964.79	7,964.79	0.00	0.00
PY-300	480.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-142.54	1.42	7,958.72	7,959.43	0.70	1.47
PY-230	485.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-73.80	0.74	7,959.43	7,959.64	0.21	0.43
PY-270	425.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	216.80	2.16	7,960.78	7,959.43	1.36	3.19
PY-380	305.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	27.35	0.27	7,957.78	7,957.76	0.02	0.07
PY-394	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	60.17	0.60	7,957.76	7,957.76	0.01	0.32
PY-450	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	60.43	0.60	7,957.76	7,957.66	0.09	0.30
PY-350	325.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	28.89	0.29	7,957.81	7,957.78	0.02	0.08
PY-280	25.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	130.79	1.30	7,959.43	7,959.40	0.03	1.25
PY-F493	56.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-25.90	0.26	7,957.76	7,957.76	0.00	0.06
PY-F346	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.01	0.00	7,957.78	7,957.78	0.00	0.00
PY-F495	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.01	0.00	7,957.76	7,957.76	0.00	0.00
PY-F491	414.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-25.89	0.26	7,957.73	7,957.76	0.03	0.06
PY-434	57.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	8.07	0.08	7,957.76	7,957.76	0.00	0.01
PY-4	15.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	1,200.09	11.97	8,051.55	8,050.41	1.14	75.94
PY-F492	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-0.00	0.00	7,957.76	7,957.76	0.00	0.00
PY-430	413.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	8.06	0.08	7,957.76	7,957.76	0.00	0.01
PY-152	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.01	0.00	7,959.75	7,959.75	0.00	0.00
PY-432	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,957.76	7,957.76	0.00	0.00
PY-342	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.01	0.00	7,957.85	7,957.85	0.00	0.00
PY-330	316.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-26.65	0.27	7,959.57	7,959.59	0.02	0.06
PY-204	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,959.36	7,959.36	0.00	0.00
PY-470	12.00	6.4	Ductile Iron	130.0	1979	false	0.00	Open	-0.00	0.00	7,958.08	7,958.08	0.00	0.00
PY-502	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,957.58	7,957.58	0.00	0.00
PY-140	385.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-194.80	1.94	7,960.82	7,961.83	1.01	2.62
PY-362	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.01	0.00	7,958.01	7,958.01	0.00	0.00
PY-312	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.01	0.00	7,960.72	7,960.72	0.00	0.00
PY-86	10.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.01	0.00	7,966.87	7,966.87	0.00	0.00

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-372	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.01	0.00	7,957.79	7,957.79	0.00	0.00
PY-132	48.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	-0.00	0.00	7,966.88	7,966.88	0.00	0.00
PY-460	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	-0.00	0.00	7,958.06	7,958.06	0.00	0.00
PY-172	20.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	-0.00	0.00	7,965.94	7,965.94	0.00	0.00
PY-474	12.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-1,000.00	9.97	7,956.39	7,957.04	0.65	54.16
PY-302	20.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	-0.01	0.00	7,958.72	7,958.72	0.00	0.00
PY-222	18.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.01	0.00	7,959.04	7,959.04	0.00	0.00
PY-176	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	-0.00	0.00	7,965.17	7,965.17	0.00	0.00
PY-114	25.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-0.00	0.00	7,965.99	7,965.99	0.00	0.00
PY-464	20.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-0.01	0.00	7,957.52	7,957.52	0.00	0.00
PY-180	458.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-150.05	1.50	7,965.24	7,965.98	0.74	1.61
PY-162	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.01	0.00	7,961.28	7,961.28	0.00	0.00
PY-190	32.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-61.76	0.62	7,965.23	7,965.24	0.01	0.31
PY-224	66.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	97.09	0.97	7,959.04	7,958.99	0.05	0.73
PY-194	398.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-61.75	0.62	7,965.10	7,965.23	0.12	0.31
PY-504	62.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	92.77	0.93	7,957.58	7,957.54	0.04	0.66
PY-200	25.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-180.37	1.80	7,959.64	7,959.69	0.06	2.27
PY-62	50.00	6.4	Ductile Iron	130.0	1981	false	0.00	Open	-0.00	0.00	7,966.77	7,966.77	0.00	0.00
PY-202	321.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-106.57	1.06	7,959.36	7,959.64	0.27	0.86
PY-136	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.01	0.00	7,962.72	7,962.72	0.00	0.00
PY-206	24.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-106.57	1.06	7,959.34	7,959.36	0.02	0.85
PY-262	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,963.53	7,963.53	0.00	0.00
PY-192	33.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,965.23	7,965.23	0.00	0.00
PY-392	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.01	0.00	7,957.76	7,957.76	0.00	0.00
PY-146	38.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.01	0.00	7,960.75	7,960.75	0.00	0.00
PY-490	470.00	6.4	PVC	140.0	1974	false	0.00	Open	43.49	0.43	7,957.73	7,957.66	0.07	0.14
PY-100	430.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	156.40	1.56	7,966.74	7,965.99	0.75	1.74
PY-282	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,959.40	7,959.40	0.00	0.00
PY-96	89.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-0.00	0.00	7,967.79	7,967.79	0.00	0.00
PY-138	65.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-475.30	4.74	7,961.83	7,962.72	0.89	13.66
PY-422	27.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	-0.01	0.00	7,959.59	7,959.59	0.00	0.00
PY-142	21.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	194.80	1.94	7,960.82	7,960.77	0.05	2.60
PY-412	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.01	0.00	7,959.51	7,959.51	0.00	0.00
PY-82	57.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	-0.00	0.00	7,966.76	7,966.76	0.00	0.00
PY-2	579.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,200.09	6.87	8,078.77	8,067.41	11.36	19.61
PY-1	1,898.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,200.09	6.87	8,116.00	8,078.77	37.23	19.61
PY-3	809.00	8.5	Ductile Iron	130.0	0	false	0.00	Open	1,200.09	6.87	8,067.41	8,051.55	15.87	19.61

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-89	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-479.05	2.68	7,966.88	7,966.98	0.10	3.37
PY-520	357.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	91.21	0.51	7,957.54	7,957.48	0.06	0.16
PY-87	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-128.30	0.72	7,966.87	7,966.88	0.01	0.29
PY-251	18.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-788.92	4.41	7,963.82	7,963.97	0.15	8.52
PY-250	459.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-404.17	2.26	7,963.97	7,965.10	1.13	2.47
PY-130	40.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-475.32	2.66	7,966.88	7,967.02	0.13	3.33
PY-90	229.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-489.41	2.73	7,966.98	7,967.79	0.81	3.52
PY-80	75.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-128.28	0.72	7,966.74	7,966.76	0.02	0.29
PY-240	445.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	264.25	1.48	7,961.28	7,960.78	0.50	1.12
PY-178	32.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-353.80	1.98	7,965.10	7,965.17	0.06	1.94
PY-70	352.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	36.07	0.20	7,966.75	7,966.74	0.01	0.03
PY-416	50.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.97	2.44	7,959.14	7,959.28	0.14	2.84
PY-160	485.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	264.26	1.48	7,961.83	7,961.28	0.54	1.12
PY-310	25.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-419.15	2.34	7,960.72	7,960.78	0.07	2.64
PY-510	45.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-81.74	0.46	7,957.48	7,957.48	0.01	0.12
PY-84	370.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-128.29	0.72	7,966.76	7,966.87	0.11	0.30
PY-472	365.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.96	2.44	7,957.04	7,958.08	1.04	2.84
PY-476	27.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	564.04	3.15	7,957.17	7,957.04	0.12	4.58
PY-174	402.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-353.81	1.98	7,965.17	7,965.94	0.78	1.93
PY-120	400.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-352.19	1.97	7,965.99	7,966.75	0.76	1.91
PY-170	24.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-353.81	1.98	7,965.94	7,965.99	0.05	1.93
PY-98	15.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-494.36	2.76	7,967.79	7,967.84	0.05	3.58
PY-414	80.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.97	2.44	7,959.28	7,959.51	0.23	2.84
PY-410	20.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.97	2.44	7,959.51	7,959.57	0.06	2.86
PY-418	375.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-435.97	2.44	7,958.08	7,959.14	1.06	2.84
PY-480	378.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	224.25	1.25	7,957.48	7,957.17	0.31	0.83
PY-314	435.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-419.14	2.34	7,959.57	7,960.72	1.15	2.64
PY-F421	504.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.32	1.93	7,959.59	7,958.67	0.92	1.83
PY-F439	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-7.19	0.04	7,957.76	7,957.76	0.00	0.00
PY-F437	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.15	0.11	7,957.76	7,957.76	0.00	0.01
PY-F435	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.15	0.11	7,957.76	7,957.76	0.00	0.01
PY-F443	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-7.20	0.04	7,957.76	7,957.76	0.00	0.00
PY-F478	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.31	1.93	7,958.01	7,957.90	0.10	1.83
PY-F354	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	22.77	0.13	7,957.77	7,957.77	0.00	0.01
PY-F352	52.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	22.78	0.13	7,957.77	7,957.77	0.00	0.01
PY-F425	360.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.32	1.93	7,958.67	7,958.01	0.66	1.83
PY-F37	439.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	168.79	0.93	7,968.26	7,968.06	0.21	0.48

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-F39	752.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	168.79	0.93	7,968.62	7,968.26	0.36	0.48
PY-F261	372.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	384.74	2.13	7,964.79	7,963.97	0.81	2.19
PY-F22	49.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.88	2.74	7,972.76	7,972.59	0.17	3.52
PY-F28	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.87	2.74	7,969.04	7,968.84	0.20	3.51
PY-F26	557.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.87	2.74	7,971.00	7,969.04	1.96	3.52
PY-F24	451.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.88	2.74	7,972.59	7,971.00	1.59	3.52
PY-F189	359.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	314.13	1.74	7,965.99	7,965.45	0.54	1.50
PY-F102	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	350.74	1.94	7,966.09	7,965.99	0.10	1.85
PY-F88	429.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	350.75	1.94	7,966.88	7,966.09	0.79	1.84
PY-F187	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	314.13	1.73	7,965.45	7,965.36	0.08	1.50
PY-F265	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	384.75	2.13	7,964.91	7,964.79	0.12	2.19
PY-F184	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	178.93	0.99	7,965.14	7,965.11	0.03	0.53
PY-F186	425.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	178.94	0.99	7,965.36	7,965.14	0.23	0.53
PY-F348	325.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-27.39	0.15	7,957.77	7,957.78	0.01	0.02
PY-F477	411.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-346.13	1.91	7,957.17	7,957.90	0.74	1.80
PY-F182	451.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	212.32	1.17	7,965.24	7,964.91	0.33	0.73
PY-F438	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.58	0.11	7,957.76	7,957.76	0.00	0.01
PY-F378	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-36.42	0.20	7,957.76	7,957.77	0.01	0.03
PY-F356	325.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-17.89	0.10	7,957.77	7,957.77	0.00	0.01
PY-F181	11.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	80.38	0.44	7,965.24	7,965.24	0.00	0.13
PY-F34	480.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	327.58	1.81	7,968.62	7,967.84	0.78	1.63
PY-F33	63.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.87	2.74	7,968.84	7,968.62	0.22	3.52
PY-F36	458.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-166.78	0.92	7,967.84	7,968.06	0.21	0.47
PY-F183	390.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	175.68	0.97	7,965.11	7,964.91	0.20	0.51
PY-F191	420.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	131.94	0.73	7,965.36	7,965.24	0.13	0.30
PY-F111	428.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-33.36	0.18	7,965.98	7,965.99	0.01	0.02
PY-F384	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-28.15	0.16	7,957.76	7,957.77	0.01	0.02
PY-F347	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	55.04	0.30	7,957.78	7,957.78	0.00	0.06
PY-F345	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	55.05	0.30	7,957.81	7,957.78	0.02	0.06
PY-F496	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-11.20	0.06	7,957.76	7,957.76	0.00	0.00
PY-F382	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	15.13	0.08	7,957.77	7,957.77	0.00	0.00
PY-F379	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	15.14	0.08	7,957.77	7,957.77	0.00	0.01
PY-F375	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	29.05	0.16	7,957.78	7,957.77	0.01	0.02
PY-F351	362.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	22.78	0.13	7,957.78	7,957.77	0.00	0.01
PY-F444	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-16.08	0.09	7,957.76	7,957.76	0.00	0.01
PY-F377	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	29.04	0.16	7,957.77	7,957.77	0.00	0.02
PY-F494	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-11.19	0.06	7,957.76	7,957.76	0.00	0.00

Scenario: Future Tank #3 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-30	289.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.26	3.49	7,971.23	7,972.76	1.52	5.27
PY-5	5.00	10.1	Cast iron	120.0	1974	false	0.00	Open	1,368.15	5.48	8,050.41	8,050.35	0.06	12.11
PY-40	598.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.26	3.49	7,968.08	7,971.23	3.15	5.27
PY-20	660.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,368.15	5.48	7,972.76	7,980.79	8.03	12.16
PY-10	5,719.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,368.15	5.48	7,980.79	8,050.35	69.56	12.16
PY-50	202.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.26	3.49	7,967.02	7,968.08	1.06	5.27
PY-60	294.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-394.27	1.44	7,966.77	7,967.02	0.25	0.84
PY-64	22.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-394.26	1.44	7,966.75	7,966.77	0.02	0.84
PY-F216	866.00	12.6	Ductile Iron	130.0	2010	false	0.00	Tempo	0.00	0.00	8,046.00	7,959.34	0.00	0.00

Scenario: Future Tank #4 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
FH-1	Zone - 1	3	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	21.03	5.00	33.22	FH-F47	N/A	0.42	JY-10
FH-2	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	39.33	5.00	36.04	JY-40	N/A	0.42	JY-10
FH-3	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	30.95	5.00	36.13	JY-40	N/A	0.42	JY-10
FH-4	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	35.44	5.00	36.66	JY-40	N/A	0.42	JY-10
FH-5	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	41.75	5.00	37.28	JY-40	N/A	0.42	JY-10
FH-6	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	34.65	5.00	35.81	JY-40	N/A	0.42	JY-10
FH-7	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	41.86	5.00	36.73	JY-40	N/A	0.42	JY-10
FH-8	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	45.99	5.00	37.38	JY-40	N/A	0.42	JY-10
FH-9	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	52.23	5.00	38.80	JY-20	N/A	0.42	JY-10
FH-10	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	27.59	5.00	31.99	JY-320	N/A	0.42	JY-10
FH-11	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	35.53	5.00	35.64	JY-40	N/A	0.42	JY-10
FH-12	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	39.86	5.00	39.97	JY-20	N/A	0.42	JY-10
FH-13	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	46.95	5.00	40.49	JY-20	N/A	0.42	JY-10
FH-14	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	56.61	5.00	40.88	JY-20	N/A	0.42	JY-10
FH-15	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	58.04	5.00	41.44	JY-20	N/A	0.42	JY-10
FH-16	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	60.73	5.00	42.03	JY-20	N/A	0.42	JY-10
FH-17	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	66.62	5.00	42.65	JY-20	N/A	0.42	JY-10
FH-18	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	25.49	5.00	32.30	JY-144	N/A	0.42	JY-10
FH-19	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	39.17	5.00	44.59	JY-20	N/A	0.42	JY-10
FH-20	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	59.81	5.00	44.99	JY-20	N/A	0.42	JY-10
FH-21	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	35.73	5.00	39.31	JY-260	N/A	0.42	JY-10
FH-22	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	41.14	5.00	44.00	JY-20	N/A	0.42	JY-10
FH-23	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	63.91	5.00	44.16	JY-20	N/A	0.42	JY-10
FH-24	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	34.87	5.00	41.15	JY-174	N/A	0.43	JY-10
FH-25	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	59.87	5.00	48.09	JY-20	N/A	0.43	JY-10
FH-26	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	58.61	5.00	48.66	JY-20	N/A	0.43	JY-10
FH-27	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	63.59	5.00	48.55	JY-20	N/A	0.43	JY-10
FH-28	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	64.79	5.00	46.15	JY-20	N/A	0.43	JY-10
FH-29	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	67.28	5.00	48.89	JY-20	N/A	0.43	JY-10
FH-30	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	67.09	5.00	48.89	JY-20	N/A	0.43	JY-10
FH-31	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	68.22	5.00	48.77	JY-20	N/A	0.43	JY-10
FH-F32	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	69.53	5.00	48.89	JY-20	N/A	0.43	JY-10
FH-F33	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	73.84	5.00	48.93	JY-20	N/A	0.43	JY-10
FH-F34	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	72.52	5.00	49.01	JY-20	N/A	0.43	JY-10
FH-F35	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	71.40	5.00	49.12	JY-20	N/A	0.43	JY-10
FH-F36	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	72.25	5.00	49.38	JY-20	N/A	0.43	JY-10
FH-F37	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	71.81	5.00	49.13	JY-20	N/A	0.43	JY-10

Scenario: Future Tank #4 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
FH-F38	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	72.89	5.00	49.01	JY-20	N/A	0.43	JY-10
FH-F39	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	71.99	5.00	48.97	JY-20	N/A	0.43	JY-10
FH-F40	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	62.00	5.00	42.03	JY-20	N/A	0.42	JY-10
FH-F41	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	56.46	5.00	41.72	JY-20	N/A	0.42	JY-10
FH-F42	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	52.29	5.00	37.58	JY-40	N/A	0.42	JY-10
FH-F43	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	48.91	5.00	37.28	JY-40	N/A	0.42	JY-10
FH-F44	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	47.09	5.00	37.02	JY-40	N/A	0.42	JY-10
FH-F45	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	43.37	5.00	36.56	JY-40	N/A	0.42	JY-10
FH-F46	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	23.99	5.00	25.96	JY-F38	N/A	0.42	JY-10
FH-F47	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	27.01	5.00	28.80	JY-F35	N/A	0.42	JY-10
FH-F48	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	30.41	5.00	32.20	JY-F34	N/A	0.41	JY-10
FH-F49	Zone - 1	2	true	true	1,000.00	3,000.00	1,000.00	3,000.00	20.00	33.72	5.00	32.78	JY-20	N/A	0.41	JY-10
JY-4	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-5	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-10	Zone - 2	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-20	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-30	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-40	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-50	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-60	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-62	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-70	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-80	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-82	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-86	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-88	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-90	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-92	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-94	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-96	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-100	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-110	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-112	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-114	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-120	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-122	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-124	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #4 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-130	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-132	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-134	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-140	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-142	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-144	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-146	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-150	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-152	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-160	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-170	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-172	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-174	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-180	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-182	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-188	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-190	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-200	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-202	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-210	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-220	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-222	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-230	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-238	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-240	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-250	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-252	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-260	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-270	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-272	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-280	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-290	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-292	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-294	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-300	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-310	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-312	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #4 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-314	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-320	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-322	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-324	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-326	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-330	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-332	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-334	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-340	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-350	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-352	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-354	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-360	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-362	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-370	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-380	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-390	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-392	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-400	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-402	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F33	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F34	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F35	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F36	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F37	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F38	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F39	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F87	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F89	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F151	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F153	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F154	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F155	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F156	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F157	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F201	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F231	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #4 Base Automatic Fire Flow Analysis

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
JY-F232	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F281	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F282	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F283	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F284	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F285	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F301	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F302	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F303	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F304	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F341	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F342	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F343	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F344	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F356	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F357	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F358	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F381	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F382	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F383	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A
JY-F384	Zone - 1	N/A	false	false	1,000.00	N/A	N/A	N/A	20.00	N/A	5.00	N/A	N/A	N/A	N/A	N/A

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
FH-1	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.89	31.10
FH-2	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.57
FH-3	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.53
FH-4	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.10	35.52
FH-5	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.34	39.52
FH-6	7,896.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	30.66
FH-7	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.05	34.63
FH-8	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.28	37.76
FH-9	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.65	41.82
FH-10	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.80	44.48
FH-11	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.57
FH-12	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.77	33.22
FH-13	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,961.36	36.93
FH-14	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.82	41.46
FH-15	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.71	44.87
FH-16	7,847.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.36	48.18
FH-17	7,840.00	Zone - 1	Demand	1,000.00	Fire	1,000.00	7,956.73	50.51
FH-18	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.71	33.19
FH-19	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.64	36.62
FH-20	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.28	41.22
FH-21	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.81	45.35
FH-22	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.32	49.03
FH-23	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.92	51.45
FH-24	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.16	35.98
FH-25	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.74	40.13
FH-26	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.55	43.94
FH-27	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.45	47.79
FH-28	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.11	51.10
FH-29	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.59	44.38
FH-30	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.53	46.52
FH-31	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.49	48.67
FH-F32	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.50	50.84
FH-F33	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.51	48.68
FH-F34	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.53	46.09
FH-F35	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.57	44.38
FH-F36	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.57	44.38
FH-F37	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.53	46.09
FH-F38	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.52	48.68
FH-F39	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.51	50.84
FH-F40	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.31	51.62
FH-F41	7,849.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.93	47.56
FH-F42	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.90	43.22
FH-F43	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.25	43.81
FH-F44	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.56	39.18
FH-F45	7,885.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.20	35.13
FH-F46	7,900.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.37	29.58
FH-F47	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,969.14	25.59
FH-F48	7,905.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.10	28.60
FH-F49	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.68	27.12
JY-4	8,082.00	Zone - 2	Demand	0.00	Fixed	0.00	8,078.81	-1.38
JY-5	8,068.00	Zone - 2	Demand	0.00	Fixed	0.00	8,067.46	-0.23
JY-10	8,050.00	Zone - 2	Demand	0.00	Fixed	0.00	8,050.41	0.18
JY-20	7,925.00	Zone - 1	Demand	0.00	Fixed	0.00	7,980.88	24.18
JY-30	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.86	27.19

Title: Town of Yampa

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Civil Design Consultants Inc

Haestad Methods Solution Center Watertown, CT 06795 USA

Project Engineer: Randy Sackett

WaterCAD v7.0 [07.00.061.00]

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Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-40	7,920.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.33	22.21
JY-50	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.18	32.09
JY-60	7,894.00	Zone - 1	Demand	1.78	Composite	1.68	7,967.11	31.63
JY-62	7,895.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.10
JY-70	7,895.00	Zone - 1	Demand	13.95	Composite	5.99	7,966.85	31.09
JY-80	7,894.00	Zone - 1	Demand	3.57	Composite	7.95	7,966.84	31.52
JY-82	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.87	31.53
JY-86	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.57
JY-88	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.99	31.58
JY-90	7,894.00	Zone - 1	Demand	4.15	Residential	10.36	7,967.09	31.62
JY-92	7,893.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.09	32.05
JY-94	7,892.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.09	32.49
JY-96	7,894.00	Zone - 1	Demand	3.39	Composite	4.94	7,967.89	31.97
JY-100	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,967.95	31.99
JY-110	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.08	35.51
JY-112	7,884.00	Zone - 1	Demand	11.90	Composite	28.57	7,966.10	35.52
JY-114	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.10	35.52
JY-120	7,886.00	Zone - 1	Demand	4.19	Composite	9.51	7,966.09	34.65
JY-122	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.05	34.63
JY-124	7,878.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.28	37.76
JY-130	7,885.00	Zone - 1	Demand	9.49	Composite	16.25	7,961.88	33.26
JY-132	7,894.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.98	31.57
JY-134	7,886.00	Zone - 1	Demand	0.00	Fixed	0.00	7,962.77	33.22
JY-140	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.79	33.22
JY-142	7,884.00	Zone - 1	Demand	1.96	Residential	4.90	7,960.73	33.20
JY-144	7,884.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.71	33.19
JY-146	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.64	36.62
JY-150	7,874.00	Zone - 1	Demand	3.16	Residential	7.91	7,965.35	39.52
JY-152	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.34	39.52
JY-160	7,877.00	Zone - 1	Demand	6.82	Composite	11.38	7,965.22	38.17
JY-170	7,874.00	Zone - 1	Demand	4.23	Composite	9.52	7,959.57	37.02
JY-172	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.51	37.00
JY-174	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.16	35.98
JY-180	7,876.00	Zone - 1	Demand	3.79	Residential	9.47	7,959.13	35.97
JY-182	7,877.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.13	35.54
JY-188	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.74	40.13
JY-190	7,876.00	Zone - 1	Demand	0.00	Fixed	0.00	7,961.36	36.93
JY-200	7,866.00	Zone - 1	Demand	5.71	Residential	14.26	7,963.94	42.37
JY-202	7,867.00	Zone - 1	Demand	0.00	Fixed	0.00	7,963.65	41.82
JY-210	7,865.00	Zone - 1	Demand	24.07	Composite	19.20	7,960.88	41.48
JY-220	7,864.00	Zone - 1	Demand	6.91	Residential	17.27	7,959.33	41.24
JY-222	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.28	41.22
JY-230	7,866.00	Zone - 1	Demand	4.81	Composite	5.08	7,958.68	40.10
JY-238	7,866.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.09	42.44
JY-240	7,858.00	Zone - 1	Demand	16.62	Composite	7.76	7,959.80	44.04
JY-250	7,856.00	Zone - 1	Demand	7.22	Composite	9.81	7,959.77	44.90
JY-252	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,960.82	41.46
JY-260	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.81	45.35
JY-270	7,860.00	Zone - 1	Demand	5.08	Residential	12.70	7,958.59	42.65
JY-272	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.59	44.38
JY-280	7,856.00	Zone - 1	Demand	5.71	Residential	14.26	7,958.59	44.38
JY-290	7,857.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.55	43.94
JY-292	7,854.00	Zone - 1	Demand	4.59	Residential	11.48	7,958.52	45.22
JY-294	7,851.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.53	46.52

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-300	7,852.00	Zone - 1	Demand	5.08	Residential	12.70	7,958.53	46.09
JY-310	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.71	44.87
JY-312	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.50	45.64
JY-314	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.37	45.59
JY-320	7,858.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.80	44.04
JY-322	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.80	44.91
JY-324	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.80	46.64
JY-326	7,854.00	Zone - 1	Demand	0.00	Fixed	0.00	7,959.80	45.77
JY-330	7,847.00	Zone - 1	Demand	3.12	Residential	7.80	7,958.44	48.22
JY-332	7,848.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.45	47.79
JY-334	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.49	48.67
JY-340	7,846.00	Zone - 1	Demand	3.25	Residential	8.13	7,958.49	48.67
JY-350	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.36	48.61
JY-352	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.38	50.79
JY-354	7,840.00	Zone - 1	Demand	2.54	Residential	6.35	7,957.51	50.84
JY-360	7,845.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.32	49.03
JY-362	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.92	51.45
JY-370	7,842.00	Zone - 1	Demand	4.46	Residential	11.14	7,958.29	50.31
JY-380	7,841.00	Zone - 1	Demand	5.08	Residential	12.70	7,958.44	50.81
JY-390	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,957.89	51.44
JY-392	7,838.00	Zone - 1	Demand	3.79	Residential	9.47	7,957.91	51.88
JY-400	7,840.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.11	51.10
JY-402	7,840.00	Zone - 1	Demand	0.62	Residential	1.56	7,958.02	51.06
JY-F33	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,972.68	27.12
JY-F34	7,905.00	Zone - 1	Demand	0.00	Fixed	0.00	7,971.10	28.60
JY-F35	7,910.00	Zone - 1	Demand	0.00	Fixed	0.00	7,969.14	25.59
JY-F36	7,909.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.95	25.94
JY-F37	7,908.00	Zone - 1	Demand	4.94	Non-Residential	0.49	7,968.72	26.27
JY-F38	7,900.00	Zone - 1	Demand	0.00	Fixed	0.00	7,968.37	29.58
JY-F39	7,895.00	Zone - 1	Demand	1.38	Composite	2.01	7,968.16	31.65
JY-F87	7,885.00	Zone - 1	Demand	0.00	Fixed	0.00	7,966.20	35.13
JY-F89	7,884.00	Zone - 1	Demand	1.30	Residential	3.25	7,966.09	35.52
JY-F151	7,874.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.35	39.52
JY-F153	7,866.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.02	42.84
JY-F154	7,864.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.22	43.79
JY-F155	7,864.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.25	43.81
JY-F156	7,874.00	Zone - 1	Demand	1.30	Residential	3.25	7,965.47	39.58
JY-F157	7,875.00	Zone - 1	Demand	0.00	Fixed	0.00	7,965.56	39.18
JY-F201	7,865.00	Zone - 1	Demand	0.00	Fixed	0.00	7,964.90	43.22
JY-F231	7,870.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.63	38.35
JY-F232	7,870.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.61	38.34
JY-F281	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.57	44.38
JY-F282	7,856.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.56	44.37
JY-F283	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.57	44.38
JY-F284	7,856.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.57	44.38
JY-F285	7,856.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.56	44.37
JY-F301	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.53	46.09
JY-F302	7,852.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.53	46.09
JY-F303	7,852.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.53	46.09
JY-F304	7,852.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.53	46.09
JY-F341	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.51	48.68
JY-F342	7,846.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.51	48.68
JY-F343	7,846.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.52	48.68
JY-F344	7,846.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.52	48.68

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
JY-F356	7,839.00	Zone - 1	Demand	6.81	Composite	3.18	7,958.21	51.58
JY-F357	7,839.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.31	51.62
JY-F358	7,849.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.93	47.56
JY-F381	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.50	50.84
JY-F382	7,841.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.51	50.84
JY-F383	7,841.00	Zone - 1	Demand	0.00	Fixed	0.00	7,958.51	50.84
JY-F384	7,841.00	Zone - 1	Demand	1.95	Residential	4.88	7,958.52	50.84

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-420	20.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.80	7,959.80	0.00	0.00
PY-94	160.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,967.09	7,967.09	0.00	0.00
PY-424	107.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.80	7,959.80	0.00	0.00
PY-428	58.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.80	7,959.80	0.00	0.00
PY-92	71.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,967.09	7,967.09	0.00	0.00
PY-426	84.00	4.3	Ductile Iron	130.0	1940	false	0.00	Open	0.00	0.00	7,959.80	7,959.80	0.00	0.00
PY-440	305.00	6.1	PVC	140.0	1974	false	0.00	Open	41.30	0.45	7,958.49	7,958.44	0.05	0.16
PY-344	55.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-5.15	0.05	7,958.59	7,958.59	0.00	0.00
PY-364	170.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	50.31	0.50	7,958.55	7,958.52	0.04	0.21
PY-340	415.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-5.15	0.05	7,958.59	7,958.59	0.00	0.00
PY-264	289.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-392.73	3.92	7,960.88	7,963.65	2.77	9.59
PY-150	399.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-198.20	1.98	7,959.64	7,960.71	1.08	2.70
PY-400	452.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-120.97	1.21	7,958.32	7,958.81	0.49	1.08
PY-260	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-392.73	3.92	7,963.65	7,963.94	0.29	9.60
PY-284	323.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-162.13	1.62	7,958.68	7,959.28	0.60	1.86
PY-390	285.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	54.21	0.54	7,958.52	7,958.45	0.07	0.24
PY-154	24.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-198.20	1.98	7,959.57	7,959.64	0.06	2.71
PY-320	460.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	379.34	3.78	7,963.94	7,959.80	4.14	9.00
PY-466	30.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-120.97	1.21	7,957.89	7,957.92	0.03	1.09
PY-462	365.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-120.97	1.21	7,957.92	7,958.32	0.40	1.08
PY-116	322.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-11.25	0.11	7,966.09	7,966.10	0.00	0.01
PY-360	155.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	50.31	0.50	7,958.59	7,958.55	0.03	0.21
PY-374	56.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	15.38	0.15	7,958.53	7,958.53	0.00	0.03
PY-370	414.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	15.38	0.15	7,958.53	7,958.52	0.01	0.02
PY-290	250.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	68.16	0.68	7,958.68	7,958.59	0.09	0.38
PY-134	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-477.67	4.76	7,962.77	7,966.98	4.21	13.79
PY-210	6.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,959.13	7,959.13	0.00	0.00
PY-220	420.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	111.58	1.11	7,959.13	7,958.74	0.39	0.93
PY-110	15.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	116.04	1.16	7,966.10	7,966.08	0.02	1.01
PY-144	6.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-198.20	1.98	7,960.71	7,960.73	0.02	2.69
PY-500	126.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	138.71	1.38	7,958.29	7,958.11	0.18	1.40
PY-112	93.00	6.4	Ductile Iron	130.0	1984	false	0.00	Open	-11.25	0.11	7,966.10	7,966.10	0.00	0.01
PY-F353	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.57	7,958.57	0.00	0.00
PY-F479	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.31	7,958.31	0.00	0.00
PY-F423	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.93	7,958.93	0.00	0.00
PY-F436	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.51	7,958.51	0.00	0.00
PY-F442	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.52	7,958.52	0.00	0.00

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-F383	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.53	7,958.53	0.00	0.00
PY-F376	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.53	7,958.53	0.00	0.00
PY-F101	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,966.20	7,966.20	0.00	0.00
PY-F25	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,971.10	7,971.10	0.00	0.00
PY-F23	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,972.68	7,972.68	0.00	0.00
PY-F27	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,969.14	7,969.14	0.00	0.00
PY-F38	11.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,968.37	7,968.37	0.00	0.00
PY-F188	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,965.56	7,965.56	0.00	0.00
PY-F185	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,965.25	7,965.25	0.00	0.00
PY-F263	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,964.90	7,964.90	0.00	0.00
PY-300	480.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-120.97	1.21	7,958.81	7,959.33	0.52	1.08
PY-230	485.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-67.63	0.67	7,959.33	7,959.51	0.18	0.37
PY-270	425.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	232.74	2.32	7,960.88	7,959.33	1.55	3.64
PY-380	305.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	36.62	0.37	7,958.53	7,958.49	0.04	0.12
PY-394	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	54.21	0.54	7,958.45	7,958.44	0.00	0.24
PY-450	305.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	80.88	0.81	7,958.44	7,958.29	0.16	0.51
PY-350	325.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	45.12	0.45	7,958.59	7,958.53	0.06	0.17
PY-280	25.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	162.13	1.62	7,959.33	7,959.28	0.05	1.87
PY-F493	56.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-40.38	0.40	7,958.50	7,958.51	0.01	0.14
PY-F346	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.57	7,958.57	0.00	0.00
PY-F495	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.51	7,958.51	0.00	0.00
PY-F491	414.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	-40.38	0.40	7,958.44	7,958.50	0.06	0.14
PY-434	57.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	34.46	0.34	7,958.49	7,958.49	0.01	0.11
PY-4	15.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	1,199.48	11.96	8,051.61	8,050.47	1.14	75.85
PY-F492	10.00	6.4	Ductile Iron	130.0	2010	false	0.00	Open	0.00	0.00	7,958.50	7,958.50	0.00	0.00
PY-430	413.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	34.46	0.34	7,958.49	7,958.44	0.04	0.11
PY-180	458.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-149.57	1.49	7,965.35	7,966.08	0.73	1.60
PY-464	20.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,957.92	7,957.92	0.00	0.00
PY-136	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,962.77	7,962.77	0.00	0.00
PY-114	25.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,966.10	7,966.10	0.00	0.00
PY-172	20.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	0.00	0.00	7,966.05	7,966.05	0.00	0.00
PY-302	20.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,958.81	7,958.81	0.00	0.00
PY-86	10.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,966.98	7,966.98	0.00	0.00
PY-176	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,965.28	7,965.28	0.00	0.00
PY-330	316.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-33.14	0.33	7,959.77	7,959.80	0.03	0.10
PY-204	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,959.16	7,959.16	0.00	0.00
PY-132	48.00	6.4	Ductile Iron	130.0	1977	false	0.00	Open	0.00	0.00	7,966.98	7,966.98	0.00	0.00

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-474	12.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	1,000.00	9.97	7,956.73	7,957.38	0.65	54.16
PY-460	20.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,958.32	7,958.32	0.00	0.00
PY-372	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,958.53	7,958.53	0.00	0.00
PY-192	33.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,965.34	7,965.34	0.00	0.00
PY-470	12.00	6.4	Ductile Iron	130.0	1979	false	0.00	Open	0.00	0.00	7,958.36	7,958.36	0.00	0.00
PY-152	35.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,959.64	7,959.64	0.00	0.00
PY-342	11.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,958.59	7,958.59	0.00	0.00
PY-140	385.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-203.10	2.03	7,960.79	7,961.88	1.09	2.83
PY-392	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,958.45	7,958.45	0.00	0.00
PY-490	470.00	6.4	PVC	140.0	1974	false	0.00	Open	68.97	0.69	7,958.44	7,958.29	0.16	0.33
PY-282	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,959.28	7,959.28	0.00	0.00
PY-142	21.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	203.10	2.03	7,960.79	7,960.73	0.06	2.84
PY-62	50.00	6.4	Ductile Iron	130.0	1981	false	0.00	Open	0.00	0.00	7,966.87	7,966.87	0.00	0.00
PY-262	15.00	6.4	Ductile Iron	130.0	1980	false	0.00	Open	0.00	0.00	7,963.65	7,963.65	0.00	0.00
PY-422	27.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,959.80	7,959.80	0.00	0.00
PY-222	18.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,958.74	7,958.74	0.00	0.00
PY-96	89.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	0.00	0.00	7,967.89	7,967.89	0.00	0.00
PY-412	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,959.71	7,959.71	0.00	0.00
PY-432	10.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,958.49	7,958.49	0.00	0.00
PY-200	25.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	-188.68	1.88	7,959.51	7,959.57	0.06	2.48
PY-162	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,961.36	7,961.36	0.00	0.00
PY-502	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,958.11	7,958.11	0.00	0.00
PY-194	398.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-61.57	0.61	7,965.22	7,965.34	0.12	0.31
PY-362	21.00	6.4	Ductile Iron	130.0	1976	false	0.00	Open	0.00	0.00	7,958.55	7,958.55	0.00	0.00
PY-146	38.00	6.4	Ductile Iron	130.0	1974	false	0.00	Open	0.00	0.00	7,960.71	7,960.71	0.00	0.00
PY-82	57.00	6.4	Ductile Iron	130.0	1982	false	0.00	Open	0.00	0.00	7,966.87	7,966.87	0.00	0.00
PY-138	65.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	-477.67	4.76	7,961.88	7,962.77	0.90	13.78
PY-504	62.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	138.71	1.38	7,958.11	7,958.02	0.09	1.39
PY-100	430.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	155.87	1.55	7,966.84	7,966.10	0.75	1.73
PY-202	321.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-121.05	1.21	7,959.16	7,959.51	0.35	1.08
PY-312	20.00	6.4	Ductile Iron	130.0	1978	false	0.00	Open	0.00	0.00	7,960.82	7,960.82	0.00	0.00
PY-206	24.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-121.05	1.21	7,959.13	7,959.16	0.03	1.08
PY-190	32.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	-61.57	0.61	7,965.34	7,965.35	0.01	0.32
PY-224	66.00	6.4	Ductile Iron	130.0	1983	false	0.00	Open	111.58	1.11	7,958.74	7,958.68	0.06	0.93
PY-2	579.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,199.48	6.86	8,078.81	8,067.46	11.35	19.60
PY-1	1,898.00	8.5	Ductile Iron	130.0	1977	false	0.00	Open	1,199.48	6.86	8,116.00	8,078.81	37.19	19.60
PY-3	809.00	8.5	Ductile Iron	130.0	0	false	0.00	Open	1,199.48	6.86	8,067.46	8,051.61	15.85	19.60

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-98	15.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-494.11	2.76	7,967.89	7,967.95	0.05	3.58
PY-251	18.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-786.33	4.39	7,963.94	7,964.09	0.15	8.46
PY-250	459.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-402.84	2.25	7,964.09	7,965.22	1.13	2.45
PY-520	357.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	137.15	0.77	7,958.02	7,957.91	0.12	0.33
PY-414	80.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-422.45	2.36	7,959.50	7,959.71	0.21	2.68
PY-310	25.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-399.12	2.23	7,960.82	7,960.88	0.06	2.40
PY-84	370.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-128.87	0.72	7,966.87	7,966.98	0.11	0.30
PY-89	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-478.81	2.68	7,966.99	7,967.09	0.10	3.37
PY-87	30.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-128.87	0.72	7,966.98	7,966.99	0.01	0.29
PY-410	20.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-422.45	2.36	7,959.71	7,959.77	0.05	2.69
PY-314	435.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-399.12	2.23	7,959.77	7,960.82	1.05	2.41
PY-480	378.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	248.64	1.39	7,957.89	7,957.51	0.38	1.00
PY-472	365.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-422.45	2.36	7,957.38	7,958.36	0.98	2.68
PY-418	375.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-422.45	2.36	7,958.36	7,959.37	1.00	2.68
PY-416	50.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-422.45	2.36	7,959.37	7,959.50	0.13	2.68
PY-170	24.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-352.64	1.97	7,966.05	7,966.09	0.05	1.93
PY-476	27.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	577.55	3.23	7,957.51	7,957.38	0.13	4.77
PY-178	32.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-352.64	1.97	7,965.22	7,965.28	0.06	1.92
PY-174	402.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-352.64	1.97	7,965.28	7,966.05	0.77	1.92
PY-80	75.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-128.87	0.72	7,966.84	7,966.87	0.02	0.29
PY-510	45.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-127.68	0.71	7,957.89	7,957.91	0.01	0.29
PY-70	352.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	34.95	0.20	7,966.85	7,966.84	0.01	0.03
PY-120	400.00	8.6	Ductile Iron	130.0	1982	false	0.00	Open	-350.90	1.96	7,966.09	7,966.85	0.76	1.90
PY-240	445.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	258.33	1.44	7,961.36	7,960.88	0.48	1.08
PY-160	485.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	258.33	1.44	7,961.88	7,961.36	0.52	1.08
PY-130	40.00	8.6	Ductile Iron	130.0	1978	false	0.00	Open	-477.67	2.67	7,966.98	7,967.11	0.13	3.36
PY-90	229.00	8.6	Ductile Iron	130.0	1983	false	0.00	Open	-489.17	2.73	7,967.09	7,967.89	0.81	3.52
PY-F435	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-47.27	0.26	7,958.49	7,958.51	0.02	0.04
PY-F375	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.58	0.11	7,958.53	7,958.53	0.00	0.01
PY-F377	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-19.58	0.11	7,958.53	7,958.53	0.00	0.01
PY-F437	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-47.27	0.26	7,958.51	7,958.51	0.00	0.04
PY-F26	557.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.62	2.74	7,971.10	7,969.14	1.96	3.51
PY-F352	52.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	70.12	0.39	7,958.57	7,958.57	0.00	0.09
PY-F439	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-20.61	0.11	7,958.51	7,958.52	0.00	0.01
PY-F443	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-20.61	0.11	7,958.52	7,958.52	0.00	0.01
PY-F354	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	70.12	0.39	7,958.57	7,958.56	0.01	0.10
PY-F184	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	178.37	0.99	7,965.25	7,965.22	0.03	0.52

Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-F22	49.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.62	2.74	7,972.86	7,972.68	0.17	3.51
PY-F24	451.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.62	2.74	7,972.68	7,971.10	1.58	3.51
PY-F186	425.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	178.37	0.99	7,965.47	7,965.25	0.22	0.53
PY-F39	752.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	168.71	0.93	7,968.72	7,968.37	0.36	0.48
PY-F37	439.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	168.71	0.93	7,968.37	7,968.16	0.21	0.48
PY-F265	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	383.49	2.12	7,965.02	7,964.90	0.12	2.17
PY-F261	372.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	383.49	2.12	7,964.90	7,964.09	0.81	2.18
PY-F421	504.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	338.44	1.87	7,959.80	7,958.93	0.87	1.73
PY-F425	360.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	338.44	1.87	7,958.93	7,958.31	0.62	1.73
PY-F478	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	338.44	1.87	7,958.31	7,958.21	0.10	1.73
PY-F28	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.62	2.74	7,969.14	7,968.95	0.20	3.51
PY-F189	359.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	313.16	1.73	7,966.09	7,965.56	0.54	1.49
PY-F187	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	313.16	1.73	7,965.56	7,965.47	0.08	1.50
PY-F88	429.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.94	1.93	7,966.99	7,966.20	0.79	1.84
PY-F102	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	349.94	1.93	7,966.20	7,966.09	0.10	1.84
PY-F348	325.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-71.24	0.39	7,958.53	7,958.56	0.03	0.10
PY-F477	411.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-335.26	1.85	7,957.51	7,958.21	0.70	1.70
PY-F182	451.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	211.63	1.17	7,965.35	7,965.02	0.33	0.72
PY-F356	325.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-65.24	0.36	7,958.53	7,958.56	0.03	0.08
PY-F384	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-50.71	0.28	7,958.52	7,958.53	0.02	0.05
PY-F438	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-24.90	0.14	7,958.51	7,958.51	0.00	0.01
PY-F378	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-56.44	0.31	7,958.51	7,958.53	0.02	0.06
PY-F34	480.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	327.42	1.81	7,968.72	7,967.95	0.78	1.62
PY-F33	63.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	496.62	2.74	7,968.95	7,968.72	0.22	3.52
PY-F36	458.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-166.70	0.92	7,967.95	7,968.16	0.21	0.46
PY-F111	428.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-33.53	0.19	7,966.08	7,966.09	0.01	0.02
PY-F181	11.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	80.08	0.44	7,965.35	7,965.35	0.00	0.13
PY-F183	390.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	175.12	0.97	7,965.22	7,965.02	0.20	0.51
PY-F191	420.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	131.54	0.73	7,965.47	7,965.35	0.13	0.30
PY-F345	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	47.32	0.26	7,958.59	7,958.57	0.02	0.05
PY-F496	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-20.35	0.11	7,958.51	7,958.52	0.00	0.01
PY-F494	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-20.35	0.11	7,958.51	7,958.51	0.00	0.01
PY-F382	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-9.66	0.05	7,958.53	7,958.53	0.00	0.00
PY-F379	414.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-9.66	0.05	7,958.53	7,958.53	0.00	0.00
PY-F347	56.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	47.32	0.26	7,958.57	7,958.56	0.00	0.04
PY-F351	362.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-28.79	0.16	7,958.56	7,958.57	0.01	0.02
PY-F287	220.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	98.91	0.55	7,958.61	7,958.57	0.04	0.18

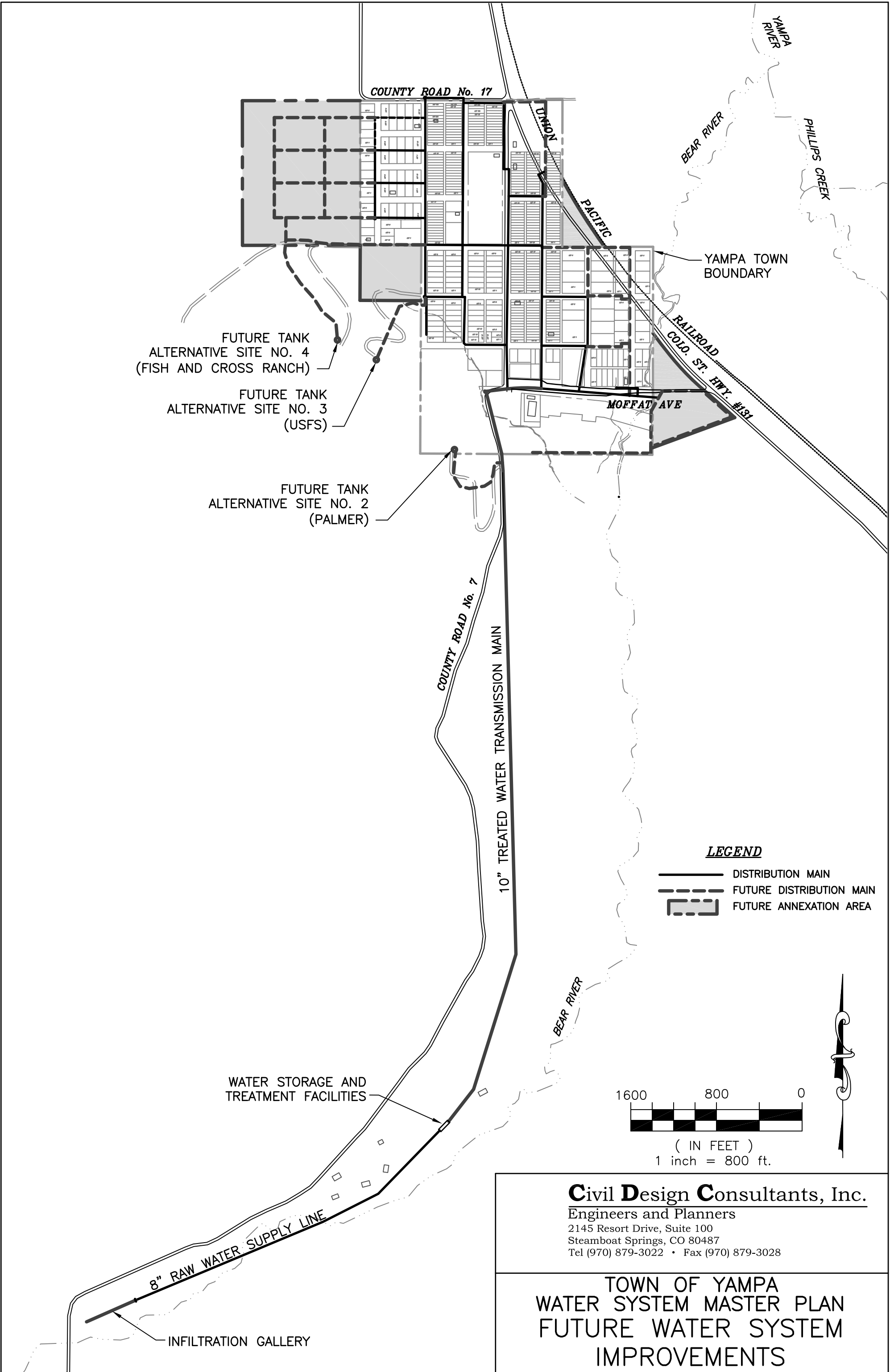
Scenario: Future Tank #4 Base Max. Daily Demand + 1,000-gpm Fire Flow
Extended Period Analysis: 19.00 hr / 24.00
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Installation Year	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
PY-F444	305.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-25.23	0.14	7,958.52	7,958.52	0.00	0.01
PY-F342	254.00	8.6	Ductile Iron	130.0	2010	false	0.00	Open	-101.56	0.56	7,958.59	7,958.63	0.05	0.18
PY-5	5.00	10.1	Cast iron	120.0	1974	false	0.00	Open	1,367.81	5.48	8,050.47	8,050.41	0.06	12.21
PY-30	289.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.19	3.49	7,971.33	7,972.86	1.52	5.27
PY-40	598.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.19	3.49	7,968.18	7,971.33	3.15	5.27
PY-20	660.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,367.81	5.48	7,972.86	7,980.88	8.02	12.16
PY-50	202.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-871.19	3.49	7,967.11	7,968.18	1.06	5.27
PY-10	5,719.00	10.1	Cast iron	120.0	1974	false	0.00	Open	-1,367.81	5.48	7,980.88	8,050.41	69.53	12.16
PY-60	294.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-391.84	1.43	7,966.87	7,967.11	0.24	0.83
PY-64	22.00	10.6	Ductile Iron	130.0	1982	false	0.00	Open	-391.84	1.43	7,966.85	7,966.87	0.02	0.82
PY-F288	1,093.00	12.6	Ductile Iron	130.0	2010	false	0.00	Tempo	0.00	0.00	8,046.00	7,958.61	0.00	0.00
PY-F285	470.00	12.6	Ductile Iron	130.0	2010	false	0.00	Open	-200.47	0.52	7,958.63	7,958.68	0.05	0.10
PY-F286	835.00	12.6	Ductile Iron	130.0	2010	false	0.00	Open	-98.91	0.25	7,958.61	7,958.63	0.02	0.03

Appendix F

Opinion of Probable Costs for Various Tank Options

I:\0353.008B_Yampa_Water_Facilities_Plan_Update\Planning-Prelim_Design\Drawings\CDC-YAMPABASE.dwg, FUTURE SYSTEM, 6/23/2011 3:19:02 PM, Tabled, 1:1



TOWN OF YAMPA
Treated Water Storage Tank
Opinion of Probable Costs
Site No. 2
Update: June 2011

[illegible]

TOWN OF YAMPA
Treated Water Storage Tank
Opinion of Probable Costs
Site No. 3
Update: June 2011

[illegible]

TOWN OF YAMPA
Treated Water Storage Tank
Opinion of Probable Costs
Site No. 4
Update: June 2011

			250,000 Steel Tank New			300,000 Steel Tank New			250,000 Steel Tank Used			250,000 Buried Concrete Tank		
Item No.	Work Item	Unit	Quantity	Unit Cost	Extended Cost	Quantity	Unit Cost	Extended Cost	Quantity	Unit Cost	Extended Cost	Quantity	Unit Cost	Extended Cost
A	Mobilization / Insurance	I.s.	1	70,000	\$ 70,000	1	75,000	\$ 75,000	1	50,000	\$ 50,000	1	85,000	\$ 85,000
B	Tank (and foundation for steel tank)	gallon	250,000	1.45	\$ 362,500	300,000	1.45	\$ 435,000	250,000	0.73	\$ 181,250	250,000	1.75	\$ 437,500
C	Site Work	I.s.	1	25,000	\$ 25,000	1	25,000	\$ 25,000	1	25,000	\$ 25,000	1	90,000	\$ 90,000
D	Access Road													
1	Construct new access to site	lf	1,100	60	\$ 66,000	1,100	60	\$ 66,000	1,100	60	\$ 66,000	1,100	60	\$ 66,000
2	Upgrade existing road - shape and gravel	lf	0	18	\$ -	0	18	\$ -	0	18	\$ -	0	18	\$ -
E	Reclamation	ac	2.6	5,000	\$ 13,000	2.6	5,000	\$ 13,000	2.6	5,000	\$ 13,000	2.6	5,000	\$ 13,000
F	Water Line													
1	12" water connection to town system	lf	2,390	110	\$ 262,900	2,390	110	\$ 262,900	2,390	110	\$ 262,900	2,390	110	\$ 262,900
2	Fittings	ea	10	1,000	\$ 10,000	10	1,000	\$ 10,000	10	1,000	\$ 10,000	10	1,000	\$ 10,000
3	Connection	ea	1	5,000	\$ 5,000	1	5,000	\$ 5,000	1	5,000	\$ 5,000	1	5,000	\$ 5,000
4	Connection to existing	ea	1	3,000	\$ 3,000	1	3,000	\$ 3,000	1	3,000	\$ 3,000	1	3,000	\$ 3,000
5	Valves	ea	3	3,000	\$ 9,000	3	3,000	\$ 9,000	3	3,000	\$ 9,000	3	3,000	\$ 9,000
6	Drain Line	I.s.	100	110	\$ 11,000	100	110	\$ 11,000	100	110	\$ 11,000	100	110	\$ 11,000
G	Level Controls													
1	Control Valve and vault at CR7	I.s.	1	15,000	\$ 15,000	1	15,000	\$ 15,000	1	15,000	\$ 15,000	1	15,000	\$ 15,000
2	Telemetry	I.s.	1	25,000	\$ 25,000	1	25,000	\$ 25,000	1	25,000	\$ 25,000	1	25,000	\$ 25,000
3	Electrical to control vault	I.s.	1	7,500	\$ 7,500	1	7,500	\$ 7,500	1	7,500	\$ 7,500	1	7,500	\$ 7,500
4	Electrical to tank - line costs	I.f.	2,390	30	\$ 71,700	2,390	30	\$ 71,700	2,390	30	\$ 71,700	2,390	30	\$ 71,700
	Transformer	ea	1	5,000	\$ 5,000	1	5,000	\$ 5,000	1	5,000	\$ 5,000	1	5,000	\$ 5,000
	Construction Subtotal				\$ 961,600			\$ 1,039,100			\$ 760,350			\$ 1,116,600
	Construction Contingency	%	15%		\$ 144,240	15%		\$ 155,865	15%		\$ 114,053	15%		\$ 167,490
	Construction Subtotal with contingency				\$ 1,105,840			\$ 1,194,965			\$ 874,403			\$ 1,284,090
	Geotechnical Foundation Investigation	I.s.	1	5,000	\$ 5,000	1	5,000	\$ 5,000	1	5,000	\$ 5,000	1	5,000	\$ 5,000
	Geotechnical quality control testing	I.s.	1	10,000	\$ 10,000	1	10,000	\$ 10,000	1	10,000	\$ 10,000	1	15,000	\$ 15,000
	Survey - Design and Construction	I.s.	1	10,000	\$ 10,000	1	10,000	\$ 10,000	1	10,000	\$ 10,000	1	10,000	\$ 10,000
	Engineering - design, bid, observation	ea	1	60,000	\$ 60,000	1	60,000	\$ 60,000	1	60,000	\$ 60,000	1	110,000	\$ 110,000
	Total Estimated Budget for Tank				\$ 1,190,840			\$ 1,279,965			\$ 959,403			\$ 1,424,090

Attachment

Water Rights Investigation

**Prepared by Resource Engineering, Inc.
April 21, 2010**

TOWN OF YAMPA WATER RIGHTS INVESTIGATION



Prepared by;
Resource Engineering, Inc.
909 Colorado Avenue
Glenwood Springs CO 81601
(970) 945-6777

April 21, 2010

1047-3.6

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ATTACHMENT 1: YAMPA WATER WORKS SYSTEM AND PIPELINE DECREE
ATTACHMENT 2: CASE NOS. 79CW74 & 79CW75 DECREES

1.0 INTRODUCTION

Resource Engineering, Inc. (RESOURCE) has completed an investigation of the Town of Yampa's municipal water supply system. The purposes of the study were to: 1. quantify the Town's existing and future water demands, and 2. assess the adequacy of the Town's physical and legal sources of supply to meet the identified demand. Water supply deficiencies, if any, were to be identified and strategies developed to assist the Town in securing long term reliable water supplies.

1.1 SCOPE OF WORK

The scope of work associated with the investigation was proposed in a letter titled "Town of Yampa Water facilities Plan and Storage Tank Upgrades". The letter describes a cooperative study to be completed by McBride Water, Civil Design Consultants (CDC), and RESOURCE. The specific study tasks identified in the letter include:

- Locate and inventory all existing conditional and absolute water rights owned by the Town. A water rights notebook will be prepared, containing all of the decrees and well permits, including an analysis of those decrees and well permits.
- Evaluation of the volume of water physically and legally available from each water right.
- An analysis of the reliability of the water rights owned by the Town of Yampa, including average year scenarios, and analyzing the effects of a dry year.
- Examination of all ground water diversions to ensure that they have appropriate, current permits for their intended uses.
- Analyzing the potential population levels that can be served from full development of the Town's water rights decrees.
- Making recommendations regarding future water rights acquisition to further strengthen the Town's water rights portfolio.
- Ensuring that the State's records regarding the Town's water rights are accurate, consistent with the decrees, and are accurately recording diversions from the Town's existing well.

2.0 WATER SYSTEM DEMAND

This chapter provides an estimate of existing and future water demand within the Town's water service area. The existing demand patterns were identified using water production records maintained by the Town. These demand patterns were then utilized to project future demands using various population growth forecasts. The water demand projections are used in later chapters to assess the adequacy of the Town's available physical and legal water supplies.

2.1 EXISTING WATER SYSTEM DEMAND

2.1.1. Water Production, Municipal Demand

Diversion records from the Town's municipal system were evaluated to determine the volume and patterns of water use within the Town's service area. The Town's Utility Department provided monthly water usage records for the period 2001 through 2009. This information provides the basis for estimating existing per capita water use, determining whether or not excessive leakage is occurring in the distribution system, and predicting future demands.

The records indicate that the Town's average annual water production is approximately 112.1 acre feet (AF). This is equivalent to an average annual flow rate of 0.15 cubic feet per second (cfs). Approximately 50% of the water use occurs during the four month summer period of June through September when lawns, parks, and other open space are being irrigated. Peak water use occurs during the months of June and July. Table 1 summarizes monthly and annual municipal water demand by the Town over the period 2001 through 2009.

Peak day demand occurs during the summer at the height of the irrigation season. Based upon Resource's experience with similar sized mountain communities, peak day demand is calculated as average annual daily demand multiplied by 2.4 or, 0.37 cubic feet per second (cfs). This is equivalent to 240,000 gallons of water use on a peak day.

To verify that the calculated peak day demand of 0.37 cfs is reasonable, RESOURCE examined the monthly diversion records provided by the Town. The maximum monthly water demand over the period of record occurred during July 2003. During this month water use totaled 7.56 million gallons; equivalent to an average flow rate of 0.37 cfs. The fact that the two values are equal indicate that for water supply planning purposes, the calculated 0.37 cfs peak

Table 1

Town of Yampa Monthly Water Use

TOTAL GALLONS OF WATER DIVERTED

Source: Town of Yampa Utility Department

Period of Use = 2001 - 2009

MONTH	2001 GALLONS	2002 GALLONS	2003 GALLONS	2004 GALLONS	2005 GALLONS	2006 GALLONS	2007 GALLONS	2008 GALLONS	2009 GALLONS	Average Acre Feet
JANUARY	2,289,000	2,301,000	2,269,000	2,378,000	3,480,000	1,754,000	2,235,000	2,028,000	1,203,000	6.8
FEBRUARY	2,010,000	2,006,000	2,059,000	2,264,000	1,805,000	1,442,000	1,868,000	1,803,000	1,075,000	5.6
MARCH	1,959,000	2,402,000	2,263,000	2,461,000	1,904,000	1,583,000	2,239,000	1,929,000	1,798,000	6.3
APRIL	2,075,000	2,296,000	2,268,000	2,449,000	1,900,000	1,996,000	2,545,000	1,796,000	1,857,000	6.5
MAY	2,735,000	3,467,000	2,826,000	3,872,000	2,897,000	3,309,000	3,790,000	2,233,000	2,770,000	9.5
JUNE	5,745,000	7,309,000	4,752,000	5,498,000	3,042,000	6,619,000	7,133,000	4,747,000	2,978,000	16.3
JULY	5,421,000	5,545,000	7,564,000	5,888,000	5,857,000	5,135,000	7,004,000	6,252,000	4,642,000	18.2
AUGUST	4,156,000	4,180,000	4,690,000	6,253,000	3,388,000	3,777,000	5,290,000	3,825,000	4,543,000	13.7
SEPTEMBER	3,244,000	3,071,000	2,941,000	4,753,000	2,793,000	2,501,000	2,988,000	2,112,000	2,425,000	9.1
OCTOBER	2,614,000	2,602,000	2,505,000	4,392,000	1,946,000	1,917,000	2,111,000	1,432,000	1,405,000	7.1
NOVEMBER	2,045,000	2,260,000	2,210,000	3,795,000	1,698,000	1,812,000	1,923,000	1,215,000	1,304,000	6.2
DECEMBER	2,281,000	2,390,000	2,322,000	3,761,000	1,763,000	2,074,000	2,092,000	1,257,000	1,584,000	6.7
TOTAL DIV	36,574,000	39,829,000	38,669,000	47,764,000	32,473,000	33,919,000	41,218,000	30,629,000	27,584,000	112.1
Acre Feet	112.2	122.2	118.7	146.6	99.7	104.1	126.5	94.0	84.7	112.1

Average Day Demand = Ave. annual demand/365 day
Peak Day Demand = Avg. day demand X 2.4

	CFS	GPM
Average Day =	0.15	69.5
Peak Day Demand =	0.37	166.8

day demand is reasonable. As discussed in later chapters, this parameter is particularly important for purposes of evaluating the adequacy of water supply and water rights.

2.1.2 Per Capita Water Production.

The water production records, together with estimates of existing populations, were used to estimate daily per capita water use within the service area. Population estimates indicate there are approximately 519 residents currently within the Town's service area. Water use occurring during the winter, non-irrigation season provides a basis for calculating that portion of total water use attributed to just in-house domestic purposes. During the winter, non irrigation season the Town diverts on average 6.3 AF per month over the period November through March. This equates to an average winter per capita demand of 130 gallon per capita/day (gpcd). The winter demand is assumed to be only in-building use as irrigation and other outside uses are minimal in the winter.

The calculated in-building per capita water use within the Town is slightly higher than national averages and other similar sized municipalities with which we are familiar. Generally, in-building per capita water use ranges from 90 to 120 gpcd. However, water use within high elevation communities such as Yampa, can be higher as some taps may be left open to prevent water from freezing during extended cold periods. Generally, we conclude that the Town's water distribution system appears to be in relatively good condition based upon water use records and estimated population. Over time, as the Town residents replace old infrastructure, per capita water demand could be expected to slightly decrease.

2.1.3. Consistency with State Diversion Records

One of the identified study tasks was to determine if the Division Engineer's office was accurately documenting the seasonal and annual diversions through the Town's water system. To determine this, RESOURCE reviewed the State's diversion records available for the period 2001 through 2007. These records are available "on-line" through the State's CDSS web site. The analysis revealed that the State's records for the Yampa Water Works System and Pipeline were consistent with the values maintained by the Town and reported in Table 1. Due to the consistency of the state records with that of the Town's, it appears that the State is diligently incorporating the Town's water use records into its database.

2.2 DEMAND FORECAST

Determining future water system demands is a function of applying existing water use patterns to projected populations within the water service area. Studies sponsored by the State of Colorado and the Upper Yampa Water Conservancy District (UYWCD) have recently been completed to determine future growth and associated water demand in the Yampa and Green River basins. The studies conclude that growth in the foreseeable future will occur at rates from 1.5% to 2.5% per year. The lower growth projection, 1.5%, was outlined in the State's 2004 Statewide Water Supply Initiative (SWSI) study that projected growth rates within the major river basins. More recently, the UYWCD retained the services of BBC Consulting to examine the growth in Routt County. In a report entitled, "Future Population Growth in Routt County, February 29, 2008", BBC projects that Routt County will grow at an average rate of growth of between 2.0 and 2.5 percent per year over the foreseeable future. For purposes of this study, we have adopted the State's growth forecast of 1.5% per year. This lower rate of growth is closer to historic rates that have occurred within the Town and is consistent with the planning direction that Town staff has received from its residents. The Town desires to maintain a relatively low, constant growth to maintain the rural character of the area.

Assuming a 30 year planning period and a continued growth rate of 1.5% per year, the Town's population in the year 2039 would be 811. Based upon existing water use patterns, the Town would divert approximately 175 AF of water annually with a peak day water demand equivalent to 0.58 cfs. This represents an increase in demand of approximately 64% over existing conditions. A summary of estimated average annual and peak day water demand over the 30 year planning period is shown in Table 2.

3.0 WATER AVAILABILITY

An analysis of the water available to the Town's Municipal System was undertaken to determine if sufficient supplies exist to meet future demand. The reliability of the Town's municipal water supply depends upon the amount of water physically available at various points of diversion and the relative water right priority under which the system operates. Both of these aspects are equally important in determining the adequacy of a municipal water supply. For example, a municipal diversion with an extremely senior water right is only valuable if sufficient physical water supplies are available for diversion. Similarly, a relatively junior water right located on an

Table 2					
Town of Yampa, Projected Water Demand					
30 Year Planning Period					
Water Use Assumptions					
Municipal Demand, AF		112.1		Start Population	519
				Annual Growth, Municipal	1.5%
		Future Water Demand, Acre Feet		Peak Day	
	Year	Population	Municipal Water	Demand (CFS)	
1	2009	519	112.1	0.37	
2	2010	527	113.8	0.38	
3	2011	535	115.5	0.38	
4	2012	543	117.2	0.39	
5	2013	551	119.0	0.39	
6	2014	559	120.7	0.40	
7	2015	567	122.5	0.41	
8	2016	576	124.4	0.41	
9	2017	585	126.3	0.42	
10	2018	593	128.1	0.42	
11	2019	602	130.1	0.43	
12	2020	611	132.0	0.44	
13	2021	621	134.0	0.44	
14	2022	630	136.0	0.45	
15	2023	639	138.1	0.46	
16	2024	649	140.1	0.46	
17	2025	659	142.2	0.47	
18	2026	668	144.4	0.48	
19	2027	679	146.5	0.49	
20	2028	689	148.7	0.49	
21	2029	699	151.0	0.50	
22	2030	710	153.2	0.51	
23	2031	720	155.5	0.52	
24	2032	731	157.8	0.52	
25	2033	742	160.2	0.53	
26	2034	753	162.6	0.54	
27	2035	764	165.1	0.55	
28	2036	776	167.5	0.56	
29	2037	787	170.0	0.56	
30	2038	799	172.6	0.57	
31	2039	811	175.2	0.58	

abundant source of water supply may be unreliable if it is placed on “call” by downstream senior rights. In order to determine the reliability of the Town's water rights, an analysis of the available physical and legal water supplies was completed.

3.1 PHYSICAL WATER SUPPLIES

The town obtains its domestic water supply from a horizontal well constructed near the Bear River at a location approximately two miles south of Town. The 500 foot horizontal well is constructed to a depth of approximately 15 feet. The well consists of a 10 inch diameter perforated pipe surrounded by clean washed rock. Groundwater is collected within the well and transported to the Town's water treatment plant via a 3,000 foot, 8 inch diameter pipeline. The water collection and diversion system is referred to as the Yampa Water Works System and Pipeline. The location of the horizontal well and water treatment plant is shown in Figure 1.

Based upon information available in the Town's 1981 Yampa Water Master Plan, flow tests conducted soon after construction of the horizontal well indicated it could produce up to 800 gpm for limited periods. Its long term yield over sustained periods was estimated to be 600 gpm. However, the report also cautioned that during extremely dry years, the yield of the gallery could decrease in response to a generally lower water table. According to Town personnel, the yield of the horizontal well has in fact decreased during extremely dry years conditions. The low yield was attributed to the reduction of flood irrigation on agriculture fields located up-gradient from the gallery.

In anticipation of lower groundwater tables in dry years, the Town obtained approval to divert a portion of its direct flow water right from the Bear River at a location up-gradient of the horizontal well. The strategy was to divert water from the river and use it flood irrigate the pasture land located above the underground collection system. Irrigation return flow would percolate through the soil elevating the local groundwater elevation and improving the yield of the horizontal well. The upstream point of diversion is referred to as the Yampa Water Works Alternate Point 1. This system has not been constructed. The location of the Yampa Water Works AP 1 and its relationship to the horizontal well is shown in Figure 1.

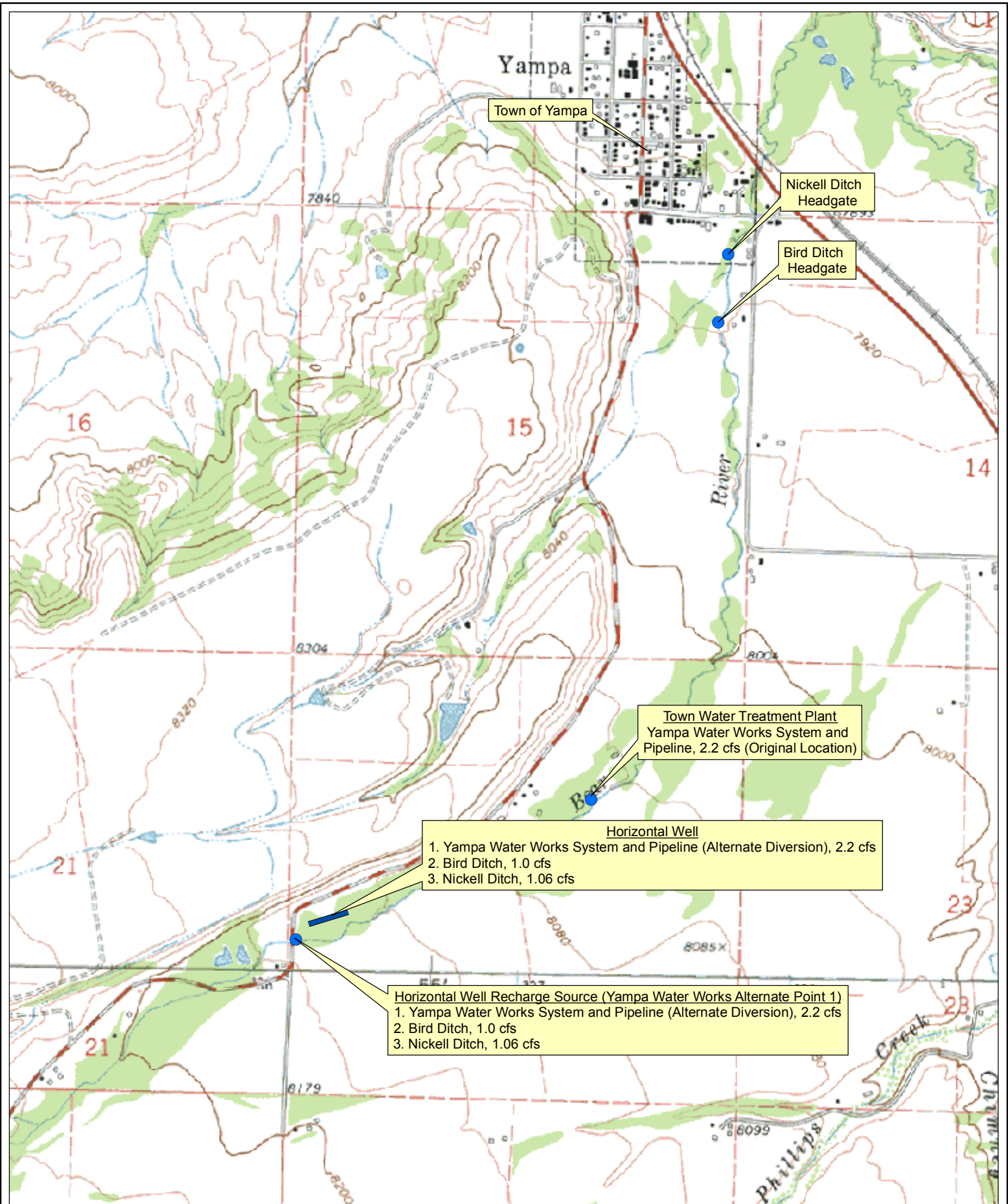
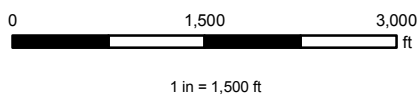
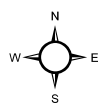


Figure 1: Water Rights Vicinity Map

Date: 3/09/2010
 File: 1047-3.6
 Drawn by: RKM
 Approved by: RSF

Town of Yampa



RESOURCE
 ENGINEERING, INC
 909 Colorado Avenue
 Glenwood Springs, CO 81601
 (970) 945-6777 Voice (970) 945-1137 Facsimile

The original flow tests of the horizontal well suggest that the yield of the Town's domestic system far exceeds the Town's calculated water demand at build-out conditions. However, observations by Town personnel during dry year conditions suggest that the yield is noticeably diminished for extended periods. This underscores the importance of encouraging continued flood irrigation on the up-gradient agriculture lands in an effort to maintain regional recharge to the valley aquifer. Such encouragement might include allocating a portion of the Town's storage pools to up-gradient agricultural users who might have limited supply during dry years. As described in more detail below, the Town has ability to access 300 AF of storage release from Yamcolo Reservoir and 108 AF from Stillwater Reservoir. Moreover, should the Town's collection system continue to exhibit lower yields during dry year conditions, the Town should develop a back-up plan designed to improve the dry-year yield of the horizontal well. Options include; constructing the Yampa Water Works AP 1 diversion and flood irrigation system and/or designing an extension of the horizontal well to more effectively interface with the nearby Bear River Alluvium. Such investigation would include examination of the potential to introduce surface water into the Town's collection system and resulting impact on water quality and treatment requirements. Alternatively, the Town could develop sufficient storage within its treated water distribution system to mitigate the effect of lower dry year yields from the horizontal well. The storage reserves would supplement the horizontal well's direct flow production thereby enabling the Town to meet peak day water demands despite short term diminished yields during dry years.

Utilization of either the Yampa Water Works AP1 or construction of an underground extension directly to the Bear River alluvium to help improve the gallery's firm yield will require presence of Bear River surface flows during critical dry year periods. To help assess the continuing reliability of surface streamflow and ability to help recharge the Town's horizontal well, RESOURCE examined historic streamflow records available from a U.S.G.S. gaging stations located above the Town and discussed historic streamflow conditions with the water commissioner and town officials. Based upon its review, RESOURCE concludes that dry-year streamflows in the Bear River during the critical summer period are heavily influenced by storage release from the upstream Stillwater and Yamcolo Reservoirs. The releases are made to help satisfy agricultural demands located largely in the Bear/Yampa River basins. Moreover, senior agricultural water rights located downstream of the Town's water collection and treatment facilities, including the Bird and Nickell Ditch, require upstream diverters to forego diversions such that downstream agricultural demands can be met. This historic, informal river administration, has helped maintain adequate streamflow in the Bear River in proximity to the Town's collection system and associated water rights. Streamflows will continue to be available for local recharge to the Bear River alluvium and for possible diversion through the Town's Yampa Water Works AP1, if necessary.

3.2 LEGAL WATER SUPPLIES

3.2.1. Yampa Water Works System and Pipeline

The Town of Yampa owns a portfolio of senior water rights that have been decreed for domestic use within the Town's service area. The Town's original water right was decreed to the Yampa Water Works System and Pipeline by the District Court in the amount of 2.2 cfs. The decree allows the Town to use the water for a variety of municipal uses and awarded a finding of "absolute" use. This finding recognizes that the Town has historically diverted and beneficially used this amount of water for municipal purposes. The water right is relatively senior with an adjudication date of 1/10/1917 and an appropriation date of 9/10/1909. The appropriation date was the date upon which the Town commenced construction of the diversion and delivery system.

The Yampa Water System and Pipeline water right originally diverted water from the Bear River at a location in proximity to the Town's existing water treatment facility. In 1977, in anticipation of construction of the Town's new horizontal well, the Town received a water court decree that allowed the Town to divert the water right at two, upstream alternate locations. The additional points of diversion were consistent with the locations of the horizontal well and the Yampa Water Works AP 1. The location of the two decreed alternate locations is shown in Figure 1. A copy of the water court decree associated with the Yampa Water Works System and Pipeline is contained in Attachment 1.

In the late 1970s the Town acquired interest in two senior agriculture water rights; the Nickell Ditch and the Bird Ditch. Both ditches divert from the Bear River near the southern end of the Town and both continue to irrigate hay and pasture land located north, northeast, and northwest of Town. A summary of the Town's water rights is shown in Table 3.

3.2.2. Bird Ditch

In the late 1970s the Town acquired 1.0 cfs interest in the Bird Ditch. The Bird Ditch headgate is located on the Bear River just south of Town and decreed for a total of 8.3 cfs. The acquisition came through the conveyance of numerous quit claim deeds to the town from various lot owners within the Town boundary. The lots were located on land historically irrigated by the ditch and

Table 3
Town of Yampa, Water Right Summary

Name	Adjudication Date	Appropriation Date	Amount	Case Number	Priority #
Nickell Ditch *	9/22/1892	6/28/1883	1.06 cfs Absolute	79CW75	5
Bird Ditch *	9/23/1892	7/20/1883	1.00 cfs Absolute	79CW74	4
Yampa Water Works System and Pipe Line	1/10/1917	11/10/1909	2.20 cfs Absolute	W-1246-77	188aa
* Priority for irrigation season only		Totals	4.26 cfs Absolute		
			0.00 cfs Conditional		
			<u>4.26</u> cfs of water rights		

each owner conveyed to the Town all rights, interest, and claim that they might hold in the Bird ditch.

In water court case Number 79CW74, the Town changed the 8.3 cfs Bird Ditch agricultural water right to allow additional uses including municipal and domestic. It also obtained the right to divert the Bird Ditch rights at its two upstream diversion points on the Bear River decreed to the Yampa Water Works System and Pipeline. The decree allows all 8.3 cfs to be diverted at the upstream sites although the Town only claims ownership of 1.0 cfs. It is not clear why the Town obtained a change for the entire right. It is our understanding that the Town does not assert a right to divert more than 1.0 cfs under its Bird Ditch water right.

The acquisition and change of the Bird Ditch to allow municipal use was a significant benefit to the Town. The Bird Ditch is extremely senior in priority with an adjudication date of 9/23/1892 and an appropriation date of 7/20/1883. Historically the Bird Ditch was used during the summer growing season only. When the court changed the right to allow municipal and domestic use it was silent as to the seasonality of the use. Although it could be argued that the decree allows year-round domestic use under the senior Bird Ditch priorities, we believe such a position creates risk for the Town. If the water right had not historically diverted water for beneficial use during the winter, non irrigation period, it is questionable that the court would allow such a right under these very senior priorities to divert year-around. Accordingly, we recommend that the Town only rely on this changed senior right to supply water during the late April through October period only. This issue is best addressed by an attorney familiar with Colorado water law. The Town may want to solicit an opinion on this matter.

3.2.3. Nickell Ditch

The Town also acquired interest in the senior Nickell Ditch. Like the Bird Ditch the Nickell Ditch is a very senior agricultural water right that diverts from the Bear River south of Town. The location of the original Nickell Ditch and Bird Ditch headgates are shown in Figure 1. The amount of interest acquired by the Town was 1.06 cfs.

In Water Court Case No. 79CW75, the Town changed the Nickell Ditch water right to allow domestic and municipal use. Similar to the Bird Ditch, the Town also obtained the right to divert its senior priority Nickell Ditch at its two upstream locations. The change case allows the Town an additional 1.06 cfs of diversion under very senior decrees at its municipal diversion points. The Nickell Ditch was adjudicated on 9/23/1882 with an appropriation date of 6/28/1883. Similar to our discussion regarding the Bird Ditch, we believe the Town can utilize the senior decree from late

April through October irrigation season. Copies of the Water Court change case decrees entered in 79CW74 and 79CW75 are contained in Attachment 2.

A summary of the Town's municipal and domestic water rights are contained in Table 3. During the winter non-irrigation season the Town can divert up to 2.2 cfs under its Yampa Water Works System and Pipeline water right. During the summer irrigation season the Town can divert up to 4.26 cfs under its various water rights including the Bird and Nickell Ditch.

3.2.4. Reliability of Town Water Rights

RESOURCE completed an investigation of the Town's water rights priorities to determine if they can provide reliable water supplies during dry year conditions when downstream seniors have placed a call on the river. Our study examined the state's water right data base, historic diversion records, historical streamflow records in the Bear River, and included discussion with the local water commissioner.

The analysis indicates that the Town's Bird and Nickell Ditches are sufficiently senior such that they will not be placed on call by downstream rights. Only three other ditches that divert from the Bear River are senior to these rights: The Mill, Cox, and Pennsylvania Ditches. These ditches are located between the Bird Ditch original diversion point and the Town's horizontal well. In total they have potential to divert up to 7.59 cfs senior to the Town's rights. However, as reflected in the State's historic diversion records, actual water demand associated with these rights are less than their decreed amounts. Together, the three ditches senior to the Town's Bird and Nickell Ditch demand less than 5.0 cfs. Thus during dry years conditions, there is more than sufficient supply in Bear River to meet their demands. This finding is supported by the local water commissioner, Elvis Iacovetto. According to Elvis, Bear River has historically had sufficient water supply to support these senior water rights and they have not placed a call on the Town's water right. Furthermore, our analysis indicates that the Bird and Nickell Ditch water rights are senior to all existing water rights downstream on the Yampa River who could potentially place a water right call on the river system. Accordingly, it is our opinion that the Town's Bird and Nickell Ditch water rights totaling 2.06 cfs are sufficiently senior in priority that they will not be placed on call by downstream rights. Therefore, these rights are considered very reliable.

While the Town's 2.06 cfs of senior Bird and Nickell Ditch are reliable, it is possible that in future dry years, water supply during the summer irrigation season could be inadequate to also support the Town's more junior Yampa Water System and Pipeline water rights. This right could be vulnerable to a call beginning mid to late summer and extending through September. However,

during the non-irrigation season the Town can rely on its 2.2 cfs Yampa Water Works System and Pipeline water right. This water right will be in priority throughout the fall/winter season and is the senior right for all non-agricultural uses.

The above findings indicate that during the summer months, the Town has a reliable physical and legal water supply totaling at least 2.06 cfs. During the winter, non-irrigation season, the Town has a reliable physical and legal water supply totaling 2.2 cfs. These findings can be compared to the Town's existing and future peak day water demand to determine if reliable supplies are available to the Town over its planning horizon.

The current peak day demand diverted by the town is 0.37 cfs. With a modest 1.5% annual growth rate, the Town's peak day demand is expected to increase over the next 30 years to 0.58 cfs (Table 2). The water rights owned by the Town are more than adequate to meet the 0.58 cfs peak day demand. Based upon our analysis RESOURCE concludes that the Town's ownership in the Bird, Nickell, and Yampa Water Works System and Pipeline water rights will provide dependable municipal and domestic water supplies over a 30 year planning period.

It would be possible for demand to exceed the Town's senior rights if it grew at unexpected rates in the future or attracted water dependent industries to the region. The question of how long will it be before the Town exceeds the 2.06 cfs demand depends upon future growth rates. From a practical point, 2.06 cfs of rights will support a population of approximately 2,800 residents. This exceeds the current population by a factor of 5. Table 4 identifies the approximate year that 2.06 cfs would be met or exceeded depending upon various growth rates. At a growth rate of 5%, the Town's demand would exceed 2.06 cfs in 35 years, approximately 2044. At an 8% sustained growth, the Town's demand would exceed 2.06 cfs in approximately 22 years. Should unexpected growth occur, the Town has ability to use some of its storage supplies available in Yamcolo and Stillwater Reservoirs. This is discussed in more detail in the following section.

3.2.5. Yamcolo and Stillwater Contract Water

The Town owns 108 AF of water in Stillwater Reservoir No. 1 and has 300 AF available from Yamcolo Reservoir through contract with the Upper Yampa Water Conservancy District. Both reservoirs are located on the main stem of the Bear River well above the Town's municipal system. The Stillwater Reservoir No. 1 is owned by the Bear River Reservoir Company and

Table 4				
Town of Yampa, Projected Water Demand				
At Various Growth Rates				
Annual Growth			Future Water Demand, Acre Feet	Peak Day
Rate	Year	Population	Municipal Water	Demand (CFS)
2.0%	2059	1397	301.7	1.00
3.0%	2059	2275	491.3	1.63
4.0%	2052	2803	605.3	2.01
5.0%	2044	2863	618.2	2.05
6.0%	2038	2812	607.3	2.01
7.0%	2034	2817	608.3	2.02
8.0%	2031	2822	609.3	2.02
9.0%	2028	2669	576.3	1.91
10.0%	2026	2623	566.5	1.88
Current	2009	519	112.1	0.37

consists of approximately 22 shareholders of which the Town is one. The reservoir has a decreed volume of 6,392 AF with a total shareholder pool of 5,175 AF. It is our understanding that the reservoir fills in average and wet years, but does not necessarily fill to capacity during critical dry years. In years when the reservoir has not filled, the available storage is allocated among the shareholders pro rata to the ownership. The 108 AF of allocation to the Town's shares can be used to provide supplemental irrigation supply to downstream locations.

The Town's 300 AF interest in Yamcolo Reservoir originates from contract agreements entered into with the Reservoir's owners, the Upper Yampa Water Conservancy District. The Town's storage pool actually originates from 200 AF in Yamcolo Reservoir and 100 AF in the downstream Stagecoach Reservoir. However, the Town gained ability to obtain its Stagecoach water from Yamcolo Reservoir through an informal exchange with the Mt. Werner Water District. Mt. Werner holds 300 AF of water in Yamcolo but would prefer to receive reservoir releases from Stagecoach Reservoir rather than Yamcolo because it is closer to their point of use. Therefore, under the informal exchange, Mt. Werner has access to the Town's 100 AF pool in Stagecoach and in return, the Town can use Mt. Werner's 100 AF of contract water in Yamcolo. Thus in total, the Town has access to use up to 300 AF of water annually from Yamcolo Reservoir.

The Town's Yamcolo releases can be used for a variety of downstream municipal uses including domestic, commercial and irrigation uses. The storage pools represent a significant asset to the Town. During dry year conditions, water can be released to the Bear River to help supplement streamflows and help the Town directly by: 1. helping recharge the local Bear River alluvium in proximity to its horizontal well, or 2. used by select upstream agricultural diversions to help sustain the regional ground water aquifer. Furthermore, as described above, should the Town's demands exceed its 2.06 cfs of reliable senior rights, the storage pools could be included in a water right plan for augmentation designed to protect the Town's use of its more junior Yampa Water Works System and Pipeline water right. For these reasons, the Town should be vigilant about renewing its contracts with the Upper Yampa Water Conservancy District and negotiate long term contracts (25+ years) if possible. Also, the Town should seek to consolidate its two storage pools (Yamcolo and Stagecoach) into one, 300 AF contract for water in Yamcolo Reservoir.

4.0 WELL PERMITS

As referenced in section 3.1 of this report the town obtains its domestic water supply from a horizontal well. The horizontal well intercepts ground water and is therefore considered a well. By

law, every well in the state that diverts ground water must have a well permit. RESOURCE researched well permit information available through the State's website. The data available in AquaMap and Colorado's WellView was reviewed to determine if the Town possesses a well permit for the horizontal well. The analysis revealed that the Town does not have a well permit for the horizontal well. To be in compliance with the State, RESOURCE recommends that the Town obtain a well permit from the State Engineers office.

To obtain a permit, the Town must file an application for approval of a permit with the State Engineer. Because the well has already been constructed and is not a standard well, a well variance will have to be filed. Additional information is required when filing for a well variance. The following information will need to be provided to the State Engineer:

- a. A letter stating the nature and reason for seeking the variance
- b. As-built plans for the well

5.0 SUMMARY OF FINDINGS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

1. The Town's existing water production from its Bear River horizontal well is approximately 112.1 AF per year. Peak day demand occurs during the summer irrigation season and is equal to approximately 0.37 cfs.
2. The Town's average in-house per capita water use is 130 gallons per day. This is slightly higher than the national average and is probably due to Yampa's colder temperatures and higher elevations resulting in residents leaving taps open to prevent freezing during extended cold periods. Per capita water use is expected to decrease in the future as Town residents replace old plumbing.
3. Assuming a 30 year planning period and sustained growth rate of 1.5% per year, the Town will divert approximately 175.2 AF of water annually through its municipal system in the year 2039 and serve 811 residents (refer to Table 2). Peak Day diversions will be approximately 0.58 cfs.
4. The Town's municipal water supply originates from a shallow-buried horizontal well located adjacent the Bear River, 2 miles south of Town. Tests completed by the Town in the early 1980's indicated that the well can reliably produce flows of 600 gpm (1.34 cfs) and provide

annual yields of 270 AF. These estimates exceed the Town's expected build-out demands identified in No. 3 above.

5. The Town's direct flow water rights are sufficiently senior such that they will provide reliable water supplies at build-out conditions. During the summer, the reliable supply is provided by the Town's interest in the Bird Ditch (1.0 cfs) and Nickell Ditch (1.06 cfs). These rights individually and together exceed the Town's expected build-out demand of 0.58 cfs. During the winter, the reliable supply will be provided by the Town's 2.2 cfs Yampa Water System Pipeline water rights.

5.2 RECOMMENDATIONS

1. Due to observed lower production from the horizontal well during dry years, it would be prudent for the Town to develop a contingency plan to support the yield of the horizontal well through either: 1. construction of the Yampa Water Works AP1 diversion and flood irrigation system, or 2. construction of an extension to more efficiently interface with the nearby Bear River alluvium, and/or 3. construct sufficient storage in the Town's distribution system to effectively mitigate the effects of the lower, dry year ground water yield.
2. The Town owns 108 AF of agricultural use water in Stillwater Reservoir No. 1 and contracts with the Upper Yampa Water Conservancy District a total of 300 AF of domestic water from Yamcolo and Stagecoach Reservoirs. These storage supplies are valuable for direct use and water right purposes and RESOURCE recommends that the Town continue to maintain all of its storage pools. The Town should request the Upper Yampa Water Conservancy District to issue a long-term, 300 AF contract for its Yamcolo Reservoir water.
3. As outlined in Section 3.2 of this report, RESOURCE believes that the Town should not rely on the use of its senior Bird Ditch and Nickell Ditch water rights for municipal use during the winter, non-irrigation season. We recommend that the Town obtain the services of an attorney familiar with Colorado water law to review and provide an opinion on this matter.
4. A horizontal well is classified as a well by the State Engineer's office and therefore requires a permit. Well permit research revealed that the Yampa Water Works System and Pipeline (horizontal well) does not have a current well permit. RESOURCE recommends that the town file for a well permit. Because the well has already been constructed, a well variance will have to be filed with the State Engineer's office. The following information will need to be provided;

- a. A letter stating the nature and reason for seeking the variance
- b. As-built plans for the well

In summary, with implementation of the above described recommendations, RESOURCE is of opinion that the Town of Yampa has sufficient physical and legal water supply available to meet its existing and future water demands.

Respectfully submitted,

RESOURCE ENGINEERING, INC.

A handwritten signature in black ink, appearing to read "R. Scott Fifer".

R. Scott Fifer
Hydrologist

RSF/mm
1047-3.6

ATTACHMENT 1: YAMPA WATER WORKS SYSTEM AND PIPELINE DECREE

IN THE DISTRICT COURT IN AND FOR

WATER DIVISION NO. 6

STATE OF COLORADO

CASE NO. W-1246-77

FILED WATER COURT
DIV. 6
STATE OF COLORADO

AUG 4 1978

Lanette Dinsillio
WATER CLERK

BY _____
DEPUTY

RULING OF REFEREE
(CHANGE OF WATER RIGHT)

IN THE MATTER OF THE
APPLICATION FOR WATER
RIGHTS OF THE TOWN OF YAMPA

IN THE YAMPA RIVER
OR ITS TRIBUTARIES.
TRIBUTARY INVOLVED:
BOARING FORK
IN ROUTT COUNTY.

1. Applicant: THE TOWN OF YAMPA
Address: P. O. BOX 224
Yampa, Colorado 80483
2. Name of ditch or other structure: The Yampa Water Works System and Pipe Line.
3. Present point of diversion and/or place of storage:
Headgate (intake of pipeline) from which the $\frac{8}{4}$ Corner, Section 15,
T. 2 N., R. 85 W., 6th P.M. bears N $44^{\circ}59'$ W 2061.5 feet.
4. Amount and priority of diversion: 2.2 cfs Priority #188aa
5. Change of Water Right (location or use, or amount and plan for operation):
Modification of present point of diversion to provide for two alternate points
of diversion, both located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 22, T. 2 N., R. 85 W;
Point 1 being 100 feet from the west line of Section 22 and 1870 feet
from the south line of Section 22;
Point 2 being 420 feet from the West line of Section 22 and 2020 feet
from the South line of Section 22.
6. Use:
7. Amount and priority of change of water right: 2.2 cfs Nov. 10, 1909
8. Court where original decree entered: Routt County District Court
Filing No.:
9. Date of appropriation: Nov. 10, 1909
10. Date of decree: Jan. 10, 1917

It is the ruling of the Referee that the statements in the application
are true and that the above described change of water right is approved.

Dated this 31st day of July, 19 78

No protest was filed in this matter.
The foregoing ruling is confirmed
and approved, and is made the
Judgment and Decree of this court.

Dated: Sept 22, 1978
Don J. Hume
Water Judge

G. I. Buffham II
G. I. Buffham II
Water Referee - Division No. 6

FILED WATER COURT
DIV. 6
STATE OF COLORADO

SEP 22 1977

Lanette Dinsillio
WATER CLERK

BY _____
DEPUTY

ATTACHMENT 2: CASE NOS. 79CW74 & 79CW75

IN THE DISTRICT COURT IN AND FOR
WATER DIVISION NO. 6

FILED WATER COURT
DIV. 6
STATE OF COLORADO

STATE OF COLORADO

SEP 20 1979

CASE NO. 79CW74

Just Ann Newborn
CLERK

BY

DEPUTY

IN THE MATTER OF THE
APPLICATION FOR WATER
RIGHTS OF THE TOWN
OF YAMPA
IN THE YAMPA RIVER
OR ITS TRIBUTARIES.
TRIBUTARY INVOLVED:
ROARING FORK
IN ROUTT COUNTY.

RULING OF REFEREE
(CHANGE OF WATER RIGHT)

1. Applicant: Town of Yampa
Address: Box 224, Yampa, Colorado 80483
2. Name of ditch or other structure: Bird Ditch
3. Present point of diversion and/or place of storage: The headgate is located in the left or west bank of the Yampa River on the E $\frac{1}{2}$ of NE $\frac{1}{4}$ Sec. 15, T2N, R85W of the 6th P.M. from which point the N $\frac{1}{4}$ corner of said Sec. 15, bears N 50° W 2679.6 feet in Routt County.
4. Amount and priority of diversion: 8.3 cfs; Priority No. 4
5. Change of Water Right (location or use, or amount and plan for operation):
In addition to the present point of diversion, applicant requests two alternate points as follows:
 - (a) A point in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 22, T2N, R85W of the 6th P.M., a distance of 100 feet from the west line and 1870 feet from the south line of said Sec. 22;
 - (b) A point in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 22, T 2N, R85W of the 6th P.M., a distance of 420 feet from the west line and 2020 feet from the south line of said Sec. 22Use to include municipal and domestic as well as irrigation.
6. Use: Use to include municipal and domestic as well as irrigation.
7. Amount and priority of change of water right: 8.3 cfs; July 20, 1883
8. Court where original decree entered: Routt County District Court
Filing No.:
9. Date of appropriation: July 20, 1883
10. Date of decree: September 23, 1891

It is the ruling of the Referee that the statements in the application are true and that the above described change of water right is approved.

Dated this 13th day of September, 1979.

No protest was entered in this matter.
The foregoing ruling is confirmed
and approved as is the
Judgment and Decree of this court.

G. I. Buffham, Jr.
G. I. Buffham, Jr.
Water Referee - Division No. 6

Dated: October 14, 1979
Sam J. Thorne
Water Judge

IN THE DISTRICT COURT IN AND FOR

WATER DIVISION NO. 6

STATE OF COLORADO

CASE NO. 79CW75

FILED WATER COURT
DIV. 6
STATE OF COLORADO

DEC 18 1981

Paul C. Anderson
CLERK
BY _____
DEPUTY

IN THE MATTER OF THE
APPLICATION FOR WATER
RIGHTS OF THE TOWN OF YAMPA

IN THE YAMPA RIVER
OR ITS TRIBUTARIES.
TRIBUTARY INVOLVED:
ROARING FORK
IN ROUTT COUNTY.

RULING OF REFEREE
(CHANGE OF WATER RIGHT)

1. Applicant: Town of Yampa
Address: Box 224
Yampa, Colo 80483
2. Name of ditch or other structure: The Nickell Ditch
3. Present point of diversion and/or place of storage:
The headgate is located on the left or west bank of the Yampa River from which point the E $\frac{1}{4}$ Corner of Section 15, T. 2 N., R. 85 W., 6th P.M., bears S 8°30' E 2277 feet in Routt County.
4. Amount and priority of diversion: 1.06 cfs Priority No. 5
5. Change of Water Right (location or use, or amount and plan for operation):
In addition to the present point of diversion, the following two alternate points of diversion:
(a) A point in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 22, T. 2 N., R. 85 W., 6th P.M., a distance of 100 feet from the west line and 1870 feet from the south line of said Section 22.
(b) A point in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 22, T. 2 N., R. 85 W., 6th P.M., a distance of 420 feet from the west line and 2020 feet from the south line of said Section 22.

The use to include municipal and domestic as well as irrigation.
6. Use: Irrigation, domestic and municipal
7. Amount and priority of change of water right: 1.06 cfs June 28, 1883
8. Court where original decree entered: Routt County District Court
Filing No.:
9. Date of appropriation: June 28, 1883
10. Date of decree: Sept. 22, 1892 (corrected)

It is the ruling of the Referee that the statements in the application are true and that the above described change of water right is approved.

Dated this 15th day of December, 1981.

No protest was filed in this matter. The foregoing ruling is confirmed and approved, and is made the Judgment and Decree of this court.

G. I. Buffham
Water Referee - Division No. 6
FILED WATER COURT
DIV. 6
STATE OF COLORADO
DEC 20 1981

Dated: *January 28, 1982*

Paul C. Anderson
Water Referee

Paul C. Anderson
CLERK
BY _____
DEPUTY

Attachment

Water Quality Report

**Prepared by McBride Water
September 10, 2010**

Currently, the Town of Yampa uses a horizontal well as its water supply source for municipal potable water. This groundwater source is completed in river alluvium and likely recharged by upgradient snowmelt, irrigation return flows, and the Bear River. This report provides a brief review of surface water quality data available for the Bear River above the Town of Yampa. This information is intended as an initial search for data on in-stream surface water quality. It is not a substitute for water quality information gathered by the Town in meeting reporting requirements to the Colorado Water Quality Control Division of the Colorado Department of Health and Environment (CDPHE). A review of the data collected by the Town of Yampa is covered in the Water System Master Plan. This review of available data should be considered in any future planning of surface water sources for municipal use or in any artificial groundwater recharge that might be considered.

A source water assessment report for the existing groundwater system was completed by the CDPHE dated November 8, 2004. It found the water system had a “moderately low” susceptibility to contamination overall but some higher susceptibility to disbursed sources of pollution. This susceptibility was attributed the well field’s proximity to pasture land (rated as a high) and to roads (moderately high) in the area. Concerns, such as spills due to the transportation of hazardous substances, are presumably small on County Road 7/FS road 900 accessing the Yamcolo and Stillwater Reservoirs. This road is a dead end at the Flat Tops wilderness and ranching is the vast majority of economic activity upstream of Yampa. General concerns regarding land management on the pasture land overlying the galleries apparently causes a check mark on the State’s table of susceptibility leading to the high rating. This report does not address these issues other than to note them here. The report can be found on the web at:

http://emaps.dphe.state.co.us/website/SWAP_Summary/Counties/Routt/154900-Yampa_Town_of_GW.pdf

The Bear River is a snowmelt dominated system with headwaters in the Flat Tops Wilderness Area. The Stillwater, Bear, and Yamcolo Reservoirs provide storage upstream of the Town of Yampa. The United States Geological Survey (USGS) has been contracted through Routt County, with support from the Yampa-White River Basin Roundtable, to compile a water quality database as part of the “Upper Yampa Water Quality Retrospective” study. This database has been reviewed for this report, however, the samples collected and parameters reported are very limited. There is a single surface water sample containing data other than field measurements, making objective statements on water quality problematic. The available data is summarized in Appendix A, “A summary of available surface water quality data from the Bear River”. Verbal interviews of Mr. Mike Zopf of the Routt County Environmental Health Department and Mr. Andy Poirot of CDPHE did not reveal any known problems regarding in-stream water quality upstream of the Town of Yampa.

In regards to standards for surface waters set by CDPHE, all waters of the State are given use classifications, numeric water quality standards are set for these classifications, and anti-degradation provisions influence discharge permits allowable for a given reach. Table 1 shows the classifications, numeric standards, and designations for local water

bodies. The headwaters of the Bear River (Yampa River), located within the Flat Tops, are designated as “Outstanding Waters”. This regulation implies that no degradation of water quality would be allowed by any regulated discharge. Segment 3 comprises the reach from the wilderness area boundary to the confluence of Wheeler Creek, immediately downstream of the Town of Yampa. Listed uses for this segment are class 1 Cold Water Aquatic Life, Water Supply, Recreation “E” (E designates existing use) and Agriculture. This reach is part of “reviewable waters” meaning that any point source discharge requiring a permit would be reviewed so that subsequent to the discharge stream standards would be met. Any permit application would require public notice the process would allow for comment by the Town. Standards associated with segments 1 and 3 are included in Table 1 from the most recent “Classifications and Numeric Standards, 5CCR1002-33”, effective as of June 30, 2010.

The Town should keep itself informed about the triennial CDPHE regulatory process due to possible implications to both water supply and wastewater treatment in the future (see the Water Quality Control Commission website <http://www.cdphe.state.co.us/op/wqcc/IH/IH.html>). This process occurs over a three year period with a year for scoping, a year for issue formulation, and a year for rulemaking. The Yampa Basin is part of the Upper Colorado rulemaking process. Standards for the Yampa Basin are scheduled for a review cycle beginning in the year 2012 ending with rulemaking in 2014.

This review indicates an expectation of high quality surface waters upstream of the Town of Yampa. Limited potential exists for impact from permitted point source discharges. Some potential for impacts from disbursed sources exists from upstream land use practices or fire. There is no data within the USGS database suggesting water quality problems and segment descriptions also suggest high water quality. The Town can expect a significant regulatory review for any new regulated pollutant discharge permits upstream of the Town of Yampa. Should surface diversion be contemplated in the future, a sampling program to fully evaluate influent quality, including seasonal fluctuations in quality, should be undertaken.

Table 1
Water Quality Segments and Numeric Standards for the Upper Yampa River
5 CCR 1002-33
Effective June 30, 2010

STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12	Desig	Classifications	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
BASIN: Yampa River			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
Stream Segment Description									
1a. All tributaries to the Yampa River, including all wetlands, which are within the Mount Zirkel, Flat Tops and Sanvis Creek Wilderness Areas.	OW	Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS/(CS-I)°C D.O. ≥6.0 mg/l D.O. (sp) ≥7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH ₃ (ac)(h)=TVS Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₃ =0.05 NO ₂ =10 Cl=250 SO ₄ =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrII(ac)=50(Trec) CrII(ch)=TVS CrVI(ac)(h)=TVS Cu(ac)(h)=TVS	Fe(ch)=WS(ds) Fe(ch)=1000(Trec) Pb(ac)(h)=TVS Mn(ch)=WS Mn(ac)(h)=TVS Hg(ch)=0.01(tot)	Ni(ac)(h)=TVS Se(ac)(h)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)(h)=TVS	
1b. All lakes and reservoirs which are within the Mount Zirkel, Flat Tops and Sanvis Creek Wilderness Areas.	OW	Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS/(CL,CLL)°C D.O. ≥6.0 mg/l D.O. (sp) ≥7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH ₃ (ac)(h)=TVS Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₃ =0.05 NO ₂ =10 Cl=250 SO ₄ =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrII(ac)=50(Trec) CrVI(ac)(h)=TVS Cu(ac)(h)=TVS	Fe(ch)=WS(ds) Fe(ch)=1000(Trec) Pb(ac)(h)=TVS Mn(ch)=WS Mn(ac)(h)=TVS Hg(ch)=0.01(tot)	Ni(ac)(h)=TVS Se(ac)(h)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)(h)=TVS	
2a. Mainstem of the Yampa River from the confluence with Wheeler Creek to a point immediately above the confluence with Oak Creek.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS/(CS-I)°C D.O. ≥6.0 mg/l D.O. (sp) ≥7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH ₃ (ac)(h)=TVS Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₃ =0.05 NO ₂ =10 Cl=250 SO ₄ =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrII(ac)=50(Trec) CrVI(ac)(h)=TVS Cu(ac)(h)=TVS	Fe(ch)=WS(ds) Fe(ch)=1000(Trec) Pb(ac)(h)=TVS Mn(ch)=WS Mn(ac)(h)=TVS Hg(ch)=0.01(tot)	Ni(ac)(h)=TVS Se(ac)(h)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)(h)=TVS	
2b. All lakes and reservoirs tributary to the Yampa River from the source to the confluence with Elkhead Creek, except for those listed in Segment 1b. All lakes and reservoirs tributary to Elkhead Creek from the source to the confluence with the Yampa River. All lakes and reservoirs tributary to the Little Snake River, including those on National Forest lands.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS/(CL,CLL)°C D.O. ≥6.0 mg/l D.O. (sp) ≥7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH ₃ (ac)(h)=TVS Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₃ =0.05 NO ₂ =10 Cl=250 SO ₄ =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrII(ac)=50(Trec) CrVI(ac)(h)=TVS Cu(ac)(h)=TVS	Fe(ch)=WS(ds) Fe(ch)=1000(Trec) Pb(ac)(h)=TVS Mn(ch)=WS Mn(ac)(h)=TVS Hg(ch)=0.01(tot)	Ni(ac)(h)=TVS Se(ac)(h)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)(h)=TVS	
2c. Mainstem of the Yampa River from a point immediately above the confluence with Oak Creek to a point immediately below the confluence with Elkhead Creek.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS/(CS-II)°C D.O. ≥6.0 mg/l D.O. (sp) ≥7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH ₃ (ac)(h)=TVS Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₃ =0.05 NO ₂ =10 Cl=250 SO ₄ =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrII(ac)=50(Trec) CrVI(ac)(h)=TVS Cu(ac)(h)=TVS	Fe(ch)=WS(ds) Fe(ch)=1000(Trec) Pb(ac)(h)=TVS Mn(ch)=WS Mn(ac)(h)=TVS Hg(ch)=0.01(tot)	Ni(ac)(h)=TVS Se(ac)(h)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)(h)=TVS	
3. All tributaries to the Yampa River, including all wetlands, from the source to the confluence with Elk River, except for specific listings in Segments 4-8, 13a and 19. Mainstem of the Bear River, including all tributaries and wetlands from the boundary of the Flat Tops Wilderness Area to the confluence with the Yampa River.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS/(CS-I)°C D.O. ≥6.0 mg/l D.O. (sp) ≥7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH ₃ (ac)(h)=TVS Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₃ =0.05 NO ₂ =10 Cl=250 SO ₄ =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrII(ac)=50(Trec) CrVI(ac)(h)=TVS Cu(ac)(h)=TVS	Fe(ch)=WS(ds) Fe(ch)=1000(Trec) Pb(ac)(h)=TVS Mn(ch)=WS Mn(ac)(h)=TVS Hg(ch)=0.01(tot)	Ni(ac)(h)=TVS Se(ac)(h)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)(h)=TVS	