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City of Placerville
Water Model Report

13 December 2005

Prepared for

City of Placerville
487 Main Street
Placerville, CA 95667

K/J Project No. 012509.00

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Section 1: Introduction

This Water Model Report presents the development and analysis of the City of Placerville's (City) water supply and distribution system model developed by Kennedy/Jenks Consultants (Kennedy/Jenks) as part of the 2005 Water Master Plan. Section 2 of this report provides a summary of the water model development and input. Section 3 describes the modeling scenarios and corresponding results used to identify deficiencies and recommend the water system improvements included in the Water Master Plan.

Along with the development of the water model and this Model Report, Kennedy/Jenks has provided a copy of the water model, and a licensed version of the required model software. Kennedy/Jenks will be training City staff on the use of the City's water model. This document should be used by City staff as a technical reference for understanding and future use of the City's water model.

Section 2: Model Development

2.1 Modeling Software

Kennedy/Jenks utilized WaterCAD® software to develop the hydraulic computer model of the City's water supply and distribution system. WaterCAD® Version 6.0 was originally used to develop the model and has been upgraded to Version 7.0. This software runs in conjunction with AutoCAD® software. Kennedy/Jenks purchased the WaterCAD® software from Bentley Systems, Inc. Haestad Methods Solution Center with the license and one-year service agreement assigned to the City.

The piping configuration input into the model was based on geographical information system (GIS) data as noted below in Section 2.2. The program also makes use of several of the City's AutoCAD® drawings as background layers, adding practical spatial references for facilities such as hydrants, valves, streets and freeways.

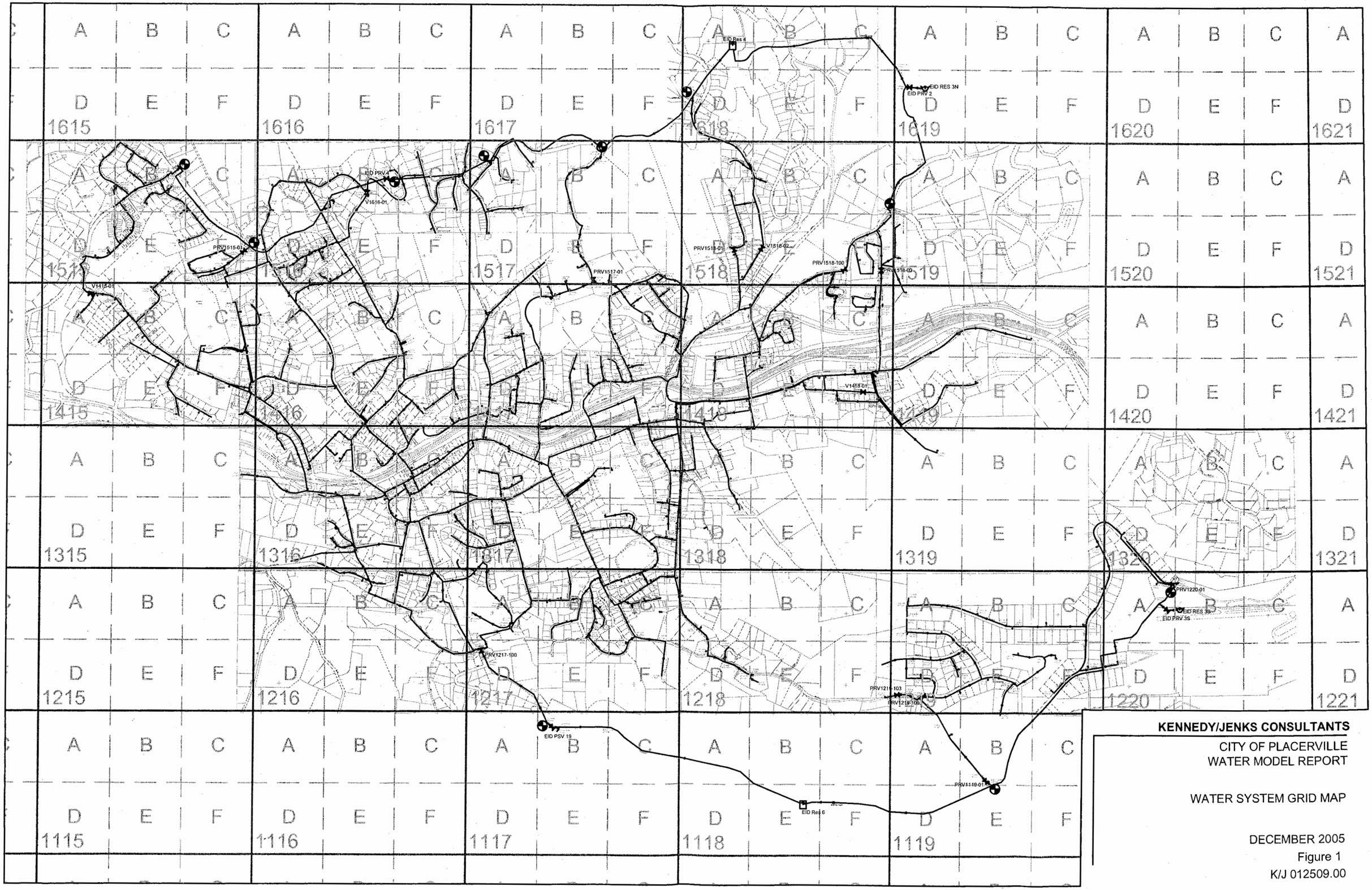
2.2 Model Input Data

Price Geographic Consulting (PGC) was responsible for developing the GIS based AutoCAD® drawing file with existing water mains represented with polylines. To develop the water main polylines, City water system maps and selected as-built drawings were inserted into an AutoCAD® drawing file and geo-referenced. The water mains as shown on the source documents were then digitized on-screen into layered vector polylines. The polylines were then refined and integrated with other GIS data including roads, topographic data, City boundary, parcels, hydrants, valves and water meters.

The GIS polyline data were converted to mapped pipeline alignments for use in the hydraulic computer model. Kennedy/Jenks worked closely with PGC and the City to complete adjustments to the drawings. Meter and PRV operation for the intertie locations with El Dorado Irrigation District (EID) were confirmed with the City to use as a basis for the model. EID pipelines and reservoirs were input into the model based on a hard copy drawing and valve table received from EID in 2002. Water demands were calculated based on metered water usage records obtained from the City.

2.2.1 Component Naming

The intent of naming various system components (such as junctions, pipes, valves and tanks) was to facilitate logical development and future use of the model. The City had an established grid system that delineates each area of the service area (such as "1619") into 6 subsections (labeled "A" thru "F") as shown in Figure 1. Components were assigned a "tag" for the element type (such as "P" for pipe, "J" for junction, "V" for valve, "PRV" for pressure reducing valves, "PSV" for pressure sustaining valves and "Res" for tanks), the grid number (such as "1619") and sequential numbering from the first element and on ("01", "02", etc). Components designated for future development were assigned a number beginning in the 100's and numbered sequentially ("100", "101", etc). EID's pipelines were denoted with "EID" preceding the component label described above to easily identify EID and City facilities (in addition there is a



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WATER SYSTEM GRID MAP

DECEMBER 2005
Figure 1
K/J 012509.00

check box in the user data tab for junctions and pipes that denotes if it is an EID facility). The model includes a link to an x-referenced drawing, named “grid”, that contains the grid system drawing that can be brought into the background of the model if desired. Note that previous identifications used by the GIS-based layout, which were descriptive for GIS purposes but too cumbersome for use in the computer model, were retained in the model database for reference purposes.

2.2.2 Pipeline

The locations, sizes and lengths of City water transmission mains and distribution pipelines were incorporated into the hydraulic model and were based on GIS data noted above and development design drawings. Maps were prepared that incorporated this information, reviewed with City staff and revisions made as required. City staff provided information regarding known pipe materials, age and meter reading routing information that was also incorporated into the model.

Based on this information, the model showed that the City distribution system included approximately 37 miles of 4-inch through 18-inch diameter pipelines and approximately two miles of small (less than 4-inch) diameter pipes. Table 1 below shows the lengths of each size of existing pipeline in the City water distribution system.

Table 1: Existing Distribution Pipe

	4-inch	6-inch	8-inch	10-inch	12-inch	16-inch	18-inch	Total
Feet	27,700	96,000	47,300	11,200	10,200	1,600	200	194,200
Miles	5.25	18.17	8.95	2.13	1.94	0.31	0.04	36.78

2.2.2.1 Friction Factors

Hazen-Williams “C” factors (which include an allowance for fittings) shown in Table 2 below were used by the model to calculate friction losses in pipes.

Table 2: Hazen-Williams “C” Factors

Pipe Material Type	“C” factor
Asbestos cement pipe	130
Cast iron pipe	120
Ductile iron pipe	120
Steel (galvanized) pipe	120
Steel (unlined) pipe	100
Polyvinyl chloride (PVC) pipe	140
Unknown pipe material	120

Friction losses in pressure-reducing valve (PRV) and pressure sustaining valve (PSV) stations were input into the model separately. The model uses a standard head loss calculation of a minor loss coefficient (K) times the velocity head (velocity squared divided by two times the gravitational acceleration constant), or ($h^m = K*V^2/2g$) to calculate minor losses through a PRV and PSV. A minor loss coefficient of 6.0 was used for full-open PRV and PSV within the model; this coefficient is typical for globe valves and agrees with published valve head loss data.

2.2.2.2 Pumps

In addition to the City's Sierra Service Zone hydro-pneumatic system, the City supplies water to two privately operated pressure zones (Pumped Zone 1 and Pumped Zone 2), each containing one small pump. Pumped Zone 1 is shown in Figure 2; the pump is located near junction J1218-10 on Washington Street between Cedar Ravine Road and Rowlin Street. Pumped Zone 2 is shown in Figure 3; the pump is located near junction J-1318-09 on Ridge Court near Washington Street. Although the pipelines and junctions within these two pumped pressure zones have been input into the model base, they have been made "inactive" in each of analyzed scenarios because City staff informed us that information regarding these two small privately owned pumps was not available and hydraulic characteristics did not need to be evaluated in the Water Master Plan. Note that since these pipelines have been made "inactive" in the model, the junctions and pipelines within these two pumped pressure zones will not be shown on any of the other figures generated within this Water Model Report or the Water Master Plan.

2.2.3 Junctions

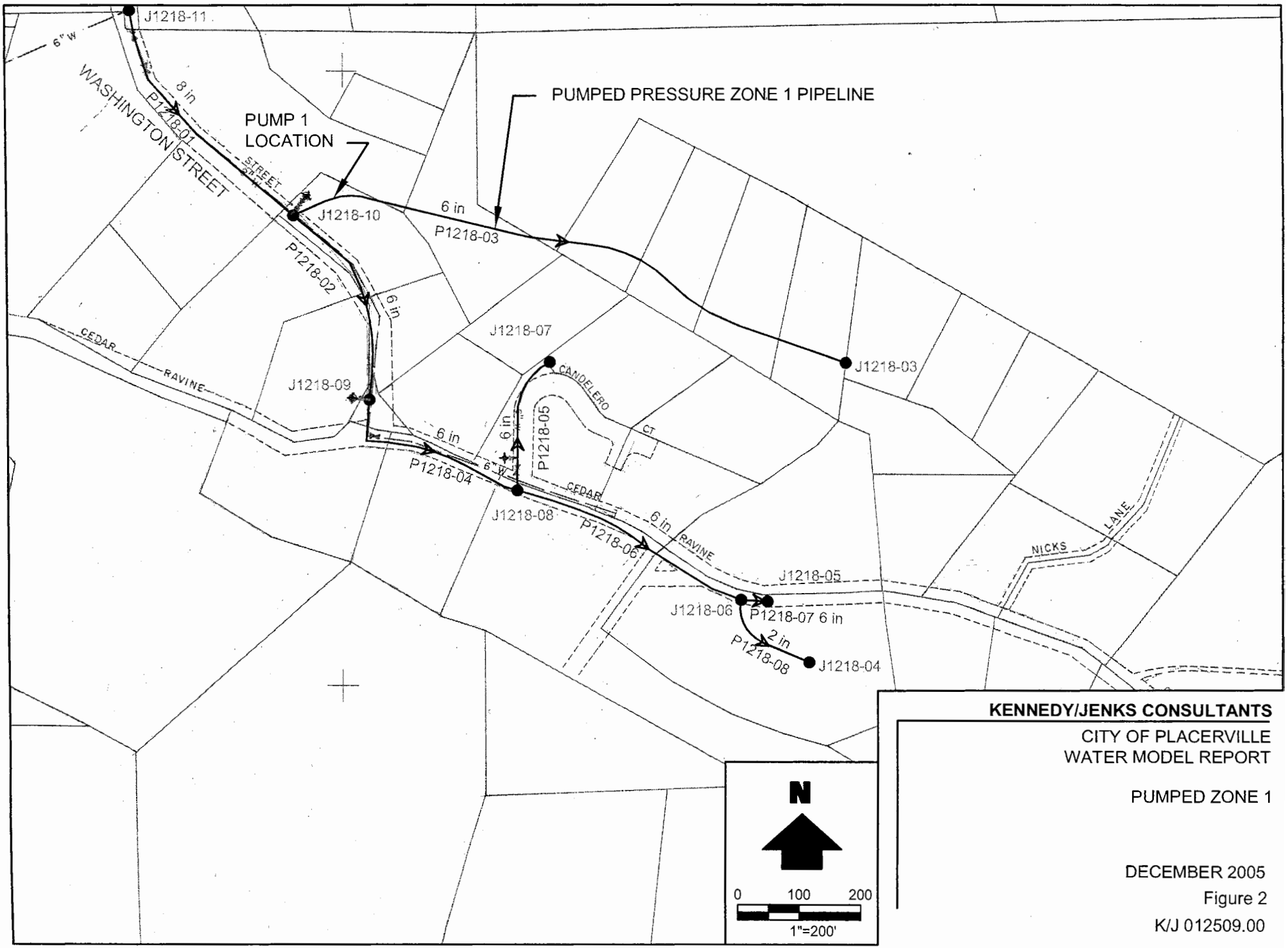
Junctions were input into the model at locations of pipeline connections (i.e. tees, wyes, crosses), end points, pipeline diameter or material changes, hydrant locations and low or high elevation locations. Each junction has an associated elevation, pressure zone, demand, and fire flow requirement. The data input for each of these are summarized below.

2.2.3.1 Elevation

Kennedy/Jenks used the topographic maps and development plan view drawings provided by PGC and included as x-references in the model called "TopoScans" and "New topos", respectively, to input the junction elevation. The elevations input into the model were reviewed by Kennedy/Jenks project team. It should be noted that although the pipelines are located below the existing ground surface, the model is based on ground elevations.

2.2.3.2 Pressure Zones

In addition to the two pumped pressure zones described above, the City's water distribution system currently consists of eight (8) separate pressure zones as shown on Figure 4. Table 3 includes brief descriptions of each of the pressure zones.



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CITY OF PLACERVILLE
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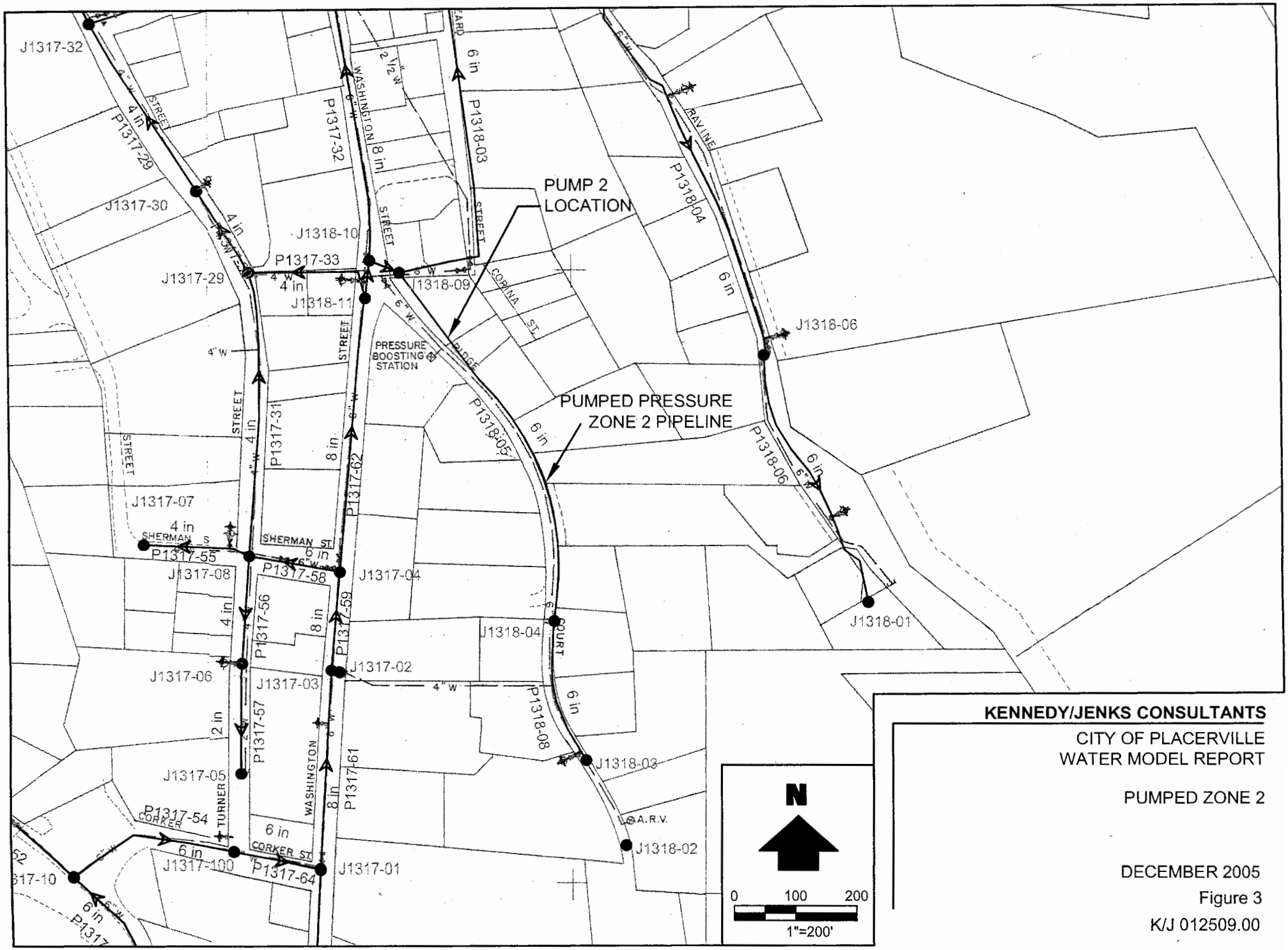
PUMPED ZONE 1

DECEMBER 2005
Figure 2
K/J 012509.00



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CITY OF PLACERVILLE
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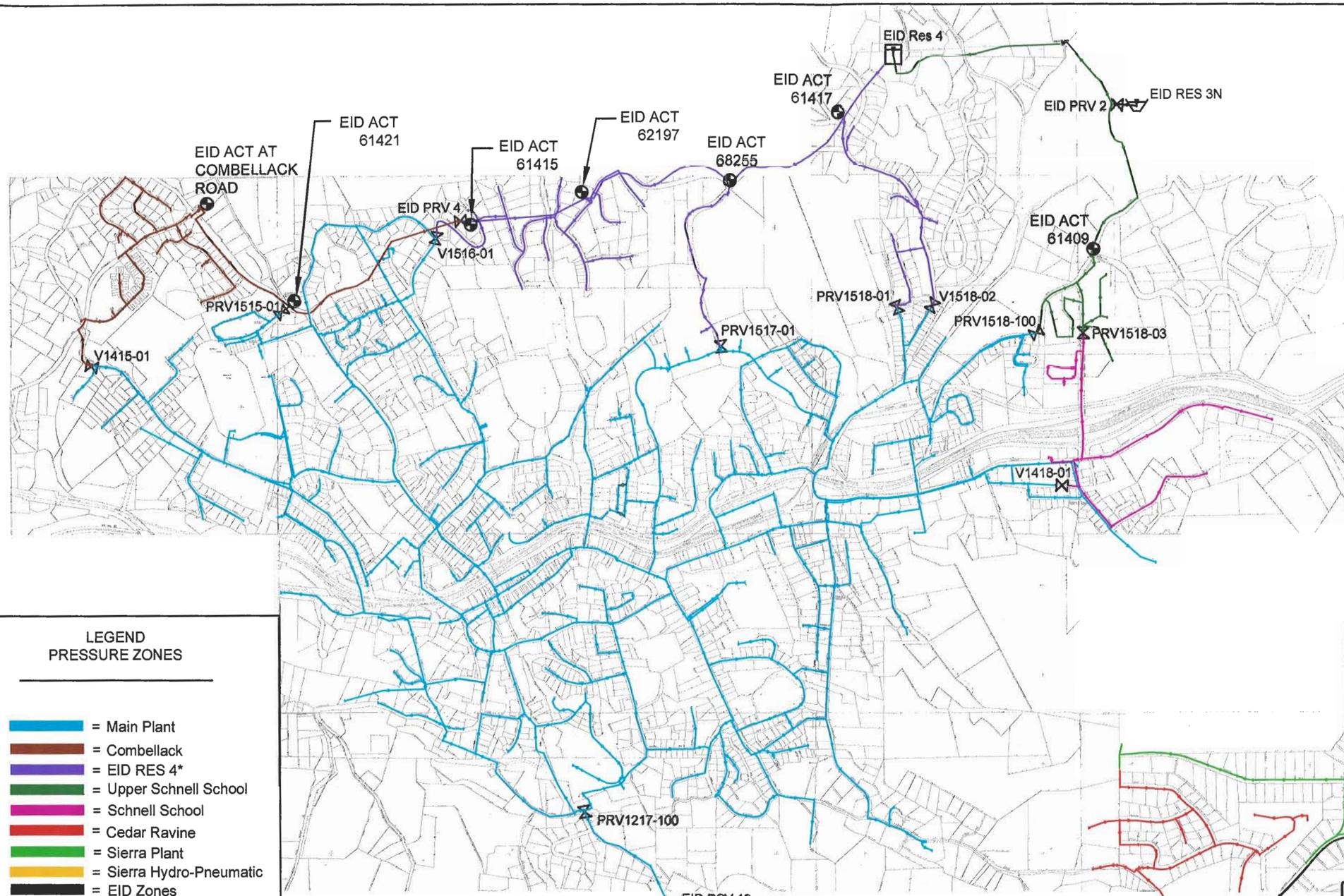
PUMPED ZONE 2

DECEMBER 2005
Figure 3
K/J 012509.00



N

0 600 1200

1"=1200'

LEGEND
PRESSURE ZONES

- = Main Plant
- = Combellack
- = EID RES 4*
- = Upper Schnell School
- = Schnell School
- = Cedar Ravine
- = Sierra Plant
- = Sierra Hydro-Pneumatic
- = EID Zones

SYMBOLS

= EID SERVICE

= VALVE

*EID Res 4 Pressure Zone contains the following services zones: Morrene, Constellation and North Ridge/Poverty Hill Services Zones

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CITY OF PLACERVILLE
WATER MODEL REPORT

PRESSURE ZONES MAP

DECEMBER 2005
Figure 4
K/J 012509.00

Table 3: Pressure Zones

Placerville Pressure Zone	Description
Main Plant	Water enters the Main Plant Zone primarily through an EID-operated PSV station located upstream of the recently abandoned "alum pond" (EID PSV 19); a City-operated PRV station (PRV 1217-100) located at the City's recently abandoned Main Water Treatment Plant regulates the hydraulic grade. City-operated PRV stations located on Coloma Court at Coloma Street (PRV 1515-01), Hocking Street (PRV 1518-01), Constellation Avenue (PRV 1517-01), and Schnell School Road (PRV 1518-03) also regulate flow into the Main Plant Pressure Zone.
EID Res 4[(a)]	EID's Reservoir 4 (EID Res 4) supplies the water and controls the hydraulic grade of this pressure zone. The EID Res 4 Pressure Zone consists of pipelines located downstream of EID Res 4, and upstream of a closed valve on Morrene Drive (V1518-02), PRV 1518-01 on Hocking Street, PRV 1517-01 on Constellation Avenue, a closed valve on North Ridge Drive (V1516-01)and EID's PRV 4.
Upper Schnell School	The EID distribution system (EID PRV 2) controls the hydraulic grade of the upper pressure zone of this service zone. The upper pressure zone is isolated from the Main Service Zone by a normally closed valve (PRV 1518-100) on Carson Road near Park Avenue and PRV 1518-03 on Schnell School Road.
Schnell School	A City-operated PRV station (PRV 1518-03) on Schnell School Road is supplied water from the Upper Schnell School Pressure Zone and regulates the hydraulic grade of the lower pressure zone. The lower pressure zone crosses State Route 50 and is isolated from the Main Service Zone by a normally closed valve between Broadway and Martin Lane near Wiltze Road (V1418-01).
Sierra Plant[(b)]	A City-operated PRV station (PRV1220-01) located at the recently abandoned Sierra Treatment Plant, followed by a float valve, control flow into a water storage tank (approximately 40,000-gallon capacity), which controls the hydraulic grade of this zone. This zone is adjacent to, but does not connect with the Cedar Ravine Zone.
Sierra Hydro-Pneumatic Zone	The water storage tank at the Sierra Plant also supplies water to a hydro-pneumatic system (pump and pressure tank) that serves domestic water to a higher-elevation pressure near the water storage tank.
Cedar Ravine	A City-operated PRV station (PRV1119-01) located on Cedar Ravine Road controls the hydraulic grade of this zone. This zone is adjacent to, but does not connect with the Sierra Service Zone.

(a) The EID Res 4 Pressure Zone includes the Constellation Service Zone, North Ridge / Poverty Hill Service Zone and Morrene Service Zone along with a portion of the EID distribution system The Water Master Plan refers to these three service zones rather than the collective EID Res 4 Pressure Zone.

(b) The Sierra Treatment Plant Tank was not input into the model as it is recommended to be removed as part of the 2005 improvements. PRV 1220-01 is used to simulate the tank's water service elevation for the Sierra Plant Zone in the existing system scenarios.

2.2.3.2.1 No Fire Flow Zone ("No FF")

Another pressure zone name "No FF" (no fire flow) has also been included in the model to help facilitate the use of the WaterCAD® automated fire flow analysis feature. WaterCAD® can run a fire flow at each of the required fire flow locations one at a time and output a table showing which hydrants can meet the fire flow requirements and which cannot. WaterCAD® can be used to analyze the fire flow capacity based on maintaining a minimum pressure of 20 psi throughout

the pressure zone. There are a few nodes within the City's water system that have static pressures less than 30 psi and typically drop below 20 psi during high flow events. These nodes are shown in the Table 4 below and were included in the "No FF" zone. The creation of the No FF Zone allows the model to run the FF without having to address the pressure at these particular nodes. Four of the nodes shown below are located near the water treatment plants and will not experience a significant pressure drop during high flow events, and the other two (J1517-26 and J1419-01) are on pipelines that will require the installation of a pump (a recommendation included in the 2005 water system improvements).

Table 4: No FF Nodes

Label	Elevation (ft)	Zone	Actual Zone	2005 Static Pressure	Location	Solution
J1217-03	2,147	No FF	Main	15	Main Plant PRV	None required
J1217-04	2,130	No FF	Main	22	Just downstream of Main Plant on Pardi Way (west side of plant)	None required
J1217-30	2,123	No FF	Main	25	Just downstream Main Plant (east side of plant)	None required
J1220-03	2,529	No FF	Sierra	9	Just downstream of Sierra Plant. Has hydrant but can not get any fire flow.	None required
J1419-01	2,130	No FF	Main	22	Top of Lane Court, has hydrant off 6-inch line.	Install pump
J1517-26	2,214	No FF	EID Res 4	25	Top of Poverty Hill, end of long 6-inch line. Max FF of 300 gpm at 20 psi residual.	Install pump

2.2.3.3 Demands

Using the parcel map provided by PGC and included as an x-reference in the model ("Placerville-xef"), individual junctions were assigned a number of parcels based on the area surrounding the node (note not all nodes were assigned parcels or demands). The number of parcels was then multiplied by the area demand calculated based on the City's meter reading data delineated by route. The total demand assigned to the junctions was then compared to the City's plant flow and EID meter reading data. Multiplication factors were used to escalate the total junction demands to equal the City's total average day demands shown below in Table 5 (see Section 2.2 of the Water Master Plan for a detailed explanation of the City's total demand calculations shown in Table 5).

The maximum day demands in the model were developed using the a maximum day peaking factor (ratio of maximum daily demand to average daily demand) of 2.20 for the Sierra Plant and Cedar Ravine Zones, and a factor of 1.84 for the remainder of the City pressure zones. The peak hour demands were calculated using a peak hour demand to maximum daily demand factor of 1.65. Table 5 provides a summary of the total average day, maximum day and peak

hour demands within the model. A breakdown of the total demands by junction is included in Appendix A.

Table 5: Modeled Demands

	Average Day Demand (gpm)			Maximum Day Demand (gpm)			Peak Hour Demand (gpm)		
Scenario Year	City Total	EID South	EID North	City Total	EID South	EID North	City Total	EID South	EID North
2005	1,118	1,290	1,015	2,090	2,373	1,868	3,448	3,915	3,083
2009	1,280	1,477	1,163	2,409	2,718	2,140	3,975	4,484	3,530
2015	1,488	1,738	1,368	2,805	3,198	2,518	4,628	5,277	4,151

The EID demands shown in Table 5 are based on information provided by Brian Mueller, EID. In September of 2003, EID reported that a maximum day flow out of EID's Reservoir (Res) 6 was 3,850 gpm and the peak hour was 4,800 gpm. Subtracting the City's estimated Main Water Treatment Plant maximum daily flow for 2003 (1,540.48 gpm) it was calculated that the EID customers required 2,309.52 gpm for 2003 maximum day. Using the 1.84 max day peaking factor established for the City's Main Plant Zone, a "EID South" 2003 average day flow of 1,255.17 gpm was calculated ("EID South" is a junction placed downstream of EID's PSV 19 to help simulate the actual head losses through the EID's pipeline from Res 6 to the PSV). The EID flow rate was then escalated using the growth rate escalation factor established for the City (approximately 3%) to the 2004/2005, 2009 and 2015 demands shown below in Table 4. The process described above was also used to establish EID's flow through their pipeline located north of the city and was assigned to a junction called "EID North".

Table 6 includes the future planned residential and commercial developments identified by the City within the City's existing service area. As shown in Table 5, each development was assigned a water demand per acre (1,500 gallon per day per acre) or dwelling unit (0.30 gpm/unit), depending on the commercial or residential land use type. The development demand was assigned its proposed geographic location.

2.2.3.4 Fire Flow Junctions

Water for fire suppression or fire flow (FF) must be available to fire hydrants throughout the City's service area. Fire flow requirements vary throughout the City, ranging from 1,000 gpm for two hours in residential areas to 4,250 gpm for four hours in certain commercial areas (such as downtown). Several locations were assigned specific FF requirements, as directed by Mike Pott, Fire Prevention Specialist, El Dorado County Fire District (Fire District); these FF requirements are shown in Table 7. As requested in Scott Chadd's 9 July 2002 letter, the hydrants within the commercial areas (hydrant locations shown in an x-referenced drawing in the model called "Hydrants" provided by PGC) and not specifically address by the Fire District were assigned 1,500 gpm (see Table 8) and hydrants within residential areas were assigned a FF of 1,000 gpm. The required FF locations color coded by range of required FF is included in Figure 5.

Table 6: Planned Developments

	DEVELOPMENT NAME	TYPE[a]	# UNITS[e]	ACREAGE	TIME (YEARS OUT)	YEAR ASSIGNED	AVG. DAY DEMAND MULTIPLIER	GROWTH DEMAND PER SCENARIO (gpm)			Fire Flow		Model Changes Due to Development	
								2004/ 2005	2009	2015	Required Fire Flow (gpm)	Source	Assigned Demand Junctions	Pipes Added/Replaced
A	CEDAR BLUFFS SUB. Phase 1	SF	8		<5	Existing	0.30 gpm/unit	2.40			1,000x2hrs	Residential FF per Scott Chadd's[c] Letter dated 9 July 2002	J1218-02	No new pipes, pipes P1219-27 already installed.
B	ESTEY ESTATES	SF	16	10	< 5	Existing	0.30 gpm/unit	4.80			1,000x2hrs	Letter from Fire District[b] for development	J1217-110 through -115 (FF J1217-111 and -114)	Pipes P1217-110 through P1217-116 currently being installed.
C	QUAIL RIDGE SUB.	SF	19	9	< 5	Existing	0.30 gpm/unit	5.70			1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1219-03 through J1219-06 (FF J1219-03 and -04)	No new pipes, pipes P1219-25, -26 -33 & -34 already installed.
D	BIG BEAR CAR WASH & LUBE	COMM	1361 BROADWAY	0.30[d]	< 5	Existing	1,500 gpd/acre	1.81			2,000x2hrs	Letter from Fire District for development	J1418-104	P1418-103 and P1418-104 to be added by developer per FF analysis performed April 04.
E	WARREN PARKER SUBDIVISION	SF	4			Existing	0.3 gpm/unit	1.20			1,000x2hrs	Warren Parker	J1217-200 and -201 (FF at J1217-201)	P1217-200 and -201 to be added by developer
F	FAUSEL PROFESSIONAL BUILDING	COMM	722 PACIFIC	0.7[d]	<5	Existing	1,500 gpd/acre	0.73			1,875x2hrs	Randy Pesses, 12/29/04	J 1316-40	No new pipes.
G	CEDAR BLUFFS SUB. Phase 2	SF	58	40	< 5	2009	0.30 gpm/unit		17.40		1,000x2hrs	Carlton Engineering, Inc. 10/02	J1218-100 through J1218-107 (FF at all nodes)	P1218-100 through P1218-111
H	D. ALLEN DOWNS	SF	28	5	< 5	2009	0.30 gpm/unit		8.40		1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1515-18	Developer to add pipes within subdivision.
I	GOLDEN EAGLE ESTATES	SF	10	25	< 5	2009	0.30 gpm/unit		3.00		1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1517-26, -27 & -19 (1 gpm each) (FF at all nodes)	Developer to add pipes within subdivision.
J	QUARTZ MOUNTAIN SUB.	SF	20	11	5 TO 15	2009	0.30 gpm/unit		6.00		1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1516-46 and -47 (FF at both nodes)	Developer to add pipes within subdivision.
K	COTTONWOOD PHASE IV & VI	SF	32	17	< 5	2009	0.30 gpm/unit		9.60		1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1517-101 and -102 (FF at both nodes and J1517-15)	P1517-101 and -102 added. Note these pipes should be added by developer. The location of the proposed pipelines and parcels is unknown.
L	ESKATON		117 SR., 60 ASST LVNG.	56	< 5	2009	840 gpd/acre		32.52		2000x2hrs	Eskaton's developer, Cooper Thorne Associates	J1318-101 to J1318-119 (2,000 gpm FF at J1318-102, 1,000 gpm at J1318-103 through -07 & -112	P1318-100 through -122, and P1418-100 & -101
M	SWEENEY COMMERCIAL BUILDING	COMM	541 MAIN STREET	0.31[d]	< 5	2009	1,500 gpd/acre		0.32		1,875x2hrs	Assumption based on Fausel Building	J1317-53	None
N	THE WOODS (CHINA WOODS)	SF	8	5	> 5	2015	0.30 gpm/unit			2.40	1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1316-25	No new pipes, pipe P1316-44 already installed.
O	LUMSDEN PROPERTY[f]	SF	350	128	5 TO 15	2015	0.30 gpm/unit			105.00	1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1319-100	P1319-100 and P1319-101. Note that pipes and PRVs should be added by the developer. The location of proposed pipelines and parcels is unknown.
P	FERRARI/MTN. VALLEY	SF	50	45	5 TO 15	2015	0.30 gpm/unit			15.00	1,000x2hrs	Residential FF per Scott Chadd's Letter dated 9 July 2002	J1517-103 and -104 (FF at both nodes)	P1517-104 and -105. Note these pipes should be added by the developer. The location of proposed pipelines and parcels is unknown. Pipeline loops may be required by City.
	TOTAL PROJECTED DEVELOPMENT DEMAND WITHIN SERVICE AREA:							*16.6*	*77.2*	*122.4*				
	BAL. OF GROWTH AFTER KNOWN DEVELOPMENT[g]:								*85.2*	*63.6*				
	CITY TOTAL DEMAND:							***1,117.97***	***1,280.38***	***1,488.00***				

(a) SF = single family housing, COMM = commercial
(b) El Dorado County Fire District
(c) Previous City Interim Director of Public Works
(d) Area generated from parcel map.
(e) Ratio of dwellings/acre = 0.78:1. Quartz Mtn. Sub. = 2:1 and classified as SF. Usage = 0.30 gpm/unit
(f) Number of units provided by City of Placerville during Draft Master Plan Review Meeting, November 2005.
(g) The ultimate demand of 1,488 gpm was used to establish a growth rate. If the projected development demands did not meet the growth rate, it is assumed additional infill demand will occur.

Table 7: Specific Fire Flow Requirements

WaterCAD® Location	Description	Address	Square Feet	Fire Flow Requirement	
				gpm	Hours
J1216-03	St. Patricks Church (Old)	Sacramento St. & Fiske	4,464	1,750	2
J1218-10	ED Convalescent	3280 Washington St.	28,830	1,500	2
J1316-07	St. Patricks Church	Sacramento St. & Fiske	12,771	1,500	2
J1316-12 J1316-40	Fausel Building	772 Main St.	N/A	1,875	2
J1316-32	Cary House	300 Main St.	21,404	1,500	2
J1317-11	Marshall View Medical Bldg	1004 Fowler Way	10,720	1,500	2
J1317-13		1008 Fowler Way	5229	2,000	2
J1317-12	Placerville Pines Conv	1040 Marshall Way	22,059	1,500	2
J1317-15	Office Buildings	3105 Cedar Ravine & Marshall Way	15,680	1,500	2
J1317-35 J1317-36	Federated Church	1031 Thompson Way	18,570	3,750	3
J1317-52	Office Space	550 Main St.	8,880	2,500	2
J1317-53	Town Hall	549 Main St.	11,000	2,750	2
	Sweeney Commercial Building	541 Main St.	N/A	1,875	2
J1318-102	Eskaton Development	Spanish Hill	N/A	2,000	2
J1417-04	Office Buildings	1166 Broadway East	8,280	1,500	2
J1417-04	Office Buildings	1166 Broadway West	7,068	1,500	2
J1417-29 J1417-49	Office Buildings	2929 Grandview	15,951	3,500	3
J1418-01 J1419-04	Grocery Outlet	1426 Broadway	19,300	3,750	3
J1418-07	Gold Country Inn	1332 Broadway East	8,250	2,500	2
J1418-09	Gold Country Inn	1332 Broadway	9,242	2,500	2
J1418-10	Commercial Business Strip	1323 Broadway	26,179	4,250	4
J1418-12	Mountain Democrat	1360 Broadway	17,900	1,500	2
J1418-17	Albertsons	1270 Broadway	15,980	1,500	2
J1418-21	Rite Aid	1220 Broadway	17,375	1,500	2
J1418-33 J1518-07 J1519-01	Deerview Apartments[(a)]	2880 Schnell School Rd.	7,616	2,250	2
J1418-55 J1417-56	EID Offices (new)	Mosquito Road	N/A	2,250	2
J1418-104	Big Bear Car Wash	Broadway	N/A	1,500	2

(a) Deerview Apartment FF demand assigned to all three know apartment complexes within the Schnell School Road Area.

Table 8: Assumed 1,500 gpm Fire Flow Hydrant Locations

Label	Pressure Zone	Land Zoning[(a)]	Facility Description
J1217-05	Main Plant	BP	Hospital Business Park
J1217-06	Main Plant	BP	Hospital Business Park
J1217-07	Main Plant	BP	Hospital Business Park
J1316-08	Main Plant	CBD	Unknown
J1316-09	Main Plant	CBD	Unknown
J1316-12	Main Plant	CBD	Unknown
J1316-14	Main Plant	CBD	Unknown
J1316-28	Main Plant	CBD	Unknown
J1316-33	Main Plant	CBD	Unknown
J1316-34	Main Plant	CBD	Unknown
J1316-42	Main Plant	CBD	Unknown
J1316-44	Main Plant	CBD	Unknown
J1316-60	Main Plant	HWC	Unknown
J1316-70	Main Plant	CBD	Unknown
J1316-71	Main Plant	CBD	Unknown
J1317-03	Main Plant	BP	Hospital Business Park
J1317-06	Main Plant	BP	Hospital Business Park
J1317-09	Main Plant	BP	Hospital Business Park
J1317-100	Main Plant	BP	Hospital Business Park
J1317-32	Main Plant	C	Unknown
J1317-34	Main Plant	C	Unknown
J1317-35	Main Plant	PF	Sierra Elem. School
J1317-41	Main Plant	CBD	Unknown
J1317-42	Main Plant	C	Unknown
J1317-51	Main Plant	CBD	Unknown
J1317-54	Main Plant	CBD	Unknown
J1317-55	Main Plant	CBD	Unknown
J1415-11	Main Plant	PF	High School
J1415-16	Main Plant	PF	High School
J1415-24	Main Plant	PF	High School
J1415-27	Main Plant	PF	High School
J1415-30	Main Plant	PF	Markup School
J1416-01	Main Plant	PF/BD	County Offices and Medical Offices
J1416-11	Main Plant	PF	Department of Health Services
J1416-24	Main Plant	C	Churches

Table 8: Assumed 1,500 gpm Fire Flow Hydrant Locations (cont'd)

Label	Pressure Zone	Land Zoning[(a)]	Facility Description
J1416-28	Main Plant	C	Restaurant
J1416-30	Main Plant	C	Restaurant
J1416-48	Main Plant	PF/BD	County Offices and Medical Offices
J1417-02	Main Plant	HWC	Unknown
J1417-05	Main Plant	C	Unknown
J1417-09	Main Plant	HC	City Owned Property
J1417-81	Main Plant	BP	Unknown
J1417-82	Main Plant	BP	Office Building on Grandview, new hydrant to help J1417-29
J1418-19	Main Plant	HWC	Unknown
J1418-20	Main Plant	HWC	Unknown
J1419-05	Schnell School	HWC	Unknown
J1419-04	Schnell School	HWC	Grocery Outlet, new hydrant to help J1418-01
J1419-07	Schnell School	HWC	Strip Mall and Car Lot
J1419-09	Upper Schnell School	PF	Schnell Elem. School
J1515-11	Main Plant	PF	Markum School

(a) Zoning based on Land Zoning Map Supplied by City of Placerville: Business Park (BP), Commercial (C), Central Business District (CBD), Heavy Commercial (HC), Highway Commercial (HWC), and Park Faculties (PF).

Note that an individual hydrant cannot typically deliver more than about 1,500 to 2,000 gpm. Multiple nearby hydrants may be simultaneously needed to deliver the full required fire flow. This is represented in Table 7 by the multiple junction locations shown for a particular description.

Please note that for easy review and data output for the FF nodes, a "selection set" called "FF Nodes" has been included in the model. This selection set includes the junctions at or near hydrants shown on the GIS hydrant layer and proposed hydrant locations. This selection set was used for the FF data output discussed in Section 3.

Figure 5: Required FF Junctions

2.2.4 Reservoirs, Tanks and Valves

The City's water system, and therefore the water model, is hydraulically controlled by the reservoirs, tanks and valves within the system. Figure 4 shows the location of reservoirs, tanks and valves that have been input into the model to represent the City's existing system. Table 9 below provides a brief summary of the model data input for the three (3) EID tanks and related PRVs that feed the City's water system.

Table 9: EID Reservoir Input Data Summary

EID Reservoir	Description
EID Res 3	EID's Reservoir 3 is actually a 1.5 million gallon (MG) steel tank located east of the City boundary. The exact location of Res 3 and downstream demand conditions are unknown since this is EID's facility; therefore for simplicity reasons EID Res 3 is represented as two reservoirs, EID Res 3S and EID Res 3N within the model. These two reservoirs provide the constant water supply required by the model (WaterCAD® models reservoirs as an endless supply of water at a constant hydraulic grade) at hydraulic grade of 2,776 feet (ft), which is the high water level of the existing tank based on information provided by EID in November 2002. Downstream of EID's Res 3, EID has two pressure reducing stations (EID PRV 3S and EID PRV 2) that control the hydraulic grade line upstream of the City. EID PRV 2 is referred by EID as EDM2 PRS#2 at 2120 Carson Road is reported by EID to have a base elevation of 2,474 ft and HGL setting of 2,636 ft. However, during the model calibration (discussed below in Section 2.3) the HGL setting was lowered to 2,436 ft. and the base elevation to 2,274 ft. to match the static readings recorded in August 2002 (assuming that the EID table misreported the elevation and setting by 200 feet). EID's PRS "S. of County Club Drive" Elevation (2536 ft) and HGL (2617 ft) from EID's District PRS Table provided by Brian Mueller of EID in Nov 2002.
EID Res 6[(a)]	EID's Reservoir 6 is a 3.5 MG steel tank located south of the City and is the primary water supply source for the City's Main Plant Zone. Res 6 has been included in the model as a tank located as accurately as possible using hard copy maps provided by EID. The high water elevation of this tank is reported by EID to be 2,412 ft with a tank height of 32 ft.
EID Res 4[(a)]	EID's Reservoir 4 is a 0.5 MG steel tank located north of the City and is the primary water supply source for the EID Res 4 Zone and the Combellack Zone. Res 4 has been included in the model as a tank located based on maps provided by EID. The high water elevation of this tank is reported by EID to be 2,283 ft. A tank height of 28 ft was assumed based on the surrounding elevation and the given high water level (HWL).

(a) Initial setting for tanks assumed 10 feet below high water elevation

2.2.4.1 Pressure Sustain Valve

In addition to the reservoirs, EID maintains a PSV (EID PSV 19) upstream of the City's Main Water Treatment Plant which was originally reported to be a PRV; however in August 2003, Brian Mueller of EID informed Kennedy/Jenks that this valve was actually a PSV set to maintain a minimum pressure of 55 psi upstream of the valve.

It should be noted that WaterCAD® computer model (and other similar modeling software) has computational limitations related to pressure-sustaining valves. WaterCAD® does not have the ability to automatically control some hydraulic elements during its simulations, particularly flow-control or pressure-sustaining components upstream of, or in conjunction with a PRV. This limitation impacts operation of the City model at the pressure-sustaining valve (EID PSV 19) that regulates flow into the City's Main service zone. This PSV station (owned and operated by EID) prevents the upstream pressure in the EID transmission pipe from falling below the PSV set point by restricting flow into the City distribution system. The City's PRV station (at the recently-abandoned Main Treatment Plant) subsequently regulates pressure in the Main service zone. WaterCAD cannot simultaneously simulate operation of both the PSV and the PRV.

To manage this limitation, the model is normally run with EID PSV 19 "inactive" (valve is full open), so only the "active" PRV 1217-100 regulates pressure into the Main Service Zone. The pressure upstream of the PSV must be manually checked for each scenario to assure that the pressure is no less than its set point (currently 55 psi). If the pressure is less than the set point, then the PSV must be changed to "active", the PRV changed to "inactive", and the scenario run again. Note that the model will show that the pipes just downstream of the PSV have negative pressure; the model operator may ignore the negative pressures, because the pressures at and downstream of the PRV are correct.

If the actual pressures in the pipe between EID PSV 19 and PRV 1217-100 are desired, then PRV 1217-100 should be switched to a PSV, with the upstream pressure set to equal the value obtained in the above previous model run. When the model is then run again, all of the pressures will be correct, and the pressure at "inactive" EID PSV 19 will be 55 psi.

2.2.4.2 Pressure Reducing Valves

Section 3 includes each set of scenarios evaluated and Table 9 includes the control settings of the PRVs that have been input into the model.

2.2.4.3 Normally Closed Valves

There are a total of six (6) normally closed valves throughout the City's distribution system based on discussions with City staff. These include V1418-01 near Wiltze Road, PRV 1518-100 on Carson Road, V1518-02 on Morrene Drive, V1516-01 on North Ridge Drive, V1415-01 on Canal Street, and a valve near PRV 1517-01 on Constellation Avenue that is modeled as a closed pipeline.

2.2.4.4 Flow Control Valves

Although no flow control valves (FCV) are known to exist within the City's water system or within the EID system, FCVs have been put into the model to regulate the flow from EID's Res 3S and EID Res 3N to EID Res 6 and EID Res 4, respectively. FCV North controls the flow from Res 3 to Res 4 and FCV South controls the flow from Res 3 to Res 6. The flow control valve setting is based on the maximum day demand downstream of Res 4 and Res 6. Although these FCVs do not actually exist, the model needs a FCV to regulate the flow from a reservoir (endless supply of water, Res 3) to a tank (limited supply of water, Res 4 and Res 6). Industry and state standards require that water systems be able to supply maximum day flow without the use of storage tanks; therefore the maximum day demand downstream of the tanks is assumed to always flow through the supply pipelines from Res 3.

2.2.5 EID Meters

All of the City water supply is received from EID connections with wholesale water meters. Symbols for representing the meter locations have been included within the model as shown in Figure 4.

2.3 Model Calibration

Kennedy/Jenks prepared a pressure testing calibration plan for the hydraulic model, which addressed the unique requirements of the City water distribution system. Hydrant flow testing procedures, detailed maps of hydrants selected for testing, maps of affected parcels and proposed testing dates were developed by Kennedy/Jenks and submitted to the City in July 2002. The plan with tasks and dates for the water system pressure testing program was then submitted to the City and El Dorado County Fire District. Special forms were then prepared to facilitate the process and to ensure the testing was methodically planned, executed and documented.

The pressure testing calibration plan and proposed procedures were included in a Notice of Intent from the City to the California Regional Water Quality Control Board Central Valley Region (RWQCB). We worked closely with City staff to prepare a Public Notice to citizens in the community concerning the hydrant flow testing. Door hangers were also prepared for distribution to area residents advising them of the dates of the testing, temporary water quality effects and recommendations to mitigate those effects.

From 19 August through 23 August 2002, Kennedy/Jenks engineers worked with City operational staff to execute the pressure testing calibration plan. Since the City had not previously adopted a water system flushing program, specific plans had to be developed for each testing site to control the significant amounts of water and sediment drained to nearby areas. Kennedy/Jenks staff sketched plans for testing each hydrant in the field, finalized each plan in the office and submitted the plans to the City for review and use. We worked closely with City staff to determine the most suitable way to control runoff at each testing site with the use of sand bags, plywood, straw waddles, etc.

As a result of accumulated sediment in the pipelines from lack of regular system flushing, it often took up to ten minutes of flushing before the water cleared up sufficiently to allow testing.

Kennedy/Jenks engineers and City staff worked closely together to set up the flow diversions, to read pressure gauges and to record the results. We documented test numbers, dates, times, locations, main materials, main sizes, test conditions, hydrant numbers, static pressures, residual pressures, pitot pressures, gage numbers, orifice sizes, observed discharge flow amounts and outlet sizes. The completed forms included photographs of the testing sites and special maps showing details of the City hydrants, water mains and parcels in the immediate location. A total of 31 tests were performed at predetermined locations to help refine and confirm the theoretical results generated by the hydraulic computer model.

A map of the hydrant testing locations, digital photographs of the tests, and the test results were provided to the City and the results of the hydrant flow tests with a map showing hydrant locations was provided to the El Dorado County Fire District in August 2002. The results of the hydrant testing are shown in Table 10 and are included in the model under the user data tab for each junction. Figure 6 provides a visual location for each of the hydrants including both the hydrants that were opened and flowed, and the near by hydrants where residual pressures were recorded (this figure was developed using an x-referenced drawing in the model called “test_hydrants” which includes the location of each of the flow and residual hydrants).

Table 10: Model Calibration Testing Results

Hydrant	Junction Label	Static Pressure (psi)	Dynamic (Flowing) Pressure (psi)	Q (gpm)
FH-1	J1319-01	56	--	904
RH-1-1	J1320-01	42	26	
RH-1-2	J1220-04	41	16	
FH-2	J1219-22	66	--	750
RH-2-1	J1219-21	70	28	
RH-2-2	J1219-24	71	28	
FH-3	J1219-14	114	--	1244
RH-3-1	J1219-13	121	82	
RH-3-2	J1219-11	112	65	
RH-3-3	J1219-17	100	50	
FH-4	J1219-25	74	--	671
RH-4-1	J1219-27	60	8	
RH-4-2	J1219-10	100	50	
FH-5	J1217-19	59	--	856
RH-5-1	J1217-14	85	74	
RH-5-2	J1217-01	62	48	
FH-6	J1218-09	59	--	949
RH-6-1	J1218-08	57	43	
RH-6-2	J1218-10	59	49	
FH-7	J1316-17	85	--	1300
RH-7-1	J1316-44	137	134	
RH-7-2	J1316-22	65	62	
RH-7-3	J1216-12	62	60	
RH-7-4	J1316-07	110	104	
FH-8	J1317-21	63	--	888
RH-8-1	J1316-04	94	92	
RH-8-2	J1316-02	62	60	
RH-8-3	J1317-20	54	49	
FH-9	J1317-16	105	--	750
RH-9-1	J1317-41	114	110	
RH-9-2	J1317-36	70	64	
RH-9-3	J1317-15	105	98	

Table 10: Model Calibration Testing Results (cont'd)

Hydrant	Junction Label	Static Pressure (psi)	Dynamic (Flowing) Pressure (psi)	Q (gpm)
FH-10	J1317-52	116	--	1061
RH-10-1	J1317-54	117	87	
RH-10-2	J1317-51	118	75	
RH-10-3	J1317-53	115	75	
FH-11	J1417-06	105	--	1087
RH-11-1	J1417-04	105	94	
RH-11-2	J1317-34	110	93	
RH-11-3	J1317-30	95	85	
FH-12	J1317-30	76	-	581
RH-12-1	J1317-32	98	91	
RH-12-2	J1318-11	65	60	
RH-12-3	J1317-08	66	65	
FH-13	J1316-58	120	--	750
RH-13-1	J1415-07	82	80	
RH-13-2	J1415-04	90	86	
RH-13-3	J1316-55	132	80	
FH-14	J1416-30	98	--	1384
RH-14-1	J1415-25	66	62	
RH-14-2	J1416-42	80	75	
RH-14-3	J1416-28	100	95	
RH-14-4	J1415-07	85	80	
FH-15	J1415-29	93	--	1278
RH-15-1	J1415-34	100	86	
RH-15-2	J1415-16	85	72	
RH-15-3	J1415-30	85	72	
FH-16	J1515-15	143	--	1482
RH-16-1	J1515-29	142	130	
RH-16-2	J1515-16	155	140	
RH-16-3	J1515-25	136	125	
FH-17	J1516-15	54	--	888
RH-17-1	J1516-21	78	70	
RH-17-2	J1516-13	53	40	
RH-17-3	J1516-01	57	46	

Table 10: Model Calibration Testing Results (cont'd)

Hydrant	Junction Label	Static Pressure (psi)	Dynamic (Flowing) Pressure (psi)	Q (gpm)
FH-18	J1516-40	45	--	531
RH-18-1	J1516-24	72	64	
RH-18-2	J1516-38	62	49	
RH-18-3	J1516-36	52	40	
FH-19	J1316-47	113	--	628
RH-19-1	J1316-48	105	60	
RH-19-2	J1316-46	101	30	
RH-19-3	J1316-34	125	115	
RH-19-4	J1316-36	90	83	
FH-20	J1416-36	102	--	1404
RH-20-1	J1416-44	100	87	
RH-20-2	J1416-25	110	100	
FH-21	J1417-32	89	--	1300
RH-21-1	J1417-45	88	75	
RH-21-2	J1417-29	109	92	
RH-21-3	J1317-51	118	115	
FH-22	J1417-81	95	--	1061
RH-22-1	J1416-11	87	51	
RH-22-2	J1417-47	103	99	
RH-22-3	J1417-76	95	60	
FH-23	J1516-30	114	--	1404
RH-23-1	J1516-46	90	60	
RH-23-2	J1516-29	131	129	
RH-23-3	J1517-25	105	103	
RH-23-4	J1516-26	110	108	
FH-24	J1517-13	95	--	1186
RH-24-1	J1517-22	52	52	
RH-24-2	J1517-12	92	85	
RH-24-3	J1517-10	105	100	
RH-24-4	J1517-11	96	86	

Table 10: Model Calibration Testing Results (cont'd)

Hydrant	Junction Label	Static Pressure (psi)	Dynamic (Flowing) Pressure (psi)	Q (gpm)
FH-25	J1417-60	57	--	712
RH-25-1	J1517-07	48	38	
RH-25-2	J1417-62	51	40	
RH-25-3	J1417-55	93	80	
RH-25-4	J1517-02	75	63	
FH-26	J1417-09	100	--	1163
RH-26-1	J1417-55	95	85	
RH-26-2	J1417-04	101	91	
RH-26-3	J1418-56	84	80	
FH-27	J1418-46	71	--	1007
RH-27-1	J1418-48	68	62	
RH-27-2	J1418-40	62	38	
FH-28	J1418-17	93	--	1061
RH-28-1	J1418-12	90	75	
RH-28-2	J1418-21	100	82	
FH-29	J1518-06	130	--	1300
RH-29-1	J1419-09	160	110	
RH-29-2	J1518-07	150	98	
RH-29-3	J1518-08	135	85	
FH-30	J1518-22	128	--	1256
RH-30-1	J1618-01	78	58	
RH-30-2	J1518-19	62	60	
FH-31	EID System	58	--	1138
RH-31-1	EID System	87	87	
RH-31-2	EID System	70	60	

Please note that the existing water model has been refined since the model calibration testing was performed.

EID Res 4

EID ACT 61417

EID PRV 2

EID RES 3N

EID ACT AT COMBELLACK ROAD

EID ACT 61421

EID ACT 61415

EID ACT 62197

EID ACT 68255

EID PRV 4

V1516-01

PRV1515-01

V1415-01

PRV1518-01

V1518-02

EID ACT 61409

PRV1518-100

PRV1518-03

PRV1517-01

V1418-01

PRV1217-100

EID PSV 19

EID ACT 61407

EID Res 6

PRV1119-01

EID ACT 61419

PRV1220-01

EID ACT 61411

EID RES 3S

EID PRV 3S

N

0 600 1200

1"=1200'

SYMBOLS

= EID SERVICE

= VALVE

= RESERVIOR

= WATER PIPELINE

FH-12 = FLOW HYDRANT

RH-12-3 = RESIDUAL HYDRANT

Kennedy/Jenks Consultants

CITY OF PLACERVILLE
WATER MODEL REPORT

HYDRANT TESTING LOCATIONS

DECEMBER 2005
Figure 6
K/J 012509.00

Section 3: Model Analysis and Results

Using the WaterCAD® water model developed for the City's water system, Kennedy/Jenks simulated and evaluated the hydraulic performance of the City's existing water distribution system during average day, maximum day, maximum day plus FF and peak hour demands as described Section 3.1 below. Based on this simulation, we identified areas within the system which currently appear to fail to meet the minimum criteria established in Section 2.1.2 of the Water Master Plan. Using an iterative procedure involving numerous trial configurations, we then developed recommendations for improvements to the City water distribution system so that the system would meet the minimum criteria established in Section 2.1.2 of the Water Master Plan. The 2005 water modeling scenarios were used for this iterative evaluation procedure as described in Section 3.2 below and now include the final recommended improvements to the City's existing water system summarized below in Section 3.2.6.

In addition, the 2009 and 2015 scenarios were used to iteratively evaluate the projected growth of the City including the proposed development included in Table 6 above. The evaluation of the 2009 and 2015 scenarios is included as Sections 3.3 and Sections 3.4 of this report.

Section 3.5 of this report also includes a summary of the extended period simulation performed to evaluate water storage requirements.

3.1 Existing System Scenarios

3.1.1 Recent Improvements

As shown in Table 6 above, the following improvements have been incorporated into the existing system scenarios: Estey Estates, Cedar Bluffs Subdivision Phase 1, Quail Ridge Subdivision, Big Bear Car Wash and Lube, Warren Parker Subdivision, and the Fausel Professional Building. These developments are included in Figure 7 of the existing water system. In addition, we have incorporated the improvements listed below into the model as part of the existing system after the model was originally developed:

1. Main and Sierra Treatment Plant Bypass - Until recently, the water delivered by EID to the City reportedly did not comply with State Department of Health Services (DHS) regulations due to several uncovered reservoirs in the EID system. Most of the EID-delivered water was treated at the City's Main Treatment Plant and stored in clearwell / storage ponds prior to conveyance within the Main Plant Zone. EID completed improvements to its potable water storage reservoirs in late 2003, thereby complying with DHS regulations. The City subsequently abandoned and bypassed the Main Treatment Plant (including the "alum pond" and fluoridation facilities) in early 2004, and the Main Treatment Plant clearwell / storage ponds in September 2004. A new PRV station (PRV1217-100) was installed near the clearwell / storage ponds to regulate pressure in the Main Plant Zone. Three PRV stations (PRV 1515-01, PRV 1517-01 and PRV 1518-01), which control flow from adjacent service zones into the Main Service Zone, were also repaired and placed into service in September 2004. The City abandoned and bypassed the Sierra Treatment Plant in late

Figure 7: Existing Water System

2004; the clearwell / storage tank remains in service as a treated water storage tank for the Sierra Service Zone (the Sierra tank is represented by PRV1220-01 in the existing system model scenario).

2. Clay/Coleman Street Pipeline Replacement – In January 2003, the City requested a FF analysis for pipeline improvements to the west of Clay Street and south of Coleman Street along Lincoln Street and Norman Street. This project upsized 3" and 4" diameter pipes within the area to 6" PVC or ductile iron pipes (including P1417-42, P1417-44, P1417-47, P1417-49, P1417-50, P1417-51, and P1417-53) and added new 6" diameter ductile iron and PVC pipes (including P1417-43, P1417-95, and P1417-96) to the water system. Based on conversations with the City (Mark Ivani) this project was constructed in 2003.

3. Forni Road Pipeline Replacement – Based on a telephone conversation with the City (Donn Smith) in March 2005, the City has or will soon be upsizing the existing pipeline along Forni Road (including P1316-01 and P1315-01) from 6 to 8-inch pipe due to the State Route 50 realignment project in this area.

3.1.2 General Valve Discussion for Existing System Scenarios

A summary of the valve and tank settings used in the existing system scenarios is included below for each of the City's existing water system pressure zones.

3.1.2.1 Main Plant Zone

Based on information provided by the City (Randy Pesses), PRV 1217-100 near the abandoned City Main Water Treatment Plant is currently operating at a setting of about 15 to 20 psi. Using a setting of 15 psi and a ground elevation of 2147 feet per the Owen Engineering Drawings (model elevations are based on ground elevations), PRV 1217-100 setting is assumed to be 2181.65 feet. The City reports that an HGL setting of 2,170 feet (approximately 5 psi lower than PRV1217-100) is being used for the other three (3) existing PRVs that supply the Main Plant Zone including PRV 1515-01, PRV 1517-01, and PRV 1518-01; these pressure settings cause the PRV 1217-100 to act as the "primary" source of water into the Main Plant Zone.

3.1.2.2 Schnell School Zone

Based on information provided by the City in 2001, the Schnell School PRV (PRV 1518-03) operates at a setting of 66 psi and the elevation at the PRV is 2,032.25 feet. Therefore, the normal operating hydraulic grade line evaluation (HGL) for this PRV is 2,184.74 feet.

3.1.2.3 Upper Schnell School Zone

The hydraulic grade of the Upper Schnell School System is controlled by EID's PRV 2, which was reported by EID to have an elevation of 2,474 feet and a HGL setting of 2,636 feet. However, during calibration the HGL setting of PRV 2 was lowered to 2,436 feet and the elevation was revised to 2,274 assuming that the EID table misreported the elevation and setting by 200 feet.

3.1.2.4 EID Res 4 Zone

Based on EID's Pressure Reducing Station table provided by EID (Brian Mueller) in November 2002, the high water level of EID's Reservoir 4 is 2283.00 feet. Therefore, for modeling purposes, it was assumed that the tank typically operates 10 feet below the high water level at an HGL of 2,273 feet.

3.1.2.5 Combellack Zone

EID's PRV 4 establishes the HGL of the Combellack Zone which is closed off from the Main Zone by a normally closed valve (V1415-01) near the intersection of Canal Street and Canal Court. Based on the information provided by EID in November 2002, the EID PRV 4 has an HGL setting of 2,279 feet. This HGL was assumed for all modeling scenarios.

3.1.2.6 Sierra Plant Zone

The hydraulic grade in the Sierra Plant Zone is currently established by the existing tank at the abandoned Sierra Treatment Plant. For modeling purposes, it was assumed that the Sierra Tank typically operates approximately 10 feet below the high water level at an HGL of 2548 ft (PRV 1220-01 represents the Sierra Tank in the existing system model scenarios and was set to an HGL of 2,548 ft).

3.1.2.7 Cedar Ravine Zone

The Cedar Ravine PRV (PRV 1119-01) was reported by EID to have a delivery pressure of 59.23 psi, however, the static readings taken in the field during the hydrant flow testing in August 2002 indicated the delivery pressure was approximately 98 psi. The model was run assuming a HGL setting of 2,456.45 feet (or 98 psi).

3.1.2.8 Flow Control Valves

The flow control valve (FCV) settings are based on the maximum day demand downstream of Res 4 and Res 6. For the existing scenarios, FCV North was set at 2,045 gpm and FCV South was set at 4,020 gpm.

Below is a summary of the existing modeling scenarios including maximum day plus FF, average day, maximum day, and peak hour demands.

3.1.3 Existing Fire Flow Scenario Summary

WaterCAD®'s FF analysis feature was used to analyze the FF capability of each hydrant as shown on the GIS hydrant layer included in Table 6, Table 7 and Table 8 above.

Based on WaterCAD®'s automated FF analysis using the existing system maximum day scenario, a total of 65 hydrants cannot supply the required FF for the developments surrounding the FF junction. Table 11 below shows a breakdown of the number of FF failures by pressure zone and Figure 3 in the Water Master Plan shows the location of FF failures. The detailed automated FF analysis results for the existing system are included in Appendix B-1.

Table 11: Existing System FF Analysis Summary

Pressure Zone	Number of FF Nodes that Fail to Meet Required FF	Number of FF Nodes that Meet Required FF	Total Number of FF Nodes
Cedar Ravine	12	3	15
Combellach	0	15	15
EID Res 4	1	26	27
Main Plant	36	175	211
Schnell School	2	8	10
Sierra Plant	12	0	12
Upper Schnell School	2[(a)]	3	5
Total	65	230	295

(a) These two FF can actually be met using two hydrants within the zone. Required FF is 2,250 gpm which is more than the operational capacity of a single hydrant.

As discussed in Section 2.2.4.1 of this report, the model does not have the ability to evaluate the pressure upstream of EID's PSV 19 during the automated FF runs; therefore, it was assumed that the pressure upstream of EID's PSV 19 was equal to or greater than 55 psi during the automated FF analysis (this assumption was confirmed based on manual FF analysis summarized in the 2005 FF scenario summary in Section 3.2.2 below).

The model calculates a maximum available FF which is reported in the WaterCAD® automated FF scenario output tables in the appendices; however it should be noted that this reported maximum available FF is based on the system maintaining pressures greater than 20 psi in the zone and does not take into consideration the need to maintain the upstream pressure of EID PSV 19 or maximum velocities within the water system. In addition, the model will not report an available FF greater than 4,500 gpm due to a setting input into the model.

Recommendations for water system improvements to meet the required FF demands of the existing system were analyzed using the 2005 water model scenarios and included in the 2005 scenario summary in Section 3.2 below.

As discussed in the Water Master Plan, fire flow requirements have increased in most jurisdictions, including the City, over the last few decades; for example, residential fire flow needs have increased from typically 500 gpm to at least 1,000 gpm. Many distribution systems that were originally adequate for the lower fire flow requirements are now undersized.

3.1.4 Existing Average and Maximum Day Scenario Summary

Both existing average day and maximum day scenarios have been included in the model. The average day scenario simulates a typical day scenario and is helpful in reviewing areas of high and low "static" pressure. The maximum day scenario provides a basis for the fire flow analyses which are based on maximum day demands plus the fire flow.

Table 12 below summarizes the EID PSV 19 PSV flow and upstream pressure during the existing average day and maximum day scenarios. During these scenarios, the EID PSV does not throttle flow to the City's PRV 1217-100 at the abandoned main treatment plant; however it was found that the PSV does throttle flow in the peak hour scenario as discussed in detail in Section 3.1.5 below.

Table 12: Existing System EID PSV 19 Operational Data

	Average Day	Maximum Day	Peak Hour
EID PSV Flow	867 gpm	1,595 gpm	1,737 gpm
EID PSV 19 Upstream Pressure	68.5 psi	62.8 psi	55.0 psi

Although Appendix B includes a complete summary of the model output for the existing system scenarios, Table 13 below provides a summary of the low pressure junctions (less than 25 psi) within the existing system and Table 14 presents the high pressure junctions within each of the pressure zones. All of the low pressure junctions included in Table 13 have been included in the "No FF" pressure zone as previously discussed in Section 2.2.3.2.1 of this report.

Table 13: Existing System Low Pressure Junctions

Junction	Static/Average Day Pressure (psi)	Maximum Day Pressure (psi)	Peak Hour Pressure[(a)] (psi)	Location
J1220-03	8	8	8	Immediately downstream of the abandoned Sierra Plant
J1217-03	15	15	14	Main Plant PRV
J1217-04	22	22	18	Immediately downstream of the abandoned Main Plant
J1419-01	24	24	24	Top of Lane Drive
J1217-30	25	25	21	Immediately downstream of the abandoned Main Plant
J1517-26	25	25	21	Golden Eagle Estates at the top of Poverty Hill

(a) See Section 3.1.5 below for the peak hour discussion of pressure problem between EID PSV 19 and PRV 1217-100 that are reported to have negative pressures including: J1117-02 (-26 psi), J1117-01 (-14 psi), and J1217-02 (-2 psi) all located on the pipeline connecting EID PSV 19 and the City's PRV 1217-100.

Table 14: Existing System High Pressure Junctions

Zone	High Pressure Junction	Static/Average Day Pressure (psi)	Maximum Day Pressure (psi)	Peak Hour Pressure (psi)	Location
Main Plant	J1316-59 to 61	157	156	152	West side of the City, at intersection of Main St. and Forni Rd.
Schnell School	J1418-04	106	105	105	Wiltze Rd., just upstream of V1418-01
Upper Schnell School	J1519-01	170	170	169	Hydrant on the east side of Schnell School Rd.
Combellack	J1515-20	192	187	174	Intersection of Combellack Rd. and Baker Rd.
EID Res 4	J1518-16	129	129	125	Intersection of Hocking St. and Immigrant Ravine St.
Sierra Plant	J1119-04	83	83	82	County Club Dr southeast of Quail Ridge Development
Cedar Ravine	J1218-01	134	134	134	West end of Cedar Ravine Dr.

Based on the modeling results, all of the City's pipelines included in the model appear to have velocities less than 1.8 ft/sec during average day flow and 3.3 ft/sec during maximum day flow (pipeline with highest velocity is the 14" diameter pipe located downstream of EID PSV 19). The pipes from EID's Res 6 have the highest velocity in the model during average and maximum day flows at approximately 5.3 ft/sec.

The average and maximum day valve data are provided in Table 15 below.

3.1.5 Existing Peak Hour Scenario Summary

During the existing peak hour scenario, the combination of the demand from EID's customers downstream of EID PSV 19 and the City demands from the Main Plant Zone cause the EID PSV 19 to begin regulating the flow to maintain a 55 psi residual upstream of the PSV. As discussed in Section 2.2.3.2.1 of this report, WaterCAD® has difficulty automatically simulating the change of control from the City's PRV to EID's PSV to maintain the pressure upstream of the EID PSV to 55 psi. To manage this limitation, the model is normally run with EID PSV 19 "inactive" (valve is full open), so only the "active" PRV 1217-100 regulates pressure into the Main Service Zone. The pressure upstream of the PSV must be manually checked for each scenario to assure that the pressure is no less than its set point (currently 55 psi). If the pressure is less than the set point, then the PSV must be changed to "active", the PRV changed to "inactive", and the scenario run again. For the existing peak hour scenario, the upstream pressure of the PSV drops to 51.5 psi with the PSV inactive. Therefore, the PSV was switched to an active status and the City's PRV1217-100 was switched to inactive.

During simultaneous peak hour demand in the City and EID, EID PSV 19 throttles flow into the City system to sustain pressure in the EID system, thereby potentially causing insufficient pressure downstream of EID PSV 19 as shown by the negative pressures in the model between EID PSV 19, -26 psi, and the City's PRV 1217-100, 2 psi (nodes between these two valves include J1117-02 at -26 psi, J1117-01at -14 psi, and J1217-02 at -2 psi). This condition could cause insufficient pressure, and potentially a vacuum, downstream of the PSV. A vacuum relief valve immediately downstream of the PSV would prevent a vacuum from forming in the pipe, but would draw air into the pipe; both conditions are undesirable. To avoid insufficient pressure in the pipe, it is recommended that the City retrofit existing PRV 1217-100 to a combination PRV / PSV, with the PSV function set at HGL 2,260 feet (approximately 50 psi). This configuration will prevent the pressure in the pipe downstream of EID PSV 19 from dropping below approximately 10 psi, and will not impact the available flow into the Main Service Zone.

The maximum flow allowed through EID's pipe from their Res 6 is 5,652 gpm due to the PSV 19 setting of 55 psi. With EID's peak hour demand of 3,915.5 gpm, the supply to the City is limited to 1,737 gpm. The upstream pressure PRV 1217-100 is 12.1 psi and the downstream pressure is 11.1 psi with a flow of 1,737 gpm. All of the City's pipes appear to have velocities less than about 4 ft/sec during the existing peak hour scenario. The pipes from EID's Res 6 appear to have the highest velocity in the model with approximately 7 ft/sec. Table 15 summarizes the valve data for the existing average day, maximum day and peak hour scenarios.

Table 15: Existing Valve Data Summary

Meter	Initial Valve Status	Dia (in)	HGL Setting (ft)	Average Day Q (gpm)	Average Day Down-stream HGL (ft)	Maximum Day Q (gpm)	Maximum Day Down-stream HGL (ft)	Peak Hour** Q (gpm)	Peak Hour** Down-stream HGL (ft)	Description	Zone
EID PRV 2	Active	16	2,436.00	2,116	2,436	2,178	2,436	2,265	2,436	EID's PRS#2 at 2120 Carson Road	Upper Schnell School
EID PRV 3S	Active	14	2,617.00	4,105	2,617	4,208	2,617	4,330	2,617	EID's PRS south of County Club Drive	EID's PRV 3S
EID PRV 4	Active	14	2,279.00	1,064	2,270*	1,958	2,265*	3,490	2,247*	EID PRV #4: PRS between Coloma & Bedford Streets.	Combellack
EID PSV 19	Inactive**	12	2,364.36	867	2,396	1,595	2,382	1,737	2,364	EID's PSV for Main Zone	Main
PRV1119-01	Active	6	2,456.45	50	2,457	111	2,457	183	2,457	23452 Cedar Ravine Drive between Butterfly & Paydirt Drive	Cedar Ravine
PRV1217-100	Active**	12	2,181.66	867	2,182	1,595	2,182	1,737	2,173	New PRV at Main Plant	Main
PRV1220-01	Active	6	2,548.00	32	2,548	71	2,548	117	2,548	Sierra Plant PRV	Sierra
PRV1515-01	Active	10	2,170.00	0	2,180	0	2,176	259	2,170	PRV on Coloma Ct.	Main
PRV1517-01	Active	6	2,170.00	0	2,180	0	2,175	505	2,170	PRV on Constellation Ave.	Main
PRV1518-01	Active	6	2,170.00	0	2,180	0	2,175	132	2,170	PRV on Hocking St.	Main
PRV1518-03	Active	6	2,184.74	46	2,185	87	2,185	144	2,185	Schnell School PRV	Main

*The HGL is reported for EID PSV 19 is the upstream HGL.
** EID's PSV 19 is inactive until the peak hour condition. During peak hour EID PSV 19 becomes active to maintain an upstream pressure of 55 psi (HGL 2364.4 feet) and PRV 1217-100 is inactive.

3.2 2005 System Scenarios

The 2005 water model scenarios were used to analyze and develop improvements recommendations for the City's existing water system. These scenarios are based on the same water demands as the existing system scenarios. No new developments are included in these scenarios. The existing system scenarios described above in Section 3.1 represent the unimproved existing water system and the finalized 2005 scenarios within the model include the recommended improvements. The discussion below summarizes the valve settings and scenario analyzes used to establish the 2005 or near-term improvement recommendations.

3.2.1 General Valve Discussion for 2005 Scenario

The 2005 scenarios were run assuming the valve settings discussed above in Section 3.1.2 of this report with the exception of the valves discussed below.

3.2.1.1 Main Plant Zone

3.2.1.1.1 PRV 1217-100

As recommended in Section 3.1.5 of this report, it was assumed for the 2005 scenarios that PRV 1217-100 will be retrofitted with a combination PRV/PSV kit to avoid insufficient pressure in the pipe located downstream of EID PRV 19.

3.2.1.1.2 PRV 1515-01, PRV 1517-01, and PRV 1518-01

In establishing the recommended setting for the other three (3) existing PRVs that feed the main zone including PRV 1515-01, PRV 1517-01, and PRV 1518-01, the Main Plant PRV is the main City water supply source and the other existing PRVs feed into the system to meet water demands during fire flows and peak hour scenarios. City staff report that these PRVs are set approximately 5 psi lower than the Main Plant PRV; therefore, an existing pressure setting of 2,170 feet was originally assumed. However, during the FF analysis it was discovered that the larger FFs in the Main Plant Zone (i.e. 3,750 gpm at J1317-36) cause the upstream pressure of EID PRV 19 (located upstream of the Main Plant PRV) to drop below 55 psi, limiting the allowable flow to the Main Plant PRV. Base on this discovery, we recommend raising the PRV 1515-01, PRV 1517-01, and PRV 1518-01 settings from an HGL of 2,170 feet to 2,175 feet. This setting still allows the majority of the water to flow into the Main Zone from the Main Plant PRV while at the same time maintaining a minimum pressure of 55 psi upstream of EID's PSV 19 during the identified FF events.

3.2.1.1.3 PRV 1518-100

Due to pressure deficiencies, FFs in the grid areas of 1418 and 1518 required that the closed valve on Carson Road be replaced with a new 6-inch PRV 1518-100. The HGL of the new PRV was set to match the other PRVs feeding the Main Zone (2,175 feet).

3.2.1.2 Schnell School Zone

Based on information provided by the City in 2001, the Schnell School PRV (PRV 1518-03) operates at a setting of 66 psi and the elevation at the PRV is 2,032.25 feet. Therefore, the normal operating HGL for this PRV is 2,184.74 feet. This setting is only 10 feet lower than the other PRVs feeding the main zone. Based on this information and the fact that the large FFs in the downtown area require water flow from the Schnell School Zone, it was assumed that the Schnell School PRV could be lowered to an HGL of 2,175 ft in lieu of replacing the normally closed valve between the Schnell School and Main Plant Zones (V1418-01) with a new PRV. Therefore, the 2005 scenarios were run with the Schnell School PRV set at an HGL of 2,175 feet and V1418-01 open, combining the Schnell School Zone into the Main Plant Zone.

3.2.1.3 Sierra Plant Zone

The existing Sierra Water System cannot supply more than 450 gpm to any of the hydrants within the Sierra Plant System. It is necessary to raise the HGL of the system to 2,558 ft and add a new 6-inch PRV 1219-102, (addition of the PRV requires pipes P1219-103 and P1219-104, two 24 feet lengths of 6-inch PVC) to meet FF requirements throughout the system. The existing small water storage tank at the abandoned Sierra Water Treatment Plant will need to be taken offline since the HGL of the system needs to be raised to at least the high water level of the tank. With the new PRV 1219-104 in place, the system will have a redundant water supply source and will therefore not need the tank. The new PRV will also act as a secondary water supply connection which is required by City policy. In addition to the above recommendations, the City should cut and cap existing pipe P1219-02 and J1219-29 to eliminate high point in the system since this pipe is not necessary.

3.2.1.4 Cedar Ravine Zone

The FF hydrants within the Cedar Ravine Zone cannot be supplied with the required FF with its existing pipe configuration and a single PRV feeding the zone. Therefore, it is recommended that the City install a new 6-inch PRV 1219-101 set to an HGL of 2,456.45 ft which the existing PRV 1119-01 feeding the Cedar Ravine Zone (the addition of the PRV requires pipes P1219-100, 264 ft of 6-inch, and P1219-101, 178 ft of 6-inch) to meet the FF requirements. This new PRV will act as a secondary water supply connection which is required by City policy. In addition to the above recommendations, the City should cut and cap existing pipe P1219-03 and J1219-28 to eliminate negative pressure in pipe during FF scenarios.

Below is a summary of the 2005 scenarios including maximum day plus FF, average day, maximum day, and peak hour.

3.2.2 2005 Fire Flow Scenario Summary

The WaterCAD® automated FF results for 2005 are included in Appendix C-1. Based on these results and the manual FF analysis summarized below in Section 3.2.2.1, the FF requirements at all but four (4) of the hydrants can be met with the 2005 improvements summarized in Section 5.2.1 of the Water Master Plan. The four hydrants that cannot achieve the required FF are located at J1218-08 in the main zone, and J1219-22, J1219-24 and J1219-30 in the Sierra Zone. It is unreasonable to recommend improvements to meet the required FF at these four hydrants because each of the hydrants will be able to obtain FF once Cedar Bluffs and Eskaton

are developed (see discussions for the manual FF analysis at the junctions in Appendix C-2 for more detail).

3.2.2.1 Manual FF Analyses

As discussed in previous sections of this report, the model does not have the ability to evaluate the pressure upstream of EID's PSV 19 during the automated FF runs. Therefore manual FF runs were performed on the high fire flow demand hydrants to confirm the upstream pressure of EID PSV 19 does not drop below the 55 psi setting and that the automated analyses results are correct. In addition the model does not have the capability of evaluating the maximum velocities through the pipes during fire flow events with its automated fire flow analysis feature. Therefore, manual fire flow runs were performed both on the high demand fire flow junctions to verify velocities and at the locations where hydrants are fed by small diameter pipelines (i.e. less than 6-inch or dead end 6-inch for flow greater than 1,000 gpm). If the flow through a pipeline was found to exceed 18 ft/sec, an improvement was recommended. Proposed pipelines are recommended based on upstream pipe size unless hydraulic limitations such as pressure or velocity showed that a larger diameter pipe was necessary. The maximum design velocity of 10 ft/sec was used for the improved pipeline recommendations. The minimum recommended pipe diameter was 6-inches.

A summary of the manual FF analyses performed and related results and improvement recommendations for each zone is included in Appendix C-2.

3.2.3 2005 Average and Maximum Day

The average day scenario simulates a typical day scenario and is helpful in reviewing areas of high and low "static" pressure. The maximum day scenario provides a basis for the fire flow analyses which are based on maximum day demands plus the fire flow. Appendix C includes the model output for the 2005 system scenarios.

3.2.4 2005 Peak Hour Scenario Summary

During 2005 peak hour the combination of the demand from EID's customers downstream of the PSV 19 and the City of Placerville demands from the Main Plant Zone, the EID PSV 19 begins to regulate the flow to maintain a 55 psi residual (with the PSV inactive, the pressure upstream of the PSV is 53.5) and the PRV at the Main Plant PRV 1217-100 has to begin to operate as a PSV to keep the pipelines between the EID PSV and the Main Plant PRV from drawing a vacuum.

The model can not simulate the PSV followed by a PRV or a combo PRV/PSV. Therefore, once the upstream pressure at the EID PSV drops to 55 psi or below, the PRV located at the Main Plant, PRV 1217-100, has be inactivated and the EID PSV 19 has to be activated. See Section 2 of the Water Master Plan for a discussion of PRV/PSV operation.

The maximum flow allowed through EID's pipe from their Res 6 is 5,657 gpm due to the PSV 19 setting of 55 psi. With EID's peak hour demand of 3,916 gpm, the supply to the City is limited to 1,742 gpm. Setting the Main Plant PRV 1217-100 to 13.9 psi (HGL of 2,179.10) provides an upstream pressure at the EID PSV 19 of 55 psi. The nodes between the PSV and Main Plant

remain positive with J1117-02 at 54 psi, J1117-01 at 65 psi, J1217-02 at 78 psi and J1217-03 at 13.9 psi. The upstream pressure PRV 1217-100 is 91.6 psi and the downstream pressure is 13.9 psi with a flow of 1,742 gpm.

3.2.5 2005 Valve Operation Summary

Table 16 below summarizes the EID PSV 19 PSV flow and upstream pressure. During average day and maximum day scenarios, the EID PSV does not throttle flow to the City's main treatment plant PRV 1217-100; however it was found that the PSV does throttle flow in the peak hour scenario as discussed above. Table 17 summarizes the valve data for the existing average day, maximum day and peak hour scenarios.

Table 16: 2005 System EID PSV 19 Operational Data

	Average Day	**Maximum Day**	**Peak Hour**
EID PSV Flow	913 gpm	1,616 gpm	1,742 gpm
EID PSV 19 Upstream Pressure	68.4 psi	62.7 psi	55.0 psi

Table 17: 2005 Valve Data Summary

Meter	Initial Valve Status	Dia (in)	HGL Setting (ft)	Average Day Q (gpm)	Average Day Down stream HGL (ft)	Maximum Day Q (gpm)	Maximum Day Down stream HGL (ft)	Peak Hour** Q (gpm)	Peak Hour** Down stream HGL (ft)	Description	Zone
EID PRV 2	Active	16	2,436.00	2,070	2,436	2,154	2,436	2,463	2,436	EID's PRS#2 on Carson Road	Upper Schnell School
EID PRV 3S	Active	14	2,617.00	4,105	2,617	4,208	2,617	4,330	2,617	EID's PRS south of Country Club Drive	EID's PRV 3S
EID PRV 4	Active	14	2,279.00	1,064	2,270	1,958	2,265	3,478	2,247	EID PRS#4: PRS between Coloma & Bedford Streets.	Combellack
EID PSV 19	Inactive**	12	2,364.36	913	2,395*	1,616	2,382*	1,738	2,364.4*	EID's PSV	Main
PRV1119-01	Active	6	2,456.45	35	2,457	67	2,457	107	2,457	23452 Cedar Ravine Drive between Butterfly & Paydirt Drive	Cedar Ravine
PRV1217-100	Active**	12	2,181.66	913	2,182	1,616	2,182	1,740	2179	New PRV at Main Plant	Main
PRV1219-101	Active	6	2,456.45	16	2,456	44	2,456	76	2,456	New PRV connecting Sierra and Cedar Ravine Zones at Quail Ridge Development	Cedar Ravine
PRV1219-102	Active	6	2,558.00	38	2,558	83	2,558	136	2,558	New PRV connecting Sierra Zone to EID on County Club Drive	Sierra
PRV1220-01	Active	6	2,558.00	11	2,558	33	2,558	56	2,558	Sierra Plant PRV	Sierra
PRV1515-01	Active	10	2,175.00	0	2,180	0	2,177	247	2,175	PRV on Coloma Ct.	Main
PRV1517-01	Active	6	2,175.00	0	2,179	0	2,175	359	2,175	PRV on Constellation Ave.	Main
PRV1518-01	Active	6	2,175.00	0	2,179	0	2,175	87	2,175	PRV on Hocking St.	Main
PRV1518-03	Active	6	2,175.00	0	2,179	55	2,175	268	2,175	Schnell School PRV	Main
PRV1518-100	Active	6	2,175.00	0	2,179	12	2,175	75	2,175	New PRV on Carson Road	Main

*This is the upstream HGL for the PSV.
** EID's PSV 19 is inactive until the peak hour condition. During peak hour PSV 19 begins regulating the flow and PRV/PSV 1217-100 operates as a PSV

3.3 2009 System Scenarios

Appendix D includes model output for the 2009 system scenarios.

3.3.1 General Valve Discussion for 2009 Scenario

With the addition of the Cedar Bluffs and Eskaton System, PRV 1119-01 setting was revised to match the setting of PRV 1220-01 (HGL of 2558 feet) since the recommended pipeline improvements for these two developments will tie the existing Sierra Plant and Cedar Ravine Zone together. In addition to the revised PRV setting, six (6) new PRVs were added to the system in 2009 due to the 2009 developments. A summary of each of the new valves is provided below:

1. PRV1218-101 – This new 6-inch PRV was added within the Cedar Bluffs Development near the west end of Barrett Road to serve the new Cedar Bluffs Zone. This PRV was set to an HGL of 2,410 feet (48 psi) which results in a range of static pressures from approximately 42 to 129 psi. The maximum FF in Cedar Bluff is 1,500 gpm therefore it is recommended that this PRV be 6-inches in diameter.

2. PRV 1218-102 – This new PRV was added, 6-inch diameter, HGL setting of 2,300 feet (50 psi)

3. PRV 1218-103 – This new PRV was added, 6-inch diameter, HGL setting of 2,175 feet (45 psi) to match the setting of the other PRVs feeding the Main Plant Zone.

4. PRV1219-103 – This new PRV was added along Cedar Ravine Road to serve the new Cedar Bluffs Zone. This PRV was set at an HGL of 2,410 feet (109 psi) matching the setting of PRV1218-101. The maximum FF in Cedar Bluff is 1,500 gpm; therefore it is recommended that this PRV be 6-inches in diameter.

5. PRV1219-100 – This new PRV was added near the intersection of Cedar Ravine Road and Country Club Lane to serve a slightly revised Cedar Ravine Zone. This PRV was set to an HGL of 2,555.33 (117 psi) to match the HGL of the existing Cedar Ravine Zone. The maximum FF in the Cedar Ravine Zone is 1,500 gpm therefore it is recommended that this PRV be 6-inches in diameter.

6. PRV1318-100 – This new PRV was added with the Eskaton Development and will serve the new Eskaton Zone. This PRV was set to an HGL of 2,347.51 (72.5 psi). This PRV setting results in a range of static pressures from approximately 40 to 91 psi within the actual Eskaton Development. The maximum pressure in the Eskaton Zone of 182 psi will occur just upstream of the new PRV1418-100 to be added at Blairs Lane. The pipe from the Eskaton Development to Barrett Drive (P1418-101, 8-inch) will need to be rated for at least 200 psi. The maximum FF in Eskaton is 2,000 gpm; therefore it is recommended that this PRV be 8-inches in diameter.

7. PRV/FCV1418-101 – This new combination PRV/FCV located near Blairs Lane was added with the Eskaton Development to connect the Sierra Plant Zone and Cedar Ravine Zone to

the Main Plant Zone. This valve will provide an additional connection to the EID pipeline located south of the City to the Main Plant Zone. PRV1418-101 was set at an HGL of 2,175 feet to match the HGL of the other PRVs feeding the Main Zone. However, a FCV had to be added to limit the flow through the PRV to below 1,500 gpm. Flows greater than 1,500 gpm through this PRV cause residual pressures in the Sierra Zone (J1219-31 and J1219-30) to drop below 20 psi. It is recommend that this PRV/FCV be 6-inches in diameter since the max flow rate allowed through the PRV will be 1,500 gpm. The model provides a warning when flows through the FCV are less than its setting of 1,500 gpm; this warning should be ignored.

As discussed in Section 2.2.4.4, the model includes two FCV to more accurately simulate the flow through EIDs pipes during a steady state modeling analysis. These settings are based on the maximum day demand downstream of Res 4 and Res 6. For the 2009 scenarios, FCV North was set at 2,380 gpm and FCV South was set at 4,395 gpm. Below is a summary of the 2009 scenarios including maximum day plus FF, average day, maximum day, and peak hour.

3.3.2 2009 Fire Flow Scenario Summary

The automated FF analysis performed by WaterCAD® is included in Appendix D-1. A brief summary for each of the manually run FF Scenarios is included in Appendix D-2.

As discussed previously, the model is unable to simulate EID PSV 19 and PRV 1217-100 in series. Therefore, during the automated FF runs, EID PSV 19 was made inactive. Manual FF runs were performed for the hydrants with FF greater than 1,500 gpm to see if the upstream pressure of the PSV drops below 55 psi, and if so, the FF was rerun with the PSV active to see if the FF could still be met. During the high FF runs, the flow through PRV1418-101 was checked to confirm that it remains below 1,500 gpm and that the pressure in Sierra Zone at J1219-31 does not drop below 20 psi. In addition to the high FF nodes, manual runs were also performed on hydrants located in small pipe networks to confirm velocities remain below 18 ft/sec.

3.3.3 2009 Average Day and Maximum Day

The average day scenario simulates a typical day scenario and is helpful in reviewing areas of high and low “static” pressure. The maximum day scenario provides a basis for the fire flow analyses which are based on maximum day demands plus the fire flow. Appendix D includes the model output for the 2009 system scenarios.

3.3.4 2009 Peak Hour Scenario Summary

During 2009 peak hour the combination of the demand from EID’s customers downstream of the PSV19 and the City of Placerville demands from the Main Plant Zone, the EID PSV19 begins to regulate the flow to maintain a 55 psi residual (with the PSV inactive, the pressure upstream of the PSV is 50.1 psi) and the PRV at the Main Plant PRV 1217-100 has to begin to operate as a PSV to keep the pipelines between the EID PSV and the Main Plant PRV from drawing a vacuum.

When the PSV is activated, the maximum flow allowed through EID's pipe from their Res 6 is 5,667 gpm due to the EID PSV 19 setting of 55 psi. With EID's peak hour demand of 4,484.3 gpm, the supply to the City is limited to 1,182.4 gpm. Setting the Main Plant PRV 1217-100 to 11.9 psi (HGL of 2,174.5) provides an upstream pressure at the EID PSV 19 of 55 psi. The nodes between the PSV and Main Plant remain positive with J1117-02 at 54 psi, J1117-01 at 66 psi, J1217-02 at 79 psi and J1217-03 at 11.9 psi. The upstream pressure PRV 1217-100 is 92.9 psi and the downstream pressure is 11.9 psi with a flow of 1,182.40 gpm.

3.3.5 2009 Valve Operation Summary

Table 18 below summarizes the EID PSV 19 PSV flow and upstream pressure. During average day and maximum day scenarios, the EID PSV does not throttle flow to the City's main treatment plant PRV 1217-100; however it was found that the PSV does throttle flow in the peak hour scenario as discussed above. Table 19 summarizes the valve data for the existing average day, maximum day and peak hour scenarios.

Table 18: 2009 System EID PSV 19 Operational Data

	Average Day	**Maximum Day**	**Peak Hour**
EID PSV Flow	982 gpm	1,677 gpm	1,182 gpm
EID PSV 19 Upstream Pressure	67.8 psi	61.0 psi	55.0 psi

Table 19: 2009 Valve Data Summary

Meter	Initial Valve Status	Dia (in)	HGL Setting (ft)	Average Day Q (gpm)	Average Day Down stream HGL (ft)	Maximum Day Q (gpm)	Maximum Day Down stream HGL (ft)	Peak Hour** Q (gpm)	Peak Hour** Down stream HGL (ft)	Description	Zone
EID PRV 2	Active	16	2,436.00	2,407	2,436	2,484	2,436	2,699	2,436	EID's PRS#2 at 2120 Carson Road	Upper Schnell School
EID PRV 3S	Active	14	2,616.87	4,538	2,617	4,782	2,617	5,462	2,617	EID's PRS south of Country Club Drive	EID's PRV 3S
EID PRV 4	Active	14	2,279.00	1,224	2,270	2,252	2,262	4,156	2,237	EID PRV #4: PRS between Coloma & Bedford St	Combellack
EID PSV 19	Inactive**	12	2,364.36	982	2,394 *	1,677	2,378*	1,182	2,364.4*	EID's PSV for Main Zone	Main
PRV1119-01	Active	6	2,558.00	79	2,558	213	2,558	667	2,558	23452 Cedar Ravine Drive between Butterfly & Paydirt Drive	Sierra
PRV1217-100	Active**	12	2,181.66	982	2,182	1,677	2,182	1,182	2,174	PRV at Main Plant.	Main
PRV1218-101	Active	6	2,410.00	0	2,410	9	2,410	171	2,410	Cedar Bluffs PRV North	Cedar Bluffs
PRV1218-102	Active	6	2,300.00	2	2,300	4	2,300	199	2,300	Proposed PRV - Cedar Bluffs to Main Zone	Cedar Bluffs
PRV1218-103	Active	6	2,175.00	0	2,179	0	2,175	192	2,175	Proposed PRV - Cedar Bluffs to Main Zone	Main
PRV1219-100	Active	6	2,455.33	0	2,456	0	2,456	24	2,455	New Cedar Ravine PRV on County Club Drive	Cedar Ravine
PRV1219-101	Active	6	2,456.45	37	2,456	81	2,456	109	2,456	PRV connecting Sierra and Cedar Ravine Zones between Barrett Drive and Quail Ridge Development	Cedar Ravine
PRV1219-102	Active	6	2,558.00	46	2,558	118	2,558	275	2,558	PRV connecting Sierra Zone to EID on Country Club Drive	Sierra
PRV1219-103	Active	6	2,410.00	24	2,410	43	2,410	106	2,410	Cedar Bluffs PRV South	Cedar Bluffs
PRV1220-01	Active	6	2,558.00	16	2,558	49	2,558	121	2,558	Sierra Plant PRV	Sierra
PRV1318-100	Active	8	2,347.51	33	2,348	144	2,348	485	2,348	Eskaton Development PRV	Eskaton
PRV1418-101	Active	8	2,175.00	0	2,179	73	2,175	367	2,175	PRV for Eskaton to Main Zone Loop	Main
PRV1515-01	Active	10	2,175.00	0	2,180	0	2,176	470	2,175	PRV on Coloma Ct	Main
PRV1517-01	Active	6	2,175.00	0	2,179	0	2,175	482	2,175	PRV on Constellation Ave	Main
PRV1518-01	Active	6	2,175.00	0	2,179	3	2,175	89	2,175	PRV on Hocking St	Main
PRV1518-03	Active	6	2,175.00	0	2,179	36	2,175	154	2,175	Schnell School PRV	Main
PRV1518-100	Active	6	2,175.00	0	2,179	19	2,175	77	2,175	New PRV on Carson Road	Main

*This is the upstream HGL for the PSV.
** EID's PSV 19 is inactive until the peak hour condition. During peak hour PSV 19 begins regulating the flow and PRV/PSV 1217-100 operates as a PSV.

3.4 2015 System Scenarios (Ultimate)

Appendix E includes model output for the 2015 system scenarios.

3.4.1 General Valve Discussion for 2015 Scenarios

1. One (1) new PRV was added to the system in 2015 based on a request from City staff to loop the Cedar Bluffs Zone to the Main Zone along Cedar Ravine Road. A summary of the new valve is provided below: PRV1218-100 – This new PRV was added along Cedar Ravine Road to connect the Cedar Bluffs Zone to the Main Plant Zone. This PRV will provide another connection that can feed water from the EID pipeline located south of the City into the Main Plant Zone and will help to supply water to for buildout along Cedar Ravine Road. This PRV was set to an HGL of 2,175 feet to match the other settings of the PRVs feeding the Main Plant Zone. This PRV will open during maximum day, peak hour and FF events. Based on FF runs in the Main Plant Zone near the new PRV, it appears that the maximum flow through this PRV will be approximately 560 gpm (peak hour flow is approximately 150 gpm). Therefore it is recommended that this PRV be 6-inches in diameter.

The valve settings previously discussed in the 2005 and 2009 scenarios do not need to be modified. However, until the Lumsden Property development provides un additional loop within the Sierra Plant Zone from Country Club Drive (near J1319-02) to the Eskaton Development (near J1318-119) as shown on Figure 4 of the Water Master Plan, the settings of PRV/FCV1418-101 may need to be modified.

Without the Lumsden pipeline loop, simultaneous 2015 maximum day demand in the City and EID, plus 2,000 gpm fire flow in Eskaton causes the pressure at J1219-31 (Sierra Service Zone, at the west end of Barrett Drive) to drop below 20 psi. Flow through PRV/ FCV 1418-101 into the Main Service Zone contributes to the total flow and resultant head loss upstream of J1219-31. We recommend decreasing the pressure setting of PRV/FCV 1418-101 to a hydraulic grade of 2,170 feet, to reduce flow into the Main Service Zone. Note that in Section 3.3.1 it was recommended that PRV/FCV 1418-101 be set at a hydraulic grade of 2,175 feet as part of the 2009 system improvements; the revised setting will still allow PRV/FCV1418-101 to open during peak hour demands and during downtown fire flow events. Note that this adjustment is not needed if the Lumsden Property loop is installed.

The Lumsden Property development is proposed for an area in the southeast portion of the City east of Eskaton, to be served by what is currently the expanded Sierra Service Zone. Based on WaterCAD modeling, the pipeline serving Lumsden Property must connect into the Sierra Service Zone at or near J1319-02 (Sierra Service Zone, on Country Club Drive). If Lumsden Property is connected only to the pipeline feeding Eskaton at J1318-119, then the pressure at J1219-31 (Sierra Service Zone, at the west end of Barrett Drive) drops below 20 psi during some demand scenarios. Pursuant to the City's policy of looping new pipes wherever feasible, the piping configuration included in the WaterCAD model for the Lumsden Property is a schematic pipe that creates a new loop between J1319-02 and J1318-119; it is not based on actual proposed alignments. This configuration will supply sufficient water pressure and flow to the development. Due to the existing steep terrain in the proposed development area, PRV

stations may be needed to reduce pressure in the development, depending on the actual location of pipelines and services; however these PRVs have not been included in the model.

As discussed in Section 2.2.4.4, the model includes two FCV to more accurately simulate the flow through EIDs pipes during a steady state modeling analysis. These settings are based on the maximum day demand downstream of Res 4 and Res 6. Based on downstream maximum day flows FCV North was set at 2,874 gpm and FCV South was set at 5,001 gpm for the 2015 scenarios.

Below is a summary of the 2015 scenarios using these revised valve settings including maximum day plus FF, average day, maximum day, and peak hour.

3.4.2 2015 Fire Flow Scenario Summary

The automated FF analysis performed by WaterCAD® is included in Appendix E-1. A brief summary for each of the manually run FF scenarios is included in Appendix E-2.

As discussed previously, the model is unable to simulate EID PSV 19 and PRV 1217-100 in series. Therefore, during the automated FF runs, EID PSV 19 was made inactive. Manual FF runs were performed for the hydrants with FF greater than 1,500 gpm to see if the upstream pressure of the PSV drops below 55 psi, and if so, the FF was rerun with the PSV active to see if the FF could still be met. During the high FF runs, the pressures in Sierra Zone (specifically J1219-31) were checked to confirm the pressures do not drop below 20 psi since WaterCAD®'s automated FFs only check residual pressure in the zone of the FF.

3.4.3 2015 Average Day and Maximum Day

The average day scenario simulates a typical day scenario and is helpful in reviewing areas of high and low "static" pressure. The maximum day scenario provides a basis for the fire flow analyses which are based on maximum day demands plus the fire flow. Appendix E includes the model output for the 2015 system scenarios.

3.4.4 2015 Peak Hour Scenario Summary

During 2015 peak hour the combination of the demand from EID's customers downstream of the EID PSV 19 and the City of Placerville demands from the Main Plant Zone, the EID PSV19 begins to regulate the flow to maintain a 55 psi residual (with the PSV inactive, the pressure upstream of the PSV is 44.8 psi) and the PRV at the Main Plant PRV 1217-100 has to begin to operate as a PSV to keep the pipelines between the EID PSV and the Main Plant PRV from drawing a vacuum.

When the PSV is activated, the maximum flow allowed through EID's pipe from their Res 6 is 5,668 gpm due to the PSV 19 setting of 55 psi. With EID's peak hour demand of 5,277 gpm, the supply to the City is limited to 389 gpm. Setting the Main Plant PRV 1217-100 to 8.5 psi (HGL of 2,166.64) provides an upstream pressure at the EID PSV 19 of 55 psi. The nodes between the PSV and Main Plant remain positive with J1117-02 at 55 psi, J1117-01 at 67 psi, J1217-02 at 80 psi and J1217-03 at 8.5 psi. The upstream pressure PRV 1217-100 is 93.9 psi and the downstream pressure is 8.5 psi with a flow of 389 gpm.

3.4.5 2015 Valve Operation Summary

Table 20 below summarizes the EID PSV 19 PSV flow and upstream pressure. During average day and maximum day scenarios, the EID PSV does not throttle flow to the City's main treatment plant PRV 1217-100; however it was found that the PSV does throttle flow in the peak hour scenario as discussed above. Table 21 summarizes the valve data for the existing average day, maximum day and peak hour scenarios.

Table 20: 2015 System EID PSV 19 Operational Data

	Average Day	**Maximum Day**	**Peak Hour**
EID PSV Flow	1,056 gpm	1,743 gpm	389 gpm
EID PSV 19 Upstream Pressure	66.8 psi	58.6 psi	55.0 psi

Table 21: 2015 Valve Data Summary

				Average Day		Maximum Day		Peak Hour**			
Meter	Initial Valve Status	Dia (in)	HGL Setting (ft)	Q (gpm)	Down stream HGL (ft)	Q (gpm)	Down stream HGL (ft)	Q (gpm)	Down stream HGL (ft)	Description	Zone
EID PRV 2	Active	16	2,436.00	2,903	2,436	3,001	2,436	3,262	2,436	EID's PRS#2 at 2120 Carson Road	Upper Schnell School
EID PRV 3S	Active	14	2,617.00	5,256	2,617	5,662	2,617	6,839	2,617	EID's PRS south of Country Club Drive	EID's PRV 3S
EID PRV 4	Active	14	2,279.00	1,433	2,268	2,622	2,258	5,039	2,220	EID PRV #4: PRS between Coloma & Bedford Streets	Combellack
EID PSV 19	Inactive**	12	2,364.36	1,054	2,392 *	1,743	2,373*	389	2,364.4*	EID's PSV for Main Zone	Main
PRV1119-01	Active	6	2,558.00	118	2,558	304	2,558	891	2,558	23452 Cedar Ravine Drive between Butterfly & Paydirt Drive	Sierra
PRV1217-100	Active**	12	2,181.66	1,054	2,182	1,743	2,182	389	2,167	PRV at Main Plant.	Main
PRV1218-100	Active	6	2,175.00	0	2,179	0	2,175	152	2,175	PRV for Cedar Ravine Rd Loop	Main
PRV1218-101	Active	6	2,410.00	0	2,410	9	2,410	278	2,410	Cedar Bluffs PRV North	Cedar Bluffs
PRV1218-102	Active	6	2,300.00	2	2,300	4	2,300	274	2,300	Proposed PRV - Cedar Bluffs to Main Zone	Cedar Bluffs
PRV1218-103	Active	6	2,175.00	0	2,179	0	2,175	266	2,175	Proposed PRV - Cedar Bluffs to Main Zone	Main
PRV1219-100	Active	6	2,455.33	0	2,456	0	2,456	30	2,455	New Cedar Ravine PRV on County Club Drive	Cedar Ravine
PRV1219-101	Active	6	2,456.45	39	2,456	85	2,456	110	2,456	PRV connecting Sierra and Cedar Ravine Zones at Quail Ridge Development	Cedar Ravine
PRV1219-102	Active	6	2,558.00	81	2,558	210	2,558	539	2,558	PRV connecting Sierra Zone to EID on Country Club Dr.	Sierra
PRV1219-103	Active	6	2,410.00	24	2,410	44	2,410	227	2,410	Cedar Bluffs PRV South	Cedar Bluffs
PRV1220-01	Active	6	2,558.00	52	2,558	143	2,558	400	2,558	Sierra Plant PRV	Sierra
PRV1318-100	Active	8	2,347.51	33	2,348	176	2,348	619	2,348	Eskaton Development PRV	Eskaton
PRV1418-101	Active	8	2,175.00	0	2,178	104	2,175	501	2,170	PRV for Eskaton to Main Zone Loop	Main
PRV1515-01	Active	10	2,175.00	0	2,180	0	2,176	713	2,175	PRV on Coloma Court	Main
PRV1517-01	Active	6	2,175.00	0	2,179	0	2,175	764	2,175	PRV on Constellation Ave	Main
PRV1518-01	Active	6	2,175.00	0	2,179	20	2,175	117	2,175	PRV on Hocking St	Main
PRV1518-03	Active	6	2,175.00	0	2,178	47	2,175	204	2,175	Schnell School PRV	Main
PRV1518-100	Active	6	2,175.00	0	2,178	27	2,175	97	2,175	New PRV on Carson Rd	Main

*This is the upstream HGL for the PSV.
** EID's PSV 19 is inactive until the peak hour condition. During peak hour PSV 19 begins regulating the flow and PRV/PSV 1217-100 operates as a PSV.

3.5 Extended Period Simulations

Using the 2015 maximum day demand scenario, extended period simulations were run on FF events that require FF for more than 2 hours including the FF at J1317-36 (3,750 gpm for 3 hours), J1417-29 (3,500 gpm for 3 hours), J1418-01 (3,750 gpm for 3 hours), and J1418-10 (4,250 gpm for 4 hours). The extended period simulation was used to verify that EID has sufficient available storage in EID's Reservoir (Res) 6 (3.5 MG), Res 4 (0.5 MG) and Res 3 (1.5 MG) to provide the necessary water for the duration of the FF events. It is assumed that all of the required FF will be supplied from storage (i.e. maximum day demand flows into the tank and maximum day plus fire flows out of the tank). A brief summary of each of the extended period simulations is summarized below by FF node:

1. FF J1418-10 – The commercial business strip at 1323 Broadway Avenue requires a 4,250 gpm FF for 4 hours. The extended period simulation confirmed that residual pressures are greater than 20 psi (not including the "No FF" nodes) throughout the duration of the FF event. The fire depleted 203,380 gallons of storage from Res 4 (40% of capacity), 64,679 gallons from Res 6 (2% of capacity) and 751,941 gallons from Res 3 (50% of capacity).

2. FF J1418-01 – The Grocery Outlet at 1426 Broadway Avenue requires a 3,750 gpm FF for 3 hours. The extended period simulation confirmed that residual pressures are greater than 20 psi (not including the "No FF" nodes) during the duration of the FF event. The fire depleted 67,084 gallons of storage from Res 4 (13% of capacity), 20,169 gallons from Res 6 (0.6% of capacity) and 587,747 gallons from Res 3 (39% of capacity).

3. FF J1317-36 – The Federated Church at 1031 Thompson Way requires a 3,750 gpm FF for 3 hours. The extended period simulation confirmed that residual pressures are greater than 20 psi (not including the "No FF" nodes) during the duration of the FF event. The fire depleted 288,147 gallons of storage from Res 4 (57% of capacity), 109,189 gallons from Res 6 (3% of capacity) and 277,664 gallons from Res 3 (19% of capacity).

4. FF J1417-29 – The office buildings at 2929 Grand View Avenue require a 3,500 gpm FF for 3 hours. The extended period simulation confirmed that residual pressures are greater than 20 psi (not including the "No FF" nodes) during the duration of the FF event. The fire depleted 207,078 gallons of storage from Res 4 (41% of capacity), 109,189 gallons from Res 6 (3% of capacity) and 313,733 gallons from Res 3 (21% of capacity).

Using the 2015 peak hour demand scenario, an extended period simulation was also run for one hour, assuming that the difference between peak hour demand and maximum day demand will be supplied from storage (i.e. maximum day demand flows into the tanks and peak hour flows out of the tanks). The extended period simulation confirmed that residual pressures are greater than 20 psi (not including the "No FF" nodes) during peak hour demand. This demand depleted 223,191 gallons of storage from Res 4 (44% of capacity), 39,642 gallons from Res 6 (1% of capacity) and 69,489 gallons from Res 3 (5% of capacity).

Based on these extended period simulation analyses, EID appears to have sufficient storage capacity to meet the City's fire flow and peak hour needs.

Section 4: Conclusion

The water model developed for the City is a powerful tool to assist the City, developers and consultants simulate and evaluate the existing and any proposed modifications to the City water system. The reader is referred to the Water Master Plan prepared by Kennedy/Jenks in conjunction with this Water Model Report for a comprehensive discussion of the City's existing water system and proposed improvements. In addition to this Model Report, Kennedy/Jenks will be providing training on the use of the City's WaterCAD® model. City staff members interested in running this model are encouraged to attend this training and other training opportunities offered by the software vendor, Bentley Systems, Inc., to enhance the usefulness of the model to the City.

Appendix A

Junction Demands

Appendix A
City of Placerville Water Model Report
Junction Demands
(Data sorted by Junction Name)

	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
EID North	1,015.32	1,868.18	3,082.50	1,162.81	2,139.58	3,530.31	1,368.36	2,517.79	4,154.35
EID South	1,289.69	2,373.03	3,915.50	1,477.05	2,717.77	4,484.32	1,738.14	3,198.19	5,277.01
EID J1117-02	0	0	0	0	0	0	0	0	0
EID J1117-03	0	0	0	0	0	0	0	0	0
EID J1119-04	0	0	0	0	0	0	0	0	0
EID J1219-02	0	0	0	0	0	0	0	0	0
EID J1220-02	0	0	0	0	0	0	0	0	0
EID J1220-06	0	0	0	0	0	0	0	0	0
EID J1516-44	0	0	0	0	0	0	0	0	0
EID J1519-04	0	0	0	0	0	0	0	0	0
EID J1619-07	0	0	0	0	0	0	0	0	0
J1117-01	0	0	0	0	0	0	0	0	0
J1117-02	0	0	0	0	0	0	0	0	0
J1119-01	0.25	0.55	0.91	0.27	0.6	0.99	0.29	0.64	1.05
J1119-02	0	0	0	0	0	0	0	0	0
J1119-03	9.6	21.12	34.85	10.34	22.75	37.54	11.09	24.39	40.24
J1119-04	0	0	0	0	0	0	0	0	0
J1216-01	1.75	3.22	5.31	1.89	3.47	5.73	2.02	3.72	6.14
J1216-02	1.59	2.93	4.83	1.72	3.16	5.21	1.84	3.39	5.59
J1216-03	0	0	0	0	0	0	0	0	0
J1216-04	38.85	71.48	117.94	41.84	76.99	127.03	44.87	82.56	136.22
J1216-05	2.13	3.91	6.45	2.29	4.22	6.96	2.46	4.52	7.46
J1216-06	1.59	2.93	4.83	1.72	3.16	5.21	1.84	3.39	5.59
J1216-07	0.26	0.48	0.79	0.28	0.52	0.86	0.3	0.56	0.92
J1216-08	4.36	8.02	13.23	4.7	8.64	14.26	5.04	9.26	15.29
J1216-09	4.84	8.91	14.7	5.21	9.6	15.84	5.59	10.29	16.98
J1216-10	0.8	1.47	2.43	0.86	1.58	2.61	0.92	1.69	2.79
J1216-11	1.07	1.97	3.25	1.15	2.12	3.5	1.23	2.27	3.75
J1216-12	0	0	0	0	0	0	0	0	0
J1217-01	3.11	5.73	9.45	3.35	6.17	10.18	3.59	6.61	10.91
J1217-02	0	0	0	0	0	0	0	0	0
J1217-03	0	0	0	0	0	0	0	0	0
J1217-04	0.53	0.98	1.62	0.58	1.06	1.75	0.62	1.14	1.87
J1217-05	3.73	6.86	11.32	4.02	7.39	12.19	4.31	7.93	13.08
J1217-06	3.44	6.32	10.43	3.7	6.81	11.24	3.97	7.3	12.05
J1217-07	0	0	0	0	0	0	0	0	0
J1217-08	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1217-09	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1217-10	0	0	0	0	0	0	0	0	0
J1217-11	1.14	2.1	3.46	1.23	2.26	3.73	1.32	2.43	4.01
J1217-110	0	0	0	0	0	0	0	0	0
J1217-111	0.9	1.66	2.74	0.9	1.66	2.74	0.9	1.66	2.73
J1217-112	0	0	0	0	0	0	0	0	0
J1217-113	1.2	2.21	3.65	1.2	2.21	3.65	1.2	2.21	3.64
J1217-114	1.2	2.21	3.65	1.2	2.21	3.65	1.2	2.21	3.64
J1217-115	1.5	2.76	4.55	1.5	2.76	4.55	1.5	2.76	4.55
J1217-12	0	0	0	0	0	0	0	0	0

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	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1217-13	2.44	4.49	7.41	2.63	4.84	7.99	2.82	5.19	8.56
J1217-14	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1217-15	0	0	0	0	0	0	0	0	0
J1217-16	0	0	0	0	0	0	0	0	0
J1217-17	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1217-18	0	0	0	0	0	0	0	0	0
J1217-19	2.06	3.8	6.27	2.22	4.09	6.75	2.38	4.39	7.24
J1217-20	0.23	0.42	0.69	0.25	0.46	0.76	0.27	0.49	0.81
J1217-200	0	0	0	0	0	0	0	0	0
J1217-201	1.2	2.21	3.65	1.29	2.38	3.93	1.39	2.55	4.21
J1217-21	3.67	6.75	11.14	3.95	7.27	12	4.24	7.79	12.86
J1217-22	2.15	3.95	6.52	2.31	4.26	7.03	2.48	4.57	7.53
J1217-23	2.36	4.34	7.16	2.54	4.67	7.71	2.72	5.01	8.27
J1217-24	4.39	8.08	13.33	4.73	8.7	14.36	5.07	9.33	15.39
J1217-25	1.14	2.1	3.46	1.23	2.26	3.73	1.32	2.43	4.01
J1217-26	2.98	5.48	9.04	3.21	5.9	9.74	3.44	6.32	10.44
J1217-27	2.66	4.9	8.09	2.87	5.28	8.71	3.07	5.66	9.33
J1217-28	1.87	3.43	5.66	2.01	3.7	6.1	2.15	3.96	6.54
J1217-29	6.44	11.86	19.57	6.94	12.77	21.07	7.44	13.7	22.6
J1217-30	0	0	0	0	0	0	0	0	0
J1217-31	0	0	0	0	0	0	0	0	0
J1218-01	3.99	8.78	14.49	4.3	9.46	15.61	4.61	10.15	16.74
J1218-02	2.4	5.28	8.71	2.4	5.28	8.71	2.4	5.28	8.71
J1218-03	0	9999	16498.35	2.16	3.98	6.56	2.32	4.26	7.04
J1218-04	0.24	0.44	0.73	0.26	0.48	0.79	0.28	0.51	0.85
J1218-05	0.24	0.44	0.73	0.26	0.48	0.79	0.28	0.51	0.85
J1218-06	0	0	0	0	0	0	0	0	0
J1218-07	0.73	1.35	2.23	0.79	1.45	2.39	0.85	1.56	2.57
J1218-08	3.25	5.98	9.87	3.5	6.44	10.63	3.75	6.9	11.39
J1218-09	0	0	0	0	0	0	0	0	0
J1218-10	4.01	7.38	12.18	2.16	3.98	6.56	2.32	4.26	7.04
J1218-100	0	0	0	1.8	3.96	6.53	1.8	3.96	6.53
J1218-101	0	0	0	1.2	2.64	4.36	1.2	2.64	4.36
J1218-102	0	0	0	4.2	9.24	15.25	4.2	9.24	15.25
J1218-103	0	0	0	1.5	3.3	5.44	1.5	3.3	5.44
J1218-104	0	0	0	3	6.6	10.89	3	6.6	10.89
J1218-105	0	0	0	1.8	3.96	6.53	1.8	3.96	6.53
J1218-106	0	0	0	2.4	5.28	8.71	2.4	5.28	8.71
J1218-107	0	0	0	1.5	3.3	5.44	1.5	3.3	5.44
J1218-11	20.76	38.2	63.03	22.36	41.14	67.88	23.98	44.12	72.79
J1218-110	0	0	0	0	0	0	0	0	0
J1219-01	3.33	7.33	12.09	3.59	7.9	13.04	3.85	8.47	13.97
J1219-02	2.75	6.04	9.97	2.96	6.51	10.74	3.17	6.98	11.51
J1219-03	3.11	6.85	11.3	3.35	7.38	12.18	3.59	7.91	13.05
J1219-04	1.2	2.64	4.36	1.2	2.64	4.36	1.2	2.64	4.36
J1219-05	1.5	3.3	5.44	1.5	3.3	5.44	1.5	3.3	5.44
J1219-06	1.5	3.3	5.44	1.5	3.5	5.77	1.5	3.3	5.44

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	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1219-07	1.5	3.3	5.44	1.5	3.3	5.44	1.5	3.3	5.44
J1219-08	1.49	3.27	5.4	1.6	3.53	5.82	1.72	3.78	6.24
J1219-09	1	2.19	3.61	1.07	2.36	3.89	1.15	2.53	4.17
J1219-10	3.44	7.56	12.47	3.7	8.15	13.45	3.97	8.73	14.41
J1219-11	0.74	1.64	2.71	0.8	1.76	2.9	0.86	1.89	3.12
J1219-12	0	0	0	0	0	0	0	0	0
J1219-13	2.34	5.14	8.48	2.52	5.54	9.14	2.7	5.94	9.8
J1219-14	6.62	14.57	24.04	7.13	15.69	25.89	7.65	16.83	27.77
J1219-15	2.18	4.8	7.92	2.35	5.17	8.53	2.52	5.54	9.14
J1219-16	2.5	5.51	9.09	2.7	5.94	9.8	2.89	6.36	10.5
J1219-17	0	0	0	0	0	0	0	0	0
J1219-18	2.32	5.09	8.4	2.49	5.49	9.06	2.67	5.88	9.71
J1219-19	0	0	0	0	0	0	0	0	0
J1219-20	3.09	6.8	11.22	3.33	7.33	12.09	3.57	7.86	12.96
J1219-21	5.15	11.32	18.68	5.54	12.19	20.11	5.94	13.07	21.57
J1219-22	0.61	1.34	2.21	0.65	1.44	2.38	0.7	1.54	2.55
J1219-23	3.67	8.07	13.32	3.95	8.69	14.34	4.24	9.32	15.38
J1219-24	2.42	5.33	8.79	2.61	5.74	9.47	2.8	6.15	10.15
J1219-25	0	0	0	0	0	0	0	0	0
J1219-26	2.79	6.13	10.11	3	6.61	10.91	3.22	7.08	11.69
J1219-27	0	0	0	0	0	0	0	0	0
J1219-28	0	0	0	0	0	0	0	0	0
J1219-29	0	0	0	0	0	0	0	0	0
J1219-30	1.81	3.99	6.58	1.95	4.3	7.1	2.09	4.61	7.6
J1219-31	0	0	0	0	0	0	0	0	0
J1220-01	2.12	4.66	7.69	2.28	5.02	8.28	2.44	5.38	8.87
J1220-03	0	0	0	0	0	0	0	0	0
J1220-04	2.4	5.28	8.71	2.58	5.69	9.39	2.77	6.1	10.06
J1220-05	0	0	0	0	0	0	0	0	0
J1220-100	0	0	0	0	0	0	0	0	0
J1315-01	0.6	1.1	1.81	0.64	1.18	1.95	0.69	1.27	2.09
J1316-01	0.53	0.98	1.62	0.58	1.06	1.75	0.62	1.14	1.87
J1316-02	2.13	3.91	6.45	2.29	4.22	6.96	2.46	4.52	7.46
J1316-03	2.4	4.42	7.29	2.58	4.76	7.85	2.77	5.1	8.41
J1316-04	0	0	0	0	0	0	0	0	0
J1316-05	2.13	3.91	6.45	2.29	4.22	6.96	2.46	4.52	7.46
J1316-06	0.82	1.5	2.47	0.88	1.62	2.67	0.94	1.74	2.87
J1316-07	3.81	7.02	11.58	4.11	7.56	12.47	4.41	8.11	13.38
J1316-08	0	0	0	0	0	0	0	0	0
J1316-09	0.27	0.5	0.83	0.29	0.54	0.89	0.31	0.58	0.96
J1316-10	0	0	0	0	0	0	0	0	0
J1316-11	0.56	1.02	1.68	0.6	1.1	1.81	0.64	1.18	1.95
J1316-12	0	0	0	0	0	0	0	0	0
J1316-13	0	0	0	0	0	0	0	0	0
J1316-14	3.58	6.59	10.87	3.86	7.1	11.71	4.14	7.62	12.57
J1316-15	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1316-16	0	0	0	0	0	0	0	0	0

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	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1316-17	2.97	5.46	9.01	3.19	5.88	9.7	3.43	6.3	10.4
J1316-18	0	0	0	0	0	0	0	0	0
J1316-19	0	0	0	0	0	0	0	0	0
J1316-20	0	0	0	0	0	0	0	0	0
J1316-21	0	0	0	0	0	0	0	0	0
J1316-22	0.71	1.31	2.16	0.76	1.41	2.33	0.82	1.51	2.49
J1316-23	0.26	0.48	0.79	0.28	0.52	0.86	0.3	0.56	0.92
J1316-24	1.58	2.91	4.8	1.7	3.14	5.18	1.83	3.36	5.55
J1316-25	0	0	0	0	0	0	2.4	4.42	7.29
J1316-26	2.34	4.3	7.1	2.52	4.63	7.64	2.7	4.97	8.19
J1316-27	7.6	13.98	23.07	8.18	15.06	24.85	8.77	16.15	26.64
J1316-28	0.43	0.79	1.3	0.46	0.85	1.4	0.5	0.91	1.51
J1316-29	3.31	6.09	10.05	3.57	6.56	10.82	3.82	7.04	11.61
J1316-30	3.44	6.32	10.43	3.7	6.81	11.24	3.97	7.3	12.05
J1316-31	3.65	6.71	11.07	3.93	7.23	11.93	4.21	7.75	12.79
J1316-32	3.32	6.11	10.08	3.58	6.58	10.86	3.84	7.06	11.65
J1316-33	6.85	12.61	20.81	7.38	13.58	22.41	7.92	14.56	24.03
J1316-34	2.44	4.49	7.41	2.63	4.84	7.99	2.82	5.19	8.56
J1316-35	0	0	0	0	0	0	0	0	0
J1316-36	4.18	7.69	12.69	4.5	8.29	13.68	4.83	8.89	14.66
J1316-37	1.21	2.22	3.66	1.3	2.39	3.94	1.39	2.56	4.23
J1316-38	0	0	0	0	0	0	0	0	0
J1316-39	0.26	0.48	0.79	0.28	0.52	0.86	0.3	0.56	0.92
J1316-40	0.73	1.34	2.21	0.79	1.45	2.39	0.84	1.55	2.56
J1316-41	1.33	2.45	4.04	1.43	2.64	4.36	1.54	2.83	4.67
J1316-42	0	0	0	0	0	0	0	0	0
J1316-43	2.05	3.78	6.24	2.21	4.07	6.72	2.37	4.36	7.2
J1316-44	0	0	0	0	0	0	0	0	0
J1316-45	0.82	1.5	2.47	0.88	1.62	2.67	0.94	1.74	2.87
J1316-46	0	0	0	0	0	0	0	0	0
J1316-47	3.45	6.34	10.46	3.71	6.83	11.27	3.98	7.33	12.09
J1316-48	4.14	7.62	12.57	4.46	8.2	13.53	4.78	8.8	14.51
J1316-49	2.19	4.03	6.65	2.36	4.34	7.16	2.53	4.65	7.68
J1316-50	4.89	9	14.85	5.27	9.7	16	5.65	10.4	17.16
J1316-51	1.09	2.01	3.32	1.17	2.16	3.56	1.26	2.32	3.82
J1316-52	0	0	0	0	0	0	0	0	0
J1316-53	0.25	0.46	0.76	0.27	0.5	0.83	0.29	0.53	0.88
J1316-54	1.26	2.31	3.81	1.35	2.49	4.11	1.45	2.67	4.41
J1316-55	0	0	0	0	0	0	0	0	0
J1316-56	2.25	4.15	6.85	2.43	4.47	7.38	2.6	4.79	7.9
J1316-57	4.52	8.31	13.71	4.87	8.95	14.77	5.22	9.6	15.84
J1316-58	0	0	0	0	0	0	0	0	0
J1316-59	2	3.68	6.07	2.16	3.97	6.55	2.31	4.25	7.02
J1316-60	1.17	2.16	3.56	1.26	2.33	3.84	1.36	2.49	4.12
J1316-61	3.14	5.78	9.54	3.39	6.23	10.28	3.63	6.68	11.02
J1316-62	1.75	3.22	5.31	1.89	3.47	5.73	2.02	3.72	6.14
J1316-70	0	0	0	0	0	0	0	0	0

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J1316-71	0	0	0	0	0	0	0	0	0
J1317-01	4.59	8.45	13.94	4.94	9.1	15.02	5.3	9.75	16.09
J1317-02	0	0	0	0	0	0	0	0	0
J1317-03	0.6	1.1	1.81	0.64	1.18	1.95	0.69	1.27	2.09
J1317-04	0.4	0.73	1.2	0.43	0.79	1.3	0.46	0.85	1.4
J1317-05	0.59	1.08	1.78	0.63	1.16	1.91	0.68	1.25	2.06
J1317-06	2.37	4.36	7.19	2.55	4.69	7.74	2.74	5.03	8.3
J1317-07	3.13	5.77	9.52	3.38	6.21	10.25	3.62	6.66	10.99
J1317-08	0.81	1.48	2.44	0.87	1.6	2.64	0.93	1.71	2.83
J1317-09	0	0	0	0	0	0	0	0	0
J1317-10	49.28	90.68	149.62	53.09	97.68	161.17	56.92	104.74	172.82
J1317-100	0	0	0	0	0	0	0	0	0
J1317-11	2.01	3.7	6.1	2.17	3.99	6.58	2.32	4.28	7.06
J1317-12	8.92	16.41	27.08	9.61	17.68	29.17	10.3	18.95	31.27
J1317-13	1.94	3.57	5.89	2.09	3.84	6.34	2.24	4.12	6.8
J1317-14	1.14	2.1	3.46	1.23	2.26	3.73	1.32	2.43	4.01
J1317-15	5.43	9.99	16.48	5.85	10.76	17.75	6.27	11.54	19.03
J1317-16	1.7	3.12	5.15	1.83	3.36	5.54	1.96	3.61	5.95
J1317-17	0	0	0	0	0	0	0	0	0
J1317-18	0	0	0	0	0	0	0	0	0
J1317-19	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1317-20	1.07	1.97	3.25	1.15	2.12	3.5	1.23	2.27	3.75
J1317-21	1.87	3.43	5.66	2.01	3.7	6.1	2.15	3.96	6.54
J1317-22	1.59	2.93	4.83	1.72	3.16	5.21	1.84	3.39	5.59
J1317-23	1.07	1.97	3.25	1.15	2.12	3.5	1.23	2.27	3.75
J1317-24	0.69	1.27	2.1	0.74	1.37	2.26	0.8	1.47	2.43
J1317-25	0	0	0	0	0	0	0	0	0
J1317-26	3.48	6.4	10.56	3.75	6.9	11.39	4.02	7.39	12.2
J1317-27	0	0	0	0	0	0	0	0	0
J1317-28	6.94	12.76	21.05	7.47	13.75	22.69	8.01	14.74	24.33
J1317-29	1.4	2.58	4.26	1.51	2.78	4.59	1.62	2.98	4.92
J1317-30	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1317-31	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1317-32	1.8	3.32	5.48	1.94	3.57	5.89	2.08	3.83	6.32
J1317-33	0	0	0	0	0	0	0	0	0
J1317-34	2.51	4.63	7.64	2.71	4.98	8.22	2.9	5.34	8.82
J1317-35	5.28	9.72	16.04	5.69	10.47	17.28	6.1	11.22	18.52
J1317-36	0	0	0	0	0	0	0	0	0
J1317-37	0.49	0.91	1.5	0.53	0.98	1.62	0.57	1.05	1.73
J1317-38	0	0	0	0	0	0	0	0	0
J1317-39	0	0	0	0	0	0	0	0	0
J1317-40	2.53	4.65	7.67	2.72	5.01	8.27	2.92	5.37	8.86
J1317-41	2.25	4.15	6.85	2.43	4.47	7.38	2.6	4.79	7.9
J1317-42	4.61	8.48	13.99	4.97	9.14	15.08	5.33	9.8	16.17
J1317-43	4.06	7.46	12.31	4.37	8.04	13.27	4.68	8.62	14.22
J1317-44	1.6	2.95	4.87	1.73	3.18	5.25	1.85	3.41	5.62
J1317-45	0	0	0	0	0	0	0	0	0

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Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1317-46	1.37	2.53	4.17	1.48	2.72	4.49	1.59	2.92	4.81
J1317-47	0.91	1.68	2.77	0.98	1.81	2.99	1.05	1.94	3.2
J1317-48	1.14	2.1	3.46	1.23	2.26	3.73	1.32	2.43	4.01
J1317-49	0	0	0	0	0	0	0	0	0
J1317-50	0.67	1.23	2.03	0.72	1.33	2.19	0.77	1.43	2.35
J1317-51	7.27	13.38	22.08	7.83	14.41	23.78	8.4	15.46	25.5
J1317-52	5.76	10.6	17.49	6.21	11.42	18.84	6.66	12.25	20.21
J1317-53	0	0	0	0.32	0.59	0.97	0.34	0.63	1.04
J1317-54	4.85	8.93	14.73	5.23	9.62	15.87	5.6	10.31	17.01
J1317-55	7.59	13.96	23.03	8.17	15.04	24.82	8.76	16.12	26.6
J1317-56	3.41	6.27	10.35	3.67	6.75	11.14	3.93	7.24	11.94
J1318-01	1.21	2.22	3.66	1.3	2.39	3.94	1.39	2.56	4.23
J1318-02	0	9999	16498.35	0	0	0	0	0	0
J1318-03	0	9999	16498.35	0	0	0	0	0	0
J1318-04	0	9999	16498.35	0	0	0	0	0	0
J1318-05	0	0	0	0	0	0	0	0	0
J1318-06	3.21	5.9	9.74	3.45	6.36	10.49	3.7	6.81	11.24
J1318-07	1.21	2.22	3.66	1.3	2.39	3.94	1.39	2.56	4.23
J1318-08	1.6	2.95	4.87	1.73	3.18	5.25	1.85	3.41	5.62
J1318-09	4.41	8.12	13.4	4.75	8.74	14.42	5.1	9.38	15.47
J1318-10	0	0	0	0	0	0	0	0	0
J1318-101	0	9999	16498.35	0	0	0	0	0	0
J1318-102	0	0	0	2.86	6.29	10.38	2.86	6.29	10.38
J1318-103	0	0	0	1.04	2.29	3.78	1.04	2.29	3.78
J1318-104	0	0	0	1.04	2.29	3.78	1.04	2.29	3.78
J1318-105	0	0	0	1.04	2.29	3.78	1.04	2.29	3.78
J1318-106	0	0	0	4.7	10.34	17.06	4.7	10.34	17.06
J1318-107	0	9999	16498.35	0	0	0	0	0	0
J1318-108	0	0	0	2.6	5.72	9.44	2.6	5.72	9.44
J1318-109	0	0	0	3.12	6.86	11.32	3.12	6.86	11.33
J1318-11	0	0	0	0	0	0	0	0	0
J1318-110	0	0	0	3.38	7.44	12.28	3.38	7.44	12.27
J1318-111	0	0	0	2.6	5.72	9.44	2.6	5.72	9.44
J1318-112	0	0	0	2.6	5.72	9.44	2.6	5.72	9.44
J1318-113	0	0	0	2.6	5.72	9.44	2.6	5.72	9.44
J1318-114	0	9999	16498.35	0	0	0	0	0	0
J1318-115	0	9999	16498.35	0	0	0	0	0	0
J1318-116	0	0	0	2.86	6.29	10.38	2.86	6.29	10.38
J1318-117	0	0	0	2.08	4.58	7.56	2.08	4.58	7.55
J1318-118	0	9999	16498.35	0	0	0	0	0	0
J1318-119	0	9999	16498.35	0	0	0	0	0	0
J1318-120	0	0	0	0	0	0	0	0	0
J1319-01	0	0	0	0	0	0	0	0	0
J1319-02	4.84	10.65	17.57	5.21	11.47	18.93	5.59	12.3	20.3
J1319-03	1.05	1.93	3.18	1.13	2.08	3.43	1.21	2.23	3.67
J1319-100	0	0	0	0	0	0	105	231	381.15
J1320-01	0	0	0	0	0	0	0	0	0

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	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1320-02	2.62	5.76	9.5	2.82	6.21	10.25	3.03	6.66	10.98
J1415-01	1.92	3.53	5.82	2.07	3.8	6.27	2.21	4.08	6.72
J1415-02	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1415-03	0	0	0	0	0	0	0	0	0
J1415-04	6.33	11.65	19.22	6.82	12.54	20.69	7.31	13.45	22.19
J1415-05	0	0	0	0	0	0	0	0	0
J1415-06	14.88	27.38	45.18	16.03	29.49	48.66	17.19	31.62	52.18
J1415-07	0	0	0	0	0	0	0	0	0
J1415-08	0	0	0	0	0	0	0	0	0
J1415-09	1.04	1.91	3.15	1.12	2.06	3.4	1.2	2.2	3.64
J1415-10	0	0	0	0	0	0	0	0	0
J1415-100	0	0	0	0	0	0	0	0	0
J1415-101	0	0	0	0	0	0	0	0	0
J1415-102	0	0	0	0	0	0	0	0	0
J1415-103	0	0	0	0	0	0	0	0	0
J1415-104	0	0	0	0	0	0	0	0	0
J1415-11	0	0	0	0	0	0	0	0	0
J1415-12	3.57	6.57	10.84	3.85	7.08	11.68	4.13	7.59	12.53
J1415-13	0	0	0	0	0	0	0	0	0
J1415-14	3.41	6.27	10.35	3.67	6.75	11.14	3.94	7.24	11.95
J1415-15	0	0	0	0	0	0	0	0	0
J1415-16	0	0	0	0	0	0	0	0	0
J1415-17	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1415-18	0	0	0	0	0	0	0	0	0
J1415-19	2.11	3.88	6.4	2.27	4.17	6.88	2.44	4.48	7.4
J1415-20	1.36	2.51	4.14	1.47	2.7	4.46	1.58	2.9	4.79
J1415-21	0.54	1	1.65	1.08	1.08	1.78	0.63	1.16	1.92
J1415-22	0	0	0	0	0	0	0	0	0
J1415-23	5.69	10.47	17.28	6.13	11.28	18.61	6.57	12.09	19.95
J1415-24	2.44	4.49	7.41	2.63	4.84	7.99	2.82	5.19	8.57
J1415-25	0	0	0	0	0	0	0	0	0
J1415-26	0	0	0	0	0	0	0	0	0
J1415-27	19.35	35.61	58.76	20.85	38.36	63.29	22.36	41.14	67.88
J1415-28	12.68	23.33	38.49	13.66	25.13	41.46	14.64	26.95	44.46
J1415-29	1.26	2.31	3.81	1.35	2.49	4.11	1.45	2.68	4.41
J1415-30	6.01	11.07	18.27	6.48	11.92	19.67	6.95	12.79	21.1
J1415-31	0	0	0	0	0	0	0	0	0
J1415-32	2	3.68	6.07	2.16	3.97	6.55	2.31	4.26	7.02
J1415-33	0	0	0	0	0	0	0	0	0
J1415-34	1.51	2.78	4.59	1.63	2.99	4.93	1.75	3.21	5.3
J1415-35	0	0	0	0	0	0	0	0	0
J1415-36	0	0	0	0	0	0	0	0	0
J1415-37	1.75	3.22	5.31	1.89	3.47	5.73	2.02	3.72	6.13
J1415-38	3.23	5.94	9.8	3.48	6.4	10.56	3.73	6.86	11.32
J1415-39	1.26	2.31	3.81	1.35	2.49	4.11	1.45	2.68	4.41
J1415-39a	0	0	0	0	0	0	0	0	0
J1415-40	0	0	0	0	0	0	0	0	0

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	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1416-01	0	0	0	0	0	0	0	0	0
J1416-02	2.07	3.82	6.3	2.23	4.11	6.78	2.4	4.41	7.28
J1416-03	1.8	3.32	5.48	1.94	3.57	5.89	2.08	3.83	6.32
J1416-04	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1416-05	0.6	1.1	1.81	0.64	1.18	1.95	0.69	1.27	2.09
J1416-06	1.8	3.32	5.48	1.94	3.57	5.89	2.08	3.83	6.32
J1416-07	3.46	6.36	10.49	3.72	6.85	11.3	3.99	7.35	12.13
J1416-08	1.37	2.53	4.17	1.48	2.72	4.49	1.59	2.92	4.81
J1416-09	1.37	2.53	4.17	1.48	2.72	4.49	1.59	2.92	4.81
J1416-10	3.24	5.96	9.83	3.49	6.42	10.59	3.74	6.88	11.35
J1416-11	1.44	2.64	4.36	1.55	2.85	4.7	1.66	3.05	5.03
J1416-12	4.34	7.98	13.17	4.67	8.6	14.19	5.01	9.22	15.21
J1416-13	2.29	4.22	6.96	2.47	4.55	7.51	2.65	4.88	8.05
J1416-14	2.2	4.05	6.68	2.37	4.36	7.19	2.54	4.68	7.72
J1416-15	0.6	1.1	1.81	0.64	1.18	1.95	0.69	1.27	2.09
J1416-16	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1416-17	3.13	5.77	9.52	3.38	6.21	10.25	3.62	6.66	10.99
J1416-18	1.6	2.95	4.87	1.73	3.18	5.25	1.85	3.41	5.62
J1416-19	1.25	2.29	3.78	1.34	2.47	4.08	1.44	2.65	4.37
J1416-20	0	0	0	0	0	0	0	0	0
J1416-21	1.09	2.01	3.32	1.17	2.16	3.56	1.26	2.32	3.82
J1416-22	1.08	1.99	3.28	1.16	2.14	3.53	1.25	2.29	3.78
J1416-23	3.75	6.9	11.39	4.04	7.44	12.28	4.33	7.97	13.16
J1416-24	18.95	34.86	57.52	20.41	37.55	61.96	21.88	40.26	66.44
J1416-25	0	0	0	0	0	0	0	0	0
J1416-26	1.51	2.78	4.59	1.63	2.99	4.93	1.74	3.21	5.29
J1416-27	3.76	6.92	11.42	4.05	7.46	12.31	4.35	8	13.19
J1416-28	0	0	0	0	0	0	0	0	0
J1416-29	4.81	8.85	14.6	5.18	9.53	15.72	5.56	10.22	16.87
J1416-30	0	0	0	0	0	0	0	0	0
J1416-31	0	0	0	0	0	0	0	0	0
J1416-32	0	0	0	0	0	0	0	0	0
J1416-33	0	0	0	0	0	0	0	0	0
J1416-34	0	0	0	0	0	0	0	0	0
J1416-35	1.6	2.95	4.87	1.73	3.18	5.25	1.85	3.41	5.62
J1416-36	0	0	0	0	0	0	0	0	0
J1416-37	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1416-38	3.92	7.21	11.9	4.22	7.77	12.82	4.53	8.33	13.74
J1416-39	0	0	0	0	0	0	0	0	0
J1416-40	1.84	3.39	5.59	1.99	3.66	6.04	2.13	3.92	6.47
J1416-41	6.16	11.34	18.71	6.64	12.21	20.15	7.12	13.09	21.61
J1416-42	3.28	6.04	9.97	3.53	6.5	10.73	3.79	6.97	11.5
J1416-43	1.37	2.53	4.17	1.48	2.72	4.49	1.59	2.92	4.81
J1416-44	0	0	0	0	0	0	0	0	0
J1416-45	7.67	14.11	23.28	8.26	15.2	25.08	8.86	16.3	26.9
J1416-46	0	0	0	0	0	0	0	0	0
J1416-47	0.54	1	1.65	0.59	1.08	1.78	0.63	1.16	1.91

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Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1416-48	0	0	0	0	0	0	0	0	0
J1417-01	0.75	1.39	2.29	0.81	1.5	2.47	0.87	1.6	2.65
J1417-02	6.56	12.07	19.92	7.07	13	21.45	7.58	13.94	23
J1417-03	0	0	0	0	0	0	0	0	0
J1417-04	3.45	6.34	10.46	3.71	6.83	11.27	3.98	7.33	12.09
J1417-05	4.03	7.42	12.24	4.35	8	13.2	4.66	8.57	14.15
J1417-06	0	0	0	0	0	0	0	0	0
J1417-07	0	0	0	0	0	0	0	0	0
J1417-08	0.36	0.66	1.09	0.38	0.71	1.17	0.41	0.76	1.25
J1417-09	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1417-10	0	0	0	0	0	0	0	0	0
J1417-11	1.21	2.22	3.66	1.3	2.39	3.94	1.39	2.56	4.23
J1417-12	0	0	0	0	0	0	0	0	0
J1417-13	1.12	2.06	3.4	1.21	2.22	3.66	1.3	2.38	3.93
J1417-14	0	0	0	0	0	0	0	0	0
J1417-15	0	0	0	0	0	0	0	0	0
J1417-16	1.35	2.49	4.11	1.46	2.68	4.42	1.56	2.87	4.74
J1417-17	0.18	0.33	0.54	0.19	0.35	0.58	0.21	0.38	0.62
J1417-18	1.48	2.72	4.49	1.59	2.93	4.83	1.71	3.14	5.18
J1417-19	2	3.68	6.07	2.16	3.97	6.55	2.31	4.25	7.02
J1417-20	1.35	2.49	4.11	1.46	2.68	4.42	1.56	2.87	4.74
J1417-21	0	0	0	0	0	0	0	0	0
J1417-22	2.25	4.15	6.85	2.43	4.47	7.38	2.6	4.79	7.9
J1417-23	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1417-24	0	0	0	0	0	0	0	0	0
J1417-25	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1417-26	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1417-27	0	0	0	0	0	0	0	0	0
J1417-28	1.28	2.35	3.88	1.38	2.53	4.17	1.48	2.72	4.48
J1417-29	0	0	0	0	0	0	0	0	0
J1417-30	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1417-31	1.8	3.32	5.48	1.94	3.57	5.89	2.08	3.83	6.32
J1417-32	2.7	4.97	8.2	2.91	5.36	8.84	3.12	5.75	9.48
J1417-33	0.45	0.83	1.37	0.49	0.89	1.47	0.52	0.96	1.58
J1417-34	1.12	2.06	3.4	1.21	2.22	3.66	1.3	2.38	3.93
J1417-35	0	0	0	0	0	0	0	0	0
J1417-36	1.8	3.32	5.48	1.94	3.57	5.89	2.08	3.83	6.32
J1417-37	0	0	0	0	0	0	0	0	0
J1417-38	0.45	0.83	1.37	0.49	0.89	1.47	0.52	0.96	1.58
J1417-39	0.67	1.23	2.03	0.72	1.33	2.19	0.77	1.43	2.35
J1417-40	0	0	0	0	0	0	0	0	0
J1417-41	1.12	2.06	3.4	1.21	2.22	3.66	1.3	2.38	3.93
J1417-42	0	0	0	0	0	0	0	0	0
J1417-43	0.67	1.23	2.03	0.72	1.33	2.19	0.77	1.43	2.35
J1417-44	0	0	0	0	0	0	0	0	0
J1417-45	1.12	2.06	3.4	1.21	2.22	3.66	1.3	2.38	3.93
J1417-46	0	0	0	0	0	0	0	0	0

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Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1417-47	2.92	5.38	8.88	3.15	5.79	9.55	3.38	6.21	10.25
J1417-48	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1417-49	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1417-50	0.47	0.87	1.44	0.51	0.93	1.53	0.54	1	1.65
J1417-51	1.21	2.22	3.66	1.3	2.39	3.94	1.39	2.56	4.23
J1417-52	2.21	4.07	6.72	2.38	4.38	7.23	2.55	4.7	7.75
J1417-53	0	0	0	0	0	0	0	0	0
J1417-54	0	0	0	0	0	0	0	0	0
J1417-55	0	0	0	0	0	0	0	0	0
J1417-56	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1417-57	0	0	0	0	0	0	0	0	0
J1417-58	1.61	2.97	4.9	1.74	3.2	5.28	1.86	3.43	5.66
J1417-59	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1417-60	1.61	2.97	4.9	1.74	3.2	5.28	1.86	3.43	5.66
J1417-61	1.41	2.6	4.29	1.52	2.8	4.62	1.63	3.01	4.96
J1417-62	5.15	9.47	15.63	5.54	10.2	16.83	5.94	10.93	18.04
J1417-63	4.06	7.46	12.31	4.37	8.04	13.27	4.68	8.62	14.22
J1417-64	0	0	0	0	0	0	0	0	0
J1417-65	2.07	3.82	6.3	2.23	4.11	6.78	2.4	4.41	7.28
J1417-66	2.9	5.34	8.81	3.13	5.75	9.49	3.35	6.17	10.18
J1417-67	2.07	3.82	6.3	2.23	4.11	6.78	2.4	4.41	7.28
J1417-68	2.07	3.82	6.3	2.23	4.11	6.78	2.4	4.41	7.28
J1417-69	0	0	0	0	0	0	0	0	0
J1417-70	0	0	0	0	0	0	0	0	0
J1417-71	0	0	0	0	0	0	0	0	0
J1417-72	0	0	0	0	0	0	0	0	0
J1417-73	1.35	2.49	4.11	1.46	2.68	4.42	1.56	2.87	4.74
J1417-74	0	0	0	0	0	0	0	0	0
J1417-75	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1417-76	1.61	2.97	4.9	1.74	3.2	5.28	1.86	3.43	5.66
J1417-77	1.12	2.06	3.4	1.21	2.22	3.66	1.3	2.38	3.93
J1417-78	0	0	0	0	0	0	0	0	0
J1417-79	2.44	4.49	7.41	2.63	4.84	7.99	2.82	5.19	8.56
J1417-80	2.47	4.55	7.51	2.66	4.9	8.09	2.86	5.26	8.67
J1417-81	0	0	0	0	0	0	0	0	0
J1417-82	0	0	0	0	0	0	0	0	0
J1418-01	0	0	0	0	0	0	0	0	0
J1418-02	0	0	0	0	0	0	0	0	0
J1418-03	4.09	7.52	12.41	4.4	8.1	13.37	4.4	8.1	13.37
J1418-04	0	0	0	0	0	0	0	0	0
J1418-05	2.99	5.5	9.08	3.22	5.92	9.77	3.45	6.35	10.47
J1418-06	1.8	3.32	5.48	1.94	3.57	5.89	2.08	3.83	6.32
J1418-07	2.33	4.28	7.06	2.51	4.61	7.61	2.69	4.94	8.16
J1418-08	0	0	0	0	0	0	0	0	0
J1418-09	0	0	0	0	0	0	0	0	0
J1418-10	0	0	0	0	0	0	0	0	0
J1418-103	0	0	0	0	0	0	0	0	0

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Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1418-104	1.81	5.43	8.96	1.81	5.43	8.96	1.81	5.43	8.96
J1418-11	0	0	0	0	0	0	0	0	0
J1418-12	5.32	9.79	16.15	5.73	10.55	17.41	6.15	11.31	18.67
J1418-13	3.96	7.29	12.03	4.27	7.85	12.95	4.58	8.42	13.89
J1418-14	0	0	0	0	0	0	0	0	0
J1418-15	5.84	10.74	17.72	6.29	11.57	19.09	6.74	12.4	20.47
J1418-16	8.29	15.25	25.16	8.93	16.43	27.11	9.57	17.62	29.07
J1418-17	0	0	0	0	0	0	0	0	0
J1418-18	1.97	3.62	5.97	2.12	3.9	6.44	2.28	4.19	6.91
J1418-19	1.39	2.56	4.22	1.5	2.76	4.55	1.61	2.96	4.89
J1418-20	0	0	0	0	0	0	0	0	0
J1418-21	13.97	25.7	42.41	15.05	27.69	45.69	16.13	29.69	48.98
J1418-22	0	0	0	0	0	0	0	0	0
J1418-23	0.61	1.12	1.85	0.65	1.2	1.98	0.7	1.29	2.13
J1418-24	1.05	1.93	3.18	1.13	2.08	3.43	1.21	2.23	3.67
J1418-25	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1418-26	0	0	0	0	0	0	0	0	0
J1418-27	0	0	0	0	0	0	0	0	0
J1418-28	0	0	0	0	0	0	0	0	0
J1418-29	0	0	0	0	0	0	0	0	0
J1418-30	0	0	0	0	0	0	0	0	0
J1418-31	0.49	0.91	1.5	0.53	0.98	1.62	0.57	1.05	1.73
J1418-32	2.27	4.18	6.9	2.45	4.51	7.44	2.63	4.83	7.97
J1418-33	5.09	9.37	15.46	5.49	10.09	16.65	5.88	10.82	17.86
J1418-34	0.91	1.68	2.77	0.98	1.81	2.99	1.05	1.94	3.2
J1418-35	0.68	1.25	2.06	0.73	1.35	2.23	0.79	1.45	2.39
J1418-36	0	0	0	0	0	0	0	0	0
J1418-37	2.04	3.76	6.2	2.2	4.05	6.68	2.36	4.34	7.17
J1418-38	0	0	0	0	0	0	0	0	0
J1418-39	0	0	0	0	0	0	0	0	0
J1418-40	0	0	0	0	0	0	0	0	0
J1418-41	1.36	2.51	4.14	1.47	2.7	4.46	1.57	2.9	4.78
J1418-42	0	0	0	0	0	0	0	0	0
J1418-43	2.94	5.42	8.94	3.17	5.84	9.64	3.4	6.26	10.33
J1418-44	2.04	3.76	6.2	2.2	4.05	6.68	2.36	4.34	7.17
J1418-45	1.81	3.34	5.51	1.95	3.59	5.92	2.09	3.85	6.36
J1418-46	0	0	0	0	0	0	0	0	0
J1418-47	2.26	4.16	6.86	2.44	4.49	7.41	2.61	4.81	7.94
J1418-48	2.88	5.3	8.75	3.1	5.71	9.42	3.33	6.12	10.11
J1418-49	0	0	0	0	0	0	0	0	0
J1418-50	0.61	1.12	1.85	0.65	1.2	1.98	0.7	1.29	2.13
J1418-51	0.18	0.33	0.54	0.19	0.35	0.58	0.21	0.38	0.62
J1418-52	1.61	2.97	4.9	1.74	3.2	5.28	1.86	3.43	5.66
J1418-53	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1418-54	1.53	2.82	4.65	1.65	3.03	5	1.77	3.25	5.36
J1418-55	2.18	4.01	6.62	2.35	4.32	7.13	2.52	4.63	7.64
J1418-56	0	0	0	0	0	0	0	0	0

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(Data sorted by Junction Name)

	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1418-57	0	0	0	0	0	0	0	0	0
J1418-58	0	0	0	0	0	0	0	0	0
J1418-61	0	0	0	0	0	0	0	0	0
J1418-62	0	0	0	0	0	0	0	0	0
J1419-01	5.46	10.05	16.58	5.88	10.82	17.85	6.31	11.6	19.14
J1419-02	20.38	37.5	61.88	21.95	40.4	66.66	23.54	43.32	71.47
J1419-03	0	0	0	0	0	0	0	0	0
J1419-04	0.65	1.2	1.98	0.7	1.29	2.13	0.75	1.38	2.28
J1419-05	2.76	5.07	8.37	2.97	5.46	9.01	3.18	5.86	9.66
J1419-06	1.62	2.99	4.93	1.75	3.22	5.31	1.88	3.45	5.7
J1419-07	0	0	0	0	0	0	0	0	0
J1419-08	2.87	5.28	8.71	3.09	5.69	9.39	3.32	6.1	10.07
J1419-09	4.48	8.25	13.61	4.83	8.89	14.67	5.18	9.53	15.73
J1515-01	0	0	0	0	0	0	0	0	0
J1515-02	1.36	2.51	4.14	1.47	2.7	4.46	1.57	2.9	4.78
J1515-03	1.65	3.03	5	1.77	3.26	5.38	1.9	3.5	5.77
J1515-04	0	0	0	0	0	0	0	0	0
J1515-05	0	0	0	0	0	0	0	0	0
J1515-06	0	0	0	0	0	0	0	0	0
J1515-07	0	0	0	0	0	0	0	0	0
J1515-08	1.65	3.03	5	1.77	3.26	5.38	1.9	3.5	5.77
J1515-09	24.47	45.02	74.28	26.36	48.5	80.02	28.26	52	85.8
J1515-10	3.12	5.75	9.49	3.36	6.19	10.21	3.61	6.64	10.95
J1515-11	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1515-12	0.81	1.48	2.44	0.87	1.6	2.64	0.93	1.71	2.83
J1515-13	1.08	1.99	3.28	1.16	2.14	3.53	1.25	2.29	3.78
J1515-14	8.58	15.79	26.05	9.24	17.01	28.07	9.91	18.24	30.09
J1515-15	0	0	0	0	0	0	0	0	0
J1515-16	3.24	5.96	9.83	3.49	6.42	10.59	3.74	6.88	11.35
J1515-17	6.88	12.67	20.91	7.42	13.65	22.52	7.95	14.63	24.14
J1515-18	0	0	0	8.4	15.46	25.51	0	0	0
J1515-19	0	0	0	0	0	0	8.4	0	0
J1515-20	0	0	0	0	0	0	0	0	0
J1515-21	0	0	0	0	0	0	0	0	0
J1515-22	2.59	4.76	7.85	2.79	5.13	8.46	2.99	5.5	9.08
J1515-23	2.16	3.97	6.55	2.33	4.28	7.06	2.49	4.59	7.57
J1515-24	1.35	2.49	4.11	1.46	2.68	4.42	1.56	2.87	4.74
J1515-25	1.62	2.99	4.93	1.75	3.22	5.31	1.88	3.45	5.7
J1515-26	0	0	0	0	0	0	0	0	0
J1515-27	0	0	0	0	0	0	0	0	0
J1515-28	1.62	2.99	4.93	1.75	3.22	5.31	1.88	3.45	5.7
J1515-29	2.8	5.15	8.5	3.01	5.55	9.16	3.23	5.95	9.81
J1515-30	0.27	0.5	0.83	0.29	0.54	0.89	0.31	0.58	0.96
J1515-31	1.08	1.99	3.28	1.16	2.14	3.53	1.25	2.29	3.78
J1515-32	2.66	4.9	8.09	2.87	5.28	8.71	3.07	5.66	9.33
J1515-33	2.43	4.47	7.38	2.62	4.82	7.95	2.81	5.17	8.53
J1515-34	0	0	0	0	0	0	0	0	0

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	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1515-35	4.91	9.04	14.92	5.29	9.74	16.07	5.68	10.44	17.23
J1515-36	0	0	0	0	0	0	0	0	0
J1515-37	1.67	3.07	5.07	1.79	3.3	5.44	1.92	3.54	5.84
J1515-38	0	0	0	0	0	0	0	0	0
J1515-39	0	0	0	0	0	0	0	0	0
J1516-01	2.76	5.07	8.37	2.97	5.46	9.01	3.18	5.86	9.66
J1516-02	0	0	0	0	0	0	0	0	0
J1516-03	0	0	0	0	0	0	0	0	0
J1516-04	2.76	5.07	8.37	2.97	5.46	9.01	3.18	5.86	9.66
J1516-05	1.6	2.95	4.87	1.73	3.18	5.25	1.85	3.41	5.62
J1516-06	0	0	0	0	0	0	0	0	0
J1516-07	0.93	1.72	2.84	1	1.85	3.05	1.08	1.98	3.27
J1516-08	0.69	1.27	2.1	0.74	1.37	2.26	0.8	1.47	2.43
J1516-09	0.69	1.27	2.1	0.74	1.37	2.26	0.8	1.47	2.43
J1516-10	0	0	0	0	0	0	0	0	0
J1516-11	0.69	1.27	2.1	0.74	1.37	2.26	0.8	1.47	2.43
J1516-12	0.69	1.27	2.1	0.74	1.37	2.26	0.8	1.47	2.43
J1516-13	0	0	0	0	0	0	0	0	0
J1516-14	1.14	2.1	3.46	1.23	2.26	3.73	1.32	2.43	4.01
J1516-15	1.83	3.37	5.56	1.98	3.63	5.99	2.12	3.9	6.43
J1516-16	1.14	2.1	3.46	1.23	2.26	3.73	1.32	2.43	4.01
J1516-17	0	0	0	0	0	0	0	0	0
J1516-18	1.37	2.53	4.17	1.48	2.72	4.49	1.59	2.92	4.81
J1516-19	0.46	0.85	1.4	0.5	0.91	1.5	0.53	0.98	1.62
J1516-20	0.69	1.27	2.1	0.74	1.37	2.26	0.8	1.47	2.43
J1516-21	0.93	1.72	2.84	1	1.85	3.05	1.08	1.98	3.27
J1516-22	0.52	0.96	1.58	0.56	1.04	1.72	0.61	1.11	1.84
J1516-23	5.41	9.95	16.42	5.82	10.72	17.69	6.25	11.49	18.96
J1516-24	0	0	0	0	0	0	0	0	0
J1516-25	0	0	0	0	0	0	0	0	0
J1516-26	0.36	0.66	1.09	0.38	0.71	1.17	0.41	0.76	1.25
J1516-27	0	0	0	0	0	0	0	0	0
J1516-28	0	0	0	0	0	0	0	0	0
J1516-29	0	0	0	0	0	0	0	0	0
J1516-30	0	0	0	0	0	0	0	0	0
J1516-31	0	0	0	0	0	0	0	0	0
J1516-32	0	0	0	0	0	0	0	0	0
J1516-33	0	0	0	0	0	0	0	0	0
J1516-34	3.76	6.92	11.42	4.05	7.46	12.31	4.35	8	13.19
J1516-35	1.5	2.76	4.55	1.61	2.97	4.9	1.73	3.18	5.25
J1516-36	2.6	4.78	7.89	2.8	5.15	8.5	3	5.52	9.11
J1516-37	0.92	1.7	2.8	0.99	1.83	3.02	1.07	1.96	3.23
J1516-38	0	0	0	0	0	0	0	0	0
J1516-39	2.76	5.07	8.37	2.97	5.46	9.01	3.18	5.86	9.66
J1516-40	3.21	5.9	9.74	3.45	6.36	10.49	3.7	6.81	11.24
J1516-41	4.04	7.44	12.28	4.36	8.02	13.23	4.67	8.6	14.18
J1516-42	0	0	0	0	0	0	0	0	0

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	2005			2009			2015		
Junction	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1516-43	2.4	4.42	7.29	2.58	4.76	7.85	2.77	5.1	8.41
J1516-45	0	0	0	0	0	0	0	0	0
J1516-46	0	0	0	3	5.52	9.11	3	5.52	9.11
J1516-47	0	0	0	3	5.52	9.11	3	5.52	9.11
J1517-01	0	0	0	0	0	0	0	0	0
J1517-02	0.4	0.73	1.2	0.43	0.79	1.3	0.46	0.85	1.4
J1517-03	0.4	0.73	1.2	0.43	0.79	1.3	0.46	0.85	1.4
J1517-04	1.21	2.22	3.66	1.3	2.39	3.94	1.39	2.56	4.23
J1517-05	2.07	3.82	6.3	2.23	4.11	6.78	2.4	4.41	7.28
J1517-06	1.61	2.97	4.9	1.74	3.2	5.28	1.86	3.43	5.66
J1517-07	1.01	1.85	3.05	1.08	1.99	3.28	1.16	2.14	3.53
J1517-08	0	0	0	0	0	0	0	0	0
J1517-09	2.07	3.82	6.3	2.23	4.11	6.78	2.4	4.41	7.28
J1517-10	0	0	0	0	0	0	0	0	0
J1517-101	0	0	0	4.8	8.83	14.57	4.8	8.83	14.57
J1517-102	0	0	0	4.8	8.83	14.57	4.8	8.83	14.57
J1517-103	0	0	0	0	0	0	7.5	13.8	22.77
J1517-104	0	0	0	0	0	0	7.5	13.8	22.77
J1517-11	6.23	11.47	18.93	6.72	12.36	20.39	7.2	13.25	21.86
J1517-12	4.09	7.52	12.41	4.4	8.1	13.37	4.72	8.69	14.33
J1517-13	10.71	19.71	32.52	11.54	21.23	35.03	12.37	22.76	37.55
J1517-14	0	0	0	0	0	0	0	0	0
J1517-15	0	0	0	0	0	0	0	0	0
J1517-16	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1517-17	0	0	0	0	0	0	0	0	0
J1517-18	0.9	1.66	2.74	0.97	1.79	2.95	1.04	1.92	3.16
J1517-19	0	0	0	1	1.84	3.04	1.07	1.97	3.26
J1517-20	0	0	0	0	0	0	0	0	0
J1517-21	0	0	0	0	0	0	0	0	0
J1517-22	0	0	0	0	0	0	0	0	0
J1517-23	0.36	0.66	1.09	0.38	0.71	1.17	0.41	0.76	1.25
J1517-24	0	0	0	0	0	0	0	0	0
J1517-25	3.18	5.84	9.64	3.42	6.29	10.38	3.07	5.65	9.33
J1517-26	0	0	0	1	1.84	3.04	1.07	1.97	3.26
J1517-27	0	0	0	1	1.84	3.04	1.07	1.97	3.26
J1517-28	0.36	0.66	1.09	0.38	0.71	1.17	0.41	0.76	1.25
J1517-29	0	0	0	0	0	0	0	0	0
J1517-30	0	0	0	0	0	0	0	0	0
J1517-31	0	0	0	0	0	0	0	0	0
J1517-32	0	0	0	0	0	0	0	0	0
J1518-01	0	0	0	0	0	0	0	0	0
J1518-02	0	0	0	0	0	0	0	0	0
J1518-03	0	0	0	0	0	0	0	0	0
J1518-04	0	0	0	0	0	0	0	0	0
J1518-05	0	0	0	0	0	0	0	0	0
J1518-06	7.41	13.63	22.49	7.98	14.68	24.22	8.56	15.75	25.98
J1518-07	6.83	12.57	20.74	7.36	13.54	22.34	7.89	14.52	23.96

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(Data sorted by Junction Name)

Junction	2005			2009			2015		
	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)	Ave Day (gpm)	Max Day (gpm)	Peak Hr (gpm)
J1518-08	0	0	0	0	0	0	0	0	0
J1518-09	0	0	0	0	0	0	0	0	0
J1518-10	1.36	2.51	4.14	1.47	2.7	4.46	1.57	2.9	4.78
J1518-11	0	0	0	0	0	0	0	0	0
J1518-12	2.04	3.76	6.2	2.2	4.05	6.68	2.36	4.34	7.17
J1518-13	1.61	2.97	4.9	1.74	3.2	5.28	1.86	3.43	5.66
J1518-14	2.82	5.19	8.56	3.04	5.59	9.22	3.26	5.99	9.88
J1518-15	3.02	5.55	9.16	3.25	5.98	9.87	3.49	6.41	10.58
J1518-16	0	0	0	0	0	0	0	0	0
J1518-17	0	0	0	0	0	0	0	0	0
J1518-18	0	0	0	0	0	0	0	0	0
J1518-19	2.4	4.42	7.29	2.58	4.76	7.85	2.77	5.1	8.41
J1518-20	0	0	0	0	0	0	0	0	0
J1518-21	0.89	1.64	2.71	0.96	1.77	2.92	1.03	1.89	3.12
J1518-22	0	0	0	0	0	0	0	0	0
J1518-23	0	0	0	0	0	0	0	0	0
J1518-24	0.45	0.83	1.37	0.49	0.89	1.47	0.52	0.96	1.58
J1518-25	1.56	2.87	4.74	1.68	3.09	5.1	1.8	3.32	5.48
J1518-26	2.22	4.09	6.75	2.39	4.4	7.26	2.57	4.72	7.79
J1518-27	2	3.68	6.07	2.16	3.97	6.55	2.31	4.25	7.02
J1518-28	0.67	1.23	2.03	0.72	1.33	2.19	0.77	1.43	2.35
J1518-29	0	0	0	0	0	0	0	0	0
J1519-01	0	0	0	0	0	0	0	0	0
J1519-02	0.99	1.81	2.99	1.06	1.95	3.22	1.14	2.09	3.45
J1519-03	5.11	9.41	15.53	5.51	10.14	16.73	5.91	10.87	17.93
J1618-01	0	0	0	0	0	0	0	0	0
J1618-02	1.33	2.45	4.04	1.43	2.64	4.36	1.54	2.83	4.67
J1618-03	0	0	0	0	0	0	0	0	0
J1618-04	2.67	4.92	8.12	2.88	5.3	8.75	3.09	5.68	9.37
J1618-05	0	0	0	0	0	0	0	0	0
J1619-06	0	0	0	0	0	0	0	0	0
Total	3422.87	106321	175429.7	3920.63	7266.41	11989.52	4594.44	8531.47	14076.71
City Total*	1117.86	102080	168431.7	1280.77	2409.06	3974.89	1487.94	2815.49	4645.35

*City Total = Total - EID North - EID South.

Appendix B

Existing System Scenarios Model Output

B-1: Existing System Automated Fire Flow Model Output

City of Placerville Water Model
Existing System WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1119-01	Cedar Ravine	FALSE	1,000	724	73	20	J1219-28
J1119-03	Cedar Ravine	TRUE	1,000	1,274	117	20	J1219-28
J1218-01	Cedar Ravine	TRUE	1,000	1,012	107	20	J1219-28
J1218-02	Cedar Ravine	FALSE	1,000	743	72	20	J1219-28
J1219-03	Cedar Ravine	FALSE	1,000	645	20	23	J1219-28
J1219-05	Cedar Ravine	FALSE	1,000	663	20	22	J1219-03
J1219-09	Cedar Ravine	FALSE	1,000	724	90	20	J1219-28
J1219-10	Cedar Ravine	FALSE	1,000	695	79	20	J1219-28
J1219-11	Cedar Ravine	FALSE	1,000	752	91	20	J1219-28
J1219-13	Cedar Ravine	TRUE	1,000	1,012	103	20	J1219-28
J1219-14	Cedar Ravine	FALSE	1,000	766	91	20	J1219-28
J1219-15	Cedar Ravine	FALSE	1,000	711	69	20	J1219-28
J1219-17	Cedar Ravine	FALSE	1,000	727	80	20	J1219-28
J1219-25	Cedar Ravine	FALSE	1,000	652	64	20	J1219-28
J1219-27	Cedar Ravine	FALSE	1,000	609	44	20	J1219-28
J1515-12	Combellack	TRUE	1,000	1,464	20	45	J1515-10
J1515-15	Combellack	TRUE	1,000	4,500	61	31	EID J1516-44
J1515-16	Combellack	TRUE	1,000	4,500	70	32	EID J1516-44
J1515-17	Combellack	TRUE	1,000	3,183	20	40	EID J1516-44
J1515-18	Combellack	TRUE	1,000	4,500	50	32	EID J1516-44
J1515-19	Combellack	TRUE	1,000	4,500	78	32	EID J1516-44
J1515-20	Combellack	TRUE	1,000	4,500	96	32	EID J1516-44
J1515-22	Combellack	TRUE	1,000	2,212	31	20	J1515-12
J1515-23	Combellack	TRUE	1,000	2,494	20	41	EID J1516-44
J1515-25	Combellack	TRUE	1,000	3,581	38	20	J1515-12
J1515-28	Combellack	TRUE	1,000	4,500	79	30	EID J1516-44
J1515-29	Combellack	TRUE	1,000	4,500	21	24	J1515-37
J1515-32	Combellack	TRUE	1,000	2,359	20	42	EID J1516-44
J1515-33	Combellack	TRUE	1,000	3,434	20	22	J1515-34
J1515-35	Combellack	TRUE	1,000	3,242	20	38	EID J1516-44
J1516-25	EID Res 4	TRUE	1,000	4,500	56	28	J1516-34
J1516-26	EID Res 4	TRUE	1,000	2,480	20	35	J1516-34
J1516-29	EID Res 4	TRUE	1,000	2,727	20	34	J1516-34
J1516-30	EID Res 4	TRUE	1,000	4,500	64	27	J1516-34
J1516-33	EID Res 4	TRUE	1,000	2,203	20	34	J1516-34
J1516-34	EID Res 4	TRUE	1,000	1,238	20	43	J1517-27
J1516-46	EID Res 4	TRUE	1,000	2,135	20	35	J1516-34
J1516-47	EID Res 4	TRUE	1,000	1,985	20	35	J1516-34
J1517-10	EID Res 4	TRUE	1,000	3,669	22	20	J1517-11
J1517-11	EID Res 4	TRUE	1,000	2,621	20	39	J1517-22
J1517-12	EID Res 4	TRUE	1,000	3,669	21	20	J1517-11
J1517-13	EID Res 4	TRUE	1,000	3,929	20	21	J1517-11
J1517-15	EID Res 4	TRUE	1,000	4,347	21	20	J1517-22

City of Placerville Water Model
Existing System WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1517-19	EID Res 4	TRUE	1,000	3,839	20	30	J1516-34
J1517-20	EID Res 4	TRUE	1,000	4,500	46	36	J1516-34
J1517-22	EID Res 4	TRUE	1,000	4,347	20	26	J1517-21
J1517-23	EID Res 4	TRUE	1,000	1,985	20	37	J1516-34
J1517-25	EID Res 4	TRUE	1,000	4,228	23	20	J1517-23
J1517-26	No FF	FALSE	1,000	0	-	-	-
J1517-27	EID Res 4	TRUE	1,000	1,094	20	40	J1516-34
J1518-16	EID Res 4	TRUE	1,000	1,090	38	20	J1518-27
J1518-17	EID Res 4	TRUE	1,000	1,090	36	20	J1518-27
J1518-18	EID Res 4	TRUE	1,000	1,090	34	20	J1518-27
J1518-19	EID Res 4	TRUE	1,000	1,090	34	20	J1518-27
J1518-22	EID Res 4	TRUE	1,000	1,242	39	20	J1518-27
J1518-27	EID Res 4	TRUE	1,000	1,044	20	33	J1518-28
J1618-01	EID Res 4	TRUE	1,000	1,574	20	23	J1618-02
J1216-01	Main Plant	TRUE	1,000	4,500	93	30	J1316-24
J1216-03	Main Plant	TRUE	1,750	4,500	30	25	J1316-24
J1216-04	Main Plant	TRUE	1,000	4,500	115	29	J1316-24
J1216-05	Main Plant	TRUE	1,000	2,101	20	30	J1316-24
J1216-07	Main Plant	TRUE	1,000	4,321	65	20	J1316-24
J1216-12	Main Plant	FALSE	1,000	142	55	20	J1316-23
J1217-01	Main Plant	TRUE	1,000	2,655	38	20	J1217-14
J1217-05	Main Plant	TRUE	1,500	2,699	35	20	J1218-05
J1217-06	Main Plant	TRUE	1,500	3,046	42	20	J1218-05
J1217-07	Main Plant	TRUE	1,500	3,235	31	20	J1218-05
J1217-08	Main Plant	TRUE	1,000	1,432	20	32	J1316-24
J1217-11	Main Plant	TRUE	1,000	3,223	60	20	J1217-08
J1217-111	Main Plant	TRUE	1,000	4,500	34	30	J1316-24
J1217-112	Main Plant	TRUE	1,000	4,500	43	31	J1316-24
J1217-114	Main Plant	TRUE	1,000	3,224	22	20	J1217-115
J1217-13	Main Plant	TRUE	1,000	3,322	64	20	J1218-05
J1217-14	Main Plant	TRUE	1,000	1,652	20	27	J1217-18
J1217-16	Main Plant	FALSE	1,000	275	26	20	J1217-17
J1217-19	Main Plant	TRUE	1,000	1,788	22	20	J1217-14
J1217-201	Main Plant	TRUE	1,000	1,479	20	32	J1316-24
J1217-21	Main Plant	TRUE	1,000	3,495	69	20	J1218-05
J1217-24	Main Plant	TRUE	1,000	1,279	20	32	J1316-24
J1217-26	Main Plant	TRUE	1,000	4,500	34	27	J1217-24
J1217-27	Main Plant	TRUE	1,000	4,500	42	30	J1316-24
J1217-28	Main Plant	TRUE	1,000	4,500	64	30	J1316-24
J1217-29	Main Plant	TRUE	1,000	4,500	41	31	J1316-24
J1218-08	Main Plant	FALSE	1,000	904	38	20	J1218-05
J1218-09	Main Plant	TRUE	1,000	1,111	44	20	J1218-05
J1218-10	Main Plant	TRUE	1,500	1,613	31	20	J1218-05

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Existing System WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1218-11	Main Plant	TRUE	1,000	1,968	39	20	J1218-05
J1315-01	Main Plant	TRUE	1,000	3,344	64	20	J1316-24
J1316-01	Main Plant	TRUE	1,000	2,723	20	31	J1316-24
J1316-02	Main Plant	TRUE	1,000	1,500	20	31	J1316-03
J1316-04	Main Plant	TRUE	1,000	1,651	20	23	J1316-05
J1316-07	Main Plant	TRUE	1,750	3,159	30	20	J1316-06
J1316-08	Main Plant	TRUE	1,500	4,500	99	28	J1316-24
J1316-09	Main Plant	TRUE	1,500	4,500	126	29	J1316-24
J1316-12	Main Plant	TRUE	1,500	4,500	118	29	J1316-24
J1316-14	Main Plant	TRUE	1,500	4,500	125	28	J1316-24
J1316-17	Main Plant	TRUE	1,000	3,056	91	20	J1316-24
J1316-22	Main Plant	TRUE	1,000	3,059	20	20	J1316-24
J1316-25	Main Plant	TRUE	1,000	2,457	20	24	J1316-24
J1316-28	Main Plant	TRUE	1,500	4,500	128	29	J1316-24
J1316-33	Main Plant	TRUE	1,500	4,500	80	29	J1316-24
J1316-34	Main Plant	TRUE	1,500	4,500	83	29	J1316-24
J1316-35	Main Plant	TRUE	1,000	1,508	20	32	J1316-24
J1316-40	Main Plant	TRUE	1,875	4,500	122	28	J1316-24
J1316-41	Main Plant	TRUE	1,000	4,500	122	28	J1316-24
J1316-42	Main Plant	TRUE	1,500	3,243	114	20	J1316-24
J1316-44	Main Plant	TRUE	1,500	3,245	137	20	J1316-24
J1316-46	Main Plant	FALSE	1,000	906	28	20	J1316-45
J1316-47	Main Plant	TRUE	1,000	1,785	39	20	J1316-45
J1316-48	Main Plant	TRUE	1,000	1,852	20	31	J1316-24
J1316-49	Main Plant	FALSE	1,000	193	20	32	J1316-24
J1316-50	Main Plant	TRUE	1,000	4,500	86	26	J1316-24
J1316-53	Main Plant	TRUE	1,000	2,311	20	30	J1316-24
J1316-56	Main Plant	TRUE	1,000	1,770	20	20	J1316-55
J1316-58	Main Plant	TRUE	1,000	1,469	20	30	J1316-24
J1316-60	Main Plant	TRUE	1,500	3,344	134	20	J1316-24
J1316-70	Main Plant	TRUE	1,500	1,787	20	31	J1316-24
J1316-71	Main Plant	TRUE	1,500	4,500	59	29	J1316-24
J1317-01	Main Plant	TRUE	1,000	3,069	39	20	J1218-05
J1317-03	Main Plant	TRUE	1,500	3,328	29	20	J1218-05
J1317-06	Main Plant	FALSE	1,500	1,022	20	23	J1317-05
J1317-08	Main Plant	TRUE	1,000	2,667	26	20	J1317-07
J1317-09	Main Plant	TRUE	1,500	3,082	20	24	J1218-05
J1317-11	Main Plant	TRUE	1,500	1,958	20	31	J1317-13
J1317-12	Main Plant	TRUE	1,500	3,064	34	20	J1317-11
J1317-13	Main Plant	FALSE	2,000	1,958	24	20	J1317-11
J1317-15	Main Plant	TRUE	1,500	4,500	60	21	J1218-05
J1317-16	Main Plant	TRUE	1,000	4,500	67	25	J1218-05
J1317-18	Main Plant	TRUE	1,000	4,500	51	30	J1316-24
J1317-20	Main Plant	TRUE	1,000	3,924	20	27	J1316-02

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Existing System WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1317-21	Main Plant	TRUE	1,000	1,916	20	20	J1316-02
J1317-26	Main Plant	TRUE	1,000	4,500	73	29	J1316-24
J1317-28	Main Plant	TRUE	1,000	4,500	90	29	J1316-24
J1317-30	Main Plant	TRUE	1,000	1,844	20	32	J1316-24
J1317-32	Main Plant	TRUE	1,500	3,558	20	30	J1218-05
J1317-34	Main Plant	TRUE	1,500	3,616	38	20	J1317-33
J1317-35	Main Plant	FALSE	1,500	489	20	32	J1316-24
J1317-36	Main Plant	FALSE	3,750	636	39	20	J1317-35
J1317-40	Main Plant	TRUE	1,000	4,500	74	27	J1317-35
J1317-41	Main Plant	TRUE	1,500	4,500	101	30	J1316-24
J1317-43	Main Plant	TRUE	1,000	4,500	101	30	J1316-24
J1317-45	Main Plant	FALSE	1,000	751	21	20	J1317-44
J1317-48	Main Plant	FALSE	1,000	506	20	32	J1316-24
J1317-49	Main Plant	TRUE	1,000	3,271	72	20	J1417-63
J1317-51	Main Plant	TRUE	1,500	4,500	98	30	J1316-24
J1317-52	Main Plant	TRUE	2,500	4,500	86	30	J1316-24
J1317-53	Main Plant	TRUE	2,750	4,500	85	30	J1316-24
J1317-54	Main Plant	TRUE	1,500	4,500	83	30	J1316-24
J1317-55	Main Plant	TRUE	1,500	4,500	67	30	J1316-24
J1318-01	Main Plant	TRUE	1,000	1,207	20	32	J1316-24
J1318-06	Main Plant	TRUE	1,000	1,414	29	20	J1318-01
J1318-08	Main Plant	TRUE	1,000	1,905	20	32	J1316-24
J1318-11	Main Plant	TRUE	1,000	3,709	20	21	J1218-05
J1319-03	Main Plant	FALSE	1,000	479	20	32	J1316-24
J1415-01	Main Plant	TRUE	1,000	1,531	20	30	J1316-24
J1415-04	Main Plant	TRUE	1,000	3,642	77	20	J1316-24
J1415-08	Main Plant	TRUE	1,000	3,958	65	20	J1316-24
J1415-10	Main Plant	TRUE	1,000	3,807	71	20	J1316-24
J1415-100	Main Plant	TRUE	1,000	1,256	20	23	J1415-22
J1415-104	Main Plant	FALSE	1,000	660	20	27	J1316-62
J1415-11	Main Plant	TRUE	1,500	3,482	23	20	J1415-26
J1415-12	Main Plant	TRUE	1,000	1,704	20	28	J1415-13
J1415-13	Main Plant	TRUE	1,000	1,798	20	29	J1316-24
J1415-16	Main Plant	TRUE	1,500	2,859	28	20	J1515-11
J1415-19	Main Plant	FALSE	1,000	321	20	22	J1415-18
J1415-21	Main Plant	FALSE	1,000	371	23	20	J1415-20
J1415-24	Main Plant	TRUE	1,500	1,596	20	29	J1316-24
J1415-27	Main Plant	TRUE	1,500	2,714	21	20	J1415-26
J1415-29	Main Plant	TRUE	1,000	2,257	42	20	J1515-11
J1415-30	Main Plant	FALSE	1,500	1,351	33	20	J1515-11
J1415-34	Main Plant	TRUE	1,000	2,102	40	20	J1515-11
J1415-37	Main Plant	TRUE	1,000	1,537	20	30	J1316-24
J1415-38	Main Plant	TRUE	1,000	1,743	20	29	J1316-24
J1415-39	Main Plant	TRUE	1,000	2,099	20	20	J1515-11

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Existing System WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1415-40	Main Plant	TRUE	1,000	1,472	25	20	J1415-100
J1416-01	Main Plant	TRUE	1,500	2,674	45	20	J1416-17
J1416-04	Main Plant	TRUE	1,000	2,047	42	20	J1316-35
J1416-06	Main Plant	FALSE	1,000	781	20	29	J1416-05
J1416-07	Main Plant	FALSE	1,000	682	20	32	J1316-24
J1416-09	Main Plant	TRUE	1,000	1,918	26	20	J1416-07
J1416-11	Main Plant	TRUE	1,500	3,162	35	20	J1416-07
J1416-13	Main Plant	TRUE	1,000	3,756	52	20	J1416-06
J1416-16	Main Plant	TRUE	1,000	1,654	20	31	J1316-24
J1416-18	Main Plant	TRUE	1,000	1,497	20	25	J1416-17
J1416-21	Main Plant	TRUE	1,000	4,500	79	21	J1516-35
J1416-23	Main Plant	TRUE	1,000	4,048	51	20	J1516-35
J1416-24	Main Plant	TRUE	1,500	3,710	81	20	J1516-35
J1416-30	Main Plant	TRUE	1,500	4,310	60	20	J1316-24
J1416-36	Main Plant	TRUE	1,000	3,103	80	20	J1516-35
J1416-42	Main Plant	TRUE	1,000	1,925	20	29	J1316-24
J1416-43	Main Plant	TRUE	1,000	2,310	63	20	J1516-35
J1416-44	Main Plant	TRUE	1,000	2,472	86	20	J1516-35
J1416-48	Main Plant	TRUE	1,500	1,894	20	25	J1416-37
J1417-02	Main Plant	TRUE	1,500	3,571	53	20	J1318-05
J1417-04	Main Plant	TRUE	1,500	4,136	55	20	J1319-03
J1417-05	Main Plant	TRUE	1,500	4,500	23	26	J1218-05
J1417-09	Main Plant	TRUE	1,500	4,363	35	20	J1518-10
J1417-12	Main Plant	TRUE	1,000	3,446	31	20	J1417-11
J1417-22	Main Plant	TRUE	1,000	2,678	40	20	J1417-20
J1417-27	Main Plant	TRUE	1,000	2,072	56	20	J1417-63
J1417-29	Main Plant	TRUE	3,500	4,061	52	20	J1417-63
J1417-32	Main Plant	TRUE	1,000	4,431	45	20	J1417-73
J1417-41	Main Plant	TRUE	1,000	3,507	20	20	J1417-38
J1417-45	Main Plant	TRUE	1,000	4,131	33	20	J1417-73
J1417-47	Main Plant	TRUE	1,000	4,465	20	24	J1417-46
J1417-48	Main Plant	TRUE	1,000	3,928	45	20	J1316-35
J1417-51	Main Plant	TRUE	1,000	2,260	20	32	J1316-24
J1417-55	Main Plant	TRUE	1,000	4,474	54	20	J1518-10
J1417-58	Main Plant	TRUE	1,000	4,500	37	23	J1518-10
J1417-59	Main Plant	TRUE	1,000	2,469	20	32	J1316-24
J1417-60	Main Plant	TRUE	1,000	4,420	20	20	J1417-59
J1417-62	Main Plant	TRUE	1,000	2,827	20	32	J1316-24
J1417-63	Main Plant	FALSE	1,000	564	20	32	J1316-24
J1417-65	Main Plant	TRUE	1,000	4,500	29	28	J1517-05
J1417-67	Main Plant	TRUE	1,000	4,500	22	30	J1517-05
J1417-68	Main Plant	TRUE	1,000	4,500	33	30	J1517-05
J1417-71	Main Plant	TRUE	1,000	1,710	20	24	J1417-73
J1417-76	Main Plant	TRUE	1,000	1,486	46	20	J1517-16

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Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1417-81	Main Plant	TRUE	1,500	1,971	42	20	J1517-16
J1417-82	Main Plant	FALSE	1,500	624	46	20	J1417-63
J1418-06	Main Plant	FALSE	1,000	852	37	20	J1319-03
J1418-07	Main Plant	TRUE	1,000	2,363	31	20	J1319-03
J1418-09	Main Plant	TRUE	2,500	2,790	21	20	J1319-03
J1418-10	Main Plant	FALSE	4,250	2,790	34	20	J1319-03
J1418-12	Main Plant	FALSE	1,500	1,037	20	32	J1316-24
J1418-17	Main Plant	TRUE	1,500	3,010	37	20	J1319-03
J1418-19	Main Plant	TRUE	1,500	2,580	44	20	J1318-01
J1418-20	Main Plant	TRUE	1,500	2,929	47	20	J1318-05
J1418-21	Main Plant	TRUE	1,500	3,128	47	20	J1318-05
J1418-24	Main Plant	FALSE	1,000	534	20	32	J1316-24
J1418-36	Main Plant	FALSE	1,000	521	25	20	J1518-10
J1418-40	Main Plant	FALSE	1,000	643	49	20	J1518-10
J1418-43	Main Plant	FALSE	1,000	751	41	20	J1518-10
J1418-44	Main Plant	FALSE	1,000	751	43	20	J1518-10
J1418-46	Main Plant	FALSE	1,000	751	55	20	J1518-10
J1418-48	Main Plant	FALSE	1,000	924	26	20	J1418-24
J1418-51	Main Plant	TRUE	1,000	4,500	37	21	J1518-10
J1418-53	Main Plant	TRUE	1,000	1,992	62	20	J1518-10
J1418-56	Main Plant	TRUE	2,250	2,786	61	20	J1518-10
J1418-61	Main Plant	FALSE	1,000	791	20	22	J1418-41
J1419-01	No FF	FALSE	1,000	0	24	8	J1220-03
J1419-03	Main Plant	FALSE	1,000	504	31	20	J1319-03
J1515-05	Main Plant	TRUE	1,000	4,500	79	32	J1316-24
J1515-06	Main Plant	TRUE	1,000	4,500	76	32	J1316-24
J1515-08	Main Plant	TRUE	1,000	4,500	56	32	J1316-24
J1515-09	Main Plant	TRUE	1,000	4,500	44	32	J1316-24
J1515-11	Main Plant	FALSE	1,500	1,149	20	31	J1316-24
J1516-01	Main Plant	TRUE	1,000	1,335	49	20	J1516-35
J1516-05	Main Plant	TRUE	1,000	2,129	36	20	J1516-35
J1516-06	Main Plant	TRUE	1,000	2,220	44	20	J1516-35
J1516-13	Main Plant	TRUE	1,000	1,811	33	20	J1516-35
J1516-15	Main Plant	TRUE	1,000	1,877	39	20	J1516-35
J1516-21	Main Plant	TRUE	1,000	2,159	62	20	J1516-35
J1516-22	Main Plant	TRUE	1,000	2,361	81	20	J1516-35
J1516-23	Main Plant	TRUE	1,000	2,409	79	20	J1516-35
J1516-24	Main Plant	TRUE	1,000	2,035	46	20	J1516-35
J1516-35	Main Plant	TRUE	1,000	1,077	20	32	J1316-24
J1516-36	Main Plant	TRUE	1,000	1,240	32	20	J1516-35
J1516-38	Main Plant	TRUE	1,000	1,584	22	20	J1516-35
J1516-40	Main Plant	TRUE	1,000	1,512	34	20	J1516-35
J1516-41	Main Plant	TRUE	1,000	1,761	28	20	J1516-35
J1517-02	Main Plant	TRUE	1,000	1,884	24	20	J1517-01

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Existing System WaterCAD Automated Fire Flow Analysis Results
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Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1517-05	Main Plant	TRUE	1,000	2,721	20	32	J1316-24
J1517-06	Main Plant	TRUE	1,000	4,015	20	32	J1316-24
J1517-07	Main Plant	TRUE	1,000	4,500	29	26	J1517-06
J1517-18	Main Plant	FALSE	1,000	477	27	20	J1517-16
J1518-11	Main Plant	FALSE	1,000	390	20	32	J1316-24
J1518-15	Main Plant	TRUE	1,000	2,721	22	20	J1518-10
J1418-01	Schnell School	FALSE	3,750	2,049	46	20	J1419-05
J1418-104	Schnell School	TRUE	1,500	2,049	38	20	J1419-05
J1418-29	Schnell School	TRUE	1,000	2,099	28	20	J1418-33
J1418-31	Schnell School	TRUE	1,000	1,968	20	27	J1418-32
J1418-32	Schnell School	TRUE	1,000	2,019	20	21	J1418-33
J1418-33	Schnell School	FALSE	2,250	1,992	20	28	J1418-32
J1419-02	Schnell School	TRUE	1,000	1,738	20	53	J1419-05
J1419-04	Schnell School	TRUE	1,500	2,020	39	20	J1419-05
J1419-05	Schnell School	TRUE	1,500	1,571	20	38	J1419-06
J1419-07	Schnell School	TRUE	1,500	1,859	31	20	J1419-05
J1119-04	Sierra Plant	FALSE	1,000	340	58	20	J1220-05
J1219-01	Sierra Plant	FALSE	1,000	340	36	20	J1220-05
J1219-20	Sierra Plant	FALSE	1,000	340	29	20	J1220-05
J1219-21	Sierra Plant	FALSE	1,000	340	36	20	J1220-05
J1219-22	Sierra Plant	FALSE	1,000	340	35	20	J1220-05
J1219-24	Sierra Plant	FALSE	1,000	340	37	20	J1220-05
J1219-30	Sierra Plant	FALSE	1,000	340	34	20	J1220-05
J1220-01	Sierra Plant	FALSE	1,000	340	31	20	J1220-05
J1220-03	Sierra Plant	FALSE	1,000	0	-	-	-
J1220-04	Sierra Plant	FALSE	1,000	340	20	20	J1220-05
J1319-01	Sierra Plant	FALSE	1,000	401	37	20	J1220-05
J1320-01	Sierra Plant	FALSE	1,000	492	20	22	J1220-05
J1419-09	Upper Schnell School	TRUE	1,500	2,186	20	26	J1519-03
J1518-06	Upper Schnell School	TRUE	1,000	2,313	20	21	J1518-07
J1518-07	Upper Schnell School	FALSE*	2,250	2,215	20	32	J1518-09
J1518-08	Upper Schnell School	TRUE	1,000	2,388	20	22	J1518-07
J1519-01	Upper Schnell School	FALSE*	2,250	1,939	33	20	J1519-03

* If the required FF is split between two hydrants in the zone, the FF can be met.

Summary

Total FF Nodes	295
Number of FF that Fail to Meet Required FF	65
Number of FF that Meet Required FF	230

B-2: Existing System Junction Model Output

City of Placerville
Water Modeling Report
Existing System Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
EID J1117-02	EID Res 6	2,300.00	0	41.9	2,396.94	0	37.4	2,386.34	0	31.1	2,371.86
EID J1117-03	EID Res 6	2,240.00	0	67.4	2,395.72	0	61.7	2,382.58	0	53.9	2,364.61
EID J1119-04	EID PRV#3S	2,237.00	0	154.9	2,595.00	0	154.6	2,594.37	0	154.3	2,593.62
EID J1219-02	EID PRV#3S	2,397.00	0	90.6	2,606.38	0	90.5	2,606.07	0	90.3	2,605.69
EID J1220-02	EID PRV#3S	2,537.59	0	34	2,616.20	0	34	2,616.10	0	33.9	2,615.94
EID J1220-06	EID PRV#3S	2,532.00	0	36.4	2,616.21	0	36.4	2,616.18	0	36.4	2,616.13
EID J1516-44	Combellack	2,140.00	0	56.4	2,270.31	0	53.9	2,264.55	0	46	2,246.40
EID J1519-04	Upper Schnell School	2,170.00	0	115	2,435.86	0	114.9	2,435.46	0	114.5	2,434.57
EID J1619-07	Upper Schnell School	2,280.00	0	67.5	2,435.92	0	67.5	2,435.92	0	67.5	2,435.92
EID North	Combellack	1,920.00	1,015.32	150.6	2,268.04	1,868.18	146	2,257.52	3,082.50	132.8	2,226.83
EID South	EID Res 6	2,240.00	1,289.69	67.3	2,395.64	2,373.03	61.6	2,382.33	3,915.50	53.6	2,363.98
J1117-01	EID Res 6	2,210.00	0	79.9	2,394.75	0	73.3	2,379.40	0	-14.3	2,176.90
J1117-02	EID Res 6	2,237.38	0	68.2	2,394.99	0	61.8	2,380.13	0	-25.8	2,177.76
J1119-01	Cedar Ravine	2,207.00	0.25	107.9	2,456.37	0.55	107.7	2,455.84	0.91	107.2	2,454.78
J1119-02	Cedar Ravine	2,226.32	0	99.6	2,456.52	0	99.6	2,456.49	0	99.6	2,456.43
J1119-03	Cedar Ravine	2,148.00	9.6	133.5	2,456.45	21.12	133.3	2,456.17	34.85	133.1	2,455.61
J1119-04	Sierra Plant	2,355.00	0	83.3	2,547.64	0	82.8	2,546.43	0	81.8	2,544.02
J1216-01	Main Plant	1,945.00	1.75	102.2	2,181.27	3.22	101.9	2,180.43	5.31	97.9	2,171.18
J1216-02	Main Plant	1,903.00	1.59	120.3	2,181.13	2.93	119.8	2,179.98	4.83	115.8	2,170.67
J1216-03	Main Plant	1,910.00	0	117.3	2,181.12	0	116.8	2,179.96	0	112.7	2,170.58
J1216-04	Main Plant	1,891.00	38.85	125.5	2,181.05	71.48	124.9	2,179.74	117.94	120.9	2,170.39
J1216-05	Main Plant	1,965.00	2.13	93.5	2,181.05	3.91	92.9	2,179.76	6.45	88.9	2,170.41
J1216-06	Main Plant	1,898.00	1.59	122.5	2,181.05	2.93	121.9	2,179.76	4.83	117.9	2,170.41
J1216-07	Main Plant	1,998.00	0.26	79.3	2,181.22	0.48	78.9	2,180.27	0.79	74.8	2,170.91
J1216-08	Main Plant	2,003.00	4.36	77.1	2,181.18	8.02	76.6	2,180.15	13.23	72.6	2,170.76
J1216-09	Main Plant	2,040.00	4.84	61	2,181.09	8.91	60.5	2,179.89	14.7	56.4	2,170.43
J1216-10	Main Plant	1,964.00	0.8	93.9	2,181.05	1.47	93.3	2,179.75	2.43	89.2	2,170.23
J1216-11	Main Plant	1,994.00	1.07	80.9	2,181.06	1.97	80.4	2,179.77	3.25	76.3	2,170.29
J1216-12	Main Plant	2,005.00	0	76.2	2,181.06	0	75.6	2,179.77	0	71.5	2,170.29
J1217-01	Main Plant	1,944.00	3.11	102.1	2,179.88	5.73	100.4	2,176.14	9.45	96.4	2,166.80
J1217-02	EID Res 6	2,180.00	0	92.7	2,394.29	0	85.7	2,377.99	0	-2.1	2,175.25
J1217-03	No FF	2,147.00	0	15	2,181.66	0	15	2,181.63	0	11.1	2,172.57
J1217-04	No FF	2,130.00	0.53	22.3	2,181.53	0.98	22.2	2,181.24	1.62	18.2	2,172.10
J1217-05	Main Plant	2,014.00	3.73	71.7	2,179.72	6.86	69.9	2,175.63	11.32	65.9	2,166.33
J1217-06	Main Plant	1,988.00	3.44	83	2,179.79	6.32	81.3	2,175.86	10.43	77.2	2,166.54
J1217-07	Main Plant	1,986.00	0	83.8	2,179.79	0	82.1	2,175.87	0	78.1	2,166.55
J1217-08	Main Plant	2,026.00	1.83	66.6	2,179.86	3.37	64.9	2,176.06	5.56	60.9	2,166.73
J1217-09	Main Plant	1,960.00	1.83	95.1	2,179.85	3.37	93.5	2,176.04	5.56	89.4	2,166.67
J1217-10	Main Plant	1,953.00	0	98.2	2,179.86	0	96.5	2,176.06	0	92.5	2,166.73
J1217-11	Main Plant	1,933.00	1.14	106.8	2,179.86	2.1	105.2	2,176.06	3.46	101.1	2,166.74
J1217-110	Main Plant	2,022.00	0	68.9	2,181.18	0	68.4	2,180.14	0	64.4	2,170.88
J1217-111	Main Plant	2,028.00	0.9	66.3	2,181.17	1.66	65.8	2,180.12	2.74	61.8	2,170.85
J1217-112	Main Plant	2,023.00	0	68.4	2,181.18	0	68	2,180.14	0	64	2,170.88
J1217-113	Main Plant	2,031.00	1.2	65	2,181.18	2.21	64.5	2,180.14	3.65	60.5	2,170.88
J1217-114	Main Plant	2,032.00	1.2	64.5	2,181.18	2.21	64.1	2,180.14	3.65	60.1	2,170.88
J1217-115	Main Plant	2,036.00	1.5	62.8	2,181.18	2.76	62.4	2,180.14	4.55	58.4	2,170.88
J1217-12	Main Plant	1,939.00	0	104.2	2,179.88	0	102.6	2,176.13	0	98.6	2,166.79
J1217-13	Main Plant	1,921.00	2.44	112	2,179.88	4.49	110.4	2,176.12	7.41	106.3	2,166.79
J1217-14	Main Plant	2,001.00	1.83	77.4	2,179.92	3.37	75.8	2,176.27	5.56	71.8	2,166.90
J1217-15	Main Plant	1,970.00	0	90.9	2,180.09	0	89.5	2,176.77	0	85.4	2,167.40
J1217-16	Main Plant	1,970.00	0	90.9	2,180.07	0	89.4	2,176.73	0	85.4	2,167.30
J1217-17	Main Plant	1,983.00	1.83	85.2	2,180.04	3.37	83.8	2,176.62	5.56	79.6	2,167.04
J1217-18	Main Plant	1,997.00	0	79.1	2,179.92	0	77.6	2,176.24	0	73.5	2,166.88
J1217-19	Main Plant	1,991.00	2.06	81.7	2,179.91	3.8	80.1	2,176.23	6.27	76.1	2,166.87
J1217-20	Main Plant	1,994.00	0.23	80.4	2,179.91	0.42	78.8	2,176.23	0.69	74.8	2,166.87
J1217-200	Main Plant	1,965.00	0	93	2,179.88	0	91.3	2,176.13	0	87.3	2,166.79
J1217-201	Main Plant	2,010.00	1.2	73.5	2,179.88	2.21	71.9	2,176.12	3.65	67.8	2,166.79
J1217-21	Main Plant	1,914.00	3.67	115.1	2,179.92	6.75	113.5	2,176.26	11.14	109.4	2,166.97
J1217-22	Main Plant	1,905.00	2.15	119	2,179.96	3.95	117.4	2,176.39	6.52	113.4	2,167.13
J1217-23	Main Plant	1,915.00	2.36	114.7	2,180.22	4.34	113.4	2,177.18	7.16	109.4	2,167.85
J1217-24	Main Plant	2,004.00	4.39	76.4	2,180.63	8.08	75.5	2,178.46	13.33	71.4	2,169.09
J1217-25	Main Plant	1,925.00	1.14	110.6	2,180.64	2.1	109.7	2,178.47	3.46	105.6	2,169.11

City of Placerville
Water Modeling Report
Existing System Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1217-26	Main Plant	1,980.00	2.98	86.8	2,180.73	5.48	86	2,178.75	9.04	81.9	2,169.39
J1217-27	Main Plant	1,985.00	2.66	84.9	2,181.16	4.9	84.4	2,180.10	8.09	80.4	2,170.81
J1217-28	Main Plant	1,952.00	1.87	99.1	2,181.13	3.43	98.6	2,180.01	5.66	94.6	2,170.70
J1217-29	Main Plant	2,037.00	6.44	62.3	2,180.98	11.86	61.7	2,179.52	19.57	57.6	2,170.21
J1217-30	No FF	2,123.00	0	25.3	2,181.48	0	25.1	2,181.09	0	21.2	2,171.96
J1217-31	Main Plant	2,031.00	0	65	2,181.18	0	64.5	2,180.15	0	60.5	2,170.89
J1218-01	Cedar Ravine	2,146.00	3.99	134.3	2,456.42	8.78	134.1	2,456.04	14.49	133.8	2,455.29
J1218-02	Cedar Ravine	2,223.00	2.4	101	2,456.38	5.28	100.8	2,455.87	8.71	100.3	2,454.85
J1218-04	Main Plant	2,036.00	0.24	62.2	2,179.70	0.44	60.4	2,175.58	0.73	56.3	2,166.20
J1218-05	Main Plant	2,048.00	0.24	57	2,179.70	0.44	55.2	2,175.58	0.73	51.1	2,166.20
J1218-06	Main Plant	2,044.00	0	58.7	2,179.70	0	56.9	2,175.58	0	52.9	2,166.20
J1218-07	Main Plant	2,017.00	0.73	70.4	2,179.70	1.35	68.6	2,175.58	2.23	64.6	2,166.20
J1218-08	Main Plant	2,006.00	3.25	75.2	2,179.70	5.98	73.4	2,175.58	9.87	69.3	2,166.20
J1218-09	Main Plant	1,993.00	0	80.8	2,179.70	0	79	2,175.58	0	74.9	2,166.21
J1218-10	Main Plant	2,022.00	4.01	68.2	2,179.70	7.38	66.5	2,175.59	12.18	62.4	2,166.22
J1218-11	Main Plant	2,005.00	20.76	75.6	2,179.71	38.2	73.8	2,175.59	63.03	69.8	2,166.23
J1219-01	Sierra Plant	2,410.00	3.33	59.5	2,547.64	7.33	59	2,546.42	12.09	58	2,544.01
J1219-02	Sierra Plant	2,397.00	2.75	65.2	2,547.64	6.04	64.7	2,546.43	9.97	63.6	2,544.02
J1219-03	Cedar Ravine	2,323.00	3.11	57.7	2,456.37	6.85	57.5	2,455.82	11.3	57	2,454.72
J1219-04	Cedar Ravine	2,310.00	1.2	63.3	2,456.37	2.64	63.1	2,455.82	4.36	62.6	2,454.72
J1219-05	Cedar Ravine	2,310.00	1.5	63.3	2,456.37	3.3	63.1	2,455.82	5.45	62.6	2,454.72
J1219-06	Cedar Ravine	2,260.00	1.5	85	2,456.37	3.3	84.7	2,455.83	5.45	84.3	2,454.75
J1219-07	Cedar Ravine	2,235.00	1.5	95.8	2,456.37	3.3	95.5	2,455.84	5.45	95.1	2,454.77
J1219-08	Cedar Ravine	2,226.00	1.49	99.7	2,456.37	3.27	99.4	2,455.84	5.4	99	2,454.78
J1219-09	Cedar Ravine	2,208.00	1	107.5	2,456.38	2.19	107.2	2,455.88	3.61	106.8	2,454.87
J1219-10	Cedar Ravine	2,234.00	3.44	96.2	2,456.38	7.56	96	2,455.87	12.47	95.6	2,454.85
J1219-11	Cedar Ravine	2,206.00	0.74	108.3	2,456.39	1.64	108.1	2,455.91	2.71	107.7	2,454.94
J1219-12	Cedar Ravine	2,187.00	0	116.6	2,456.40	0	116.4	2,455.94	0	116	2,455.01
J1219-13	Cedar Ravine	2,180.00	2.34	119.6	2,456.42	5.14	119.4	2,456.04	8.48	119.1	2,455.30
J1219-14	Cedar Ravine	2,198.00	6.62	111.8	2,456.38	14.57	111.6	2,455.89	24.04	111.1	2,454.89
J1219-15	Cedar Ravine	2,240.00	2.18	93.6	2,456.38	4.8	93.4	2,455.87	7.92	93	2,454.85
J1219-16	Cedar Ravine	2,236.00	2.5	95.3	2,456.38	5.51	95.1	2,455.87	9.09	94.7	2,454.85
J1219-17	Cedar Ravine	2,225.00	0	100.1	2,456.38	0	99.9	2,455.87	0	99.4	2,454.85
J1219-18	Cedar Ravine	2,223.00	2.32	101	2,456.38	5.09	100.8	2,455.87	8.4	100.3	2,454.85
J1219-19	Cedar Ravine	2,165.00	0	126.1	2,456.42	0	125.9	2,456.04	0	125.6	2,455.30
J1219-20	Sierra Plant	2,436.00	3.09	48.3	2,547.65	6.8	47.8	2,546.46	11.22	46.8	2,544.11
J1219-21	Sierra Plant	2,412.00	5.15	58.7	2,547.63	11.32	58.1	2,546.39	18.68	57.1	2,543.92
J1219-22	Sierra Plant	2,409.00	0.61	60	2,547.62	1.34	59.4	2,546.36	2.21	58.3	2,543.85
J1219-23	Sierra Plant	2,417.00	3.67	56.5	2,547.62	8.07	56	2,546.35	13.32	54.9	2,543.83
J1219-24	Sierra Plant	2,396.00	2.42	65.6	2,547.62	5.33	65	2,546.35	8.79	64	2,543.82
J1219-25	Cedar Ravine	2,270.00	0	80.6	2,456.38	0	80.4	2,455.87	0	80	2,454.85
J1219-26	Cedar Ravine	2,319.00	2.79	59.4	2,456.38	6.13	59.2	2,455.87	10.11	58.8	2,454.85
J1219-27	Cedar Ravine	2,315.00	0	61.2	2,456.38	0	60.9	2,455.87	0	60.5	2,454.85
J1219-28	Cedar Ravine	2,371.00	0	36.9	2,456.38	0	36.7	2,455.87	0	36.3	2,454.85
J1219-29	Sierra Plant	2,375.00	0	74.7	2,547.62	0	74.1	2,546.35	0	73	2,543.81
J1219-30	Sierra Plant	2,391.00	1.81	67.8	2,547.62	3.99	67.2	2,546.35	6.58	66.1	2,543.81
J1219-31	Sierra Plant	2,392.50	0	67.1	2,547.62	0	66.6	2,546.35	0	65.5	2,543.81
J1220-01	Sierra Plant	2,417.00	2.12	56.5	2,547.64	4.66	56	2,546.42	7.69	55	2,544.01
J1220-03	No FF	2,528.60	0	8.4	2,547.97	0	8.3	2,547.87	0	8.2	2,547.66
J1220-04	Sierra Plant	2,464.00	2.4	36.2	2,547.69	5.28	35.8	2,546.66	8.71	34.9	2,544.61
J1220-05	Sierra Plant	2,465.00	0	35.8	2,547.70	0	35.3	2,546.68	0	34.5	2,544.66
J1220-100	Sierra Hydro	2,528.60	0	37.9	2,616.19	0	37.9	2,616.09	0	37.8	2,615.91
J1315-01	Main Plant	1,832.00	0.6	150.9	2,180.79	1.1	150.1	2,178.96	1.82	145.9	2,169.29
J1316-01	Main Plant	1,949.00	0.53	100.4	2,181.13	0.98	99.9	2,180.01	1.62	95.9	2,170.70
J1316-02	Main Plant	1,995.00	2.13	80.4	2,180.78	3.91	79.6	2,178.91	6.45	75.5	2,169.55
J1316-03	Main Plant	1,970.00	2.4	91.2	2,180.78	4.42	90.4	2,178.90	7.29	86.3	2,169.55
J1316-04	Main Plant	1,896.00	0	123.2	2,180.78	0	122.4	2,178.91	0	118.4	2,169.55
J1316-05	Main Plant	1,890.00	2.13	125.8	2,180.78	3.91	125	2,178.91	6.45	120.9	2,169.55
J1316-06	Main Plant	1,909.00	0.82	117.6	2,180.90	1.5	116.9	2,179.29	2.47	112.8	2,169.77
J1316-07	Main Plant	1,885.00	3.81	128	2,180.90	7.02	127.3	2,179.29	11.58	123.2	2,169.77
J1316-08	Main Plant	1,863.00	0	137.5	2,180.74	0	136.6	2,178.80	0	132.6	2,169.46
J1316-09	Main Plant	1,859.00	0.27	139.2	2,180.76	0.5	138.4	2,178.86	0.82	134.4	2,169.53

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1316-10	Main Plant	1,860.00	0	138.8	2,180.74	0	137.9	2,178.79	0	133.9	2,169.46
J1316-11	Main Plant	1,860.00	0.56	138.8	2,180.74	1.02	137.9	2,178.79	1.68	133.9	2,169.45
J1316-12	Main Plant	1,852.00	0	142.2	2,180.71	0	141.3	2,178.70	0	137.3	2,169.37
J1316-13	Main Plant	1,855.00	0	140.9	2,180.71	0	140.1	2,178.70	0	136	2,169.37
J1316-14	Main Plant	1,839.00	3.58	147.8	2,180.66	6.59	146.9	2,178.54	10.87	142.9	2,169.20
J1316-15	Main Plant	1,835.00	1.01	149.5	2,180.64	1.85	148.6	2,178.47	3.05	144.6	2,169.12
J1316-16	Main Plant	1,943.00	0	103	2,180.97	0	102.3	2,179.52	0	98.2	2,169.98
J1316-17	Main Plant	1,939.00	2.97	104.7	2,180.96	5.46	104	2,179.49	9.01	99.9	2,169.94
J1316-18	Main Plant	1,937.00	0	105.5	2,180.96	0	104.9	2,179.46	0	100.8	2,169.91
J1316-19	Main Plant	1,942.00	0	103.4	2,180.96	0	102.7	2,179.46	0	98.6	2,169.91
J1316-20	Main Plant	1,997.00	0	79.6	2,180.96	0	78.9	2,179.46	0	74.8	2,169.91
J1316-21	Main Plant	1,987.00	0	83.9	2,180.96	0	83.3	2,179.46	0	79.1	2,169.91
J1316-22	Main Plant	1,991.00	0.71	82.2	2,180.96	1.31	81.5	2,179.46	2.16	77.4	2,169.91
J1316-23	Main Plant	2,085.00	0.26	41.6	2,181.05	0.48	41	2,179.76	0.79	36.9	2,170.26
J1316-24	Main Plant	2,104.00	1.58	33.3	2,180.97	2.91	32.7	2,179.52	4.8	28.5	2,169.98
J1316-25	Main Plant	1,936.00	0	106	2,180.96	0	105.3	2,179.46	0	101.2	2,169.91
J1316-26	Main Plant	1,953.00	2.34	98.5	2,180.71	4.3	97.6	2,178.69	7.09	93.6	2,169.39
J1316-27	Main Plant	1,846.00	7.6	144.8	2,180.66	13.98	143.9	2,178.55	23.07	139.8	2,169.22
J1316-28	Main Plant	1,845.00	0.43	145.2	2,180.70	0.79	144.4	2,178.67	1.3	140.3	2,169.34
J1316-29	Main Plant	1,842.00	3.31	146.5	2,180.66	6.09	145.6	2,178.55	10.05	141.6	2,169.21
J1316-30	Main Plant	1,841.00	3.44	146.9	2,180.64	6.32	146	2,178.48	10.43	142	2,169.14
J1316-31	Main Plant	1,842.00	3.65	146.5	2,180.53	6.71	145.4	2,178.14	11.07	141.4	2,168.87
J1316-32	Main Plant	1,842.00	3.32	146.5	2,180.51	6.11	145.4	2,178.07	10.08	141.4	2,168.81
J1316-33	Main Plant	1,845.00	6.85	145.1	2,180.44	12.61	144	2,177.87	20.81	140	2,168.68
J1316-34	Main Plant	1,842.00	2.44	146.4	2,180.46	4.49	145.3	2,177.93	7.41	141.3	2,168.70
J1316-35	Main Plant	1,923.00	0	111.2	2,179.99	0	109.7	2,176.46	0	106.1	2,168.24
J1316-36	Main Plant	1,920.00	4.18	112.6	2,180.33	7.69	111.4	2,177.52	12.69	107.3	2,168.05
J1316-37	Main Plant	1,882.00	1.21	129.1	2,180.33	2.22	127.9	2,177.53	3.66	123.8	2,168.09
J1316-38	Main Plant	1,880.00	0	129.9	2,180.33	0	128.7	2,177.53	0	124.6	2,168.09
J1316-39	Main Plant	1,865.00	0.26	136.4	2,180.34	0.48	135.2	2,177.57	0.79	131.2	2,168.17
J1316-40	Main Plant	1,837.00	0.73	148.7	2,180.64	1.34	147.7	2,178.47	2.21	143.7	2,169.12
J1316-41	Main Plant	1,837.00	1.33	148.7	2,180.63	2.45	147.7	2,178.45	4.04	143.7	2,169.10
J1316-42	Main Plant	1,830.00	0	151.8	2,180.86	0	151.1	2,179.16	0	146.9	2,169.53
J1316-43	Main Plant	1,822.00	2.05	155.3	2,180.86	3.78	154.5	2,179.16	6.24	150.4	2,169.53
J1316-44	Main Plant	1,822.00	0	155.3	2,180.86	0	154.5	2,179.15	0	150.4	2,169.52
J1316-45	Main Plant	1,911.00	0.82	116.5	2,180.34	1.5	115.3	2,177.54	2.47	111.3	2,168.14
J1316-46	Main Plant	1,893.00	0	124.3	2,180.34	0	123.1	2,177.54	0	119	2,168.14
J1316-47	Main Plant	1,868.00	3.45	135.1	2,180.34	6.34	133.9	2,177.54	10.46	129.9	2,168.14
J1316-48	Main Plant	1,895.00	4.14	123.4	2,180.30	7.62	122.2	2,177.43	12.57	118.1	2,168.06
J1316-49	Main Plant	1,893.00	2.19	124.3	2,180.34	4.03	123.1	2,177.55	6.65	118.9	2,167.89
J1316-50	Main Plant	1,855.00	4.89	140.8	2,180.39	9	139.6	2,177.72	14.85	135.6	2,168.33
J1316-51	Main Plant	1,862.00	1.09	137.7	2,180.36	2.01	136.6	2,177.62	3.32	132.5	2,168.23
J1316-52	Main Plant	1,885.00	0	127.8	2,180.36	0	126.6	2,177.62	0	122.5	2,168.22
J1316-53	Main Plant	1,900.00	0.25	121.3	2,180.36	0.46	120.1	2,177.62	0.76	116	2,168.21
J1316-54	Main Plant	1,843.00	1.26	146	2,180.36	2.31	144.8	2,177.62	3.81	140.7	2,168.21
J1316-55	Main Plant	1,825.00	0	153.7	2,180.36	0	152.6	2,177.62	0	148.5	2,168.20
J1316-56	Main Plant	1,825.00	2.25	153.7	2,180.36	4.15	152.6	2,177.62	6.85	148.5	2,168.20
J1316-57	Main Plant	1,827.00	4.52	152.9	2,180.36	8.31	151.7	2,177.62	13.71	147.6	2,168.20
J1316-58	Main Plant	1,855.00	0	140.8	2,180.43	0	139.7	2,177.84	0	135.5	2,168.25
J1316-59	Main Plant	1,819.00	2	156.6	2,180.85	3.68	155.8	2,179.13	6.07	151.6	2,169.46
J1316-60	Main Plant	1,820.00	1.17	156.1	2,180.80	2.16	155.3	2,178.96	3.56	151.1	2,169.29
J1316-61	Main Plant	1,819.00	3.14	156.5	2,180.79	5.78	155.7	2,178.96	9.54	151.6	2,169.29
J1316-62	Main Plant	1,881.00	1.75	129.6	2,180.60	3.22	128.7	2,178.35	5.31	124.4	2,168.53
J1316-70	Main Plant	1,856.00	0	140.4	2,180.56	0	139.4	2,178.24	0	135.4	2,169.03
J1316-71	Main Plant	1,847.00	0	144.2	2,180.35	0	143	2,177.59	0	139.1	2,168.56
J1317-01	Main Plant	1,994.00	4.59	80.3	2,179.69	8.45	78.5	2,175.55	13.94	74.6	2,166.32
J1317-02	Main Plant	1,995.00	0	79.9	2,179.66	0	78.1	2,175.44	0	74.1	2,166.32
J1317-03	Main Plant	1,995.00	0.6	79.9	2,179.66	1.1	78.1	2,175.44	1.82	74.1	2,166.32
J1317-04	Main Plant	1,987.00	0.4	83.3	2,179.64	0.73	81.5	2,175.39	1.2	77.6	2,166.32
J1317-05	Main Plant	1,980.00	0.59	86.4	2,179.63	1.08	84.5	2,175.36	1.78	80.6	2,166.27
J1317-06	Main Plant	1,986.00	2.37	83.8	2,179.63	4.36	81.9	2,175.37	7.19	78	2,166.29
J1317-07	Main Plant	1,994.00	3.13	80.3	2,179.63	5.77	78.5	2,175.36	9.52	74.5	2,166.28

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1317-08	Main Plant	1,980.00	0.81	86.4	2,179.64	1.48	84.5	2,175.37	2.44	80.6	2,166.31
J1317-09	Main Plant	1,984.00	0	84.7	2,179.74	0	82.9	2,175.69	0	78.9	2,166.37
J1317-10	Main Plant	1,965.00	49.28	92.9	2,179.71	90.68	91.1	2,175.61	149.62	87.1	2,166.29
J1317-100	Main Plant	1,982.00	0	85.5	2,179.70	0	83.7	2,175.57	0	79.7	2,166.31
J1317-11	Main Plant	1,972.00	2.01	89.9	2,179.77	3.7	88.2	2,175.78	6.11	84.1	2,166.47
J1317-12	Main Plant	1,940.00	8.92	103.7	2,179.77	16.41	102	2,175.78	27.08	98	2,166.48
J1317-13	Main Plant	1,946.00	1.94	101.1	2,179.77	3.57	99.4	2,175.78	5.89	95.4	2,166.47
J1317-14	Main Plant	1,967.00	1.14	92.5	2,180.73	2.1	91.6	2,178.75	3.46	87.6	2,169.39
J1317-15	Main Plant	1,890.00	5.43	125.5	2,179.97	9.99	123.9	2,176.42	16.48	120	2,167.35
J1317-16	Main Plant	1,886.00	1.7	127.2	2,180.00	3.12	125.7	2,176.51	5.15	121.8	2,167.55
J1317-17	Main Plant	1,978.00	0	87.9	2,181.14	0	87.4	2,180.02	0	83.4	2,170.71
J1317-18	Main Plant	1,970.00	0	91.3	2,181.14	0	90.9	2,180.02	0	86.8	2,170.71
J1317-19	Main Plant	2,011.00	1.83	73.5	2,180.78	3.37	72.7	2,178.92	5.56	68.6	2,169.60
J1317-20	Main Plant	2,011.00	1.07	73.5	2,180.78	1.97	72.7	2,178.92	3.25	68.6	2,169.59
J1317-21	Main Plant	1,994.00	1.87	80.8	2,180.78	3.43	80	2,178.91	5.66	76	2,169.56
J1317-22	Main Plant	1,961.00	1.59	95	2,180.64	2.93	94.1	2,178.48	4.83	89.9	2,168.70
J1317-23	Main Plant	1,990.00	1.07	82.5	2,180.66	1.97	81.6	2,178.56	3.25	77.4	2,168.89
J1317-24	Main Plant	1,980.00	0.69	86.9	2,180.74	1.27	86	2,178.80	2.1	82	2,169.49
J1317-25	Main Plant	1,964.00	0	93.8	2,180.69	0	92.9	2,178.64	0	88.9	2,169.37
J1317-26	Main Plant	1,965.00	3.48	93.3	2,180.69	6.4	92.4	2,178.64	10.56	88.4	2,169.37
J1317-27	Main Plant	1,964.00	0	93.8	2,180.69	0	92.9	2,178.65	0	88.9	2,169.37
J1317-28	Main Plant	1,929.00	6.94	108.9	2,180.71	12.76	108	2,178.70	21.05	104	2,169.41
J1317-29	Main Plant	1,951.00	1.4	98.9	2,179.61	2.58	97	2,175.30	4.26	93.2	2,166.32
J1317-30	Main Plant	1,938.00	1.01	104.5	2,179.60	1.85	102.7	2,175.27	3.05	98.8	2,166.33
J1317-31	Main Plant	1,910.00	1.01	116.6	2,179.59	1.85	114.7	2,175.22	3.05	110.9	2,166.36
J1317-32	Main Plant	1,912.00	1.8	115.8	2,179.59	3.32	113.9	2,175.23	5.48	110.1	2,166.37
J1317-33	Main Plant	1,925.00	0	110.2	2,179.62	0	108.3	2,175.34	0	104.6	2,166.88
J1317-34	Main Plant	1,883.00	2.51	128.3	2,179.62	4.63	126.5	2,175.34	7.64	122.8	2,166.88
J1317-35	Main Plant	1,993.00	5.28	80.9	2,180.00	9.72	79.4	2,176.50	16.04	75.5	2,167.49
J1317-36	Main Plant	1,949.00	0	99.9	2,180.01	0	98.4	2,176.54	0	94.6	2,167.57
J1317-37	Main Plant	1,939.00	0.49	104.3	2,180.03	0.91	102.8	2,176.59	1.5	99	2,167.71
J1317-38	Main Plant	1,882.00	0	128.9	2,180.03	0	127.5	2,176.59	0	123.6	2,167.71
J1317-39	Main Plant	1,882.00	0	128.9	2,180.03	0	127.5	2,176.59	0	123.6	2,167.71
J1317-40	Main Plant	1,883.84	2.53	128.1	2,180.03	4.65	126.7	2,176.59	7.67	122.8	2,167.71
J1317-41	Main Plant	1,874.00	2.25	132.4	2,180.09	4.15	131	2,176.79	6.85	127.3	2,168.14
J1317-42	Main Plant	1,874.00	4.61	132.2	2,179.67	8.48	130.4	2,175.47	13.99	126.8	2,167.19
J1317-43	Main Plant	1,871.00	4.06	133.7	2,180.05	7.46	132.2	2,176.65	12.31	128.6	2,168.13
J1317-44	Main Plant	1,979.00	1.6	87.3	2,180.69	2.95	86.4	2,178.62	4.87	82.3	2,169.31
J1317-45	Main Plant	1,978.00	0	87.7	2,180.69	0	86.8	2,178.63	0	82.8	2,169.33
J1317-46	Main Plant	1,983.00	1.37	85.5	2,180.69	2.53	84.6	2,178.63	4.17	80.6	2,169.33
J1317-47	Main Plant	1,977.00	0.91	88.1	2,180.69	1.68	87.2	2,178.63	2.77	83.2	2,169.32
J1317-48	Main Plant	1,982.00	1.14	86	2,180.69	2.1	85.1	2,178.63	3.46	81	2,169.31
J1317-49	Main Plant	1,873.00	0	132.8	2,179.91	0	131.2	2,176.22	0	127.8	2,168.32
J1317-50	Main Plant	1,872.00	0.67	133.2	2,179.92	1.23	131.6	2,176.24	2.03	128.2	2,168.31
J1317-51	Main Plant	1,867.00	7.27	135.4	2,180.04	13.38	134	2,176.63	22.08	130.3	2,168.16
J1317-52	Main Plant	1,861.00	5.76	138	2,180.05	10.6	136.6	2,176.65	17.49	132.9	2,168.19
J1317-53	Main Plant	1,861.00	0	138	2,180.05	0	136.6	2,176.66	0	132.9	2,168.19
J1317-54	Main Plant	1,860.00	4.85	138.5	2,180.06	8.93	137	2,176.69	14.73	133.4	2,168.23
J1317-55	Main Plant	1,856.00	7.59	140.2	2,180.16	13.96	138.9	2,176.99	23.03	135.1	2,168.32
J1317-56	Main Plant	1,870.00	3.41	134.2	2,180.21	6.27	132.9	2,177.16	10.35	129.1	2,168.37
J1318-01	Main Plant	1,958.00	1.21	95.9	2,179.55	2.22	93.9	2,175.11	3.66	90.1	2,166.20
J1318-05	Main Plant	1,975.00	0	88.5	2,179.55	0	86.6	2,175.11	0	82.7	2,166.23
J1318-06	Main Plant	1,937.00	3.21	104.9	2,179.55	5.9	103	2,175.11	9.73	99.2	2,166.20
J1318-07	Main Plant	1,903.00	1.21	119.7	2,179.55	2.22	117.7	2,175.11	3.66	113.9	2,166.22
J1318-08	Main Plant	1,918.00	1.6	113.2	2,179.61	2.95	111.3	2,175.29	4.87	107.4	2,166.32
J1318-09	Main Plant	1,987.00	4.41	83.3	2,179.61	8.12	81.5	2,175.29	13.4	77.6	2,166.32
J1318-10	Main Plant	1,987.00	0	83.3	2,179.61	0	81.5	2,175.29	0	77.6	2,166.33
J1318-11	Main Plant	1,987.00	0	83.3	2,179.61	0	81.5	2,175.30	0	77.6	2,166.33
J1319-01	Sierra Plant	2,425.00	0	53.1	2,547.76	0	52.8	2,546.94	0	52	2,545.30
J1319-02	Sierra Plant	2,423.00	4.84	54	2,547.77	10.65	53.6	2,547.00	17.57	53	2,545.47
J1319-03	Main Plant	1,985.00	1.05	84.1	2,179.47	1.93	82.1	2,174.85	3.18	78.3	2,165.87
J1320-01	Sierra Plant	2,470.00	0	33.7	2,547.85	0	33.5	2,547.32	0	33	2,546.28

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1320-02	Sierra Hydro	2,485.00	2.62	56.8	2,616.19	5.76	56.7	2,616.06	9.5	56.6	2,615.83
J1415-01	Main Plant	1,885.00	1.92	127.8	2,180.43	3.53	126.7	2,177.84	5.82	122.3	2,167.69
J1415-02	Main Plant	1,930.00	1.01	108.4	2,180.60	1.85	107.5	2,178.36	3.05	103.2	2,168.55
J1415-03	Main Plant	1,930.00	0	108.4	2,180.60	0	107.5	2,178.37	0	103.2	2,168.58
J1415-04	Main Plant	1,930.00	6.33	108.4	2,180.60	11.65	107.5	2,178.37	19.22	103.2	2,168.58
J1415-05	Main Plant	1,921.00	0	112.3	2,180.57	0	111.3	2,178.28	0	107.1	2,168.47
J1415-06	Main Plant	1,923.00	14.88	111.4	2,180.55	27.38	110.4	2,178.21	45.18	106.2	2,168.39
J1415-07	Main Plant	1,944.00	0	102.3	2,180.55	0	101.3	2,178.21	0	97.1	2,168.39
J1415-08	Main Plant	1,930.00	0	108.4	2,180.47	0	107.3	2,177.95	0	103	2,168.17
J1415-09	Main Plant	1,931.00	1.04	107.9	2,180.48	1.91	106.9	2,177.97	3.15	102.6	2,168.18
J1415-10	Main Plant	1,929.00	0	108.8	2,180.51	0	107.8	2,178.08	0	103.5	2,168.25
J1415-100	Main Plant	2,017.00	0	70.7	2,180.46	0	69.6	2,177.92	0	65.3	2,167.98
J1415-101	Main Plant	1,942.00	0	103.2	2,180.49	0	102.1	2,178.02	0	97.8	2,168.12
J1415-103	Main Plant	1,898.00	0	122.3	2,180.67	0	121.4	2,178.58	0	117.2	2,168.83
J1415-104	Main Plant	1,897.00	0	122.7	2,180.60	0	121.7	2,178.36	0	117.5	2,168.55
J1415-11	Main Plant	1,963.00	0	94.1	2,180.45	0	93	2,177.91	0	88.6	2,167.87
J1415-12	Main Plant	1,895.00	3.57	123.5	2,180.43	6.57	122.4	2,177.84	10.84	118	2,167.69
J1415-13	Main Plant	1,929.00	0	108.8	2,180.43	0	107.7	2,177.84	0	103.3	2,167.69
J1415-14	Main Plant	1,945.00	3.41	101.9	2,180.43	6.27	100.7	2,177.84	10.35	96.4	2,167.71
J1415-15	Main Plant	1,952.00	0	98.8	2,180.44	0	97.7	2,177.86	0	93.3	2,167.76
J1415-16	Main Plant	1,948.00	0	100.6	2,180.44	0	99.5	2,177.86	0	95.1	2,167.76
J1415-17	Main Plant	2,007.00	1.01	74.8	2,179.94	1.85	73.3	2,176.32	3.05	70.4	2,169.81
J1415-18	Main Plant	2,005.00	0	75.9	2,180.44	0	74.8	2,177.86	0	70.5	2,167.95
J1415-19	Main Plant	2,010.00	2.11	73.7	2,180.44	3.88	72.6	2,177.86	6.4	68.3	2,167.95
J1415-20	Main Plant	2,011.00	1.36	73.3	2,180.44	2.51	72.2	2,177.87	4.14	67.9	2,167.97
J1415-21	Main Plant	2,005.00	0.54	75.9	2,180.44	1	74.8	2,177.87	1.65	70.5	2,167.97
J1415-22	Main Plant	2,010.00	0	73.7	2,180.46	0	72.7	2,177.92	0	68.4	2,167.98
J1415-23	Main Plant	1,978.00	5.69	87.6	2,180.46	10.47	86.5	2,177.92	17.28	82.2	2,167.98
J1415-24	Main Plant	1,990.00	2.44	82.4	2,180.46	4.49	81.3	2,177.92	7.41	77	2,167.98
J1415-25	Main Plant	1,971.00	0	90.6	2,180.46	0	89.5	2,177.92	0	85.2	2,167.99
J1415-26	Main Plant	1,986.00	0	84.1	2,180.45	0	83	2,177.90	0	78.7	2,167.86
J1415-27	Main Plant	1,984.00	19.35	85	2,180.45	35.61	83.9	2,177.90	58.76	79.5	2,167.86
J1415-28	Main Plant	1,923.00	12.68	109.6	2,176.31	23.33	104.7	2,165.10	38.49	91.9	2,135.49
J1415-29	Main Plant	1,917.00	1.26	114	2,180.43	2.31	112.9	2,177.84	3.81	108.5	2,167.70
J1415-30	Main Plant	1,938.00	6.01	104.9	2,180.42	11.07	103.8	2,177.82	18.27	99.4	2,167.64
J1415-31	Main Plant	1,942.00	0	103.2	2,180.43	0	102	2,177.82	0	97.6	2,167.65
J1415-32	Main Plant	1,909.00	2	117.4	2,180.43	3.68	116.3	2,177.83	6.07	111.9	2,167.68
J1415-33	Main Plant	1,905.00	0	119.2	2,180.43	0	118	2,177.83	0	113.6	2,167.68
J1415-34	Main Plant	1,901.00	1.51	120.9	2,180.43	2.78	119.8	2,177.83	4.59	115.4	2,167.68
J1415-35	Main Plant	1,880.00	0	130	2,180.43	0	128.9	2,177.83	0	124.5	2,167.68
J1415-36	Main Plant	1,882.00	0	129.1	2,180.43	0	128	2,177.83	0	123.6	2,167.68
J1415-37	Main Plant	1,934.00	1.75	106.6	2,180.43	3.22	105.5	2,177.83	5.31	101.1	2,167.68
J1415-38	Main Plant	1,850.00	3.23	143	2,180.43	5.94	141.8	2,177.83	9.8	137.4	2,167.66
J1415-39	Main Plant	1,854.00	1.26	141.2	2,180.43	2.31	140.1	2,177.83	3.81	135.7	2,167.67
J1415-39a	Combellack	1,859.00	0	177	2,268.04	0	172.4	2,257.53	0	159.1	2,226.84
J1415-40	Main Plant	2,006.00	0	75.5	2,180.46	0	74.4	2,177.92	0	70.1	2,167.98
J1416-01	Main Plant	1,924.00	0	110.8	2,180.09	0	109.4	2,176.78	0	105.4	2,167.72
J1416-02	Main Plant	1,930.00	2.07	108.2	2,180.09	3.82	106.8	2,176.78	6.3	102.8	2,167.72
J1416-03	Main Plant	1,898.00	1.8	122	2,179.99	3.32	120.5	2,176.46	5.48	116.9	2,168.23
J1416-04	Main Plant	1,872.00	0.9	133.3	2,179.99	1.66	131.7	2,176.46	2.74	128.2	2,168.24
J1416-05	Main Plant	1,960.00	0.6	95.2	2,180.15	1.1	93.9	2,176.96	1.82	89.9	2,167.70
J1416-06	Main Plant	1,980.00	1.8	86.6	2,180.15	3.32	85.2	2,176.98	5.48	81.2	2,167.73
J1416-07	Main Plant	1,974.00	3.46	89.2	2,180.10	6.36	87.8	2,176.83	10.49	83.8	2,167.69
J1416-08	Main Plant	1,944.00	1.37	102.2	2,180.11	2.53	100.7	2,176.84	4.17	96.8	2,167.72
J1416-09	Main Plant	1,960.00	1.37	95.2	2,180.11	2.53	93.8	2,176.85	4.17	89.9	2,167.75
J1416-10	Main Plant	1,957.00	3.24	96.5	2,180.11	5.96	95.1	2,176.86	9.83	91.2	2,167.76
J1416-11	Main Plant	1,937.00	1.44	105.2	2,180.13	2.64	103.8	2,176.90	4.36	99.8	2,167.77
J1416-12	Main Plant	1,916.00	4.34	114.3	2,180.14	7.98	112.9	2,176.93	13.17	108.9	2,167.79
J1416-13	Main Plant	1,905.00	2.29	119.1	2,180.16	4.22	117.7	2,177.01	6.96	113.7	2,167.82
J1416-14	Main Plant	1,952.00	2.2	98.7	2,180.14	4.05	97.3	2,176.94	6.68	93.3	2,167.59
J1416-15	Main Plant	1,942.00	0.6	103	2,180.06	1.1	101.5	2,176.71	1.82	97.3	2,167.01
J1416-16	Main Plant	1,945.00	1.83	101.7	2,180.09	3.37	100.3	2,176.78	5.56	96.4	2,167.71

City of Placerville
Water Modeling Report
Existing System Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1416-17	Main Plant	1,982.00	3.13	85.7	2,180.09	5.77	84.3	2,176.77	9.52	80.3	2,167.70
J1416-18	Main Plant	1,952.00	1.6	98.7	2,180.09	2.95	97.2	2,176.77	4.87	93.3	2,167.70
J1416-19	Main Plant	1,896.00	1.25	123	2,180.26	2.29	121.7	2,177.29	3.78	117.6	2,167.87
J1416-20	Main Plant	1,873.00	0	132.9	2,180.28	0	131.7	2,177.36	0	127.6	2,168.04
J1416-21	Main Plant	1,872.00	1.09	133.4	2,180.29	2.01	132.1	2,177.39	3.32	128.1	2,168.06
J1416-22	Main Plant	1,873.00	1.08	132.9	2,180.28	1.99	131.7	2,177.37	3.28	127.7	2,168.05
J1416-23	Main Plant	1,888.00	3.75	126.5	2,180.27	6.9	125.2	2,177.35	11.39	121.2	2,168.03
J1416-24	Main Plant	1,886.00	18.95	127.3	2,180.26	34.86	126	2,177.32	57.52	122	2,168.01
J1416-25	Main Plant	1,886.00	0	127.3	2,180.26	0	126	2,177.32	0	122	2,168.02
J1416-26	Main Plant	1,899.00	1.51	121.8	2,180.46	2.78	120.7	2,177.93	4.59	116.4	2,168.04
J1416-27	Main Plant	1,899.00	3.76	121.8	2,180.49	6.92	120.7	2,178.03	11.42	116.5	2,168.28
J1416-28	Main Plant	1,913.00	0	115.7	2,180.34	0	114.5	2,177.55	0	110.4	2,168.06
J1416-29	Main Plant	1,908.00	4.81	117.8	2,180.39	8.85	116.7	2,177.71	14.6	112.5	2,168.09
J1416-30	Main Plant	1,910.00	0	117	2,180.41	0	115.8	2,177.76	0	111.7	2,168.11
J1416-31	Main Plant	1,925.00	0	110.4	2,180.09	0	108.9	2,176.77	0	105	2,167.72
J1416-32	Main Plant	1,956.00	0	96.9	2,180.08	0	95.5	2,176.74	0	91.6	2,167.72
J1416-33	Main Plant	1,930.00	0	108.2	2,180.08	0	106.8	2,176.74	0	102.8	2,167.72
J1416-34	Main Plant	1,956.00	0	96.9	2,180.08	0	95.5	2,176.74	0	91.6	2,167.72
J1416-35	Main Plant	1,930.00	1.6	108.2	2,180.08	2.95	106.8	2,176.74	4.87	102.8	2,167.72
J1416-36	Main Plant	1,898.00	0	122.1	2,180.19	0	120.7	2,177.09	0	116.8	2,168.01
J1416-37	Main Plant	1,984.00	1.83	84.8	2,180.05	3.37	83.4	2,176.66	5.56	79.5	2,167.71
J1416-38	Main Plant	2,000.00	3.92	77.8	2,179.86	7.21	76.2	2,176.07	11.9	71.9	2,166.26
J1416-39	Main Plant	1,963.00	0	93.9	2,180.05	0	92.4	2,176.65	0	88.6	2,167.71
J1416-40	Main Plant	1,946.00	1.84	101.3	2,180.05	3.39	99.8	2,176.65	5.59	95.9	2,167.72
J1416-41	Main Plant	1,941.00	6.16	103.4	2,180.05	11.34	102	2,176.66	18.71	98.1	2,167.72
J1416-42	Main Plant	1,966.00	3.28	92.8	2,180.39	6.04	91.6	2,177.70	9.97	87.4	2,168.09
J1416-43	Main Plant	1,931.00	1.37	107.8	2,180.05	2.53	106.3	2,176.66	4.17	102.5	2,167.94
J1416-44	Main Plant	1,911.00	0	116.4	2,180.06	0	115	2,176.69	0	111.2	2,168.01
J1416-45	Main Plant	1,910.00	7.67	116.8	2,180.07	14.11	115.4	2,176.73	23.28	111.6	2,168.01
J1416-46	Main Plant	1,910.00	0	116.8	2,180.07	0	115.4	2,176.73	0	111.6	2,168.01
J1416-47	Main Plant	1,922.00	0.54	111.7	2,180.07	1	110.2	2,176.73	1.65	106.4	2,168.01
J1416-48	Main Plant	1,996.00	0	79.6	2,180.05	0	78.2	2,176.66	0	74.3	2,167.71
J1417-01	Main Plant	1,895.00	0.75	123.1	2,179.56	1.39	121.2	2,175.14	2.29	117.5	2,166.65
J1417-02	Main Plant	1,896.00	6.56	122.7	2,179.56	12.07	120.8	2,175.15	19.92	116.9	2,166.29
J1417-03	Main Plant	1,895.00	0	123.1	2,179.57	0	121.2	2,175.17	0	117.4	2,166.38
J1417-04	Main Plant	1,895.00	3.45	123.1	2,179.57	6.34	121.2	2,175.18	10.46	117.4	2,166.36
J1417-05	Main Plant	1,887.00	4.03	126.6	2,179.60	7.42	124.7	2,175.27	12.24	121	2,166.64
J1417-06	Main Plant	1,885.00	0	127.5	2,179.61	0	125.6	2,175.31	0	121.9	2,166.80
J1417-07	Main Plant	1,885.00	0	127.5	2,179.61	0	125.6	2,175.31	0	121.9	2,166.84
J1417-08	Main Plant	1,892.00	0.36	124.4	2,179.62	0.66	122.6	2,175.32	1.09	119	2,166.94
J1417-09	Main Plant	1,903.00	1.01	119.7	2,179.56	1.85	117.7	2,175.15	3.05	114.8	2,168.26
J1417-10	Main Plant	1,898.00	0	121.8	2,179.56	0	119.9	2,175.16	0	116.6	2,167.61
J1417-11	Main Plant	1,937.00	1.21	104.9	2,179.56	2.22	103	2,175.15	3.66	99.8	2,167.70
J1417-12	Main Plant	1,912.00	0	115.8	2,179.58	0	113.9	2,175.19	0	110.7	2,167.79
J1417-13	Main Plant	1,908.00	1.12	117.5	2,179.58	2.06	115.6	2,175.19	3.4	112.3	2,167.63
J1417-14	Main Plant	1,908.00	0	117.5	2,179.58	0	115.6	2,175.19	0	112.3	2,167.61
J1417-15	Main Plant	1,920.00	0	112.3	2,179.58	0	110.4	2,175.20	0	107.1	2,167.51
J1417-16	Main Plant	1,919.00	1.35	112.7	2,179.58	2.49	110.8	2,175.20	4.11	107.5	2,167.51
J1417-17	Main Plant	1,895.00	0.18	123.1	2,179.63	0.33	121.3	2,175.34	0.54	117.7	2,167.12
J1417-18	Main Plant	1,887.00	1.48	126.6	2,179.63	2.72	124.8	2,175.35	4.49	121.2	2,167.18
J1417-19	Main Plant	1,965.00	2	92.8	2,179.51	3.68	90.9	2,174.99	6.07	87.4	2,166.97
J1417-20	Main Plant	1,988.00	1.35	82.9	2,179.56	2.49	81	2,175.14	4.11	77.5	2,167.15
J1417-21	Main Plant	1,945.00	0	101.5	2,179.59	0	99.6	2,175.23	0	96.2	2,167.38
J1417-22	Main Plant	1,942.00	2.25	102.8	2,179.59	4.15	100.9	2,175.23	6.85	97.5	2,167.38
J1417-23	Main Plant	1,949.00	0.9	99.8	2,179.58	1.66	97.9	2,175.19	2.74	94.4	2,167.17
J1417-24	Main Plant	1,927.00	0	109.3	2,179.60	0	107.4	2,175.25	0	104	2,167.32
J1417-25	Main Plant	1,926.00	0.9	109.7	2,179.60	1.66	107.8	2,175.25	2.74	104.4	2,167.32
J1417-26	Main Plant	1,906.00	0.9	118.5	2,179.92	1.66	116.9	2,176.24	2.74	113.5	2,168.31
J1417-27	Main Plant	1,921.00	0	112	2,179.89	0	110.4	2,176.17	0	107	2,168.34
J1417-28	Main Plant	1,887.00	1.28	126.7	2,179.85	2.35	125	2,176.02	3.88	121.8	2,168.47
J1417-29	Main Plant	1,888.00	0	126.3	2,179.84	0	124.6	2,176.01	0	121.4	2,168.49
J1417-30	Main Plant	1,921.00	0.9	112	2,179.81	1.66	110.3	2,175.93	2.74	107.1	2,168.50

City of Placerville
Water Modeling Report
Existing System Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1417-31	Main Plant	1,895.00	1.8	123.2	2,179.82	3.32	121.6	2,175.95	5.48	118.4	2,168.56
J1417-32	Main Plant	1,923.00	2.7	111.1	2,179.77	4.97	109.4	2,175.78	8.2	106.4	2,168.87
J1417-33	Main Plant	1,876.00	0.45	131.5	2,179.89	0.83	129.9	2,176.17	1.37	126.5	2,168.34
J1417-34	Main Plant	1,944.00	1.12	102	2,179.84	2.06	100.4	2,176.00	3.4	97.1	2,168.50
J1417-35	Main Plant	1,959.00	0	95.5	2,179.84	0	93.9	2,176.00	0	90.6	2,168.49
J1417-36	Main Plant	1,951.00	1.8	99	2,179.84	3.32	97.3	2,176.00	5.48	94.1	2,168.49
J1417-37	Main Plant	1,946.00	0	101.2	2,179.84	0	99.5	2,176.00	0	96.3	2,168.49
J1417-38	Main Plant	1,932.00	0.45	107.2	2,179.84	0.83	105.6	2,176.00	1.37	102.3	2,168.49
J1417-39	Main Plant	1,956.00	0.67	96.8	2,179.84	1.23	95.2	2,176.00	2.03	91.9	2,168.49
J1417-40	Main Plant	1,935.00	0	105.9	2,179.84	0	104.3	2,176.00	0	101	2,168.49
J1417-41	Main Plant	1,924.00	1.12	110.7	2,179.84	2.06	109	2,176.00	3.4	105.8	2,168.49
J1417-42	Main Plant	1,915.00	0	114.6	2,179.84	0	112.9	2,176.00	0	109.7	2,168.49
J1417-43	Main Plant	1,948.00	0.67	100.3	2,179.80	1.23	98.6	2,175.88	2.03	95.5	2,168.66
J1417-44	Main Plant	1,940.00	0	103.8	2,179.82	0	102.1	2,175.95	0	98.9	2,168.58
J1417-45	Main Plant	1,934.00	1.12	106.4	2,179.84	2.06	104.7	2,176.00	3.4	101.5	2,168.50
J1417-46	Main Plant	1,890.00	0	125.4	2,179.92	0	123.9	2,176.26	0	120.4	2,168.31
J1417-47	Main Plant	1,887.00	2.92	126.7	2,179.93	5.38	125.2	2,176.29	8.88	121.7	2,168.29
J1417-48	Main Plant	1,865.00	1.83	136.3	2,179.99	3.37	134.8	2,176.47	5.56	131.2	2,168.24
J1417-49	Main Plant	1,907.00	0.9	118.1	2,179.98	1.66	116.6	2,176.44	2.74	113	2,168.16
J1417-50	Main Plant	1,864.00	0.47	136.7	2,179.99	0.87	135.2	2,176.47	1.44	131.6	2,168.24
J1417-51	Main Plant	1,987.00	1.21	83.3	2,179.57	2.22	81.4	2,175.18	3.66	78.7	2,168.94
J1417-52	Main Plant	1,975.00	2.21	88.5	2,179.57	4.07	86.6	2,175.18	6.72	83.9	2,168.94
J1417-53	Main Plant	1,913.00	0	115.3	2,179.57	0	113.4	2,175.17	0	110.7	2,168.85
J1417-54	Main Plant	1,916.00	0	114	2,179.57	0	112.1	2,175.17	0	109.4	2,168.85
J1417-55	Main Plant	1,917.00	0	113.6	2,179.57	0	111.7	2,175.17	0	109	2,168.86
J1417-56	Main Plant	1,945.00	1.01	101.5	2,179.57	1.85	99.6	2,175.18	3.05	96.9	2,168.92
J1417-57	Main Plant	1,938.00	0	104.5	2,179.57	0	102.6	2,175.18	0	99.9	2,168.92
J1417-58	Main Plant	1,944.00	1.61	101.9	2,179.57	2.97	100	2,175.18	4.9	97.3	2,168.92
J1417-59	Main Plant	2,001.00	1.01	77.3	2,179.58	1.85	75.4	2,175.21	3.05	72.7	2,169.06
J1417-60	Main Plant	2,000.00	1.61	77.7	2,179.58	2.97	75.8	2,175.21	4.9	73.1	2,169.06
J1417-61	Main Plant	2,009.30	1.41	73.7	2,179.59	2.6	71.8	2,175.22	4.29	69.2	2,169.15
J1417-62	Main Plant	1,973.00	5.15	89.4	2,179.58	9.47	87.5	2,175.19	15.63	84.5	2,168.28
J1417-63	Main Plant	2,004.00	4.06	76.1	2,179.88	7.46	74.5	2,176.14	12.31	71.1	2,168.25
J1417-64	Main Plant	2,032.00	0	63.9	2,179.59	0	62	2,175.22	0	59.3	2,168.99
J1417-65	Main Plant	2,023.00	2.07	67.8	2,179.63	3.82	65.9	2,175.36	6.3	63.5	2,169.79
J1417-66	Main Plant	2,006.00	2.9	75.1	2,179.64	5.34	73.3	2,175.39	8.81	70.8	2,169.72
J1417-67	Main Plant	1,980.00	2.07	86.4	2,179.64	3.82	84.5	2,175.38	6.3	82.1	2,169.73
J1417-68	Main Plant	2,007.00	2.07	74.7	2,179.64	3.82	72.9	2,175.38	6.3	70.4	2,169.73
J1417-69	Main Plant	2,005.00	0	75.6	2,179.64	0	73.7	2,175.39	0	71.3	2,169.70
J1417-70	Main Plant	1,996.00	0	79.5	2,179.66	0	77.6	2,175.45	0	75.1	2,169.58
J1417-71	Main Plant	2,001.00	0	77.4	2,179.80	0	75.7	2,175.88	0	72.5	2,168.66
J1417-72	Main Plant	1,997.00	0	79.1	2,179.80	0	77.4	2,175.88	0	74.3	2,168.66
J1417-73	Main Plant	2,001.00	1.35	77.4	2,179.80	2.49	75.7	2,175.88	4.11	72.5	2,168.65
J1417-74	Main Plant	1,999.00	0	78.2	2,179.80	0	76.5	2,175.88	0	73.4	2,168.66
J1417-75	Main Plant	1,988.00	0.9	83	2,179.80	1.66	81.3	2,175.87	2.74	78.1	2,168.63
J1417-76	Main Plant	1,922.00	1.61	111.7	2,180.06	2.97	110.2	2,176.69	4.9	106.3	2,167.75
J1417-77	Main Plant	1,925.00	1.12	110.3	2,179.95	2.06	108.7	2,176.34	3.4	104.6	2,166.88
J1417-78	Main Plant	1,920.00	0	112.5	2,180.06	0	111.1	2,176.69	0	107.2	2,167.76
J1417-79	Main Plant	1,908.00	2.44	117.7	2,180.06	4.49	116.2	2,176.68	7.41	112.4	2,167.77
J1417-80	Main Plant	1,920.00	2.47	112.5	2,180.06	4.55	111.1	2,176.69	7.51	107.2	2,167.76
J1417-81	Main Plant	1,925.00	0	110.4	2,180.08	0	108.9	2,176.75	0	105	2,167.76
J1417-82	Main Plant	1,945.00	0	101.6	2,179.88	0	100	2,176.14	0	96.6	2,168.26
J1418-01	Schnell School	1,953.00	0	100.3	2,184.76	0	100.2	2,184.66	0	100.1	2,184.46
J1418-02	Main Plant	1,950.00	0	99.3	2,179.44	0	97.2	2,174.77	0	93.4	2,165.80
J1418-03	Main Plant	1,949.00	4.09	99.7	2,179.44	7.52	97.7	2,174.77	12.41	93.8	2,165.80
J1418-04	Schnell School	1,941.00	0	105.5	2,184.75	0	105.4	2,184.65	0	105.3	2,184.43
J1418-05	Schnell School	1,945.00	2.99	103.7	2,184.74	5.5	103.7	2,184.61	9.07	103.5	2,184.32
J1418-06	Main Plant	1,945.00	1.8	101.4	2,179.47	3.32	99.4	2,174.85	5.48	95.6	2,165.88
J1418-07	Main Plant	1,930.00	2.33	108	2,179.54	4.28	106	2,175.09	7.06	102.2	2,166.19
J1418-08	Main Plant	1,930.00	0	108	2,179.55	0	106	2,175.10	0	102.2	2,166.20
J1418-09	Main Plant	1,934.00	0	106.2	2,179.55	0	104.3	2,175.10	0	100.5	2,166.21
J1418-10	Main Plant	1,925.00	0	110.1	2,179.55	0	108.2	2,175.10	0	104.4	2,166.21

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1418-103	Schnell School	1,946.00	0	103.3	2,184.75	0	103.3	2,184.66	0	103.2	2,184.45
J1418-104	Schnell School	1,944.50	1.81	103.9	2,184.75	5.43	103.9	2,184.66	8.96	103.8	2,184.45
J1418-11	Main Plant	1,919.00	0	112.7	2,179.55	0	110.8	2,175.11	0	107	2,166.23
J1418-12	Main Plant	1,934.00	5.32	106.2	2,179.43	9.79	104.2	2,174.73	16.15	100.3	2,165.80
J1418-13	Main Plant	1,922.00	3.96	111.4	2,179.55	7.29	109.5	2,175.10	12.03	105.7	2,166.21
J1418-14	Main Plant	1,927.00	0	109.3	2,179.55	0	107.3	2,175.11	0	103.5	2,166.21
J1418-15	Main Plant	1,931.00	5.84	107.4	2,179.25	10.74	105.2	2,174.19	17.72	101	2,164.51
J1418-16	Main Plant	1,923.00	8.29	110.9	2,179.43	15.25	108.9	2,174.74	25.16	105.1	2,165.91
J1418-17	Main Plant	1,920.00	0	112.3	2,179.55	0	110.4	2,175.11	0	106.5	2,166.22
J1418-18	Main Plant	1,957.00	1.97	96.2	2,179.40	3.62	94.2	2,174.64	5.97	90.6	2,166.34
J1418-19	Main Plant	1,902.00	1.39	120.1	2,179.55	2.56	118.2	2,175.11	4.22	114.3	2,166.23
J1418-20	Main Plant	1,913.00	0	115.3	2,179.55	0	113.4	2,175.11	0	109.6	2,166.23
J1418-21	Main Plant	1,912.00	13.97	115.8	2,179.55	25.7	113.8	2,175.11	42.4	110	2,166.23
J1418-22	Main Plant	1,912.00	0	115.7	2,179.46	0	113.7	2,174.82	0	110	2,166.20
J1418-23	Main Plant	1,937.00	0.61	104.9	2,179.42	1.12	102.9	2,174.72	1.85	99.2	2,166.20
J1418-24	Main Plant	1,996.00	1.05	79.3	2,179.40	1.93	77.3	2,174.64	3.18	73.6	2,166.20
J1418-25	Main Plant	1,954.00	1.01	97.5	2,179.38	1.85	95.4	2,174.60	3.05	91.8	2,166.08
J1418-26	Main Plant	1,906.00	0	118.4	2,179.56	0	116.4	2,175.15	0	113.7	2,168.73
J1418-27	Schnell School	1,992.00	0	83.4	2,184.76	0	83.4	2,184.68	0	83.3	2,184.49
J1418-28	Schnell School	2,002.00	0	79.1	2,184.77	0	79	2,184.71	0	79	2,184.57
J1418-29	Schnell School	2,006.00	0	77.3	2,184.77	0	77.3	2,184.71	0	77.3	2,184.58
J1418-30	Schnell School	2,035.00	0	64.8	2,184.78	0	64.8	2,184.75	0	64.8	2,184.69
J1418-31	Schnell School	2,035.00	0.49	64.8	2,184.78	0.91	64.8	2,184.75	1.5	64.8	2,184.69
J1418-32	Schnell School	2,039.00	2.27	63.1	2,184.78	4.18	63.1	2,184.75	6.9	63	2,184.69
J1418-33	Schnell School	2,048.00	5.09	59.2	2,184.78	9.37	59.2	2,184.75	15.46	59.1	2,184.69
J1418-34	Main Plant	2,020.00	0.91	69	2,179.39	1.68	66.9	2,174.61	2.77	63.3	2,166.40
J1418-35	Main Plant	2,036.00	0.68	62	2,179.39	1.25	60	2,174.61	2.06	56.4	2,166.40
J1418-36	Main Plant	2,026.00	0	66.4	2,179.39	0	64.3	2,174.61	0	60.7	2,166.40
J1418-37	Main Plant	2,039.00	2.04	60.7	2,179.39	3.76	58.7	2,174.61	6.2	55.1	2,166.40
J1418-38	Main Plant	2,026.00	0	66.4	2,179.39	0	64.3	2,174.61	0	60.7	2,166.40
J1418-39	Main Plant	2,021.00	0	68.5	2,179.39	0	66.5	2,174.61	0	62.9	2,166.40
J1418-40	Main Plant	1,980.00	0	86.3	2,179.39	0	84.2	2,174.63	0	80.7	2,166.45
J1418-41	Main Plant	1,944.00	1.36	101.9	2,179.42	2.51	99.8	2,174.72	4.14	96.1	2,166.19
J1418-42	Main Plant	1,960.00	0	94.9	2,179.40	0	92.9	2,174.64	0	89.3	2,166.35
J1418-43	Main Plant	1,975.00	2.94	88.4	2,179.40	5.42	86.4	2,174.64	8.94	82.8	2,166.47
J1418-44	Main Plant	1,981.00	2.04	85.8	2,179.40	3.76	83.8	2,174.64	6.2	80.2	2,166.47
J1418-45	Main Plant	1,985.00	1.81	84.1	2,179.40	3.34	82	2,174.64	5.51	78.5	2,166.47
J1418-46	Main Plant	1,965.00	0	92.8	2,179.40	0	90.7	2,174.64	0	87.2	2,166.49
J1418-47	Main Plant	1,963.00	2.26	93.6	2,179.40	4.16	91.6	2,174.64	6.86	88	2,166.49
J1418-48	Main Plant	1,982.00	2.88	85.4	2,179.40	5.3	83.4	2,174.65	8.74	79.7	2,166.22
J1418-49	Main Plant	1,953.00	0	98	2,179.57	0	96.1	2,175.18	0	93.4	2,168.93
J1418-50	Main Plant	1,947.00	0.61	100.6	2,179.57	1.12	98.7	2,175.18	1.85	96	2,168.92
J1418-51	Main Plant	1,922.00	0.18	111.4	2,179.57	0.33	109.5	2,175.17	0.54	106.8	2,168.88
J1418-52	Main Plant	1,922.00	1.61	111.4	2,179.57	2.97	109.5	2,175.17	4.9	106.8	2,168.88
J1418-53	Main Plant	1,931.00	1.01	107.5	2,179.51	1.85	105.6	2,174.98	3.05	102.8	2,168.60
J1418-54	Main Plant	1,927.00	1.53	109.3	2,179.52	2.82	107.3	2,175.01	4.65	104.6	2,168.75
J1418-55	Main Plant	1,927.00	2.18	109.3	2,179.52	4.01	107.3	2,175.03	6.62	104.6	2,168.75
J1418-56	Main Plant	1,923.00	0	111	2,179.53	0	109.1	2,175.05	0	106.3	2,168.74
J1418-57	Main Plant	1,917.00	0	113.6	2,179.54	0	111.7	2,175.08	0	108.9	2,168.74
J1418-58	Main Plant	1,908.00	0	117.5	2,179.56	0	115.6	2,175.14	0	112.8	2,168.73
J1418-61	Main Plant	1,948.00	0	100.1	2,179.42	0	98.1	2,174.72	0	94.4	2,166.19
J1418-62	Schnell School	1,949.00	0	102	2,184.75	0	102	2,184.66	0	101.9	2,184.45
J1419-01	No FF	2,130.00	5.46	23.7	2,184.69	10.05	23.6	2,184.47	16.58	23.4	2,183.98
J1419-02	Schnell School	1,960.00	20.38	97.2	2,184.70	37.5	97.1	2,184.49	61.88	96.9	2,184.03
J1419-03	Main Plant	1,960.00	0	95	2,179.47	0	93	2,174.85	0	89.1	2,165.87
J1419-04	Schnell School	1,970.00	0.65	92.9	2,184.76	1.2	92.9	2,184.66	1.98	92.8	2,184.45
J1419-05	Schnell School	2,014.00	2.76	73.9	2,184.75	5.07	73.8	2,184.65	8.37	73.7	2,184.44
J1419-06	Schnell School	1,994.00	1.62	82.5	2,184.75	2.99	82.5	2,184.65	4.93	82.4	2,184.44
J1419-07	Schnell School	1,988.00	0	85.1	2,184.75	0	85.1	2,184.66	0	85	2,184.44
J1419-08	Schnell School	1,987.00	2.87	85.6	2,184.75	5.28	85.5	2,184.66	8.71	85.4	2,184.44
J1419-09	Upper Schnell School	2,057.00	4.48	163.8	2,435.61	8.25	163.4	2,434.67	13.61	162.5	2,432.57
J1515-01	Main Plant	1,977.00	0	87.8	2,179.94	0	86.2	2,176.32	0	83.4	2,169.81

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1515-02	Main Plant	1,974.00	1.36	89.1	2,179.94	2.51	87.5	2,176.31	4.14	84.8	2,169.89
J1515-03	Main Plant	1,955.00	1.65	97.3	2,179.94	3.03	95.8	2,176.31	5	93	2,169.90
J1515-04	Main Plant	1,938.31	0	104.5	2,179.94	0	103	2,176.31	0	100.3	2,170.08
J1515-05	Main Plant	1,954.00	0	97.8	2,179.94	0	96.2	2,176.31	0	93.5	2,170.00
J1515-06	Main Plant	1,952.00	0	98.6	2,179.94	0	97	2,176.31	0	94.3	2,169.93
J1515-07	Main Plant	1,980.00	0	86.5	2,179.94	0	84.9	2,176.30	0	82.2	2,169.93
J1515-08	Main Plant	1,975.00	1.65	88.7	2,179.94	3.03	87.1	2,176.30	5	84.3	2,169.93
J1515-09	Main Plant	1,987.00	24.47	83.5	2,179.93	45.02	81.9	2,176.30	74.28	79.1	2,169.93
J1515-10	Combellack	1,988.00	3.12	121.2	2,268.04	5.75	116.6	2,257.52	9.49	103.3	2,226.84
J1515-11	Main Plant	1,967.00	1.01	92.3	2,180.42	1.85	91.2	2,177.82	3.05	86.8	2,167.64
J1515-12	Combellack	1,991.00	0.81	119.9	2,268.04	1.48	115.3	2,257.52	2.44	102	2,226.84
J1515-13	Combellack	1,967.00	1.08	130.2	2,268.04	1.99	125.7	2,257.53	3.28	112.4	2,226.85
J1515-14	Combellack	1,943.00	8.58	140.6	2,268.04	15.79	136.1	2,257.53	26.05	122.8	2,226.85
J1515-15	Combellack	1,937.00	0	143.2	2,268.04	0	138.7	2,257.53	0	125.4	2,226.85
J1515-16	Combellack	1,905.00	3.24	157.1	2,268.04	5.96	152.5	2,257.53	9.83	139.2	2,226.84
J1515-17	Combellack	1,896.00	6.88	161	2,268.04	12.67	156.4	2,257.52	20.91	143.1	2,226.83
J1515-18	Combellack	1,883.00	0	166.6	2,268.04	0	162	2,257.53	0	148.8	2,226.84
J1515-19	Combellack	1,879.00	0	168.3	2,268.04	0	163.8	2,257.53	0	150.5	2,226.84
J1515-20	Combellack	1,825.00	0	191.7	2,268.04	0	187.1	2,257.53	0	173.9	2,226.84
J1515-21	Combellack	1,831.00	0	189.1	2,268.04	0	184.5	2,257.53	0	171.3	2,226.84
J1515-22	Combellack	1,965.00	2.59	131.1	2,268.04	4.76	126.6	2,257.53	7.85	113.3	2,226.85
J1515-23	Combellack	1,948.00	2.16	138.5	2,268.04	3.97	133.9	2,257.54	6.55	120.7	2,226.87
J1515-24	Combellack	1,949.00	1.35	138	2,268.04	2.49	133.5	2,257.54	4.11	120.2	2,226.87
J1515-25	Combellack	1,950.00	1.62	137.6	2,268.04	2.99	133.1	2,257.54	4.93	119.8	2,226.87
J1515-26	Combellack	1,945.78	0	139.4	2,268.05	0	134.9	2,257.56	0	121.6	2,226.93
J1515-27	Combellack	1,944.00	0	140.2	2,268.05	0	135.7	2,257.55	0	122.4	2,226.90
J1515-28	Combellack	1,933.00	1.62	145	2,268.05	2.99	140.4	2,257.54	4.93	127.1	2,226.88
J1515-29	Combellack	1,931.00	2.8	145.8	2,268.04	5.15	141.3	2,257.53	8.5	128	2,226.85
J1515-30	Combellack	1,914.00	0.27	153.2	2,268.04	0.5	148.6	2,257.53	0.82	135.4	2,226.86
J1515-31	Combellack	1,902.00	1.08	158.4	2,268.04	1.99	153.8	2,257.53	3.28	140.6	2,226.86
J1515-32	Combellack	1,942.00	2.66	141.1	2,268.04	4.9	136.5	2,257.53	8.09	123.2	2,226.84
J1515-33	Combellack	1,957.00	2.43	134.6	2,268.04	4.47	130	2,257.53	7.38	116.7	2,226.84
J1515-34	Combellack	1,958.00	0	134.1	2,268.04	0	129.6	2,257.53	0	116.3	2,226.84
J1515-35	Combellack	1,964.00	4.91	131.5	2,268.04	9.04	127	2,257.53	14.92	113.7	2,226.84
J1515-36	Combellack	1,900.00	0	159.2	2,268.04	0	154.7	2,257.53	0	141.4	2,226.86
J1515-37	Combellack	1,925.00	1.67	148.4	2,268.04	3.07	143.9	2,257.53	5.07	130.6	2,226.85
J1515-38	Combellack	1,975.10	0	127.1	2,268.81	0	123.2	2,259.91	0	111.5	2,232.86
J1515-39	Combellack	1,920.00	0	150.6	2,268.06	0	146.1	2,257.57	0	132.8	2,226.96
J1516-01	Main Plant	2,001.00	2.76	77.5	2,180.02	5.07	76	2,176.55	8.37	72.2	2,167.84
J1516-02	Main Plant	1,971.00	0	90.4	2,180.02	0	88.9	2,176.57	0	85.2	2,167.85
J1516-03	Main Plant	1,970.00	0	90.9	2,180.02	0	89.4	2,176.57	0	85.6	2,167.85
J1516-04	Main Plant	1,959.00	2.76	95.6	2,180.04	5.07	94.2	2,176.62	8.37	90.4	2,167.84
J1516-05	Main Plant	1,997.00	1.6	79.2	2,180.04	2.95	77.7	2,176.63	4.87	73.9	2,167.87
J1516-06	Main Plant	1,972.00	0	90	2,180.05	0	88.5	2,176.65	0	84.8	2,167.90
J1516-07	Main Plant	1,934.00	0.93	106.5	2,180.05	1.72	105	2,176.66	2.84	101.2	2,167.94
J1516-08	Main Plant	1,986.00	0.69	84	2,180.05	1.27	82.5	2,176.65	2.1	78.7	2,167.90
J1516-09	Main Plant	2,000.00	0.69	77.9	2,180.02	1.27	76.4	2,176.56	2.1	72.6	2,167.83
J1516-10	Main Plant	2,005.00	0	75.7	2,180.02	0	74.2	2,176.57	0	70.5	2,167.85
J1516-11	Main Plant	2,005.00	0.69	75.7	2,180.02	1.27	74.2	2,176.57	2.1	70.5	2,167.85
J1516-12	Main Plant	1,996.00	0.69	79.6	2,180.02	1.27	78.1	2,176.57	2.1	74.4	2,167.87
J1516-13	Main Plant	2,007.00	0	74.9	2,180.02	0	73.4	2,176.57	0	69.6	2,167.87
J1516-14	Main Plant	2,013.00	1.14	72.3	2,180.02	2.1	70.8	2,176.57	3.46	67	2,167.87
J1516-15	Main Plant	2,001.00	1.83	77.5	2,180.02	3.37	76	2,176.57	5.56	72.2	2,167.88
J1516-16	Main Plant	1,985.00	1.14	84.4	2,180.02	2.1	82.9	2,176.57	3.46	79.1	2,167.90
J1516-17	Main Plant	2,002.00	0	77	2,180.02	0	75.5	2,176.57	0	71.8	2,167.90
J1516-18	Main Plant	1,999.00	1.37	78.3	2,180.02	2.53	76.8	2,176.57	4.17	73.1	2,167.92
J1516-19	Main Plant	1,986.00	0.46	83.9	2,180.02	0.85	82.5	2,176.58	1.4	78.7	2,167.92
J1516-20	Main Plant	1,959.00	0.69	95.6	2,180.03	1.27	94.1	2,176.58	2.1	90.4	2,167.98
J1516-21	Main Plant	1,943.00	0.93	102.5	2,180.03	1.72	101.1	2,176.58	2.84	97.3	2,167.98
J1516-22	Main Plant	1,924.00	0.52	110.8	2,180.03	0.96	109.3	2,176.60	1.58	105.6	2,168.05
J1516-23	Main Plant	1,926.00	5.41	109.9	2,180.01	9.95	108.4	2,176.53	16.42	104.8	2,168.22
J1516-24	Main Plant	1,963.00	0	93.9	2,180.01	0	92.4	2,176.53	0	88.7	2,168.11

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1516-25	EID Res 4	2,052.00	0	95.2	2,271.98	0	94.3	2,269.86	0	91	2,262.28
J1516-26	EID Res 4	2,015.00	0.36	111.2	2,271.98	0.66	110.3	2,269.86	1.09	107	2,262.28
J1516-27	EID Res 4	2,037.00	0	101.7	2,271.98	0	100.7	2,269.86	0	97.5	2,262.28
J1516-28	EID Res 4	2,018.00	0	109.9	2,271.98	0	109	2,269.86	0	105.7	2,262.28
J1516-29	EID Res 4	1,980.00	0	126.3	2,271.98	0	125.4	2,269.86	0	122.1	2,262.28
J1516-30	EID Res 4	2,017.00	0	110.3	2,271.98	0	109.4	2,269.86	0	106.1	2,262.28
J1516-31	EID Res 4	2,068.00	0	88.3	2,271.98	0	87.3	2,269.85	0	84.1	2,262.27
J1516-32	EID Res 4	2,122.00	0	64.9	2,271.98	0	64	2,269.85	0	60.7	2,262.27
J1516-33	EID Res 4	2,138.00	0	58	2,271.98	0	57	2,269.85	0	53.8	2,262.27
J1516-34	EID Res 4	2,172.00	3.76	43.3	2,271.98	6.92	42.3	2,269.85	11.42	39.1	2,262.26
J1516-35	Main Plant	2,075.00	1.5	45.4	2,180.01	2.76	43.9	2,176.54	4.55	40.2	2,167.84
J1516-36	Main Plant	2,034.00	2.6	63.2	2,180.01	4.78	61.7	2,176.54	7.89	57.9	2,167.84
J1516-37	Main Plant	1,999.00	0.92	78.3	2,179.99	1.7	76.8	2,176.48	2.81	73	2,167.70
J1516-38	Main Plant	1,996.00	0	79.6	2,180.01	0	78.1	2,176.54	0	74.4	2,167.85
J1516-39	Main Plant	1,997.00	2.76	79.2	2,180.01	5.07	77.7	2,176.54	8.37	73.9	2,167.85
J1516-40	Main Plant	2,028.00	3.21	65.8	2,180.01	5.9	64.3	2,176.53	9.73	60.5	2,167.86
J1516-41	Main Plant	2,009.00	4.04	74	2,180.01	7.44	72.5	2,176.53	12.28	68.8	2,167.96
J1516-42	EID Res 4	2,142.29	0	55.7	2,270.94	0	53.8	2,266.64	0	47.9	2,252.91
J1516-43	EID Res 4	2,142.29	2.4	56.1	2,271.98	4.42	55.2	2,269.85	7.29	51.9	2,262.27
J1516-45	Combellack	2,000.00	0	116.5	2,269.28	0	113.1	2,261.36	0	102.6	2,237.11
J1516-46	EID Res 4	2,072.00	0	86.5	2,271.98	0	85.6	2,269.85	0	82.3	2,262.27
J1516-47	EID Res 4	2,122.00	0	64.9	2,271.98	0	64	2,269.85	0	60.7	2,262.27
J1517-01	Main Plant	1,965.00	0	92.8	2,179.58	0	90.9	2,175.19	0	88.3	2,168.98
J1517-02	Main Plant	1,957.00	0.4	96.3	2,179.58	0.73	94.4	2,175.19	1.2	91.7	2,168.98
J1517-03	Main Plant	1,960.00	0.4	95	2,179.58	0.73	93.1	2,175.19	1.2	90.4	2,168.99
J1517-04	Main Plant	1,972.00	1.21	89.8	2,179.58	2.22	87.9	2,175.19	3.66	85.2	2,169.00
J1517-05	Main Plant	2,026.50	2.07	66.3	2,179.63	3.82	64.4	2,175.36	6.3	62	2,169.79
J1517-06	Main Plant	2,029.00	1.61	65.2	2,179.60	2.97	63.3	2,175.27	4.9	60.8	2,169.53
J1517-07	Main Plant	2,022.60	1.01	67.9	2,179.60	1.85	66.1	2,175.27	3.05	63.6	2,169.53
J1517-08	Main Plant	2,037.00	0	61.7	2,179.62	0	59.8	2,175.33	0	57.5	2,169.95
J1517-09	Main Plant	2,036.00	2.07	62.1	2,179.62	3.82	60.3	2,175.33	6.3	58	2,169.94
J1517-10	EID Res 4	2,040.50	0	100.3	2,272.41	0	99.8	2,271.17	0	95.4	2,261.09
J1517-11	EID Res 4	2,064.50	6.23	90	2,272.41	11.47	89.4	2,271.16	18.93	85.3	2,261.57
J1517-12	EID Res 4	2,062.00	4.09	91	2,272.41	7.52	90.5	2,271.17	12.41	86.3	2,261.58
J1517-13	EID Res 4	2,067.00	10.71	88.9	2,272.41	19.71	88.3	2,271.17	32.52	84.4	2,262.17
J1517-14	EID Res 4	2,068.50	0	88.2	2,272.41	0	87.7	2,271.17	0	83.8	2,262.30
J1517-15	EID Res 4	2,068.00	0	88.4	2,272.41	0	87.9	2,271.17	0	84.3	2,262.95
J1517-16	Main Plant	1,983.00	0.9	85.3	2,180.06	1.66	83.8	2,176.67	2.74	79.9	2,167.72
J1517-17	Main Plant	1,968.00	0	91.6	2,179.66	0	89.8	2,175.45	0	87.2	2,169.58
J1517-18	Main Plant	1,968.00	0.9	91.7	2,180.06	1.66	90.3	2,176.68	2.74	86.4	2,167.72
J1517-19	EID Res 4	2,019.00	0	109.5	2,271.98	0	108.5	2,269.86	0	105.3	2,262.28
J1517-20	EID Res 4	2,142.49	0	56.2	2,272.42	0	55.7	2,271.19	0	53.4	2,265.98
J1517-21	EID Res 4	2,150.00	0	53	2,272.41	0	52.4	2,271.19	0	49.8	2,265.11
J1517-22	EID Res 4	2,150.00	0	53	2,272.41	0	52.4	2,271.19	0	49.7	2,264.78
J1517-23	EID Res 4	2,050.00	0.36	96	2,271.98	0.66	95.1	2,269.86	1.09	91.8	2,262.28
J1517-24	EID Res 4	2,047.00	0	97.3	2,271.98	0	96.4	2,269.86	0	93.1	2,262.28
J1517-25	EID Res 4	2,043.00	3.18	99.1	2,271.98	5.84	98.1	2,269.86	9.64	94.9	2,262.28
J1517-26	No FF	2,214.00	0	25.1	2,271.99	0	24.2	2,269.86	0	20.9	2,262.29
J1517-27	EID Res 4	2,166.00	0	45.9	2,271.99	0	44.9	2,269.86	0	41.7	2,262.29
J1517-28	EID Res 4	2,120.00	0.36	65.8	2,271.99	0.66	64.8	2,269.86	1.09	61.6	2,262.29
J1517-29	EID Res 4	2,131.00	0	61	2,271.99	0	60.1	2,269.86	0	56.8	2,262.29
J1517-30	EID Res 4	2,130.00	0	61.6	2,272.42	0	61.1	2,271.20	0	58.9	2,266.18
J1517-31	EID Res 4	2,121.00	0	65.3	2,271.99	0.00	64.4	2,269.86	0	61.1	2,262.30
J1517-32	EID Res 4	2,117.56	0	66.8	2,271.99	0	65.9	2,269.86	0	62.6	2,262.30
J1518-01	Schnell School	2,024.00	0	69.6	2,184.78	0.00	69.6	2,184.76	0	69.5	2,184.69
J1518-02	Schnell School	2,032.27	0	66	2,184.79	0	66	2,184.78	0	66	2,184.76
J1518-03	Schnell School	2,053.00	0	57	2,184.80	0	57	2,184.79	0	57	2,184.79
J1518-04	Upper Schnell School	2,050.00	0	166.8	2,435.61	0	166.4	2,434.67	0	165.5	2,432.57
J1518-05	Upper Schnell School	2,082.00	0	153	2,435.64	0	152.6	2,434.75	0	151.8	2,432.79
J1518-06	Upper Schnell School	2,098.00	7.41	146.1	2,435.64	13.63	145.7	2,434.75	22.49	144.8	2,432.79
J1518-07	Upper Schnell School	2,105.00	6.83	143.1	2,435.64	12.57	142.7	2,434.77	20.74	141.8	2,432.82
J1518-08	Upper Schnell School	2,108.96	0	141.3	2,435.66	0	141	2,434.83	0	140.2	2,432.98

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1518-09	Upper Schnell School	2,084.00	0	152.1	2,435.64	0	151.8	2,434.78	0	150.9	2,432.85
J1518-10	Main Plant	2,046.00	1.36	57.7	2,179.39	2.51	55.6	2,174.61	4.14	52.1	2,166.41
J1518-11	Main Plant	2,042.00	0	59.4	2,179.39	0	57.4	2,174.61	0	53.8	2,166.42
J1518-12	Main Plant	2,008.00	2.04	74.2	2,179.39	3.76	72.1	2,174.61	6.2	68.5	2,166.42
J1518-13	Main Plant	1,942.00	1.61	101.9	2,177.52	2.97	98.1	2,168.79	4.9	91.3	2,152.94
J1518-14	Main Plant	1,949.00	2.82	99.7	2,179.51	5.19	97.8	2,175.00	8.56	95.3	2,169.32
J1518-15	Main Plant	1,946.00	3.02	101	2,179.51	5.55	99.1	2,175.00	9.16	96.6	2,169.32
J1518-16	EID Res 4	1,975.00	0	128.8	2,272.76	0	128.6	2,272.26	0	125.4	2,264.76
J1518-17	EID Res 4	1,980.00	0	126.7	2,272.76	0	126.4	2,272.26	0	123.2	2,264.76
J1518-18	EID Res 4	1,987.00	0	123.6	2,272.76	0	123.4	2,272.26	0	120.2	2,264.82
J1518-19	EID Res 4	1,989.00	2.4	122.8	2,272.76	4.42	122.6	2,272.26	7.29	119.4	2,264.87
J1518-20	Upper Schnell School	2,111.58	0	140.2	2,435.70	0	139.9	2,434.95	0	139.2	2,433.28
J1518-21	EID Res 4	2,011.00	0.89	113.2	2,272.73	1.64	113	2,272.18	2.71	110.3	2,265.83
J1518-22	EID Res 4	1,988.00	0	123.2	2,272.76	0	123	2,272.27	0	120.3	2,266.06
J1518-23	EID Res 4	1,979.00	0	127.1	2,272.76	0	126.9	2,272.26	0	123.8	2,265.21
J1518-24	EID Res 4	2,010.00	0.45	113.7	2,272.76	0.83	113.5	2,272.27	1.37	110.9	2,266.36
J1518-25	EID Res 4	1,998.00	1.56	118.9	2,272.76	2.87	118.7	2,272.27	4.74	116.1	2,266.36
J1518-26	EID Res 4	2,033.00	2.22	103.7	2,272.76	4.09	103.5	2,272.26	6.75	101	2,266.34
J1518-27	EID Res 4	2,031.00	2	104.6	2,272.76	3.68	104.4	2,272.26	6.07	101.3	2,265.06
J1518-28	EID Res 4	2,015.00	0.67	111.5	2,272.76	1.23	111.3	2,272.26	2.03	108.2	2,265.06
J1518-29	Upper Schnell School	2,062.00	0	161.7	2,435.71	0	161.4	2,434.99	0	160.7	2,433.39
J1519-01	Upper Schnell School	2,043.00	0	169.9	2,435.61	0	169.5	2,434.66	0	168.5	2,432.56
J1519-02	Upper Schnell School	2,052.00	0.99	166	2,435.61	1.81	165.6	2,434.66	2.99	164.7	2,432.56
J1519-03	Upper Schnell School	2,095.00	5.11	147.4	2,435.59	9.41	146.9	2,434.61	15.53	146	2,432.42
J1618-01	EID Res 4	2,110.00	0	70.4	2,272.78	0	70.2	2,272.31	0	68.7	2,268.70
J1618-02	EID Res 4	2,165.00	1.33	46.6	2,272.78	2.45	46.4	2,272.33	4.04	45.3	2,269.60
J1618-03	EID Res 4	2,147.07	0	54.4	2,272.79	0	54.2	2,272.36	0	53.4	2,270.48
J1618-04	EID Res 4	2,149.00	2.67	53.6	2,272.78	4.92	53.4	2,272.33	8.12	52.2	2,269.61
J1618-05	EID Res 4	2,094.80	0	77	2,272.79	0	76.8	2,272.36	0	76	2,270.48
J1619-06	Upper Schnell School	2,274.00	0	70.1	2,436.04	0	70.1	2,436.04	0	70.1	2,436.04

B-3: Existing System Pipeline Model Output

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Existing System Pipeline Model Output

				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
EID P1117-03	16	69	Galvanized iron	2.06	1,289.69	0.08	1.16	3.79	2,373.03	0.25	3.59	6.25	3,915.50	0.63	9.07
EID P1117-04	16	101	Galvanized iron	1.38	866.88	0.06	0.56	2.55	1,595.23	0.17	1.72	2.77	1,736.80	0.2	2.01
EID P1118-01a	18	2,989	Galvanized iron	2.72	2,156.57	5.06	1.69	5	3,968.26	15.66	5.24	7.13	5,652.29	30.14	10.08
EID P1118-01b	18	719	Galvanized iron	2.72	2,156.57	1.22	1.69	5	3,968.26	3.77	5.24	7.13	5,652.29	7.25	10.08
EID P1119-02	18	2,350	Galvanized iron	5.07	4,020.00	12.61	5.37	5.07	4,020.00	12.61	5.36	5.07	4,020.00	12.61	5.37
EID P1119-03	18	438	Galvanized iron	5.07	4,020.00	2.35	5.36	5.07	4,020.00	2.35	5.36	5.07	4,020.00	2.35	5.36
EID P1219-02	18	2,072	Galvanized iron	5.13	4,070.47	11.38	5.49	5.21	4,131.02	11.69	5.64	5.3	4,203.19	12.07	5.83
EID P1220-03	18	1,792	Galvanized iron	5.13	4,070.47	9.84	5.49	5.21	4,131.02	10.11	5.64	5.3	4,203.19	10.44	5.83
EID P1220-05	18	179	Galvanized iron	5.18	4,105.28	1	5.58	5.3	4,207.60	1.04	5.84	5.46	4,329.52	1.1	6.16
EID P1220-06	18	146	Galvanized iron	5.18	4,105.28	0.81	5.58	5.3	4,207.59	0.85	5.84	5.46	4,329.53	0.9	6.16
EID P1220-07	8	411	Galvanized iron	0.22	34.81	0.02	0.04	0.49	76.57	0.07	0.18	0.81	126.35	0.19	0.46
EID P1515-35	18	27	Galvanized iron	0	0	0	0	0	0	0	0	0.33	259.18	0	0.04
EID P1515-40	18	109	Galvanized iron	0	0	0	0	0	0	0	0	0.33	258.93	0	0.03
EID P1515-41	18	1,648	Galvanized iron	1.34	1,064.19	0.75	0.46	2.47	1,958.14	2.33	1.42	4.07	3,230.93	5.9	3.58
EID P1515-42	18	40	Galvanized iron	1.28	1,015.32	0.02	0.42	2.36	1,868.18	0.05	1.29	3.89	3,082.50	0.13	3.28
EID P1516-47	16	1,281	Galvanized iron	1.7	1,064.20	1.04	0.81	3.12	1,958.14	3.22	2.51	5.57	3,489.86	9.39	7.33
EID P1516-48	16	25	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
EID P1516-49	16	177	Galvanized iron	1.7	1,064.20	0.14	0.81	3.12	1,958.14	0.44	2.51	5.57	3,489.86	1.3	7.33
EID P1516-50	16	38	Galvanized iron	1.7	1,064.20	0.03	0.81	3.12	1,958.14	0.1	2.51	5.57	3,489.86	0.28	7.33
EID P1516-51	16	1,268	Galvanized iron	1.7	1,064.20	1.03	0.81	3.12	1,958.14	3.19	2.51	5.57	3,489.86	9.29	7.33
EID P1516-52	18	1,030	Galvanized iron	1.34	1,064.20	0.47	0.46	2.47	1,958.14	1.46	1.42	4.4	3,489.86	4.25	4.13
EID P1517-02	21	28	Galvanized iron	0.01	10.43	0	0	0.02	19.17	0	0	0.03	31.62	0	0
EID P1517-33	21	1,960	Galvanized iron	1	1,074.63	0.43	0.22	1.83	1,977.32	1.33	0.68	3.26	3,521.48	3.88	1.98
EID P1519-01	10	137	Galvanized iron	0.2	48.87	0	0.03	0.37	89.96	0.01	0.08	0.61	148.44	0.03	0.21
EID P1519-03	8	921	Galvanized iron	0.45	71.21	0.15	0.16	0.85	133.15	0.47	0.51	1.4	219.7	1.18	1.28
EID P1617-01	21	1,646	Galvanized iron	1.01	1,095.66	0.38	0.23	1.87	2,016.02	1.16	0.71	3.79	4,090.22	4.3	2.61
EID P1618-02	21	90	Galvanized iron	0.01	14.19	0	0	0.02	26.13	0	0	0.16	174.63	0	0.01
EID P1618-05	27	594	Galvanized iron	1.15	2,045.00	0.13	0.21	1.15	2,045.00	0.13	0.21	1.15	2,045.00	0.13	0.21
EID P1618-06	27	2,169	Galvanized iron	1.15	2,045.00	0.46	0.21	1.15	2,045.00	0.46	0.21	1.15	2,045.00	0.46	0.21
EID P1618-07	21	891	Galvanized iron	1.03	1,109.85	0.21	0.23	1.89	2,042.15	0.64	0.72	3.95	4,264.85	2.52	2.83
EID P1619-01	24	223	Galvanized iron	1.5	2,116.21	0.09	0.4	1.54	2,178.15	0.09	0.42	1.61	2,264.70	0.1	0.46
EID P1619-02	24	49	Galvanized iron	1.5	2,116.21	0.02	0.4	1.54	2,178.15	0.02	0.42	1.61	2,264.70	0.02	0.46
EID P1619-03	8	1,146	Galvanized iron	0.45	71.21	0.18	0.16	0.85	133.15	0.58	0.51	1.4	219.7	1.47	1.28
EID P1619-04	24	311	Galvanized iron	1.45	2,045.00	0.12	0.38	1.45	2,045.00	0.12	0.38	1.45	2,045.00	0.12	0.38
P1117-01	14	110	Galvanized iron	1.81	866.88	0.12	1.06	3.32	1,595.23	0.36	3.3	3.62	1,736.80	0.42	3.86
P1117-02	16	430	Galvanized iron	1.38	866.88	0.24	0.56	2.55	1,595.23	0.74	1.72	2.77	1,736.80	0.87	2.01
P1119-01	8	893	Unknown Material	0.32	50.47	0.07	0.08	0.71	111.02	0.32	0.36	1.17	183.18	0.82	0.91

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1119-02	8	102	Unknown Material	0.32	50.47	0.01	0.08	0.71	111.02	0.04	0.36	1.17	183.19	0.09	0.91
P1119-03	8	114	Unknown Material	0.32	50.47	0.01	0.08	0.71	111.02	0.04	0.36	1.17	183.18	0.1	0.91
P1119-04	6	506	C-900	0	0.25	0	0	0.01	0.55	0	0	0.01	0.91	0	0
P1216-01	2	98	Galvanized iron	0.03	0.26	0	0	0.05	0.48	0	0.01	0.08	0.79	0	0.03
P1216-02	2	222	Unknown Material	0.08	0.8	0.01	0.03	0.15	1.47	0.02	0.1	0.25	2.43	0.06	0.26
P1216-03	12	182	Unknown Material	0.68	239.71	0.04	0.21	1.25	441.09	0.12	0.65	1.4	494.54	0.15	0.8
P1216-04	12	392	Unknown Material	0.69	244.55	0.08	0.22	1.28	450	0.26	0.67	1.44	509.24	0.33	0.84
P1216-05	12	163	Asbestos Cement	0.8	280.41	0.04	0.24	1.46	515.99	0.12	0.74	1.64	577.56	0.15	0.92
P1216-06	6	447	Galvanized iron	0.36	31.5	0.06	0.14	0.66	57.97	0.2	0.44	0.63	55.09	0.18	0.4
P1216-07	6	434	Galvanized iron	0.36	31.5	0.06	0.14	0.66	57.97	0.19	0.44	0.63	55.09	0.17	0.4
P1216-08	6	423	Unknown Material	0.02	2.13	0	0	0.04	3.91	0	0	0.07	6.45	0	0.01
P1216-09	6	73	Unknown Material	0.32	27.78	0.01	0.11	0.58	51.13	0.03	0.35	0.5	43.81	0.02	0.26
P1216-10	12	194	Unknown Material	0.98	344.55	0.08	0.41	1.8	634.04	0.25	1.26	1.93	679.45	0.28	1.44
P1216-11	12	402	Ductile Iron	0.91	322.2	0.15	0.36	1.68	592.9	0.45	1.12	1.8	635.86	0.51	1.27
P1216-12	8	490	C-900	0.15	23.95	0.01	0.02	0.28	44.06	0.02	0.05	0.31	48.42	0.03	0.06
P1216-13	12	715	Galvanized iron	0.92	323.95	0.26	0.36	1.69	596.12	0.81	1.13	1.82	641.18	0.92	1.29
P1216-14	12	1,295	Asbestos Cement	0.8	280.67	0.31	0.24	1.47	516.47	0.97	0.75	1.64	578.36	1.19	0.92
P1217-01	10	510	Galvanized iron	1.07	261.74	0.3	0.6	1.97	481.67	0.94	1.85	2.11	515.64	1.07	2.1
P1217-02	10	439	Galvanized iron	0.93	227.93	0.2	0.46	1.71	419.45	0.63	1.43	1.79	437.27	0.68	1.54
P1217-03	8	541	Asbestos Cement	0.87	136.98	0.25	0.46	1.61	252.07	0.77	1.42	1.66	260.09	0.82	1.51
P1217-04	8	172	C-900	0.17	26.35	0	0.02	0.31	48.47	0.01	0.06	0.36	55.7	0.01	0.08
P1217-05	6	805	Unknown Material	0.05	4.39	0	0	0.09	8.08	0.01	0.01	0.15	13.33	0.02	0.03
P1217-06	8	178	Unknown Material	0.85	132.86	0.09	0.5	1.56	244.49	0.28	1.56	1.58	247.59	0.28	1.6
P1217-07	6	221	Unknown Material	1.44	127.33	0.42	1.89	2.66	234.31	1.29	5.85	2.62	230.79	1.26	5.69
P1217-08	6	37	Unknown Material	0	0.23	0	0	0	0.42	0	0	0.01	0.69	0	0
P1217-09	6	76	Unknown Material	0.23	20.59	0	0.06	0.43	37.89	0.02	0.2	0.4	35.65	0.01	0.18
P1217-10	6	111	Cast iron	0.23	20.59	0.01	0.06	0.43	37.89	0.02	0.2	0.4	35.65	0.02	0.18
P1217-11	4	297	Cast iron	0.57	22.42	0.16	0.55	1.05	41.26	0.5	1.69	1.05	41.21	0.5	1.69
P1217-110	8	46	PVC	0.22	33.81	0	0.03	0.4	62.21	0	0.09	0.5	78.37	0.01	0.14
P1217-111	8	299	PVC	0.19	29.91	0.01	0.02	0.35	55.03	0.02	0.07	0.42	66.52	0.03	0.11
P1217-112	8	364	PVC	0.19	29.01	0.01	0.02	0.34	53.37	0.03	0.07	0.41	63.78	0.04	0.1
P1217-113	8	61	PVC	0.02	3.9	0	0	0.05	7.18	0	0	0.08	11.85	0	0
P1217-114	6	103	PVC	0.01	1.2	0	0	0.03	2.21	0	0	0.04	3.65	0	0
P1217-115	8	470	PVC	0.02	2.7	0	0	0.03	4.97	0	0	0.05	8.2	0	0
P1217-116	6	112	PVC	0.02	1.5	0	0	0.03	2.76	0	0	0.05	4.55	0	0
P1217-12	2	292	PVC	0.19	1.83	0.03	0.12	0.34	3.37	0.1	0.36	0.57	5.56	0.27	0.91
P1217-13	2	95	Unknown Material	0.19	1.83	0.01	0.13	0.34	3.37	0.04	0.41	0.57	5.56	0.1	1.04

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1217-14	4	244	Unknown Material	0.62	24.25	0.13	0.54	1.14	44.63	0.41	1.69	1.19	46.77	0.45	1.84
P1217-15	6	209	Unknown Material	1.14	100.72	0.26	1.23	2.1	185.34	0.79	3.79	2.01	176.86	0.73	3.48
P1217-16	8	119	Unknown Material	0.69	107.54	0.04	0.34	1.26	197.9	0.13	1.05	1.4	219.57	0.15	1.28
P1217-17	6	589	Galvanized iron	0.45	39.56	0.13	0.22	0.83	72.8	0.4	0.67	0.85	75.18	0.42	0.71
P1217-18	8	359	Unknown Material	0.41	64.31	0.05	0.13	0.76	118.35	0.15	0.41	0.85	133.25	0.18	0.51
P1217-19	6	745	C-900	0.21	18.3	0.03	0.04	0.38	33.67	0.09	0.12	0.33	28.68	0.07	0.09
P1217-20	6	456	Asbestos Cement	0.01	1.14	0	0	0.02	2.1	0	0	0.04	3.46	0	0
P1217-200	8	426	PVC	0.01	1.2	0	0	0.01	2.21	0	0	0.02	3.65	0	0
P1217-201	6	485	PVC	0.01	1.2	0	0	0.03	2.21	0	0	0.04	3.65	0	0
P1217-21	8	96	Unknown Material	0.48	75.86	0.02	0.18	0.89	139.59	0.05	0.55	0.9	141.43	0.05	0.56
P1217-22	8	417	Cast iron	0.45	71.06	0.07	0.16	0.83	130.75	0.2	0.49	0.81	126.84	0.19	0.46
P1217-23	8	409	Unknown Material	0.49	76.01	0.07	0.18	0.89	139.88	0.23	0.55	0.85	133.77	0.21	0.51
P1217-24	8	516	C-900	0.09	13.99	0	0.01	0.16	25.73	0.01	0.02	0.1	15.58	0	0.01
P1217-25	6	113	Asbestos Cement	0.04	3.66	0	0	0.08	6.74	0	0.01	0.13	11.12	0	0.02
P1217-26	6	409	Asbestos Cement	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0.01
P1217-27	2	50	Galvanized iron	0.19	1.83	0.01	0.15	0.34	3.37	0.02	0.48	0.57	5.56	0.06	1.21
P1217-28	8	420	Unknown Material	0.19	29.23	0.01	0.03	0.34	53.79	0.04	0.09	0.57	88.75	0.1	0.24
P1217-29	6	413	Galvanized iron	0.35	31.17	0.06	0.14	0.65	57.35	0.18	0.43	0.66	57.82	0.18	0.44
P1217-30	8	513	Asbestos Cement	0.27	43.05	0.03	0.05	0.51	79.23	0.09	0.17	0.22	33.69	0.02	0.03
P1217-31	10	294	Galvanized iron	1.07	261.74	0.18	0.6	1.97	481.67	0.54	1.85	2.11	515.64	0.62	2.1
P1217-32	16	188	Galvanized iron	1.38	866.88	0.1	0.56	2.55	1,595.23	0.32	1.72	2.77	1,736.80	0.38	2.01
P1217-33	16	21	Galvanized iron	1.38	866.89	0.01	0.56	2.55	1,595.24	0.04	1.72	2.77	1,736.80	0.04	2.01
P1217-34	12	110	Ductile Iron	1.72	605.15	0.13	1.16	3.16	1,113.57	0.39	3.59	3.46	1,221.15	0.47	4.26
P1217-35	16	816	Unknown Material	1.38	866.88	0.45	0.56	2.55	1,595.23	1.4	1.72	2.77	1,736.80	1.64	2.01
P1217-36	6	152	C-900	0.17	15.19	0	0.03	0.32	27.94	0.01	0.09	0.22	19.23	0.01	0.04
P1218-01	8	436	Unknown Material	0.05	8.47	0	0	0.1	15.59	0	0.01	0.16	25.72	0.01	0.02
P1218-02	6	350	Unknown Material	0.05	4.46	0	0	0.09	8.21	0	0.01	0.15	13.55	0.01	0.03
P1218-04	6	329	Unknown Material	0.05	4.46	0	0	0.09	8.21	0	0.01	0.15	13.55	0.01	0.03
P1218-05	6	228	Unknown Material	0.01	0.73	0	0	0.02	1.35	0	0	0.03	2.23	0	0
P1218-06	6	408	Unknown Material	0.01	0.48	0	0	0.01	0.88	0	0	0.02	1.45	0	0
P1218-07	6	43	Unknown Material	0	0.24	0	0	0	0.44	0	0	0.01	0.73	0	0
P1218-08	2	166	Unknown Material	0.02	0.24	0	0	0.04	0.44	0	0.01	0.07	0.73	0	0.03
P1218-09	8	180	Galvanized iron	0.03	3.99	0	0	0.06	8.78	0	0	0.09	14.49	0	0.01
P1218-10	8	245	Galvanized iron	0.03	3.99	0	0	0.06	8.78	0	0	0.09	14.49	0	0.01
P1218-11	8	70	Galvanized iron	0.22	34.54	0	0.04	0.48	75.98	0.01	0.18	0.8	125.37	0.03	0.45
P1218-12	8	147	Galvanized iron	0.22	34.54	0.01	0.04	0.48	75.98	0.03	0.18	0.8	125.37	0.07	0.45
P1219-01	6	113	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0

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P1219-02	6	141	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1219-03	8	181	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-04	8	98	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-05	8	401	Unknown Material	0.02	2.79	0	0	0.04	6.13	0	0	0.06	10.11	0	0
P1219-06	6	1,018	Unknown Material	0.02	1.81	0	0	0.05	3.99	0	0	0.07	6.58	0.01	0.01
P1219-07	8	407	Unknown Material	0.02	2.79	0	0	0.04	6.13	0	0	0.06	10.11	0	0
P1219-08	6	344	Unknown Material	0.05	4.23	0	0	0.11	9.32	0.01	0.01	0.17	15.38	0.01	0.04
P1219-09	6	183	Unknown Material	0.09	7.9	0	0.01	0.2	17.39	0.01	0.05	0.33	28.69	0.02	0.12
P1219-10	6	474	Unknown Material	0.1	8.51	0.01	0.01	0.21	18.73	0.03	0.05	0.35	30.9	0.07	0.14
P1219-11	6	566	Unknown Material	0.16	13.66	0.02	0.03	0.34	30.05	0.07	0.13	0.56	49.58	0.19	0.33
P1219-12	6	587	Asbestos Cement	0.28	24.95	0.05	0.08	0.62	54.89	0.2	0.34	1.03	90.55	0.51	0.87
P1219-13	8	501	Unknown Material	0.26	40.87	0.03	0.06	0.57	89.9	0.12	0.24	0.95	148.33	0.31	0.62
P1219-14	6	347	Unknown Material	0.02	1.44	0	0	0.04	3.18	0	0	0.06	5.25	0	0
P1219-15	6	287	Unknown Material	0.02	1.44	0	0	0.04	3.18	0	0	0.06	5.25	0	0.01
P1219-16	6	292	Unknown Material	0.02	2.18	0	0	0.05	4.8	0	0.01	0.09	7.92	0	0.01
P1219-17	6	478	Unknown Material	0.07	6.16	0	0.01	0.15	13.55	0.01	0.03	0.25	22.36	0.04	0.08
P1219-18	6	431	Unknown Material	0.15	12.78	0.01	0.03	0.32	28.12	0.05	0.12	0.53	46.4	0.13	0.29
P1219-19	8	399	Unknown Material	0.14	21.76	0.01	0.02	0.31	47.86	0.03	0.08	0.5	78.97	0.08	0.19
P1219-20	6	222	Unknown Material	0.04	3.24	0	0	0.08	7.13	0	0.01	0.13	11.76	0.01	0.02
P1219-21	8	351	Unknown Material	0.13	21.02	0.01	0.02	0.3	46.22	0.03	0.07	0.49	76.26	0.06	0.18
P1219-22	8	484	Unknown Material	0.06	9.47	0	0	0.13	20.82	0.01	0.02	0.22	34.35	0.02	0.04
P1219-23	6	472	Unknown Material	0.12	10.55	0.01	0.02	0.26	23.21	0.04	0.08	0.43	38.3	0.1	0.2
P1219-24	6	61	Unknown Material	0.1	8.81	0	0.02	0.22	19.39	0	0.06	0.36	31.99	0.01	0.14
P1219-25	6	225	Unknown Material	0.08	7.31	0	0.01	0.18	16.09	0.01	0.04	0.3	26.55	0.02	0.1
P1219-26	6	382	Unknown Material	0.07	5.81	0	0.01	0.15	12.79	0.01	0.03	0.24	21.1	0.03	0.07
P1219-27	6	360	Galvanized iron	0.03	2.4	0	0	0.06	5.28	0	0.01	0.1	8.71	0	0.01
P1219-28	6	648	Unknown Material	0.09	8.2	0.01	0.01	0.2	18.03	0.03	0.05	0.34	29.75	0.08	0.13
P1219-30	6	468	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1219-31	6	198	Unknown Material	0.06	5.45	0	0	0.14	11.99	0	0.02	0.22	19.78	0.01	0.06
P1219-32	6	357	Asbestos Cement	0.02	2.12	0	0	0.05	4.66	0	0	0.09	7.69	0	0.01
P1219-33	6	441	Unknown Material	0.02	1.5	0	0	0.04	3.3	0	0	0.06	5.45	0	0.01
P1219-34	6	226	Unknown Material	0.04	3.11	0	0	0.08	6.85	0	0.01	0.13	11.3	0	0.02
P1219-35	8	96	Galvanized iron	0.03	3.99	0	0	0.06	8.78	0	0.01	0.09	14.49	0	0.01
P1220-01	6	84	Galvanized iron	0.37	32.19	0.01	0.15	0.8	70.81	0.05	0.64	1.33	116.84	0.14	1.61
P1220-03	6	46	Asbestos Cement	0.31	27.35	0	0.1	0.68	60.17	0.02	0.41	1.13	99.26	0.05	1.02
P1220-04	6	211	Galvanized iron	0.37	32.19	0.03	0.15	0.8	70.82	0.13	0.64	1.33	116.84	0.34	1.61
P1315-01	8	526	PVC	0	0.6	0	0	0.01	1.1	0	0	0.01	1.82	0	0

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Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1316-01	8	489	PVC	0.02	3.74	0	0	0.04	6.88	0	0	0.07	11.35	0	0
P1316-02	4	587	Cast iron	0.25	9.87	0.07	0.12	0.46	18.15	0.22	0.37	0.2	7.76	0.04	0.08
P1316-03	4	88	Unknown Material	0.06	2.25	0	0.01	0.11	4.15	0	0.02	0.17	6.85	0.01	0.06
P1316-04	6	338	Unknown Material	0.04	3.09	0	0	0.06	5.69	0	0.01	0.15	12.8	0.01	0.03
P1316-05	4	12	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-06	6	334	Asbestos Cement	0.02	1.58	0	0	0.03	2.92	0	0	0.2	17.38	0.01	0.04
P1316-07	6	195	Asbestos Cement	0	0.25	0	0	0.01	0.46	0	0	0.01	0.76	0	0
P1316-08	12	465	Asbestos Cement	0.57	201.6	0.06	0.13	1.05	370.96	0.19	0.4	1.18	414.28	0.23	0.5
P1316-09	3	302	Unknown Material	0.09	2	0.01	0.03	0.17	3.68	0.02	0.08	0.28	6.07	0.06	0.2
P1316-10	6	169	Asbestos Cement	0.02	1.58	0	0	0.03	2.92	0	0	0.2	17.38	0.01	0.04
P1316-11	8	136	Unknown Material	0.57	89.58	0.03	0.24	1.05	164.81	0.1	0.75	1.04	162.36	0.1	0.73
P1316-12	2	264	Unknown Material	0.22	2.19	0.06	0.22	0.41	4.03	0.18	0.67	0.68	6.65	0.44	1.68
P1316-13	8	840	Cast iron	0.62	96.66	0.24	0.28	1.14	177.84	0.73	0.87	1.17	183.86	0.77	0.92
P1316-14	8	31	Unknown Material	0.53	83.81	0.01	0.21	0.98	154.23	0.02	0.66	1	156.95	0.02	0.69
P1316-15	12	10	Unknown Material	0.58	203.6	0	0.17	1.06	374.64	0	0.46	1.19	420.35	0.01	0.61
P1316-16	8	275	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-17	4	319	Cast iron	0.25	9.8	0.04	0.12	0.46	17.95	0.12	0.36	0.38	14.82	0.08	0.25
P1316-18	4	296	Galvanized iron	0.02	0.82	0	0	0.04	1.5	0	0	0.06	2.47	0	0.01
P1316-19	4	109	Galvanized iron	0.02	0.82	0	0	0.04	1.5	0	0	0.06	2.47	0	0.01
P1316-20	4	32	Unknown Material	0.36	14.07	0.01	0.23	0.66	25.79	0.02	0.71	0.71	27.76	0.03	0.81
P1316-21	6	304	Cast iron	0.16	14.17	0.01	0.03	0.3	26.06	0.03	0.1	0.35	30.95	0.04	0.14
P1316-22	12	732	Asbestos Cement	0.58	205.65	0.1	0.14	1.07	378.42	0.31	0.42	1.21	426.59	0.38	0.52
P1316-23	8	102	Unknown Material	0.55	85.55	0.02	0.22	1	157.42	0.07	0.69	1.04	162.21	0.07	0.73
P1316-24	8	302	Cast iron	0.57	90.07	0.07	0.25	1.06	165.73	0.23	0.76	0.9	141.66	0.17	0.57
P1316-25	4	222	Cast iron	0.15	5.94	0.01	0.05	0.28	11.11	0.03	0.15	0.44	17.27	0.07	0.34
P1316-26	4	15	Unknown Material	0.14	5.39	0	0.03	0.25	9.91	0	0.11	0.42	16.35	0	0.31
P1316-27	4	230	Cast iron	0.11	4.18	0.01	0.02	0.2	7.69	0.02	0.08	0.32	12.69	0.04	0.19
P1316-28	4	302	Unknown Material	0.52	20.27	0.12	0.39	0.95	37.38	0.37	1.22	1.17	45.81	0.53	1.77
P1316-29	8	476	Asbestos Cement	0.24	38.33	0.02	0.04	0.45	70.52	0.06	0.13	0.29	45.18	0.03	0.06
P1316-30	6	434	Cast iron	0.37	32.58	0.07	0.15	0.68	59.97	0.2	0.47	0.55	48.47	0.14	0.32
P1316-31	6	93	Unknown Material	0.69	61.04	0.04	0.48	1.28	112.38	0.14	1.5	1.12	98.41	0.11	1.17
P1316-32	6	20	Unknown Material	1.1	96.95	0.02	1.15	2.03	178.47	0.07	3.54	1.78	156.96	0.06	2.78
P1316-33	6	147	Unknown Material	0.87	76.56	0.11	0.74	1.6	140.93	0.34	2.28	1.44	126.98	0.28	1.88
P1316-34	8	82	Unknown Material	0.6	94.17	0.02	0.27	1.11	173.31	0.07	0.82	1.07	168.36	0.06	0.78
P1316-35	8	109	Unknown Material	0.72	112.64	0.04	0.37	1.32	207.28	0.13	1.15	1.36	212.44	0.13	1.2
P1316-36	6	143	Asbestos Cement	0.56	49.21	0.04	0.28	1.03	90.57	0.12	0.87	1.01	88.89	0.12	0.84
P1316-37	4	210	Cast iron	0.61	24.04	0.13	0.62	1.13	44.25	0.4	1.93	1.05	41.05	0.35	1.68

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1316-38	12	387	Ductile Iron	0.46	162.28	0.04	0.1	0.85	298.64	0.12	0.31	0.86	302.64	0.12	0.32
P1316-39	6	169	Cast iron	0.73	64.06	0.09	0.53	1.34	117.88	0.28	1.64	0.83	72.85	0.11	0.67
P1316-40	6	365	Cast iron	0.73	64.06	0.19	0.53	1.34	117.88	0.6	1.64	0.83	72.85	0.25	0.67
P1316-41	4	439	C-900	0.06	2.34	0	0.01	0.11	4.3	0.01	0.02	0.18	7.09	0.02	0.05
P1316-42	6	551	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-43	2	700	Galvanized iron	0.03	0.26	0	0	0.05	0.48	0.01	0.01	0.08	0.79	0.02	0.03
P1316-44	6	505	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1316-45	8	922	Asbestos Cement	0.01	1.58	0	0	0.02	2.91	0	0	0.03	4.8	0	0
P1316-46	12	464	Asbestos Cement	0.67	237.58	0.08	0.18	1.24	437.17	0.25	0.55	1.38	488.07	0.31	0.67
P1316-47	4	271	Cast iron	0.03	1.01	0	0	0.05	1.85	0	0.01	0.08	3.05	0	0.01
P1316-48	8	295	Asbestos Cement	0.1	15.16	0	0.01	0.18	27.87	0.01	0.02	0.22	34.04	0.01	0.03
P1316-49	6	133	C-900	0.01	0.71	0	0	0.01	1.31	0	0	0.02	2.16	0	0
P1316-50	8	41	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-51	8	233	Unknown Material	0	0.71	0	0	0.01	1.31	0	0	0.01	2.16	0	0
P1316-52	8	25	Unknown Material	0	0.71	0	0	0.01	1.31	0	0	0.01	2.17	0	0
P1316-53	12	47	Unknown Material	0.59	206.37	0.01	0.16	1.08	379.73	0.02	0.49	1.22	428.75	0.03	0.61
P1316-54	12	52	Unknown Material	0.67	236	0.01	0.2	1.23	434.26	0.03	0.63	1.37	483.27	0.04	0.77
P1316-55	8	308	Unknown Material	0.47	73.98	0.05	0.17	0.87	136.14	0.16	0.53	0.89	139.05	0.17	0.55
P1316-56	6	90	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1316-57	6	686	Asbestos Cement	0.3	26.66	0.06	0.09	0.56	49.07	0.19	0.28	0.52	45.5	0.17	0.24
P1316-58	12	742	Cast iron	0.95	333.48	0.29	0.38	1.74	613.68	0.88	1.19	1.72	605.32	0.86	1.16
P1316-59	6	363	C-900	0.01	0.53	0	0	0.01	0.98	0	0	0.02	1.62	0	0
P1316-60	8	156	Unknown Material	0.47	73.98	0.03	0.17	0.87	136.14	0.08	0.53	0.89	139.05	0.09	0.55
P1316-61	8	32	Unknown Material	0.34	52.51	0	0.09	0.62	96.61	0.01	0.28	0.7	109.28	0.01	0.35
P1316-62	12	117	Unknown Material	0.61	214.79	0.02	0.17	1.12	395.25	0.06	0.53	1.17	411.92	0.07	0.57
P1316-63	6	49	Cast iron	0.25	22.03	0	0.07	0.46	40.55	0.01	0.23	0.36	31.45	0.01	0.14
P1316-64	4	213	Cast iron	0.02	0.82	0	0	0.04	1.5	0	0	0.06	2.47	0	0.01
P1316-65	6	268	Asbestos Cement	0.03	2.4	0	0	0.05	4.42	0	0	0.08	7.29	0	0.01
P1316-66	6	90	Galvanized iron	0.02	2.13	0	0	0.04	3.91	0	0	0.07	6.45	0	0.01
P1316-67	6	598	Galvanized iron	0.02	2.13	0	0	0.04	3.91	0	0	0.07	6.45	0	0.01
P1316-68	12	876	Ductile Iron	0.34	118.43	0.05	0.06	0.62	217.94	0.15	0.17	0.55	192.57	0.12	0.14
P1316-69	6	303	Asbestos Cement	0.05	4.53	0	0	0.09	8.33	0	0.01	0.16	13.74	0.01	0.03
P1316-70	4	202	Steel	0.45	17.57	0.1	0.49	0.83	32.34	0.3	1.51	0.63	24.77	0.19	0.92
P1316-71	4	720	Steel	0.45	17.57	0.35	0.49	0.83	32.34	1.09	1.51	0.63	24.77	0.66	0.92
P1317-01	4	160	Steel	0.36	14.16	0.05	0.33	0.67	26.07	0.16	1.01	0.37	14.43	0.05	0.34
P1317-02	6	154	Cast iron	0.8	70.64	0.1	0.63	1.48	129.99	0.3	1.97	0.73	64.24	0.08	0.53
P1317-03	8	371	Cast iron	0.18	28.31	0.01	0.03	0.33	52.09	0.03	0.09	0.38	60.28	0.04	0.12

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1317-04	8	47	Cast iron	0.18	28.31	0	0.03	0.33	52.09	0	0.09	0.38	60.28	0.01	0.11
P1317-05	8	382	Cast iron	0.14	22.55	0.01	0.02	0.26	41.49	0.02	0.06	0.27	42.79	0.02	0.06
P1317-06	6	449	Cast iron	0.52	45.47	0.13	0.28	0.95	83.68	0.39	0.87	0.56	49.46	0.15	0.33
P1317-07	6	25	Unknown Material	0.5	43.9	0.01	0.26	0.92	80.79	0.02	0.82	0.62	54.23	0.01	0.39
P1317-08	4	275	Steel	0.03	1.14	0	0	0.05	2.1	0	0.01	0.09	3.46	0.01	0.02
P1317-09	4	212	Steel	0.05	2.05	0	0.01	0.1	3.78	0.01	0.03	0.16	6.24	0.02	0.07
P1317-10	4	184	Steel	0.04	1.6	0	0.01	0.08	2.95	0	0.02	0.12	4.87	0.01	0.05
P1317-11	4	356	Steel	0.04	1.6	0	0.01	0.08	2.95	0.01	0.02	0.12	4.87	0.02	0.05
P1317-12	8	206	Unknown Material	0.19	30.18	0.01	0.03	0.35	55.57	0.02	0.1	0.45	70.17	0.03	0.16
P1317-13	4	142	Unknown Material	0.13	5.02	0	0.03	0.24	9.26	0.01	0.1	0.39	15.28	0.04	0.27
P1317-14	6	356	Cast iron	0.43	37.47	0.07	0.2	0.78	68.97	0.22	0.61	0.12	10.78	0.01	0.02
P1317-15	6	57	Unknown Material	0.5	43.9	0.01	0.26	0.92	80.79	0.05	0.81	0.62	54.23	0.02	0.39
P1317-16	4	273	Cast iron	0.02	0.9	0	0	0.04	1.66	0	0	0.07	2.74	0	0.01
P1317-17	6	818	Cast iron	0.68	59.78	0.38	0.47	1.25	110.02	1.18	1.44	1.1	97.33	0.94	1.15
P1317-18	8	168	Unknown Material	0.6	94.03	0.04	0.27	1.1	173.05	0.14	0.82	0.25	39.46	0.01	0.05
P1317-19	8	380	Unknown Material	0.47	74.11	0.06	0.17	0.87	136.36	0.2	0.53	1.31	205.04	0.43	1.13
P1317-20	6	400	Unknown Material	0.01	0.49	0	0	0.01	0.91	0	0	0.02	1.5	0	0
P1317-21	6	57	Unknown Material	0.06	5.28	0	0	0.11	9.72	0	0.02	0.18	16.04	0	0.04
P1317-22	4	23	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-23	4	461	Unknown Material	0.13	5.28	0.02	0.04	0.25	9.72	0.05	0.12	0.41	16.04	0.14	0.29
P1317-24	4	296	Unknown Material	0.13	5.28	0.01	0.04	0.25	9.72	0.03	0.12	0.41	16.04	0.09	0.29
P1317-25	6	501	Unknown Material	0.27	23.74	0.04	0.08	0.5	43.69	0.13	0.26	0.79	69.56	0.31	0.62
P1317-26	8	248	C-900	0.42	65.8	0.03	0.1	0.77	121.08	0.08	0.32	1.15	179.82	0.16	0.66
P1317-27	2	255	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-28	6	401	C-900	0.1	9	0	0.01	0.19	16.55	0.01	0.03	0.18	16.26	0.01	0.03
P1317-29	4	325	Cast iron	0.14	5.37	0.01	0.04	0.25	9.89	0.04	0.12	0.25	9.64	0.04	0.11
P1317-30	4	158	Cast iron	0.16	6.38	0.01	0.05	0.3	11.74	0.03	0.17	0.17	6.58	0.01	0.06
P1317-31	4	467	Unknown Material	0.16	6.34	0.02	0.05	0.3	11.67	0.08	0.16	0.11	4.45	0.01	0.03
P1317-32	8	512	Cast iron	0.23	35.49	0.02	0.04	0.42	65.32	0.07	0.14	0.27	42.05	0.03	0.06
P1317-33	4	223	Unknown Material	0.04	1.44	0	0	0.07	2.65	0	0.01	0.05	2.12	0	0.01
P1317-34	6	166	Cast iron	0.24	21.23	0.01	0.07	0.44	39.06	0.04	0.21	0.7	61.92	0.08	0.5
P1317-35	8	885	Cast iron	0.54	84.52	0.19	0.22	0.99	155.52	0.6	0.67	1.01	157.61	0.61	0.69
P1317-36	6	332	C-900	0.3	26.35	0.03	0.08	0.55	48.47	0.08	0.24	0.63	55.7	0.1	0.31
P1317-37	8	748	Unknown Material	1.09	170.38	0.6	0.8	2	313.55	1.85	2.47	1.6	251.35	1.23	1.64
P1317-38	12	65	Unknown Material	0.3	104.13	0	0.05	0.54	191.62	0.01	0.14	0.42	149.14	0.01	0.09
P1317-39	8	29	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-40	8	331	Cast iron	0.45	69.74	0.05	0.15	0.82	128.34	0.16	0.47	0.72	112.77	0.12	0.37

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1317-41	2	249	Unknown Material	0.27	2.66	0.08	0.31	0.5	4.9	0.24	0.96	0.83	8.09	0.6	2.42
P1317-42	2	200	Unknown Material	0.16	1.59	0.02	0.12	0.3	2.93	0.07	0.37	0.49	4.83	0.19	0.93
P1317-43	8	247	Unknown Material	0.47	73.09	0.04	0.17	0.86	134.51	0.13	0.52	0.78	122.95	0.11	0.44
P1317-44	6	42	Galvanized iron	0.11	9.6	0	0.02	0.2	17.64	0	0.05	0.33	29.11	0.01	0.13
P1317-45	6	350	Galvanized iron	0.1	8.53	0	0.01	0.18	15.67	0.01	0.04	0.29	25.86	0.03	0.1
P1317-46	8	88	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1317-47	6	704	Galvanized iron	0.1	8.97	0.01	0.01	0.19	16.51	0.03	0.04	0.56	49.23	0.23	0.33
P1317-48	8	305	C-900	0.41	64.1	0.03	0.1	0.75	117.96	0.09	0.3	1.11	174.68	0.19	0.63
P1317-49	6	719	Asbestos Cement	0.56	49.7	0.21	0.29	1.04	91.46	0.64	0.88	1.24	108.97	0.88	1.22
P1317-50	8	280	Asbestos Cement	0.01	1.94	0	0	0.02	3.57	0	0	0.04	5.89	0	0
P1317-51	6	326	Asbestos Cement	0.04	3.95	0	0	0.08	7.27	0	0.01	0.14	12	0.01	0.02
P1317-52	6	296	Unknown Material	0.42	36.83	0.06	0.19	0.77	67.78	0.17	0.59	0.79	69.9	0.18	0.62
P1317-53	6	185	Unknown Material	0.35	31.17	0.03	0.14	0.65	57.35	0.08	0.43	0.66	57.82	0.08	0.44
P1317-54	6	282	Asbestos Cement	0.21	18.72	0.01	0.05	0.39	34.45	0.04	0.14	0.25	21.9	0.02	0.06
P1317-55	4	173	Steel	0.08	3.13	0	0.02	0.15	5.77	0.01	0.06	0.24	9.52	0.03	0.16
P1317-56	4	176	Unknown Material	0.08	2.96	0	0.01	0.14	5.44	0.01	0.04	0.23	8.98	0.02	0.1
P1317-57	2	182	Unknown Material	0.06	0.59	0	0.02	0.11	1.08	0.01	0.06	0.18	1.78	0.03	0.15
P1317-58	6	149	Cast iron	0.15	13.24	0	0.03	0.28	24.36	0.01	0.09	0.19	16.49	0.01	0.04
P1317-59	8	161	Unknown Material	0.36	56.58	0.02	0.1	0.66	104.13	0.05	0.32	0.03	3.97	0	0
P1317-60	4	14	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-61	8	327	Unknown Material	0.36	57.18	0.03	0.11	0.67	105.23	0.11	0.33	0.01	2.15	0	0
P1317-62	8	452	Cast iron	0.27	42.94	0.03	0.06	0.5	79.04	0.09	0.19	0.14	21.66	0.01	0.02
P1317-63	12	354	Galvanized iron	0.31	109.15	0.02	0.05	0.57	200.88	0.05	0.15	0.47	164.42	0.04	0.1
P1317-64	6	143	Asbestos Cement	0.21	18.72	0.01	0.05	0.39	34.45	0.02	0.15	0.25	21.9	0.01	0.06
P1318-01	8	62	Unknown Material	0.26	41.5	0	0.06	0.49	76.39	0.01	0.18	0.15	23.78	0	0.02
P1318-02	6	52	Unknown Material	0.07	6.01	0	0.01	0.13	11.07	0	0.02	0.21	18.27	0	0.05
P1318-03	6	607	Asbestos Cement	0.02	1.6	0	0	0.03	2.95	0	0	0.06	4.87	0	0
P1318-04	6	804	C-900	0.05	4.42	0	0	0.09	8.12	0.01	0.01	0.15	13.4	0.02	0.02
P1318-06	6	451	C-900	0.01	1.21	0	0	0.03	2.22	0	0	0.04	3.66	0	0
P1318-07	2	280	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1318-10	4	304	Cast iron	0.56	22.03	0.16	0.53	1.04	40.55	0.5	1.64	0.8	31.45	0.31	1.02
P1319-01	6	622	Asbestos Cement	0.31	27.35	0.06	0.09	0.68	60.17	0.25	0.41	1.13	99.26	0.64	1.03
P1319-02	6	161	Asbestos Cement	0.31	27.35	0.02	0.09	0.68	60.17	0.07	0.41	1.13	99.26	0.17	1.03
P1319-03	6	583	Asbestos Cement	0.37	32.19	0.07	0.13	0.8	70.82	0.32	0.55	1.33	116.84	0.81	1.39
P1320-01	4	267	Galvanized iron	0.07	2.62	0	0.01	0.15	5.76	0.01	0.04	0.24	9.5	0.03	0.11
P1320-02	4	723	Galvanized iron	0.07	2.62	0.01	0.01	0.15	5.76	0.03	0.04	0.24	9.5	0.08	0.11
P1320-03	6	859	Galvanized iron	0.37	32.19	0.13	0.15	0.8	70.82	0.55	0.64	1.33	116.84	1.39	1.61

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1415-01	6	71	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-01a	6	130	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-02	6	453	C-900	0.04	3.23	0	0	0.07	5.94	0	0	0.11	9.8	0.01	0.01
P1415-03	6	293	C-900	0.05	4.49	0	0	0.09	8.25	0	0.01	0.15	13.61	0.01	0.02
P1415-04	6	576	Asbestos Cement	0.02	1.75	0	0	0.04	3.22	0	0	0.06	5.31	0	0
P1415-05	2	30	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1415-06	8	220	Galvanized iron	0.03	4.49	0	0	0.05	8.25	0	0	0.09	13.61	0	0.01
P1415-07	8	84	Galvanized iron	0.04	6	0	0	0.07	11.03	0	0.01	0.12	18.2	0	0.01
P1415-08	8	147	Unknown Material	0.05	7.75	0	0	0.09	14.25	0	0.01	0.15	23.51	0	0.02
P1415-09	6	472	Asbestos Cement	0.08	7.02	0	0.01	0.15	12.92	0.01	0.02	0.24	21.32	0.03	0.06
P1415-10	6	169	Galvanized iron	0.08	7.02	0	0.01	0.15	12.92	0	0.03	0.24	21.32	0.01	0.07
P1415-11	8	224	Galvanized iron	0.11	16.77	0	0.01	0.2	30.85	0.01	0.03	0.32	50.9	0.02	0.09
P1415-12	2	740	Galvanized iron	1.29	12.68	4.12	5.57	2.38	23.33	12.74	17.22	3.93	38.49	32.21	43.53
P1415-13	8	563	Galvanized iron	0.12	18.03	0.01	0.01	0.21	33.16	0.02	0.04	0.35	54.71	0.05	0.1
P1415-14	6	368	Galvanized iron	0.01	1.01	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1415-15	6	132	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-16	6	663	Cast iron	0.1	8.7	0.01	0.01	0.18	16.02	0.03	0.04	0.43	37.71	0.13	0.2
P1415-17	6	338	Unknown Material	0.03	2.44	0	0	0.05	4.49	0	0	0.08	7.41	0	0.01
P1415-18	6	77	Unknown Material	0.09	8.13	0	0.01	0.17	14.96	0	0.03	0.28	24.69	0.01	0.09
P1415-20	4	97	Unknown Material	0.03	1.36	0	0.01	0.06	2.51	0	0.01	0.11	4.14	0	0.03
P1415-21	4	369	Cast iron	0.05	2.11	0	0.01	0.1	3.88	0.01	0.02	0.16	6.4	0.02	0.05
P1415-22	4	181	Cast iron	0	0	0	0	0	0	0	0	0	0	0	0
P1415-23	6	437	Asbestos Cement	0.19	16.83	0.02	0.04	0.35	30.98	0.05	0.12	0.71	62.4	0.19	0.44
P1415-24	4	811	Steel	0.1	4.01	0.03	0.03	0.19	7.39	0.08	0.1	0.31	12.19	0.2	0.25
P1415-25	6	202	Asbestos Cement	0.01	1.01	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1415-26	8	54	Galvanized iron	0.12	18.03	0	0.01	0.21	33.16	0	0.04	0.35	54.71	0.01	0.1
P1415-27	6	94	Unknown Material	0.24	21.58	0.01	0.07	0.45	39.7	0.02	0.22	0.74	65.5	0.05	0.55
P1415-28	6	481	Asbestos Cement	0.06	5.49	0	0	0.11	10.1	0.01	0.02	0.19	16.66	0.02	0.04
P1415-29	6	262	Asbestos Cement	0.04	3.57	0	0	0.07	6.57	0	0.01	0.12	10.84	0	0.02
P1415-30	8	268	Unknown Material	0.25	39.61	0.01	0.05	0.47	72.86	0.04	0.17	0.77	120.22	0.11	0.42
P1415-31	6	576	Asbestos Cement	0.02	1.92	0	0	0.04	3.53	0	0	0.07	5.82	0	0.01
P1415-32	4	561	Steel	0.04	1.75	0	0.01	0.08	3.22	0.01	0.02	0.14	5.31	0.03	0.05
P1415-33	4	249	Steel	0.04	1.75	0	0.01	0.08	3.22	0.01	0.02	0.14	5.31	0.01	0.05
P1415-34	6	284	Asbestos Cement	0.12	10.65	0	0.02	0.22	19.6	0.01	0.05	0.24	21.05	0.02	0.06
P1415-35	8	270	Asbestos Cement	0.32	50.26	0.02	0.07	0.59	92.46	0.06	0.22	0.9	141.26	0.13	0.49
P1415-36	8	59	Unknown Material	1.01	157.59	0.04	0.69	1.85	289.97	0.13	2.14	1.93	302.84	0.14	2.32
P1415-37	4	356	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1415-38	8	26	Unknown Material	1.1	172.47	0.02	0.82	2.03	317.35	0.07	2.54	2.22	348.01	0.08	3
P1415-39	12	270	Asbestos Cement	0.53	187.6	0.03	0.11	0.98	345.2	0.1	0.35	1.05	371.77	0.11	0.41
P1415-40	12	8	Unknown Material	0.56	195.68	0	0.12	1.02	360.07	0	0.43	1.12	396.31	0	0.52
P1415-41	2	89	Galvanized iron	0.1	1.01	0	0.05	0.19	1.85	0.01	0.16	0.31	3.05	0.04	0.4
P1415-42	8	104	Unknown Material	0.69	107.33	0.04	0.34	1.26	197.51	0.11	1.05	1.03	161.57	0.08	0.73
P1415-43	8	32	Unknown Material	0.57	89.45	0.01	0.24	1.05	164.62	0.02	0.76	0.61	96.02	0.01	0.27
P1415-44	8	324	Asbestos Cement	0.55	85.44	0.06	0.19	1	157.23	0.19	0.59	0.54	83.83	0.06	0.19
P1415-45	4	215	Steel	0.39	15.14	0.08	0.37	0.71	27.85	0.25	1.15	0.61	23.76	0.18	0.85
p1415-46	6	295	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-47	6	143	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-48	6	214	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-49	8	512	Asbestos Cement	0.32	50.26	0.04	0.07	0.59	92.46	0.11	0.22	0.9	141.26	0.25	0.49
P1415-50	12	542	Asbestos Cement	0.56	196.69	0.07	0.12	1.03	361.92	0.21	0.39	1.13	399.36	0.25	0.46
P1415-51	12	985	Asbestos Cement	0.56	196.69	0.12	0.12	1.03	361.92	0.38	0.39	1.13	399.36	0.46	0.46
P1416-01	6	261	Asbestos Cement	0.01	0.54	0	0	0.01	1	0	0	0.02	1.65	0	0
P1416-02	6	30	Unknown Material	0.01	0.54	0	0	0.01	1	0	0	0.02	1.65	0	0
P1416-03	8	146	C-900	0.39	61.6	0.01	0.09	0.72	113.35	0.04	0.28	0.06	9.96	0	0
P1416-04	6	350	C-900	0.17	15.2	0.01	0.03	0.32	27.97	0.03	0.09	0.5	43.7	0.07	0.2
P1416-05	8	753	Galvanized iron	0.45	69.81	0.12	0.15	0.82	128.46	0.36	0.47	0.1	14.97	0.01	0.01
P1416-06	6	72	Unknown Material	0.01	0.93	0	0	0.02	1.72	0	0	0.03	2.84	0	0
P1416-07	6	265	C-900	0.15	12.9	0.01	0.02	0.27	23.72	0.02	0.06	0.42	36.69	0.04	0.14
P1416-08	2	294	Unknown Material	0.4	3.92	0.19	0.63	0.74	7.21	0.58	1.96	1.21	11.9	1.45	4.95
P1416-09	6	257	Asbestos Cement	0.04	3.92	0	0	0.08	7.21	0	0.01	0.13	11.9	0.01	0.02
P1416-10	6	116	Unknown Material	0.17	15	0	0.04	0.31	27.61	0.01	0.11	0.19	16.63	0	0.04
P1416-12	6	352	Asbestos Cement	0.26	22.99	0.02	0.07	0.48	42.32	0.07	0.21	0.09	7.64	0	0.01
P1416-13	8	483	Galvanized iron	0.45	69.81	0.07	0.15	0.82	128.46	0.23	0.47	0.1	14.97	0	0.01
P1416-14	6	74	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1416-15	6	18	Unknown Material	0.28	24.59	0	0.08	0.51	45.27	0.01	0.28	0.14	12.5	0	0.03
P1416-16	4	82	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1416-17	6	117	Unknown Material	0.28	24.59	0.01	0.09	0.51	45.27	0.03	0.28	0.14	12.51	0	0.03
P1416-18	6	30	Unknown Material	0.28	24.59	0	0.09	0.51	45.27	0.01	0.28	0.14	12.51	0	0.02
P1416-19	4	510	Cast iron	0.25	9.87	0.06	0.12	0.46	18.15	0.19	0.37	0.2	7.76	0.04	0.08
P1416-20	6	521	Asbestos Cement	0.04	3.28	0	0	0.07	6.04	0	0.01	0.11	9.97	0.01	0.01
P1416-21	4	404	Unknown Material	0.05	2.06	0	0.01	0.1	3.78	0.01	0.02	0.16	6.24	0.02	0.05
P1416-22	8	88	Asbestos Cement	0.55	85.44	0.02	0.19	1	157.23	0.05	0.59	0.54	83.83	0.02	0.19
P1416-23	8	306	Asbestos Cement	0.49	77.35	0.05	0.16	0.91	142.34	0.15	0.49	0.38	59.26	0.03	0.1
P1416-24	2	304	Unknown Material	0.1	1.01	0.02	0.05	0.19	1.85	0.05	0.16	0.31	3.05	0.12	0.4

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1416-25	2	289	Galvanized iron	0.15	1.51	0.03	0.11	0.28	2.78	0.1	0.33	0.47	4.59	0.24	0.85
P1416-26	8	477	Asbestos Cement	0.49	77.35	0.08	0.16	0.91	142.34	0.24	0.49	0.38	59.26	0.05	0.1
P1416-27	4	290	Cast iron	0.14	5.66	0.01	0.04	0.26	10.33	0.04	0.13	0.06	2.25	0	0.01
P1416-28	1	400	Galvanized iron	0.23	0.55	0.2	0.49	0.49	1.2	0.6	1.49	0.37	0.91	0.5	1.25
P1416-29	6	10	Unknown Material	0.09	7.54	0	0	0.16	13.88	0	0.05	0.5	44.29	0	0.27
P1416-30	6	443	Unknown Material	0.13	11.41	0.01	0.02	0.24	20.98	0.03	0.07	0.15	13.23	0.01	0.03
P1416-31	6	228	Unknown Material	0.17	15.16	0.01	0.04	0.32	27.88	0.03	0.11	0.28	24.62	0.02	0.09
P1416-32	8	21	Unknown Material	0.6	94.65	0.01	0.27	1.11	174.05	0.02	0.84	0.9	140.6	0.01	0.56
P1416-33	8	21	Unknown Material	0.5	78.41	0	0.19	0.92	144.17	0.01	0.58	0.72	112.7	0.01	0.37
P1416-34	2	287	Galvanized iron	0.13	1.25	0.02	0.08	0.23	2.29	0.07	0.23	0.39	3.78	0.17	0.59
P1416-35	6	264	Asbestos Cement	0.02	1.6	0	0	0.03	2.95	0	0	0.06	4.87	0	0
P1416-36	1	132	Galvanized iron	0.25	0.6	0.08	0.57	0.45	1.1	0.23	1.76	0.74	1.82	0.59	4.45
P1416-37	6	460	Asbestos Cement	0.05	4.73	0	0	0.1	8.72	0.01	0.01	0.16	14.39	0.01	0.03
P1416-38	6	664	C-900	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0
P1416-39	8	617	Unknown Material	0.49	77.16	0.11	0.18	0.91	141.88	0.35	0.57	0.7	108.92	0.22	0.35
P1416-40	3	330	Steel	0.1	2.25	0.01	0.04	0.18	3.95	0.04	0.12	0.34	7.58	0.14	0.42
P1416-41	8	158	Unknown Material	0.45	70.22	0.02	0.15	0.83	129.29	0.08	0.48	0.56	87.08	0.04	0.23
P1416-42	8	338	Galvanized iron	0.21	32.66	0.01	0.04	0.38	60.13	0.04	0.12	0.22	35.15	0.01	0.04
P1416-43	8	373	Galvanized iron	0.2	31.22	0.01	0.03	0.37	57.49	0.04	0.11	0.2	30.8	0.01	0.03
P1416-44	6	294	Asbestos Cement	0.07	6.2	0	0.01	0.13	11.42	0.01	0.02	0.21	18.84	0.01	0.05
P1416-45	3	158	Steel	0.06	1.37	0	0.02	0.11	2.53	0.01	0.05	0.19	4.17	0.02	0.14
P1416-46	4	483	Asbestos Cement	0.09	3.46	0.01	0.01	0.16	6.36	0.02	0.05	0.27	10.49	0.06	0.12
P1416-47	4	257	Steel	0.12	4.65	0.01	0.04	0.21	8.37	0.03	0.12	0.38	14.88	0.09	0.36
P1416-48	2	242	Unknown Material	0.06	0.6	0	0.02	0.11	1.1	0.01	0.06	0.19	1.82	0.04	0.15
P1416-49	4	101	C-900	0.05	1.8	0	0	0.08	3.32	0	0.01	0.14	5.48	0	0.03
P1416-50	6	363	Asbestos Cement	0.38	33.22	0.05	0.14	0.69	61.18	0.15	0.42	0.44	38.76	0.07	0.18
P1416-51	6	49	Unknown Material	0.1	8.63	0	0.01	0.18	15.91	0	0.04	0.3	26.25	0.01	0.1
P1416-52	6	469	Galvanized iron	0.25	21.78	0.03	0.07	0.46	40.11	0.1	0.22	0.02	2.12	0	0
P1416-53	6	504	Asbestos Cement	0.03	2.7	0	0	0.06	4.98	0	0	0.09	8.22	0.01	0.01
P1416-54	6	139	Asbestos Cement	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0.01
P1416-55	6	374	Asbestos Cement	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0.01
P1417-01	6	274	Galvanized iron	0.25	21.78	0.02	0.07	0.46	40.11	0.06	0.22	0.02	2.12	0	0
P1417-02	6	183	C-900	0.05	4.53	0	0	0.09	8.35	0	0.01	0.16	13.78	0	0.02
P1417-03	1	82	PVC	0.46	1.12	0.11	1.37	0.84	2.06	0.35	4.23	1.39	3.4	0.88	10.69
P1417-04	6	58	Unknown Material	0.04	3.41	0	0	0.07	6.29	0	0.01	0.12	10.38	0	0.02
P1417-05	6	135	C-900	0.17	14.78	0	0.03	0.31	27.21	0.01	0.08	0.22	19.16	0.01	0.04
P1417-06	6	37	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0

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Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-07	4	125	C-900	0.06	2.25	0	0.01	0.11	4.15	0	0.02	0.17	6.85	0.01	0.05
P1417-08	4	98	C-900	0.03	1.35	0	0	0.06	2.49	0	0	0.1	4.11	0	0.02
P1417-09	2	112	C-900	0.09	0.9	0	0.03	0.17	1.66	0.01	0.1	0.28	2.74	0.03	0.24
P1417-10	4	787	Cast iron	0.05	1.8	0	0	0.08	3.32	0.01	0.02	0.14	5.48	0.03	0.04
P1417-11	8	136	Unknown Material	0.41	64.49	0.02	0.13	0.76	118.69	0.06	0.41	1.15	180.34	0.12	0.89
P1417-12	10	36	Ductile Iron	0.26	64.49	0	0.04	0.48	118.69	0	0.14	0.74	180.34	0.01	0.3
P1417-13	8	154	Unknown Material	0.01	2.07	0	0	0.02	3.82	0	0	0.04	6.3	0	0
P1417-14	10	43	Unknown Material	0.25	61.59	0	0.05	0.46	113.35	0.01	0.12	0.77	189.15	0.01	0.33
P1417-15	10	234	C-900	0.23	57.45	0.01	0.03	0.43	105.71	0.02	0.08	0.82	201.75	0.06	0.28
P1417-16	6	164	C-900	0.1	9.03	0	0.01	0.19	16.6	0.01	0.03	1.17	103.23	0.16	0.96
P1417-17	10	359	Unknown Material	0.22	53.31	0.01	0.03	0.4	98.07	0.03	0.1	0.88	214.36	0.15	0.41
P1417-18	4	700	Cast iron	0.31	12.34	0.13	0.18	0.58	22.72	0.39	0.56	0.68	26.57	0.52	0.75
P1417-19	6	551	Galvanized iron	0.1	9.03	0.01	0.01	0.19	16.6	0.02	0.04	1.17	103.23	0.71	1.28
P1417-20	8	262	Unknown Material	0.15	23.95	0.01	0.02	0.28	44.05	0.02	0.07	0.68	106.59	0.09	0.34
P1417-21	6	192	Unknown Material	0.01	1.01	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1417-22	8	648	C-900	0.14	21.33	0.01	0.01	0.25	39.23	0.03	0.04	0.63	98.64	0.14	0.22
P1417-23	6	57	Unknown Material	0.01	1.01	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1417-24	4	85	Unknown Material	0.03	1.01	0	0	0.05	1.85	0	0.01	0.08	3.05	0	0.01
P1417-25	8	221	Unknown Material	0.12	18.71	0	0.01	0.22	34.41	0.01	0.04	0.58	90.69	0.05	0.25
P1417-26	8	29	Unknown Material	0.16	25.11	0	0.03	0.29	46.2	0	0.08	0.82	128.84	0.01	0.48
P1417-27	6	92	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1417-28	6	173	Unknown Material	0.01	1.21	0	0	0.03	2.22	0	0	0.04	3.66	0	0
P1417-29	6	521	Galvanized iron	0.04	3.88	0	0	0.08	7.13	0	0.01	0.99	87.6	0.49	0.95
P1417-30	6	512	C-900	0.07	6.47	0	0.01	0.14	11.92	0.01	0.02	0.39	34.4	0.06	0.13
P1417-31	8	287	C-900	0.04	6.4	0	0	0.08	11.79	0	0	0.24	38.15	0.01	0.04
P1417-32	8	254	Unknown Material	0.16	25.11	0.01	0.02	0.29	46.2	0.02	0.07	0.82	128.84	0.12	0.48
P1417-33	6	400	C-900	0.16	14.23	0.01	0.03	0.3	26.18	0.03	0.08	0.7	61.9	0.15	0.37
P1417-34	6	470	C-900	0.03	2.25	0	0	0.05	4.15	0	0	0.08	6.85	0	0.01
P1417-35	2	241	Galvanized iron	0.09	0.9	0.01	0.04	0.17	1.66	0.03	0.13	0.28	2.74	0.08	0.33
P1417-36	6	17	Unknown Material	0.41	36.1	0	0.17	0.75	66.44	0.01	0.56	0.17	14.95	0	0.03
P1417-37	6	404	Cast iron	0.36	31.57	0.06	0.14	0.66	58.09	0.18	0.44	0.33	28.73	0.05	0.12
P1417-38	6	33	Unknown Material	0.47	40.99	0.01	0.23	0.86	75.43	0.02	0.72	0.73	64.18	0.02	0.53
P1417-39	6	361	Galvanized iron	0.47	40.99	0.08	0.23	0.86	75.43	0.26	0.72	0.73	64.18	0.19	0.53
P1417-40	6	86	Galvanized iron	0.44	39.06	0.02	0.21	0.82	71.9	0.06	0.66	0.97	85.49	0.08	0.9
P1417-41	6	96	Unknown Material	0.44	39.06	0.02	0.21	0.82	71.9	0.06	0.66	0.97	85.49	0.09	0.91
P1417-42	6	82	Ductile Iron	0	0.25	0	0	0.01	0.45	0	0	0.05	4.73	0	0
P1417-43	6	84	Ductile Iron	0	0	0	0	0	0	0	0	0	0	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-44	6	214	Ductile Iron	0	0.25	0	0	0.01	0.45	0	0	0.05	4.73	0	0
P1417-45	6	94	Galvanized iron	0	0.4	0	0	0.01	0.68	0	0	0.01	0.62	0	0
P1417-46	6	89	Galvanized iron	0	0.42	0	0	0.01	0.81	0	0	0.04	3.12	0	0
P1417-47	6	117	PVC	0.02	1.33	0	0	0.03	2.44	0	0	0	0.04	0	0
P1417-48	6	83	PVC	0.01	0.8	0	0	0.02	1.48	0	0	0.2	17.91	0	0.04
P1417-49	6	59	PVC	0.02	1.33	0	0	0.03	2.44	0	0	0	0.04	0	0
P1417-50	6	181	PVC	0.01	1.23	0	0	0.03	2.27	0	0	0.09	7.75	0	0.01
P1417-51	6	153	PVC	0	0.32	0	0	0.01	0.58	0	0	0.16	14.51	0	0.03
P1417-52	6	251	C-900	0.41	36.14	0.03	0.14	0.75	66.52	0.11	0.43	1.07	94.37	0.2	0.82
P1417-53	6	372	Ductile Iron	0.05	4.36	0	0	0.09	8.03	0	0.01	0.03	2.24	0	0
P1417-54	6	226	Unknown Material	0.45	39.39	0.05	0.22	0.82	72.5	0.15	0.67	0.77	67.91	0.13	0.59
P1417-55	6	192	Unknown Material	0.05	4.06	0	0	0.08	7.46	0	0.01	0.14	12.31	0	0.03
P1417-56	6	369	C-900	0.36	31.43	0.04	0.11	0.66	57.85	0.12	0.33	0.16	13.78	0.01	0.02
P1417-57	8	1,071	C-900	0.41	64.49	0.11	0.1	0.76	118.69	0.33	0.31	1.15	180.33	0.71	0.67
P1417-58	4	409	Unknown Material	0.1	4.06	0.01	0.02	0.19	7.46	0.03	0.07	0.31	12.31	0.07	0.18
P1417-59	6	25	Unknown Material	0.43	38.11	0.01	0.21	0.8	70.15	0.02	0.63	0.81	71.78	0.02	0.65
P1417-60	6	113	Unknown Material	0.38	33.75	0.02	0.16	0.7	62.12	0.06	0.5	0.79	69.55	0.07	0.62
P1417-61	2	185	Galvanized iron	0.09	0.9	0.01	0.04	0.17	1.66	0.02	0.13	0.28	2.74	0.06	0.33
P1417-62	6	541	C-900	0.35	31.05	0.06	0.1	0.65	57.14	0.17	0.32	0.88	77.76	0.31	0.57
P1417-63	4	20	Unknown Material	0.02	0.9	0	0	0.04	1.66	0	0	0.07	2.74	0	0.01
P1417-64	2	336	Steel	0.09	0.9	0.02	0.06	0.17	1.66	0.06	0.18	0.28	2.74	0.15	0.46
P1417-65	6	156	Unknown Material	0.21	18.57	0.01	0.05	0.39	34.17	0.03	0.17	0.59	51.96	0.06	0.36
P1417-66	4	47	Unknown Material	0.03	1.35	0	0.01	0.06	2.49	0	0.01	0.1	4.11	0	0.03
P1417-67	2	326	Unknown Material	0.14	1.35	0.03	0.09	0.25	2.49	0.09	0.27	0.42	4.11	0.23	0.69
P1417-68	6	204	PVC	0.11	9.59	0	0.01	0.2	17.63	0.01	0.04	0.63	55.77	0.06	0.31
P1417-69	2	379	Unknown Material	0.2	2	0.07	0.18	0.38	3.68	0.21	0.56	0.62	6.07	0.54	1.42
P1417-70	6	263	Unknown Material	0.17	14.97	0.01	0.04	0.31	27.53	0.03	0.11	0.71	62.92	0.13	0.51
P1417-71	6	497	Asbestos Cement	0.11	9.41	0.01	0.01	0.2	17.3	0.02	0.04	0.63	55.23	0.17	0.35
P1417-72	4	264	Cast iron	0.14	5.43	0.01	0.04	0.25	9.98	0.03	0.12	0.8	31.38	0.27	1.02
P1417-73	8	200	Cast iron	0.28	43.48	0.01	0.06	0.51	80.02	0.04	0.2	0.18	28.84	0.01	0.03
P1417-74	4	39	Unknown Material	0.05	2	0	0.01	0.09	3.68	0	0.02	0.16	6.07	0	0.04
P1417-75	6	150	Unknown Material	0.13	11.62	0	0.02	0.24	21.36	0.01	0.07	0.83	73.1	0.1	0.68
P1417-76	6	21	Unknown Material	0.02	1.55	0	0	0.03	2.85	0	0	0.91	80.54	0.02	0.81
P1417-77	6	182	Unknown Material	0.03	2.67	0	0	0.06	4.91	0	0.01	0.95	83.94	0.16	0.87
P1417-78	2	222	PVC	0.12	1.21	0.01	0.05	0.23	2.22	0.04	0.17	0.37	3.66	0.09	0.42
P1417-79	6	519	C-900	0.15	13.16	0.01	0.02	0.27	24.21	0.03	0.07	0.08	7.44	0	0.01
P1417-80	6	274	Galvanized iron	0.04	3.59	0	0	0.08	6.62	0	0.01	1.63	143.56	0.65	2.36

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-81	6	258	Unknown Material	0.1	9.05	0	0.01	0.19	16.64	0.01	0.04	0.61	54.14	0.1	0.39
P1417-82	6	123	Cast iron	0.1	9.05	0	0.01	0.19	16.64	0.01	0.04	0.61	54.14	0.05	0.39
P1417-83	6	99	Unknown Material	0.34	30.28	0.01	0.13	0.63	55.7	0.04	0.41	1.32	116.06	0.16	1.59
P1417-84	6	414	Cast iron	0.24	20.82	0.03	0.07	0.43	38.3	0.08	0.2	0.82	72.44	0.28	0.67
P1417-85	6	28	Unknown Material	0.26	22.82	0	0.08	0.48	42.03	0.01	0.24	0.82	72.35	0.02	0.66
P1417-86	8	216	Cast iron	0.24	38.02	0.01	0.05	0.45	69.95	0.03	0.15	0.67	105.49	0.07	0.33
P1417-87	6	266	Cast iron	0.19	16.77	0.01	0.04	0.35	30.9	0.04	0.14	1.04	91.24	0.27	1.02
P1417-88	6	369	Unknown Material	0.11	9.57	0.01	0.02	0.2	17.6	0.02	0.05	1.71	151	0.96	2.59
P1417-89	6	1,050	Cast iron	0.29	25.59	0.1	0.1	0.53	47.1	0.31	0.3	0.65	57.47	0.46	0.43
P1417-90	10	1,030	Asbestos Cement	0.13	31.46	0.01	0.01	0.24	57.88	0.03	0.03	0.35	85.57	0.07	0.06
P1417-91	4	394	Cast iron	0.15	6.05	0.02	0.05	0.28	11.14	0.06	0.15	0.48	18.89	0.16	0.4
P1417-92	6	192	Galvanized iron	0.03	2.58	0	0	0.05	4.77	0	0.01	1.66	146.61	0.47	2.46
P1417-94	6	485	Galvanized iron	0.23	20.37	0.03	0.06	0.43	37.49	0.1	0.2	0.53	46.49	0.14	0.29
P1417-95	6	89	PVC	0.01	0.49	0	0	0.01	0.88	0	0	0.04	3.64	0	0
P1417-96	6	94	PVC	0.01	0.47	0	0	0.01	0.93	0	0	0.01	0.72	0	0
P1417-97	6	679	Unknown Material	0.05	4.06	0	0	0.08	7.46	0.01	0.01	0.14	12.31	0.02	0.02
P1418-01	4	17	Unknown Material	0	0.11	0	0	0.01	0.2	0	0	0.11	4.3	0	0.03
P1418-02	4	430	Cast iron	0.04	1.72	0	0	0.08	3.17	0.01	0.01	0.23	9.2	0.04	0.1
P1418-03	4	77	Unknown Material	0.06	2.33	0	0.01	0.11	4.29	0	0.03	0.28	11.05	0.01	0.15
P1418-04	6	189	Unknown Material	0.31	27.69	0.02	0.11	0.58	50.96	0.07	0.35	0.2	17.77	0.01	0.05
P1418-05	8	292	Galvanized iron	0.18	27.69	0.01	0.03	0.33	50.96	0.03	0.09	0.11	17.77	0	0.01
P1418-06	8	262	Galvanized iron	0.18	27.69	0.01	0.03	0.33	50.96	0.02	0.08	0.11	17.77	0	0.01
P1418-07	8	283	Unknown Material	0.16	25.51	0.01	0.02	0.3	46.95	0.02	0.07	0.16	24.39	0.01	0.02
P1418-08	6	172	Unknown Material	0.21	18.14	0.01	0.05	0.38	33.4	0.03	0.16	0.96	84.77	0.15	0.89
P1418-09	4	457	Asbestos Cement	0.4	15.52	0.11	0.24	0.73	28.58	0.34	0.74	1.96	76.81	2.11	4.61
P1418-10	4	242	Unknown Material	0.06	2.53	0	0.01	0.12	4.68	0.01	0.03	0.56	21.94	0.13	0.52
P1418-105	10	248	PVC	0.01	1.81	0	0	0.02	5.43	0	0	0.04	8.96	0	0
P1418-106	6	85	PVC	0.02	1.81	0	0	0.06	5.43	0	0.01	0.1	8.96	0	0.01
P1418-11	6	428	Asbestos Cement	0.07	5.84	0	0.01	0.12	10.74	0.01	0.02	1.29	113.81	0.57	1.33
P1418-12	1	559	Galvanized iron	0.66	1.61	1.99	3.56	1.21	2.97	6.19	11.08	2	4.9	15.66	28.01
P1418-13	4	180	Unknown Material	0.01	0.56	0	0	0.03	1.06	0	0	0.71	27.91	0.15	0.82
P1418-14	6	23	Unknown Material	0.16	13.82	0	0.03	0.29	25.48	0	0.1	0.48	42.04	0.01	0.24
P1418-15	6	261	C-900	0.08	6.79	0	0.01	0.14	12.52	0.01	0.02	0.23	20.66	0.01	0.05
P1418-16	6	56	C-900	0.05	4.1	0	0	0.09	7.55	0	0	0.14	12.46	0	0.02
P1418-17	6	495	C-900	0.02	2.06	0	0	0.04	3.79	0	0	0.07	6.25	0	0.01
P1418-18	4	460	C-900	0.02	0.88	0	0	0.04	1.63	0	0	0.07	2.69	0	0.01
P1418-19	6	469	Galvanized iron	0.08	7.03	0	0.01	0.15	12.96	0.01	0.03	0.24	21.38	0.03	0.07

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				Average Day				Maximum Day				Peak Hour			
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P1418-20	6	498	Galvanized iron	0.08	7.03	0	0.01	0.15	12.96	0.01	0.03	0.24	21.38	0.03	0.07
P1418-21	6	134	Ductile Iron	0.02	2.04	0	0	0.04	3.76	0	0	0.07	6.2	0	0.01
P1418-22	6	153	Asbestos Cement	0.01	0.91	0	0	0.02	1.68	0	0	0.03	2.77	0	0
P1418-23	6	261	Asbestos Cement	0.01	1.3	0	0	0.03	2.4	0	0	0.04	3.96	0	0
P1418-24	6	161	Asbestos Cement	0.02	1.59	0	0	0.03	2.93	0	0	0.05	4.83	0	0
P1418-25	2	33	Unknown Material	0.03	0.29	0	0.01	0.05	0.53	0	0.01	0.09	0.87	0	0.04
P1418-26	6	565	Unknown Material	0.01	0.66	0	0	0.01	1.21	0	0	0.02	1.99	0	0
P1418-27	6	65	Unknown Material	0.01	0.49	0	0	0.01	0.91	0	0	0.02	1.5	0	0
P1418-28	8	221	Unknown Material	0.02	3.42	0	0	0.04	6.3	0	0	0.07	10.39	0	0
P1418-29	6	50	Unknown Material	0.05	4.43	0	0	0.09	8.16	0	0.01	0.15	13.47	0	0.03
P1418-30	8	205	Asbestos Cement	0.25	38.54	0.01	0.04	0.47	73.02	0.03	0.14	0.77	120.48	0.07	0.36
P1418-31	8	35	Unknown Material	0.25	38.54	0	0.05	0.47	73.02	0.01	0.17	0.77	120.48	0.01	0.42
P1418-32	6	238	Asbestos Cement	0.04	3.34	0	0	0.07	6.16	0	0.01	0.12	10.17	0	0.02
P1418-33	2	442	Unknown Material	0.03	0.29	0	0	0.05	0.53	0.01	0.02	0.09	0.87	0.02	0.04
P1418-34	8	261	Unknown Material	0.05	7.85	0	0	0.09	14.46	0	0.01	0.15	23.86	0.01	0.02
P1418-35	8	303	Asbestos Cement	0.25	38.54	0.01	0.04	0.47	73.02	0.04	0.14	0.77	120.48	0.11	0.36
P1418-36	6	76	C-900	0.06	5.63	0	0.01	0.12	10.34	0	0.02	0.19	17.06	0	0.04
P1418-37	6	28	Unknown Material	0.31	27.69	0	0.11	0.58	50.96	0.01	0.35	0.2	17.77	0	0.04
P1418-38	4	318	Cast iron	0.19	7.47	0.02	0.07	0.35	13.76	0.07	0.22	0.18	6.95	0.02	0.06
P1418-40	8	752	Unknown Material	0.01	0.97	0	0	0.01	1.76	0	0	0.02	2.4	0	0
P1418-41	8	165	Unknown Material	0.01	0.97	0	0	0.01	1.76	0	0	0.02	2.4	0	0
P1418-42	4	294	Cast iron	0.24	9.44	0.03	0.11	0.44	17.39	0.1	0.34	0.02	0.96	0	0
P1418-43	6	640	Cast iron	0.18	16.15	0.03	0.04	0.34	29.71	0.08	0.13	0.66	58.43	0.29	0.45
P1418-44	10	534	Galvanized iron	0.07	16.53	0	0	0.12	30.41	0.01	0.01	0.17	40.77	0.01	0.02
P1418-45	6	109	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-46	6	95	Unknown Material	0.02	1.97	0	0	0.04	3.62	0	0	0.07	5.97	0	0.01
P1418-47	2	135	Galvanized iron	0.6	5.84	0.18	1.32	1.1	10.74	0.55	4.09	1.81	17.72	1.4	10.35
P1418-48	4	401	Galvanized iron	0.05	2.02	0	0.01	0.09	3.72	0.01	0.02	0.4	15.55	0.11	0.28
P1418-49	10	272	Galvanized iron	0.07	16.53	0	0	0.12	30.41	0	0.01	0.17	40.77	0.01	0.02
P1418-50	10	119	Asbestos Cement	0.07	16.53	0	0	0.12	30.41	0	0.01	0.17	40.77	0	0.02
P1418-51	10	278	Asbestos Cement	0.05	12.57	0	0	0.09	23.12	0	0.01	0.12	28.74	0	0.01
P1418-52	4	733	Galvanized iron	0.08	3.3	0.01	0.02	0.15	6.07	0.04	0.05	0.02	0.61	0	0
P1418-53	12	666	Galvanized iron	0.11	38.54	0	0.01	0.21	73.02	0.02	0.02	0.34	120.48	0.04	0.06
P1418-54	8	182	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1418-55	10	164	Unknown Material	0.05	12.57	0	0	0.09	23.12	0	0.01	0.12	28.74	0	0.01
P1418-56	10	378	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1418-57	10	195	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1418-59	4	397	Cast iron	0.19	7.39	0.03	0.07	0.35	13.59	0.09	0.22	0.33	13.01	0.08	0.2
P1418-61	6	155	Asbestos Cement	0.14	12.57	0	0.02	0.26	23.12	0.01	0.07	0.33	28.74	0.02	0.1
P1418-63	4	599	Ductile Iron	0.26	10.24	0.08	0.13	0.48	18.84	0.24	0.4	0.55	21.68	0.31	0.51
P1418-64	6	134	Asbestos Cement	0.33	28.83	0.01	0.1	0.6	53.05	0.04	0.32	0.99	87.53	0.11	0.81
P1418-66	4	93	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-67	10	415	Asbestos Cement	0.03	7.9	0	0	0.06	14.54	0	0	0.1	23.99	0	0.01
P1418-68	4	483	Cast iron	0.03	1.05	0	0	0.05	1.93	0	0.01	0.08	3.18	0.01	0.01
P1418-69	6	436	Asbestos Cement	0.29	25.84	0.04	0.09	0.54	47.55	0.11	0.26	0.89	78.46	0.29	0.67
P1418-71	4	239	Cast iron	0.03	1.36	0	0	0.06	2.51	0	0.01	0.11	4.14	0.01	0.02
P1418-72	4	34	Cast iron	0.03	1.36	0	0.01	0.06	2.51	0	0.01	0.11	4.14	0	0.02
P1418-74	10	108	Asbestos Cement	0.13	30.64	0	0.01	0.24	58.48	0	0.03	0.39	96.49	0.01	0.08
P1418-75	10	297	Asbestos Cement	0.12	28.83	0	0.01	0.22	53.05	0.01	0.03	0.36	87.53	0.02	0.07
P1419-01	8	52	Unknown Material	0.03	4.38	0	0	0.05	8.06	0	0	0.08	13.3	0	0.01
P1419-02	8	466	Asbestos Cement	0.03	4.38	0	0	0.05	8.06	0	0	0.08	13.3	0	0.01
P1419-03	8	579	C-900	0.02	2.76	0	0	0.03	5.07	0	0	0.05	8.37	0	0
P1419-04	6	641	Asbestos Cement	0.01	1.05	0	0	0.02	1.93	0	0	0.04	3.18	0	0
P1419-05	8	819	Asbestos Cement	0.05	7.25	0	0	0.09	13.34	0	0.01	0.14	22.01	0.01	0.02
P1419-06	6	1,322	Asbestos Cement	0.06	5.46	0.01	0	0.11	10.05	0.02	0.01	0.19	16.58	0.05	0.04
P1515-01	6	140	C-900	0.02	1.67	0	0	0.03	3.07	0	0	0.06	5.07	0	0
P1515-02	10	103	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-03	6	847	C-900	0.03	2.88	0	0	0.06	5.32	0	0	0.1	8.74	0.01	0.01
P1515-04	6	206	C-900	0.02	2.03	0	0	0.04	3.72	0	0	0.07	6.17	0	0
P1515-05	6	41	C-900	0.02	2.03	0	0	0.04	3.72	0	0	0.07	6.17	0	0.01
P1515-06	6	385	C-900	0.03	2.66	0	0	0.06	4.9	0	0	0.09	8.09	0	0.01
P1515-07	6	616	C-900	0.08	7.12	0	0.01	0.15	13.09	0.01	0.02	0.25	21.63	0.03	0.05
P1515-08	10	259	C-900	0.11	27.4	0	0.01	0.21	50.45	0.01	0.02	0.34	83.21	0.01	0.05
P1515-09	6	209	C-900	0.08	7.35	0	0.01	0.15	13.54	0	0.02	0.25	22.31	0.01	0.06
P1515-10	10	169	C-900	0.08	19.78	0	0	0.15	36.41	0	0.01	0.25	60.08	0	0.03
P1515-11	10	231	C-900	0.15	36.14	0	0.01	0.27	66.53	0.01	0.03	0.45	109.78	0.02	0.09
P1515-12	10	218	C-900	0.2	48.87	0	0.02	0.37	89.96	0.01	0.06	0.61	148.44	0.03	0.16
P1515-13	6	175	C-900	0.14	12.73	0	0.02	0.27	23.43	0.01	0.06	0.44	38.66	0.03	0.16
P1515-14	6	112	C-900	0.02	1.35	0	0	0.03	2.49	0	0	0.05	4.11	0	0
P1515-15	6	376	C-900	0.02	2.16	0	0	0.05	3.97	0	0	0.07	6.55	0	0.01
P1515-16	6	395	C-900	0.09	7.6	0	0.01	0.16	13.98	0.01	0.02	0.26	23.07	0.02	0.06
P1515-17	10	374	C-900	0.08	18.7	0	0	0.14	34.42	0	0.01	0.23	56.8	0.01	0.03
P1515-18	6	419	C-900	0.04	3.93	0	0	0.08	7.23	0	0.01	0.14	11.93	0.01	0.02
P1515-19	8	562	C-900	0	0	0	0	0	0	0	0	0	0	0	0

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Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1515-19a	8	75	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-20	6	53	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-21	10	361	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-22	6	57	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-23	6	352	C-900	0.08	6.88	0	0.01	0.14	12.67	0.01	0.02	0.24	20.91	0.02	0.05
P1515-24	10	190	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-25	6	133	C-900	0.01	1.08	0	0	0.02	1.99	0	0	0.04	3.28	0	0
P1515-26	10	240	Galvanized iron	0.04	10.12	0	0	0.08	18.63	0	0	0.13	30.74	0	0.01
P1515-27	10	110	Galvanized iron	0.04	10.12	0	0	0.08	18.63	0	0	0.13	30.74	0	0.01
P1515-28	6	423	C-900	0.01	0.81	0	0	0.02	1.48	0	0	0.03	2.44	0	0
P1515-29	8	716	Unknown Material	0.06	9.69	0	0	0.11	17.83	0.01	0.01	0.36	56.28	0.07	0.1
P1515-30	8	192	Unknown Material	0.09	14.78	0	0.01	0.17	27.19	0.01	0.03	0.11	18	0	0.01
P1515-31	10	42	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1515-32	10	400	Unknown Material	0.07	16.43	0	0	0.12	30.22	0	0.01	0.09	23	0	0.01
P1515-33	10	184	Unknown Material	0.04	9.69	0	0	0.07	17.83	0	0	0.83	202.9	0.07	0.37
P1515-34	10	137	Unknown Material	0	0	0	0	0	0	0	0	1.06	259.18	0.08	0.59
P1515-36	8	43	Unknown Material	0.17	26.12	0	0.02	0.31	48.05	0	0.08	1.15	179.89	0.04	0.89
P1515-37	4	390	Unknown Material	0.03	1.36	0	0	0.06	2.51	0	0.01	0.11	4.14	0.01	0.02
P1515-38	8	102	Unknown Material	0.19	29.13	0	0.03	0.34	53.59	0.01	0.09	1.09	170.75	0.08	0.8
P1515-39	6	586	Asbestos Cement	0.34	30.14	0.07	0.11	0.63	55.44	0.2	0.35	1.9	167.7	1.59	2.72
P1516-01	6	677	Asbestos Cement	0.05	4.76	0	0	0.1	8.73	0.01	0.01	0.39	34.66	0.1	0.15
P1516-02	6	454	Asbestos Cement	0.07	5.88	0	0.01	0.12	10.81	0.01	0.02	0.14	12.58	0.01	0.02
P1516-03	6	539	Galvanized iron	0.02	2.09	0	0	0.04	3.81	0	0	0.14	12.35	0.01	0.03
P1516-04	6	241	Unknown Material	0.01	0.92	0	0	0.02	1.7	0	0	0.03	2.81	0	0
P1516-05	6	506	Unknown Material	0.11	9.56	0.01	0.02	0.2	17.58	0.02	0.05	0.02	1.41	0	0
P1516-06	2	107	Unknown Material	0.17	0.92	0.02	0.18	0.31	1.7	0.06	0.55	0.51	2.81	0.15	1.38
P1516-07	6	513	Galvanized iron	0.05	4.69	0	0	0.1	8.59	0.01	0.01	0.05	4.46	0	0
P1516-08	6	17	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-09	6	735	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-10	6	367	Asbestos Cement	0.04	3.76	0	0	0.08	6.92	0	0.01	0.13	11.42	0.01	0.02
P1516-11	8	328	C-900	0.04	6.16	0	0	0.07	11.34	0	0	0.12	18.71	0	0.01
P1516-13	8	459	C-900	0.04	6.16	0	0	0.07	11.34	0	0	0.12	18.71	0	0.01
P1516-14	8	560	C-900	0.04	6.16	0	0	0.07	11.34	0	0	0.12	18.71	0.01	0.01
P1516-15	6	479	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1516-16	8	93	C-900	0.04	6.16	0	0	0.07	11.35	0	0	0.12	18.71	0	0.01
P1516-17	6	270	C-900	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0
P1516-18	6	167	Unknown Material	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0

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Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1516-19	8	212	C-900	0.04	6.52	0	0	0.08	12.01	0	0	0.13	19.8	0	0.01
P1516-20	8	461	C-900	0.06	10.07	0	0	0.12	18.51	0	0.01	0.19	30.53	0.01	0.02
P1516-21	8	405	C-900	0.02	3.54	0	0	0.04	6.5	0	0	0.07	10.73	0	0
P1516-22	8	561	C-900	0.3	46.4	0.03	0.05	0.54	85.38	0.09	0.17	0.34	53.66	0.04	0.07
P1516-23	6	135	Unknown Material	0.4	34.83	0.02	0.17	0.73	64.1	0.07	0.53	1.18	104.34	0.18	1.31
P1516-24	6	213	Unknown Material	0.13	11.05	0	0.02	0.23	20.32	0.01	0.06	0.56	49.1	0.07	0.32
P1516-25	6	223	Unknown Material	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-26	6	202	Unknown Material	0.11	9.43	0	0.01	0.2	17.33	0.01	0.05	0.5	44.16	0.05	0.27
P1516-27	6	264	Asbestos Cement	0.02	1.37	0	0	0.03	2.53	0	0	0.05	4.17	0	0
P1516-28	6	117	Unknown Material	0.09	7.6	0	0.01	0.16	13.95	0	0.03	0.44	38.59	0.02	0.21
P1516-29	6	266	Unknown Material	0.01	1.14	0	0	0.02	2.1	0	0	0.04	3.46	0	0
P1516-30	6	111	Unknown Material	0.07	6.46	0	0.01	0.13	11.85	0	0.02	0.4	35.12	0.02	0.17
P1516-31	6	111	Unknown Material	0.05	4.63	0	0	0.1	8.48	0	0.01	0.34	29.56	0.01	0.13
P1516-32	6	52	Galvanized iron	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-33	6	109	Galvanized iron	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-34	6	131	Unknown Material	0.03	2.8	0	0	0.06	5.11	0	0	0.27	24	0.01	0.09
P1516-35	4	15	Unknown Material	0.02	0.69	0	0	0.03	1.27	0	0	0.05	2.1	0	0
P1516-36	2	123	Galvanized iron	0.07	0.69	0	0.03	0.13	1.27	0.01	0.08	0.21	2.1	0.02	0.2
P1516-37	6	182	Unknown Material	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-38	6	152	C-900	0.02	1.42	0	0	0.03	2.57	0	0	0.22	19.81	0.01	0.04
P1516-39	6	820	Asbestos Cement	0.1	9.24	0.01	0.01	0.19	17.01	0.03	0.04	0.39	34.12	0.12	0.14
P1516-40	6	20	Unknown Material	0.09	8.14	0	0.01	0.17	15.02	0	0.04	0.24	21.22	0	0.07
P1516-41	6	400	Asbestos Cement	0.19	17.09	0.02	0.04	0.36	31.44	0.05	0.12	0.14	12.76	0.01	0.02
P1516-42	6	229	Unknown Material	0.12	10.61	0	0.02	0.22	19.5	0.01	0.06	0.34	29.73	0.03	0.13
P1516-43	6	200	Unknown Material	0.14	12.21	0	0.02	0.25	22.45	0.02	0.08	0.39	34.6	0.03	0.17
P1516-44	6	298	Galvanized iron	0.1	8.95	0	0.01	0.19	16.42	0.01	0.04	0.1	8.46	0	0.01
P1516-45	6	561	Galvanized iron	0.07	6.19	0	0.01	0.13	11.35	0.01	0.02	0	0.09	0	0
P1516-53	6	455	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1516-54	6	336	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-01	8	48	Unknown Material	0.07	10.43	0	0.01	0.12	19.17	0	0.02	0.2	31.62	0	0.04
P1517-03	6	115	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-04	6	867	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-05	6	535	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-06	6	205	C-900	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0
P1517-07	6	346	C-900	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0
P1517-08	10	132	Galvanized iron	0.09	21.03	0	0.01	0.16	38.7	0	0.02	2.32	568.74	0.33	2.51
P1517-09	10	460	C-900	0.09	21.03	0	0	0.16	38.7	0.01	0.01	2.32	568.74	0.87	1.89

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P1517-10	8	319	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-11	8	303	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-12	4	247	Cast iron	0.02	0.9	0	0	0.04	1.66	0	0	0.07	2.74	0	0.01
P1517-13	6	146	Unknown Material	0.02	2.07	0	0	0.04	3.82	0	0	0.07	6.3	0	0.01
P1517-14	8	195	Unknown Material	0.31	48.62	0.02	0.08	0.57	89.43	0.05	0.24	1.76	276.01	0.38	1.95
P1517-15	10	726	Galvanized iron	0.09	21.03	0	0.01	0.16	38.7	0.01	0.02	2.32	568.74	1.82	2.51
P1517-16	10	261	Unknown Material	0.09	21.03	0	0.01	0.16	38.7	0	0.02	2.32	568.74	0.66	2.51
P1517-17	10	51	Galvanized iron	0.09	21.03	0	0	0.16	38.7	0	0.01	2.32	568.74	0.13	2.51
P1517-18	10	260	Galvanized iron	0.04	10.32	0	0	0.08	18.99	0	0	2.19	536.22	0.59	2.25
P1517-19	6	141	Unknown Material	0.07	6.23	0	0.01	0.13	11.47	0	0.02	0.21	18.93	0.01	0.06
P1517-20	10	243	Unknown Material	0	0	0	0	0	0	0	0	2.06	504.88	0.49	2.01
P1517-21	10	58	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-22	10	17	Unknown Material	0.21	51.24	0	0.03	0.39	94.25	0	0.09	0.9	220.66	0.01	0.43
P1517-23	10	30	Unknown Material	0	0	0	0	0	0	0	0	2.06	504.88	0.06	2.02
P1517-24	10	49	Unknown Material	0	0	0	0	0	0	0	0	2.06	504.62	0.1	2.01
P1517-25	8	204	Unknown Material	0.33	51.24	0.02	0.09	0.6	94.25	0.05	0.27	1.81	283.96	0.42	2.06
P1517-26	8	127	Unknown Material	0.01	1.61	0	0	0.02	2.97	0	0	0.03	4.9	0	0
P1517-27	6	289	C-900	0.11	9.89	0	0.01	0.21	18.21	0.01	0.04	0.51	44.78	0.06	0.21
P1517-28	4	318	Cast iron	0.06	2.33	0	0.01	0.11	4.29	0.01	0.03	0.28	11.05	0.05	0.15
P1517-29	6	185	Asbestos Cement	0.04	3.13	0	0	0.07	5.75	0	0.01	0.15	13.46	0	0.03
P1517-30	4	86	Unknown Material	0.07	2.73	0	0.01	0.13	5.02	0	0.03	0.31	12.25	0.02	0.18
P1517-31	4	91	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-32	10	81	Galvanized iron	0.09	21.03	0	0.01	0.16	38.7	0	0.02	2.32	568.74	0.2	2.51
P1518-01	4	348	Asbestos Cement	0.06	2.22	0	0.01	0.1	4.09	0.01	0.02	0.17	6.75	0.02	0.05
P1518-02	4	101	Unknown Material	0.01	0.45	0	0	0.02	0.83	0	0	0.03	1.37	0	0
P1518-03	6	209	PVC	0.02	2	0	0	0.04	3.68	0	0	0.07	6.07	0	0
P1518-04	6	119	Unknown Material	0.07	5.96	0	0.01	0.12	10.97	0	0.02	1.7	149.62	0.3	2.55
P1518-05	8	314	PVC	0.03	5.07	0	0	0.06	9.33	0	0	0.94	146.91	0.14	0.46
P1518-06	8	471	PVC	0.02	2.4	0	0	0.03	4.42	0	0	0.89	138.81	0.19	0.41
P1518-07	6	345	Unknown Material	0.06	5.07	0	0	0.11	9.33	0.01	0.02	1.67	146.91	0.85	2.47
P1518-08	2	174	Galvanized iron	0.16	0.89	0.03	0.17	0.3	1.64	0.09	0.51	0.49	2.71	0.23	1.29
P1518-09	6	665	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-10	8	83	Galvanized iron	0.45	71.21	0.01	0.16	0.85	133.15	0.04	0.51	1.4	219.7	0.11	1.28
P1518-11	8	44	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1518-12	6	34	Unknown Material	0	0	0	0	0	0	0	0	1.49	131.51	0.07	2.01
P1518-13	6	433	Asbestos Cement	0	0	0	0	0	0	0	0	1.49	131.53	0.75	1.73
P1518-14	8	174	PVC	0	0	0	0	0	0	0	0	0.84	131.52	0.06	0.37

City of Placerville
Water Modeling Report
Existing System Pipeline Model Output

				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1518-15	8	98	Unknown Material	0	0	0	0	0	0	0	0	0.84	131.52	0.05	0.5
P1518-16	8	553	Asbestos Cement	0.02	2.82	0	0	0.03	5.19	0	0	0.05	8.56	0	0
P1518-17	8	18	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-18	4	507	Unknown Material	0.01	0.29	0	0	0.01	0.53	0	0	0.02	0.87	0	0
P1518-19	6	528	Asbestos Cement	0.05	4.7	0	0	0.1	8.67	0.01	0.01	0.16	14.31	0.02	0.03
P1518-20	8	567	Unknown Material	0.03	4.48	0	0	0.05	8.25	0	0	0.09	13.61	0	0.01
P1518-21	8	280	Asbestos Cement	0.45	71.21	0.04	0.14	0.85	133.15	0.12	0.44	1.4	219.7	0.31	1.1
P1518-22	6	147	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-23	6	393	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-24	6	407	Asbestos Cement	0.19	17.14	0.02	0.04	0.36	32	0.05	0.13	0.6	52.8	0.13	0.32
P1518-25	8	274	Unknown Material	0.11	17.14	0	0.01	0.2	32	0.01	0.04	0.34	52.8	0.02	0.09
P1518-26	8	813	Unknown Material	0.07	10.31	0	0	0.12	19.43	0.01	0.01	0.2	32.06	0.03	0.04
P1518-27	8	214	Unknown Material	0.02	2.9	0	0	0.04	5.8	0	0	0.06	9.57	0	0
P1518-28	8	241	Unknown Material	0.35	54.07	0.02	0.1	0.65	101.15	0.07	0.3	1.07	166.9	0.19	0.77
P1518-29	8	256	Unknown Material	0.36	56.97	0.03	0.1	0.68	106.95	0.09	0.34	1.13	176.47	0.22	0.85
P1518-30	8	80	Asbestos Cement	0.3	46.39	0	0.06	0.56	87.48	0.02	0.2	0.92	144.34	0.04	0.51
P1518-31	8	21	Asbestos Cement	0.3	46.39	0	0.06	0.56	87.48	0	0.2	0.92	144.34	0.01	0.51
P1518-32	8	50	Asbestos Cement	0.3	46.39	0	0.06	0.56	87.48	0.01	0.2	0.92	144.34	0.03	0.5
P1518-33	8	134	Asbestos Cement	0.3	46.39	0.01	0.06	0.56	87.48	0.03	0.2	0.92	144.34	0.07	0.51
P1518-34	6	224	Unknown Material	0.07	6.1	0	0.01	0.13	11.22	0	0.02	0.21	18.51	0.01	0.05
P1519-01	4	490	Unknown Material	0.13	5.11	0.02	0.04	0.24	9.41	0.05	0.11	0.4	15.53	0.14	0.28
P1519-02	6	78	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1528-01	6	196	Galvanized iron	0.1	8.4	0	0.01	0.18	15.45	0.01	0.04	0.2	17.35	0.01	0.05
P1602-01	6	178	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1618-01	6	788	Galvanized iron	0.12	10.19	0.01	0.02	0.21	18.76	0.04	0.05	1.84	162.47	2.34	2.97
P1618-03	6	299	Asbestos Cement	0.16	14.19	0.01	0.03	0.3	26.13	0.03	0.09	1.98	174.63	0.88	2.93
P1618-04	4	310	Asbestos Cement	0.03	1.33	0	0	0.06	2.45	0	0.01	0.1	4.04	0.01	0.02
P1618-05	6	304	Galvanized iron	0.12	10.19	0.01	0.02	0.21	18.76	0.02	0.05	1.84	162.47	0.9	2.97
P1628-01	6	504	Galvanized iron	0.01	0.72	0	0	0.01	1.29	0	0	0.53	46.94	0.15	0.3
P1630-01	6	387	Galvanized iron	0.01	0.72	0	0	0.01	1.29	0	0	0.53	46.94	0.12	0.3

Appendix C

2005 System Scenarios Model Output

C-1: 2005 Automated Fire Flow Scenario Model Output

City of Placerville Water Model
2005 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1119-01	Cedar Ravine	TRUE	1,000	1,940	20	35	J1219-26
J1119-03	Cedar Ravine	TRUE	1,000	3,322	83	20	J1219-26
J1218-01	Cedar Ravine	TRUE	1,000	2,705	20	22	J1219-26
J1218-02	Cedar Ravine	TRUE	1,000	1,636	20	34	J1219-26
J1219-03	Cedar Ravine	TRUE	1,000	1,549	20	45	J1219-05
J1219-05	Cedar Ravine	TRUE	1,000	1,398	20	45	J1219-03
J1219-09	Cedar Ravine	TRUE	1,000	2,111	68	20	J1219-26
J1219-10	Cedar Ravine	TRUE	1,000	1,850	57	20	J1219-26
J1219-11	Cedar Ravine	TRUE	1,000	2,194	66	20	J1219-26
J1219-13	Cedar Ravine	TRUE	1,000	2,766	72	20	J1219-26
J1219-14	Cedar Ravine	TRUE	1,000	2,142	44	20	J1219-26
J1219-15	Cedar Ravine	TRUE	1,000	1,725	20	27	J1219-26
J1219-17	Cedar Ravine	TRUE	1,000	1,999	35	20	J1219-26
J1219-25	Cedar Ravine	TRUE	1,000	1,602	41	20	J1219-26
J1219-27	Cedar Ravine	TRUE	1,000	1,432	20	20	J1219-26
J1515-12	Combellack	TRUE	1,000	1,464	20	45	J1515-10
J1515-15	Combellack	TRUE	1,000	4,500	62	29	EID J1516-44
J1515-16	Combellack	TRUE	1,000	4,500	71	30	EID J1516-44
J1515-17	Combellack	TRUE	1,000	3,182	20	38	EID J1516-44
J1515-18	Combellack	TRUE	1,000	4,500	52	30	EID J1516-44
J1515-19	Combellack	TRUE	1,000	4,500	80	30	EID J1516-44
J1515-20	Combellack	TRUE	1,000	4,500	99	30	EID J1516-44
J1515-22	Combellack	TRUE	1,000	2,212	31	20	J1515-12
J1515-23	Combellack	TRUE	1,000	2,494	20	41	EID J1516-44
J1515-25	Combellack	TRUE	1,000	3,564	38	20	J1515-12
J1515-28	Combellack	TRUE	1,000	4,500	79	29	EID J1516-44
J1515-29	Combellack	TRUE	1,000	4,500	21	24	J1515-37
J1515-32	Combellack	TRUE	1,000	2,359	20	42	EID J1516-44
J1515-33	Combellack	TRUE	1,000	3,421	20	22	J1515-34
J1515-35	Combellack	TRUE	1,000	3,234	20	37	EID J1516-44
J1516-25	EID Res 4	TRUE	1,000	4,500	56	28	J1516-34
J1516-26	EID Res 4	TRUE	1,000	2,480	20	35	J1516-34
J1516-29	EID Res 4	TRUE	1,000	2,727	20	34	J1516-34
J1516-30	EID Res 4	TRUE	1,000	4,500	64	27	J1516-34
J1516-33	EID Res 4	TRUE	1,000	2,203	20	34	J1516-34
J1516-34	EID Res 4	TRUE	1,000	1,238	20	43	J1517-27
J1516-46	EID Res 4	TRUE	1,000	2,135	20	35	J1516-34
J1516-47	EID Res 4	TRUE	1,000	1,985	20	35	J1516-34
J1517-10	EID Res 4	TRUE	1,000	3,669	22	20	J1517-11
J1517-11	EID Res 4	TRUE	1,000	2,621	20	39	J1517-22
J1517-12	EID Res 4	TRUE	1,000	3,669	21	20	J1517-11
J1517-13	EID Res 4	TRUE	1,000	3,929	20	21	J1517-11
J1517-15	EID Res 4	TRUE	1,000	4,347	21	20	J1517-22

City of Placerville Water Model
2005 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1517-19	EID Res 4	TRUE	1,000	3,839	20	30	J1516-34
J1517-20	EID Res 4	TRUE	1,000	4,500	46	36	J1516-34
J1517-22	EID Res 4	TRUE	1,000	4,347	20	26	J1517-21
J1517-23	EID Res 4	TRUE	1,000	1,985	20	37	J1516-34
J1517-25	EID Res 4	TRUE	1,000	4,228	23	20	J1517-23
J1517-26	No FF, EID Res4	FALSE [(a)]	1,000	0	24	-	-
J1517-27	EID Res 4	TRUE	1,000	1,094	20	40	J1516-34
J1518-16	EID Res 4	TRUE	1,000	1,090	38	20	J1518-27
J1518-17	EID Res 4	TRUE	1,000	1,090	36	20	J1518-27
J1518-18	EID Res 4	TRUE	1,000	1,090	34	20	J1518-27
J1518-19	EID Res 4	TRUE	1,000	1,090	34	20	J1518-27
J1518-22	EID Res 4	TRUE	1,000	1,242	39	20	J1518-27
J1518-27	EID Res 4	TRUE	1,000	1,044	20	33	J1518-28
J1618-01	EID Res 4	TRUE	1,000	1,574	20	23	J1618-02
J1216-01	Main Plant	TRUE	1,000	4,500	94	31	J1316-24
J1216-03	Main Plant	TRUE	1,750	4,500	32	27	J1316-24
J1216-04	Main Plant	TRUE	1,000	4,500	116	30	J1316-24
J1216-05	Main Plant	TRUE	1,000	2,119	20	31	J1316-24
J1216-07	Main Plant	TRUE	1,000	4,500	66	22	J1316-24
J1216-12	Main Plant	TRUE	1,000	3,775	55	20	J1316-23
J1217-01	Main Plant	TRUE	1,000	2,968	33	20	J1217-18
J1217-05	Main Plant	TRUE	1,500	3,022	35	20	J1218-05
J1217-06	Main Plant	TRUE	1,500	3,467	40	20	J1218-05
J1217-07	Main Plant	TRUE	1,500	3,728	25	20	J1218-05
J1217-08	Main Plant	TRUE	1,000	1,482	20	32	J1316-24
J1217-11	Main Plant	TRUE	1,000	3,528	60	20	J1217-08
J1217-111	Main Plant	TRUE	1,000	4,500	35	31	J1316-24
J1217-112	Main Plant	TRUE	1,000	4,500	44	31	J1316-24
J1217-114	Main Plant	TRUE	1,000	3,261	22	20	J1217-115
J1217-13	Main Plant	TRUE	1,000	3,657	64	20	J1217-08
J1217-14	Main Plant	TRUE	1,000	1,848	20	27	J1217-18
J1217-16	Main Plant	TRUE	1,000	3,626	26	20	J1217-17
J1217-19	Main Plant	TRUE	1,000	1,989	21	20	J1217-20
J1217-201	Main Plant	TRUE	1,000	1,530	20	32	J1316-24
J1217-21	Main Plant	TRUE	1,000	4,035	64	20	J1218-05
J1217-24	Main Plant	TRUE	1,000	1,297	20	32	J1316-24
J1217-26	Main Plant	TRUE	1,000	4,500	37	30	J1217-24
J1217-27	Main Plant	TRUE	1,000	4,500	43	31	J1316-24
J1217-28	Main Plant	TRUE	1,000	4,500	65	31	J1316-24
J1217-29	Main Plant	TRUE	1,000	4,500	42	31	J1316-24
J1218-08	Main Plant	FALSE	1,000	939	38	20	J1218-05
J1218-09	Main Plant	TRUE	1,000	1,161	44	20	J1218-05
J1218-10	Main Plant	TRUE	1,500	1,711	31	20	J1218-05

City of Placerville Water Model
2005 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1218-11	Main Plant	TRUE	1,000	2,118	39	20	J1218-05
J1315-01	Main Plant	TRUE	1,000	3,908	42	20	J1316-24
J1316-01	Main Plant	TRUE	1,000	2,742	20	32	J1316-24
J1316-02	Main Plant	TRUE	1,000	1,517	20	31	J1316-03
J1316-04	Main Plant	TRUE	1,000	1,662	20	23	J1316-05
J1316-07	Main Plant	TRUE	1,750	3,193	30	20	J1316-06
J1316-08	Main Plant	TRUE	1,500	4,500	100	29	J1316-24
J1316-09	Main Plant	TRUE	1,500	4,500	128	30	J1316-24
J1316-12	Main Plant	TRUE	1,500	4,500	120	30	J1316-24
J1316-14	Main Plant	TRUE	1,500	4,500	127	30	J1316-24
J1316-17	Main Plant	TRUE	1,000	3,481	91	20	J1316-24
J1316-22	Main Plant	TRUE	1,000	3,132	20	22	J1316-24
J1316-25	Main Plant	TRUE	1,000	2,490	20	26	J1316-24
J1316-28	Main Plant	TRUE	1,500	4,500	130	30	J1316-24
J1316-33	Main Plant	TRUE	1,500	4,500	84	30	J1316-24
J1316-34	Main Plant	TRUE	1,500	4,500	87	30	J1316-24
J1316-35	Main Plant	TRUE	1,000	1,523	20	32	J1316-24
J1316-40	Main Plant	TRUE	1,875	4,500	124	30	J1316-24
J1316-41	Main Plant	TRUE	1,000	4,500	124	30	J1316-24
J1316-42	Main Plant	TRUE	1,500	3,751	108	20	J1316-24
J1316-44	Main Plant	TRUE	1,500	3,755	136	20	J1316-24
J1316-46	Main Plant	TRUE	1,000	3,059	28	20	J1316-45
J1316-47	Main Plant	TRUE	1,000	3,387	39	20	J1316-45
J1316-48	Main Plant	TRUE	1,000	2,109	20	32	J1316-24
J1316-49	Main Plant	TRUE	1,000	2,479	20	22	J1316-53
J1316-50	Main Plant	TRUE	1,000	4,500	92	29	J1316-24
J1316-53	Main Plant	TRUE	1,000	2,502	20	23	J1316-49
J1316-56	Main Plant	TRUE	1,000	1,809	20	20	J1316-55
J1316-58	Main Plant	TRUE	1,000	1,487	20	31	J1316-24
J1316-60	Main Plant	TRUE	1,500	3,908	134	20	J1316-24
J1316-70	Main Plant	TRUE	1,500	4,500	66	30	J1316-24
J1316-71	Main Plant	TRUE	1,500	4,500	62	30	J1316-24
J1317-01	Main Plant	TRUE	1,000	3,545	38	20	J1218-05
J1317-03	Main Plant	TRUE	1,500	3,845	29	20	J1218-05
J1317-06	Main Plant	TRUE	1,500	3,564	20	23	J1317-05
J1317-08	Main Plant	TRUE	1,000	2,621	26	20	J1317-07
J1317-09	Main Plant	TRUE	1,500	3,317	20	28	J1218-05
J1317-11	Main Plant	TRUE	1,500	3,078	20	31	J1317-13
J1317-12	Main Plant	TRUE	1,500	3,243	34	20	J1317-11
J1317-13	Main Plant	TRUE	2,000	2,945	20	25	J1317-11
J1317-15	Main Plant	TRUE	1,500	4,500	67	30	J1218-05
J1317-16	Main Plant	TRUE	1,000	4,500	73	31	J1316-24
J1317-18	Main Plant	TRUE	1,000	4,500	52	31	J1316-24
J1317-20	Main Plant	TRUE	1,000	3,997	20	27	J1316-02

City of Placerville Water Model
2005 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1317-21	Main Plant	TRUE	1,000	1,937	21	20	J1316-02
J1317-26	Main Plant	TRUE	1,000	4,500	75	31	J1316-24
J1317-28	Main Plant	TRUE	1,000	4,500	92	30	J1316-24
J1317-30	Main Plant	TRUE	1,000	1,994	20	32	J1316-24
J1317-32	Main Plant	TRUE	1,500	4,149	20	32	J1316-24
J1317-34	Main Plant	TRUE	1,500	3,964	38	20	J1317-33
J1317-35	Main Plant	TRUE	1,500	3,671	20	32	J1316-24
J1317-36	Main Plant	TRUE	3,750	4,500	46	27	J1317-35
J1317-40	Main Plant	TRUE	1,000	4,500	80	31	J1316-24
J1317-41	Main Plant	TRUE	1,500	4,500	105	31	J1316-24
J1317-43	Main Plant	TRUE	1,000	4,500	105	31	J1316-24
J1317-45	Main Plant	TRUE	1,000	4,500	33	31	J1316-24
J1317-48	Main Plant	TRUE	1,000	3,829	20	31	J1316-24
J1317-49	Main Plant	TRUE	1,000	4,499	37	20	J1417-63
J1317-51	Main Plant	TRUE	1,500	4,500	102	31	J1316-24
J1317-52	Main Plant	TRUE	2,500	4,500	90	31	J1316-24
J1317-53	Main Plant	TRUE	2,750	4,500	89	31	J1316-24
J1317-54	Main Plant	TRUE	1,500	4,500	87	31	J1316-24
J1317-55	Main Plant	TRUE	1,500	4,500	70	31	J1316-24
J1318-01	Main Plant	TRUE	1,000	1,293	20	33	J1316-24
J1318-06	Main Plant	TRUE	1,000	1,543	29	20	J1318-01
J1318-08	Main Plant	TRUE	1,000	1,999	20	32	J1316-24
J1318-11	Main Plant	TRUE	1,000	4,500	23	22	J1218-05
J1319-03	Main Plant	TRUE	1,000	1,344	20	33	J1316-24
J1415-01	Main Plant	TRUE	1,000	1,628	20	31	J1316-24
J1415-04	Main Plant	TRUE	1,000	4,407	77	20	J1316-24
J1415-08	Main Plant	TRUE	1,000	4,500	68	22	J1316-24
J1415-10	Main Plant	TRUE	1,000	4,500	74	21	J1316-24
J1415-100	Main Plant	TRUE	1,000	1,554	20	23	J1415-22
J1415-102	Main Plant	TRUE	1,000	4,500	51	22	J1316-24
J1415-104	Main Plant	TRUE	1,000	4,235	92	20	J1316-24
J1415-11	Main Plant	TRUE	1,500	4,500	30	23	J1316-24
J1415-12	Main Plant	TRUE	1,000	1,842	20	31	J1316-24
J1415-13	Main Plant	TRUE	1,000	1,992	20	30	J1316-24
J1415-16	Main Plant	TRUE	1,500	4,434	20	22	J1415-15
J1415-19	Main Plant	TRUE	1,000	1,189	20	31	J1316-24
J1415-21	Main Plant	TRUE	1,000	1,840	24	20	J1415-100
J1415-24	Main Plant	TRUE	1,500	1,736	20	30	J1316-24
J1415-27	Main Plant	TRUE	1,500	3,194	21	20	J1415-26
J1415-29	Main Plant	TRUE	1,000	4,145	23	20	J1415-37
J1415-30	Main Plant	TRUE	1,500	3,898	20	30	J1316-24
J1415-34	Main Plant	TRUE	1,000	3,529	26	20	J1415-37
J1415-37	Main Plant	TRUE	1,000	1,856	20	31	J1316-24
J1415-38	Main Plant	TRUE	1,000	2,045	20	31	J1316-24

City of Placerville Water Model
2005 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1415-39	Main Plant	TRUE	1,000	2,672	20	22	J1415-38
J1415-40	Main Plant	TRUE	1,000	1,836	25	20	J1415-100
J1416-01	Main Plant	TRUE	1,500	2,814	45	20	J1416-17
J1416-04	Main Plant	TRUE	1,000	2,070	42	20	J1316-35
J1416-06	Main Plant	TRUE	1,000	1,384	20	26	J1416-07
J1416-07	Main Plant	TRUE	1,000	1,405	20	22	J1416-06
J1416-09	Main Plant	TRUE	1,000	2,520	20	27	J1416-08
J1416-11	Main Plant	TRUE	1,500	3,968	25	20	J1416-09
J1416-13	Main Plant	TRUE	1,000	4,265	50	20	J1416-06
J1416-16	Main Plant	TRUE	1,000	1,691	20	32	J1316-24
J1416-18	Main Plant	TRUE	1,000	1,528	20	26	J1416-17
J1416-21	Main Plant	TRUE	1,000	4,500	87	27	J1516-35
J1416-23	Main Plant	TRUE	1,000	4,500	42	21	J1516-35
J1416-24	Main Plant	TRUE	1,500	4,167	77	20	J1516-35
J1416-30	Main Plant	TRUE	1,500	4,500	66	24	J1316-24
J1416-36	Main Plant	TRUE	1,000	3,379	78	20	J1516-35
J1416-42	Main Plant	TRUE	1,000	1,975	20	30	J1316-24
J1416-43	Main Plant	TRUE	1,000	2,453	61	20	J1516-35
J1416-44	Main Plant	TRUE	1,000	2,634	85	20	J1516-35
J1416-48	Main Plant	TRUE	1,500	1,950	20	25	J1416-37
J1417-02	Main Plant	TRUE	1,500	4,500	78	32	J1316-24
J1417-04	Main Plant	TRUE	1,500	4,500	86	32	J1316-24
J1417-05	Main Plant	TRUE	1,500	4,500	49	32	J1316-24
J1417-09	Main Plant	TRUE	1,500	4,500	49	32	J1316-24
J1417-12	Main Plant	TRUE	1,000	3,638	31	20	J1417-11
J1417-22	Main Plant	TRUE	1,000	2,876	40	20	J1417-20
J1417-27	Main Plant	TRUE	1,000	3,290	20	32	J1316-24
J1417-29	Main Plant	TRUE	3,500	3,870	63	20	J1417-63
J1417-32	Main Plant	TRUE	1,000	4,500	51	25	J1417-73
J1417-41	Main Plant	TRUE	1,000	3,571	20	20	J1417-38
J1417-45	Main Plant	TRUE	1,000	4,307	32	20	J1417-73
J1417-47	Main Plant	TRUE	1,000	4,500	22	26	J1417-46
J1417-48	Main Plant	TRUE	1,000	3,992	45	20	J1316-35
J1417-51	Main Plant	TRUE	1,000	2,334	20	33	J1316-24
J1417-55	Main Plant	TRUE	1,000	4,500	69	32	J1316-24
J1417-58	Main Plant	TRUE	1,000	4,500	52	32	J1316-24
J1417-59	Main Plant	TRUE	1,000	2,559	20	33	J1316-24
J1417-60	Main Plant	TRUE	1,000	4,500	31	30	J1417-59
J1417-62	Main Plant	TRUE	1,000	2,946	20	32	J1316-24
J1417-63	Main Plant	TRUE	1,000	1,306	20	32	J1316-24
J1417-65	Main Plant	TRUE	1,000	4,500	38	32	J1316-24
J1417-67	Main Plant	TRUE	1,000	4,500	31	32	J1316-24
J1417-68	Main Plant	TRUE	1,000	4,500	42	32	J1316-24
J1417-71	Main Plant	TRUE	1,000	1,743	20	24	J1417-73

City of Placerville Water Model
2005 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1417-76	Main Plant	TRUE	1,000	2,460	20	25	J1417-77
J1417-81	Main Plant	TRUE	1,500	2,912	20	31	J1316-24
J1417-82	Main Plant	TRUE	1,500	2,941	46	20	J1417-63
J1418-01	Main Plant	TRUE	3,750	4,032	46	20	J1419-05
J1418-06	Main Plant	TRUE	1,000	1,760	20	33	J1316-24
J1418-07	Main Plant	TRUE	1,000	3,880	20	32	J1316-24
J1418-09	Main Plant	TRUE	2,500	4,500	49	29	J1419-05
J1418-10	Main Plant	TRUE	4,250	4,744	47	20	J1419-05
J1418-104	Main Plant	TRUE	1,500	3,862	20	27	J1419-05
J1418-12	Main Plant	TRUE	1,500	4,500	50	29	J1419-05
J1418-17	Main Plant	TRUE	1,500	4,500	59	32	J1316-24
J1418-19	Main Plant	TRUE	1,500	3,337	44	20	J1318-01
J1418-20	Main Plant	TRUE	1,500	4,500	49	22	J1318-05
J1418-21	Main Plant	TRUE	1,500	4,500	67	32	J1316-24
J1418-24	Main Plant	TRUE	1,000	3,266	20	32	J1316-24
J1418-29	Main Plant	TRUE	1,000	3,750	29	20	J1418-33
J1418-31	Main Plant	TRUE	1,000	2,456	20	31	J1418-32
J1418-32	Main Plant	TRUE	1,000	2,750	20	22	J1418-31
J1418-33	Main Plant	TRUE	2,250	2,665	20	31	J1418-32
J1418-36	Main Plant	TRUE	1,000	1,542	24	20	J1418-35
J1418-40	Main Plant	TRUE	1,000	2,559	20	33	J1316-24
J1418-43	Main Plant	TRUE	1,000	1,617	20	33	J1316-24
J1418-44	Main Plant	TRUE	1,000	1,871	20	23	J1418-45
J1418-46	Main Plant	TRUE	1,000	2,519	29	20	J1418-45
J1418-48	Main Plant	TRUE	1,000	1,900	20	33	J1316-24
J1418-51	Main Plant	TRUE	1,000	4,500	52	32	J1316-24
J1418-53	Main Plant	TRUE	1,000	3,176	27	20	J1518-13
J1418-56	Main Plant	TRUE	2,250	4,218	34	20	J1418-24
J1418-61	Main Plant	TRUE	1,000	2,115	20	22	J1418-41
J1419-01	No FF, Main	FALSE (c)	1,000	0	19	-	-
J1419-02	Main Plant	TRUE	1,000	2,178	31	20	J1319-03
J1419-03	Main Plant	TRUE	1,000	2,170	31	20	J1319-03
J1419-04	Main Plant	TRUE	1,500	3,649	39	20	J1419-05
J1419-05	Main Plant	TRUE	1,500	1,693	20	33	J1316-24
J1419-07	Main Plant	TRUE	1,500	2,271	31	20	J1419-05
J1515-05	Main Plant	TRUE	1,000	4,500	83	31	J1316-24
J1515-06	Main Plant	TRUE	1,000	4,500	82	31	J1316-24
J1515-08	Main Plant	TRUE	1,000	4,500	66	31	J1316-24
J1515-09	Main Plant	TRUE	1,000	4,500	52	31	J1316-24
J1515-11	Main Plant	TRUE	1,500	4,500	60	31	J1316-24
J1516-01	Main Plant	TRUE	1,000	1,389	48	20	J1516-35
J1516-05	Main Plant	TRUE	1,000	2,257	34	20	J1516-35
J1516-06	Main Plant	TRUE	1,000	2,355	41	20	J1516-35
J1516-13	Main Plant	TRUE	1,000	1,903	32	20	J1516-35

City of Placerville Water Model
2005 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1516-15	Main Plant	TRUE	1,000	1,975	37	20	J1516-35
J1516-21	Main Plant	TRUE	1,000	2,281	60	20	J1516-35
J1516-22	Main Plant	TRUE	1,000	2,500	81	20	J1516-35
J1516-23	Main Plant	TRUE	1,000	2,543	79	20	J1516-35
J1516-24	Main Plant	TRUE	1,000	2,140	44	20	J1516-35
J1516-35	Main Plant	TRUE	1,000	1,114	20	32	J1316-24
J1516-36	Main Plant	TRUE	1,000	1,288	32	20	J1516-35
J1516-38	Main Plant	TRUE	1,000	1,618	21	20	J1516-37
J1516-40	Main Plant	TRUE	1,000	1,578	33	20	J1516-35
J1516-41	Main Plant	TRUE	1,000	1,845	26	20	J1516-35
J1517-02	Main Plant	TRUE	1,000	1,930	24	20	J1517-01
J1517-05	Main Plant	TRUE	1,000	2,805	20	32	J1316-24
J1517-06	Main Plant	TRUE	1,000	4,332	20	32	J1316-24
J1517-07	Main Plant	TRUE	1,000	4,500	38	32	J1316-24
J1517-18	Main Plant	TRUE	1,000	4,120	27	20	J1517-16
J1518-11	Main Plant	TRUE	1,000	2,336	21	20	J1518-10
J1518-15	Main Plant	TRUE	1,000	2,963	21	20	J1518-14
J1220-100	Sierra Hydro	TRUE	1,000	1,823	20	20	J1220-100
J1119-04	Sierra Plant	TRUE	1,000	1,976	20	35	J1220-05
J1219-01	Sierra Plant	TRUE	1,000	2,162	23	20	J1220-01
J1219-20	Sierra Plant	TRUE	1,000	1,373	28	20	J1220-05
J1219-21	Sierra Plant	TRUE	1,000	1,037	22	20	J1219-23
J1219-22	Sierra Plant	FALSE [(d)]	1,000	829	24	20	J1219-23
J1219-24	Sierra Plant	FALSE [(d)]	1,000	776	21	20	J1219-23
J1219-30	Sierra Plant	FALSE [(d)]	1,000	637	21	20	J1219-31
J1220-01	Sierra Plant	TRUE	1,000	1,487	20	38	J1320-01
J1220-04	Sierra Plant	TRUE	1,000	1,071	20	20	J1220-05
J1319-01	Sierra Plant	TRUE	1,000	1,229	30	20	J1220-05
J1320-01	Sierra Plant	TRUE	1,000	1,041	20	30	J1220-05
J1419-09	Upper Schnell School	TRUE	1,500	2,237	20	27	J1519-03
J1518-06	Upper Schnell School	TRUE	1,000	2,397	20	21	J1518-07
J1518-07	Upper Schnell School	FALSE [(e)]	2,250	2,238	20	32	J1518-09
J1518-08	Upper Schnell School	TRUE	1,000	2,475	20	22	J1518-07
J1519-01	Upper Schnell School	FALSE [(f)]	2,250	1,956	33	20	J1519-03

(a) Add pump to 6-inch pipeline P1517-04 to obtain necessary fire flow at J1517-26.

(b) FF at J1218-08 to be met in 2009 with Cedar Ravine/Eskaton Loop.

(c) Add pump to 6-inch pipeline P1419-06 to obtain necessary fire flow at J1419-01 (Lane Drive).

(d) FF to be met in 2009 with Cedar Bluff Loop to Main Zone.

(e) Split the flow between J1519-07 & -06 (since the entire flow cannot be supplied by one hydrant) and FF can be met.

(f) Split the flow between J1519-01 & 1518-03 or EID hydrant (since the entire flow cannot be supplied by one hydrant) and FF can be met

C-2: 2005 Manual Fire Flow Scenario Notes

Appendix C-2: 2005 Manual Fire Flow Scenario Notes

Appendix C-2 contains a summary of the 2005 manual fire flow (FF) analyses performed and related results and improvement recommendations for each zone is included in the sections below.

Main Plant Zone

Manual FF analyses were performed for the following Main Plant Zone FF junctions:

1. FFJ1419-01 – 1,000 gpm FF required. This hydrant is located at the top of Lane Court, high elevation location with static pressure less than 20 psi (this node is included in the No FF Zone). The required FF for this hydrant as well as the other FF rates throughout the Main Plant Zone cannot be obtained without installation of a pump. Install pump station on pipe P1419-06.

2. FF J1418-01 – Grocery Outlet requires FF of 3,750 gpm for 3 hours per Mike Pott, Fire Prevention Specialist, El Dorado County Fire District. This flow rate can be obtained with a residual pressure at the node of 55 psi with the following improvements:

   a. Add a pump to keep pressures along Lane Drive/Court positive as discussed above to keep node above 20 psi (goes negative with this FF).

   b. Replace 6-inch meter with 8-inch meter at EID Bulk Meter Account No. 61409, 21760 Woodman Circle @ Carson & Stonecrest Road because during fire flow events in this zone and the Upper Schnell School Zone exceeds the 2,000 gpm (2,199 gpm) factory recommended continuous flow for a 6-inch meter.

   c. Add second hydrant at J1419-02 to help achieve the required FF since a single hydrant can typically only supply a flow of 1,500 to 2,000 gpm. The hydrant that exists at J1418-01 could possibly be supplemented by a hydrant at J1416-06 in the Main Zone, but the hydrant at J1416-06 can only supply 1,100 gpm (this hydrant is not required to get 1,500 gpm because it is outside of the commercial zoning). Therefore it is recommended that a second hydrant be located closer to the Grocery Outlet along Broadway Avenue to supply the required FF. For modeling purposes this new hydrant was assumed to be located at J1419-04.

   Since this is the high demand FF, pressure at EID PSV 19 was checked and was found to maintain an upstream pressure greater than 55 psi. During this FF event maximum velocities are approximately 14 ft/sec (8-inch pipes from EID).

3. FF J1418-33 - 2,250 gpm required at 2880 Schnell School Road, Deer View Apartments 201 - 220, per Mike Pott, Fire Prevention Specialist, El Dorado County Fire District (This fire flow was assigned to all 3 sets of known apartments on Schnell School). This flow rate can be obtained with a residual pressure at the node of 34 psi with the following improvement:

   a. Add a pump to keep pressures above 20 psi along Lane Drive/Court positive (without pump J1419-01 has pressure of 16 psi) [same recommendation as 2a above].

   Velocities in pipeline P1418-34 (8” diameter, 261 feet) leading the apartments reaches 14.5 ft/sec during this fire flow event. In the model velocity in the 6-inch pipe P1418-29

leading to J1418-33 exceeds 20 ft/sec; however in reality a single hydrant cannot be used to obtain the entire fire flow; therefore, some of the flow would go to the hydrant at J1418-32 reducing the flow and velocity through the 6-inch pipe to below 15 ft/sec.

4. FF J1419-05 and -07 – 1,500 gpm FF required in this highway commercial zone. J1419-07 located near a strip mall and car lot. Both these hydrants are located on a dead end 8" pipeline, but are capable of meeting the required FF. Velocities remain below 10 ft/sec.

5. FF J1319-03 and J1419-03 – 1,000 gpm FF. Both of these hydrants are located on a dead end 6" pipeline that is feed by a 4" pipeline. With the current pipeline configuration, J1319-03 can only obtain 536 gpm and J1419-03 can only obtain 508 gpm with a 20 psi residual in the Main Zone. Looping J1419-03 to J1419-02 with a new pipe P1419-100 (25' of 8" PVC), these two hydrants can obtain their required FF with velocities less than 12 ft/sec. The pump station recommended for Lane Court would be needed to obtain these FF.

6. FF J1317-36 – 3,750 gpm FF. Existing dead end pipe P1317-21 and -23 cannot supply FF due to pressure and velocity problems. Upsizing P1317-21 from 6" to 12" (57' of 12" PVC) and P1317-23 from 4" to 12" (461' of 12" PVC), and adding P1317-100 (93' of 6" PVC) to connect the parallel 6" line to the new 12" line allows for a residual pressure of 61 psi at the FF node and velocities less than 16 ft/sec (16.04 ft/sec through P1317-19).

   In reality a single fire hydrant cannot supply the full 3,750 gpm FF; therefore the hydrant at J1317-36 would have to be supplemented with flow from a hydrant at J1317-35 (which can obtain more that 1,500 gpm with the improvements discussed below) and a third hydrant at J1317-42 (which can obtain more than 1,500 gpm). With this split in FF, the velocity through P1317-19 would drop below 13 ft/sec.

7. FF J1317-35 – 1,500 gpm FF required due to Park Facility Zoning. This hydrant is located at Sierra Elementary School. This hydrant is located on a dead end 4" pipeline and cannot meet the fire flow requirements. Combined with the improvements summarized above for FF1317-36, upsize P1317-24 from 4" to 8" (296' of 8" PVC). Velocities will remain below 10 ft/sec, and PSV 19 upstream pressure is greater than 60 psi.

8. FF J1418-10 – 4,250 gpm FF. Commercial Business Strip at 1323 Broadway requires 4,250 gpm FF for 4 hours per Mike Potts, Fire District. With V1418-01 open (this valve supplies 1,795 gpm), the FF at this node can be supplied with a residual pressure of 60 psi (pump needed for Lane Court). However, in reality a hydrant does not exist at J1418-10 and the FF would be split between three hydrants. Running the FF using the nearest hydrants at J1418-12 (1,500 gpm), J1418-09 (1,500 gpm) and J1418-07 (1,250 gpm) the FF cannot be met because J1418-12 is on a 4-inch pipeline that is unable to supply 1,500 gpm. Looping the two hydrants J1418-12 and J1418-09 would allow the hydrant at J1418-12 to achieve the 1,500 gpm FF, but velocities in the 8-inch pipe downstream of J1418-09 would exceed 16 ft/sec. Therefore it seems more practical to loop the 8-inch pipe feeding J1418-09 to the 10-inch pipe at the corner of Broadway Avenue and Blairs Lane with a 10" pipe and connect the hydrant at J1418-12 to the new 10" pipe. This loop would consist of P1418-103 (64' of 10" PVC) and P1418-107 (251' of 10"PVC). With this new loop, the required FF can be met with velocities less than 14 ft/sec in the entire system (Upper Schnell School 8" pipe from EID at 13.9 ft/sec) and less than 11 ft/sec in the pipelines local the FF (4" pipe connected to J1418-12 has velocity of 10.8 ft/sec). During this FF the upstream pressure of the PSV remains above 59 psi. Proposed improvements are within a heavily traveled existing roadway.

9. FF J1418-09 – 2,500 gpm. With the improvement discussed above for FF J1418-10, the FF at this node can be met with a residual of 88 psi at the FF node, velocities below 10 ft/sec and a PSV upstream pressure greater than 61 psi. The hydrant at J1418-09 cannot achieve the full 2,500 gpm flow due to hydrant limitations (max flow of 1,500 gpm). Therefore J1418-09 will need to be supplemented with flow from the hydrant at J1418-12 which, with the improvement noted above for FFJ1418-10, can achieve a FF of 1,500 gpm.

10. FF J1317-11 (1,500 gpm FF), -12 (1,500 gpm FF) and-13 gpm (2,000 gpm FF). Existing dead end pipe P1317-51 is a 6" pipe (326') that feeds an 8" pipe (P1317-50, 280'). The 6" pipe cannon supply FF due to velocity. Upsize P1317-51 from 6" to 10" (326' of 10" PVC) to reduce velocities from 23 ft/sec to less than 13 ft/sec (velocity in the new 10" will be less than 10 ft/sec). If the hydrant at J1317-13 cannot achieve the full 2,000 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1317-12. Proposed improvement is within the existing roadway.

11. FF J1316-07 – 1,750 gpm. Existing 4" and 6" pipes can supply required FF. Residual at node is 102 psi, velocities below 13 ft/sec and PSV upstream pressure is 58 psi. If the hydrant at J1316-07 cannot achieve the full 1,750 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1216-03 and vice versa. No improvements necessary.

12. FF J1216-03 – 1,750 gpm. Existing 6" pipes can supply required FF. Residual at node is 101 psi, velocities below 11 ft/sec and PSV upstream pressure is 57 psi. If the hydrant at J1216-03 cannot achieve the full 1,750 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1316-07 and vice versa. No improvements necessary.

13. FF J1316-32 – 1,500 gpm. Existing 6" pipes can supply required FF. Residual at node is 139 psi, velocities below 12 ft/sec and PSV upstream pressure is 58 psi. No improvements necessary.

14. FF J1316-40 – 1,875 gpm. Existing 8" pipes can supply required FF. Residual at node is 143 psi, velocities below 8 ft/sec and PSV upstream pressure is 59 psi. If the hydrant at J1316-40 cannot achieve the full 1,850 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1316-12. No improvements necessary.

15. FF J1417-04 – 1,500 gpm. Existing 6" pipes can supply required FF. Residual at node is 117 psi, velocities below 7 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

16. FF J1418-21 – 1,500 gpm. Existing 8" pipes can supply required FF. Residual at node is 108 psi, velocities below 7 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

17. FF J1418-17 – 1,500 gpm. Existing 10" pipes can supply required FF. Residual at node is 105 psi, velocities below 7 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

18. FF J1418-104 – 1,500 gpm. Existing 10" pipe to 8" pipe can supply required FF. Residual at node is 93 psi, velocities below 10 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

19. FF J1218-10 – 1,500 gpm. Existing 8” pipe and 6” pipe can supply required FF. Residual at node is 39 psi, velocities below 10 ft/sec and PSV upstream pressure is 61 psi. No improvements necessary.

20. FF J1418-56 – 2,250 gpm. Existing 8” pipes can supply required FF. Residual at node is 90 psi, velocities below 13 ft/sec and PSV upstream pressure is 62 psi. If the hydrant at J1418-56 cannot achieve the full 2,250 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1417-55. No improvements necessary.

21. FF J1317-53 (2,750 gpm FF) and -52 (2,500 gpm FF). Existing 8” pipes can supply required FF. Residual at node is 117 psi, velocities below 11 ft/sec and PSV upstream pressure is 58 psi. Since a single hydrant cannot supply the full FF due to hydrant limitations (max flow of 1,500 gpm), each of the hydrants can help supplement the full flow from the other. No improvements necessary.

22. FF J1417-29 – 3,500 gpm. Existing 6” pipes can supply required FF. Residual at node is 75 psi, velocities below 16 ft/sec and PSV upstream pressure is 58 psi. Although the model shows that the water system can deliver 3,500 gpm to this hydrant, the hydrant itself can not deliver that much flow. It is likely that two additional hydrants would be necessary to meet the FF requirements. There appears to be only one other hydrant (J1317-49) nearby (within 500’); therefore it is recommended that a third hydrant be put in along pipe P1417-100 or at J1417-82. For purposes of modeling the new hydrant has been located at J1417-82.

23. FF J1418-20 and -19 – 1,500 gpm. Existing 8” pipes can supply required FF. Residual at node is 105 psi, velocities below 9 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

24. FF J1417-02 - 1,500 gpm. Existing 10” and 8” pipes can supply required FF. Residual at node is 115 psi, velocities below 7 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

25. FF J1417-09 - 1,500 gpm. Existing 6” pipes can supply required FF. Residual at node is 109 psi, max velocity less than 10 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

26. FF J1417-05 - 1,500 gpm. Existing 6” pipes can supply required FF. Residual at node is 115 psi, max velocity below 8 ft/sec and PSV upstream pressure is 62 psi. No improvements necessary.

27. FF J1317-32, -34, -42 - 1,500 gpm. Existing 4” and 6” pipes can supply required FF. Residual at FF nodes is 100 to 118 psi, max velocity below 11 ft/sec and PSV upstream pressure is 61 psi. No improvements necessary.

28. FF J1417-81 - 1,500 gpm. Existing 6” pipes can supply required FF. Residual at node is 82 psi, max velocity below 11 ft/sec and PSV upstream pressure is 60 psi. No improvements necessary.

29. FF J1416-11 and -01 - 1,500 gpm. Existing 6” and 8” pipes can supply required FF. Residual at FF nodes is 89 to 88 psi, max velocity below 12 ft/sec and PSV upstream pressure is 60 psi. No improvements necessary.

30. FF J1416-48 - 1,500 gpm. Existing dead end 6” pipe can supply required FF. Residual at node is 41 psi. The velocity in the downstream 6” pipe is 17 ft/sec (short section of pipe, approximately 139’ long). The rest of the system has velocities below 10 ft/sec and PSV upstream pressure is 60 psi. No improvements necessary.

31. FF J1416-24 - 1,500 gpm. Existing 8” pipe can supply required FF. Residual at node is 117 psi. The velocity in an upstream 6” pipe is 12.5 ft/sec (10’), but the rest of the system has velocities below 7 ft/sec and PSV upstream pressure is 60 psi. No improvements necessary.

32. FF J1416-11 and -01 - 1,500 gpm. Existing 8” pipes can supply required FF. Residual at FF node is 107 psi, max velocity below 7 ft/sec and PSV upstream pressure is 59 psi. No improvements necessary.

33. FF J1415-11, -16, -27, -24 – 1,500 gpm assumed for the high school. Existing 8” and 6” pipes can supply required FF. Residual pressures at the FF nodes are from 77 to 31 psi. Velocities remain below 11 ft/sec with the exception P1415-17 (17 ft/sec, 338’ long) and P1418-18 (15 ft/sec, 77’ long) during the FF at J1415-24. The hydrant at J1415-24 is on a dead end 6” hydrant pipe; therefore velocities should not exceed 17 ft/sec. No improvements are necessary.

34. FF J1415-30 and J1515-11 – 1,500 gpm assumed for the Markum School. Existing dead end 6-inch pipeline cannot supply FF due to pressure losses. Add P1515-100 (371’ of 10” PVC) to loop J1515-11 to -07 (P1515-100 alignment was based on roads shown on topographic map). With the new loop FF can be met and residual pressures are from 86 to 88 psi at the FF nodes, velocities are less than 11 ft/sec and the PSV upstream pressure is 62 psi.

35. FF J1316-60 and -44 - 1,500 gpm. Existing 12” pipes can supply required FF. Residual at FF node is 150 psi, max velocity below 7 ft/sec and PSV upstream pressure is 59 psi. No improvements necessary.

36. FF J1316-42 - 1,500 gpm. Existing dead end 8” pipe can supply required FF. Residual at FF node is 142 psi, max velocity below 10 ft/sec and PSV upstream pressure is 59 psi. No improvements necessary.

37. FF J1316-09, -12 and -14 - 1,500 gpm. Existing 8” and 12” pipes can supply required FF. Residual at FF node is 136 to 144 psi, max velocity below 7 ft/sec and PSV upstream pressure is 59 psi. No improvements necessary.

38. FF J1316-08 - 1,500 gpm. Existing 6” and 4” pipes can supply required FF. Residual at FF node is 131 psi, max velocity below 15 ft/sec and PSV upstream pressure is 59 psi. No improvements necessary.

39. FF J1317-41, -51, -54, -55, and -33 – 1,500 gpm. Existing 6” and 8” pipes can supply required FF. Residual at FF nodes is 127 to 135 psi, max velocity below 11 ft/sec and PSV upstream pressure is 60 psi. No improvements necessary.

40. FF J1316-34, -28, and -71 – 1,500 gpm. Existing 6” and 8” pipes can supply required FF. Residual at FF nodes is 142 to 132 psi, max velocity below 12 ft/sec and PSV upstream pressure is 60 psi. No improvements necessary.

41. FF J1316-70 – 1,500 gpm FF required. Existing 4-inch pipelines cannot supply FF due to velocity (P1316-70 exceeds 26 ft/sec). Upsize P1316-70 (202' of 8" PVC). With the upsized pipe, FF can be met with a residual pressure of 127 at the FF node, velocities less than 12 ft/sec and the PSV upstream pressure is 59 psi.

42. FF J1317-100, -09, and -03 – 1,500 gpm. Existing 6" and 8" pipes can supply required FF. Residual at FF nodes is 69 to 73 psi, max velocity below 10 ft/sec and PSV upstream pressure is 61 psi. No improvements necessary.

43. FF J1217-05, -06, -07 – 1,500 gpm. Existing 6" and 8" pipes can supply required FF. Residual at FF nodes is 60 to 42 psi, max velocity below 10 ft/sec and PSV upstream pressure is 60 psi. No improvements necessary.

44. FF J1415-19 – 1,000 gpm FF. Existing dead end pipe P1415-21 (369' of 4") cannot supply FF due to pressure and velocity. Add P1415-100 (219' of 6" PVC) and P1415-102 (24' of 6") to loop P1415-22 (4") to P1415-48 (6"). Residual pressure at the FF node is 32 psi with the loop and velocities through the system do not exceed 15 ft/sec. Proposed improvements are within the existing roadway.

45. FF J1415-07 – 1,000 gpm FF. Existing pipe P1415-37 (356' of 4") can supply FF with residual pressure of 25 psi at the FF node but velocity through the pipe exceeds 25 ft/sec. Add P1415-101 (16' of 8" PVC) and reconnect hydrant to 8-inch pipe P1415-35. Houses will continue to be feed off the 4", but fire flow will come from 8-inch, no need to loop the 4" to 8" pipe. Proposed improvement is within the existing roadway.

46. FF J1316-49 – 1,000 gpm FF. Existing pipe P1316-12 (264' of 2") cannot supply FF. Add P1316-101 (156' of 8" PVC) to loop P1316-12 (2") to P1316-07 (6") (used 8-inch instead of 6-inch because velocity exceeded 10 ft/sec in 6"). Should loop to the hydrant location approximately an addition 40' from end of 2" to hydrant. Velocities during the FF event remain below 11 ft/sec. Proposed improvement is within the existing roadway.

47. FF J1416–06 and 07 – 1,000 gpm FF. Existing dead end pipes (4") cannot supply FF due to velocity and pressure. Add P1416-101 (254' of 6" PVC) to loop the two hydrants together. During FF events the loop provides residual pressures of 47 and 49 psi at J1416-06 and -07, respectively. Velocities during the FF events remain below 14 ft/sec. Did not loop to J1416-05 because this pipe is 2" and could not meet FF. Proposed improvement is within the existing roadway.

48. FF J1417-63 – 1,000 gpm FF. Existing dead end pipe P1417-97 (679' of 6") feed by P1417-58 (409' of 4") cannot supply FF due to pressure and velocity. Add P1417-100 (440' of 8" PVC) to loop J1417-31 to -82 (this gives residual of 36 psi at FF node). Velocities during the FF events remain below 12 ft/sec. Proposed improvement is within the existing roadway.

49. FF J1418-24 – 1,000 gpm FF. Existing dead end pipe P1416-21 (404' of 4") cannot supply FF due to pressure and velocity. Add P1418-104 (493' of 8" PVC) for loop from J1418-24 on Pinecrest Court to J1418-57 on Mosquito Road. Propose use of 8-inch since main on Mosquito Road is 8"; however, a 6" will work too (8" in used model). Residual pressure at FF node with loop is 71 psi and velocities are below 7 ft/sec. Proposed improvement does not appear to be located in an existing roadway.

50. FF J1418-61 – 1,000 gpm FF. Existing dead end pipe P1418-71 (239' of 4") cannot supply FF due to pressure and velocity. Add P1418-102 (175' of 6" PVC) to loop J1418-61 to

J1418-42. Residual pressure at FF node with loop is 78 psi and velocities are below 12 ft/sec. Proposed improvement is within the existing roadway.

51. FF J1518-11 – 1,000 gpm FF. Existing 4" pipe P1518-18 (507') cannot supply FF due to pressure and velocity. Add P1519-100 (33' of 8" PVC) to connect the hydrant to the 6-inch main at J1518-11. Recommend connecting the 4" pipe (P1518-18) to the 6" pipe (P1518-19). Residual pressure at FF node with loop is 54 psi and velocities are below 10 ft/sec. Proposed improvement is within the existing roadway.

52. FF J1317-48 – 1,000 gpm FF. Existing dead end pipe P1317-08, -09 and -13 cannot supply FF due to pressure and velocity. Upsize P1317-08 (275'), P1317-09 (212') and P1317-13 (142') from 4" to 8" (or run parallel pipe). Residual pressure at the FF node is 79 psi and velocities are less than 7 ft/sec. As an alternative we tried looping J1317-48 to the 4-inch pipe on Bernardi Court (P1316-41) at Meridian Court, but velocity through the downstream portion of P1316-41 exceeds 17 ft/sec. Therefore the alternative was found to be unfeasible. As an second alternative we evaluated running a line up the property lines from J1317-28 to J1317-48 connecting directly to the 12" main on Pacific Street; however the topographic map shows houses or garages along this alignment making this alternative unfeasible as well. Proposed improvement is within the existing roadway.

53. FF J1317-45 – 1,000 gpm FF. Existing dead end pipe P1317-10 (184' of 4") cannot supply FF due to velocity. Upsize P1317-10 (184') from 4" to 8" (or run parallel pipe). Residual pressure at the FF node is 83 psi and velocities are less than 7 ft/sec. Proposed improvement is within the existing roadway.

54. FF J1217-16 – 1,000 gpm FF. Existing 2" and 4" pipes cannot supply FF due to pressure and velocity. Upsize P1217-14 from 4" to 8" (244' of 8" PVC) and P1217-13 from 2" to 8" (95' of 8" PVC). Velocities less than 10 ft/sec. Proposed improvements are all within the existing roadway.

55. FFJ1218-08 – 1,000 gpm FF. This hydrant can only receive 940 gpm for FF due to pressure limitations. It is not feasible to implement an improvement to increase the flow an addition 60 gpm in 2005 because this hydrant will receive adequate flow once the Cedar Bluffs loop is made in 2009. No improvement recommended for 2005.

56. FF J1317-06 and J1317-08 – 1,500 gpm and 1,000 gpm FF, respectively. Existing 4" pipelines cannot supply FF due to velocity and pressure (pressure issue only at J1317-06). Loop to J1317-06 with 313' long 8" pipeline on Cocker Street (J1317-100) with P1317-101. Velocities would remain below 12 ft/sec. Proposed improvements are all within the existing roadway.

57. FFJ1317-20 – 1,000 gpm FF. Checked this FF because it is on 4" line, but velocities remain below 15 ft/sec (14.2 ft/sec) so no improvement recommendation necessary.

58. FF J1216-12 – 1,000 pm FF. Existing 2" line P1216-12 not large enough to supply FF due to pressure and velocity. Upsize P1216-01 from 2" to 8" (98' of 8" PVC). Residual at FF node is 73 psi and velocities remain below 7 ft/sec. Proposed improvements are within existing roadway.

59. FF J1316-62 (now J1415-103) – 1,000 gpm FF. Existing 4" line P1415-32 (561') cannot supply FF due to pressure and velocity. Connect hydrant (J1415-103) to 12" line P1415-50 with P1415-103 (22' of 8" PVC). Residual at FF node is 118 psi and velocities remain below 7 ft/sec. Proposed improvements are within existing roadway.

60. FF J1316-46 – 1,000 gpm FF. Existing dead end 4-inch cannot supply FF. Upsize P1316-18 from 4" to 8" (296' of 8" PVC). Need to upsize pipe based on pressure and velocity. Proposed improvement is within an existing roadway.

61. FF J1517-18 – 1,000 gpm FF. Existing dead end 4-inch pipe cannot supply FF due to pressure. Add P1517-100 (40' of 8" PVC) to loop the 4" to an 8" pipe from J1517-17 to J1517-18. Velocities are less than 7 ft/sec with this improvement. Proposed improvement appears to be within a roadway.

The improvements listed above within each manual FF analysis for the Main Plant Zone are summarized in the 2005 improvements section of the Water Master Plan.

Combellack Zone

The HGL of the Combellack zone (approx. 2,275 feet base on EID's PRV 4 setting) is much higher than Main Zone and is therefore is not fed water from the Main Plant Zone. All hydrants in this zone are on 6" or larger pipelines and all FFs are 1,000 gpm. Therefore, no manual FF analyses were preformed for this zone and no improvements are necessary to meet FF in this zone.

Upper Schnell School Zone

Manual FF analyses were performed for the following Upper Schnell School FF junctions:

1. FF J1518-07 - 2,250 gpm required at 2880 Schnell School Road, Deer View Apartments 201 - 220, per Mike Pott, Fire Prevention Specialist, El Dorado County Fire District (This fire flow was assigned to all 3 sets of known apartments on Schnell School). This flow rate cannot be obtained with a single hydrant located at J1518-07. The model shows that a flow of 2,213 gpm can be obtained with a residual pressure of 20 psi at the FF node.

   In reality a hydrant can not supply more than 1,500 to 2,000 gpm; therefore, a 2,250 gpm fire flow event would have to be supplied by two local hydrants. The model shows that splitting the fire flow between the hydrant at J1518-07 (1,250 gpm) and J1518-06 (1,000 gpm) would allow pressures to remain above 20 psi (with the exception of J1419-01 on Lane Court which is discussed above). Flow through the EID Bulk Meter Account No. 61409, 21760 Woodman Circle at Carson & Stonecrest Road would exceed the recommend capacity of 2,000 gpm (2,364 gpm) and should therefore be upsized as discussed above. Flows through the 8-inch pipelines feeding the zone from the EID would reach velocities of 15 ft/sec; however this is the highest velocity in the system. Based on the assumption that the FF will be supplied by two hydrants, no additional improvements are recommended to meet this FF requirement.

2. FF J1519-01 - 2,250 gpm required at 2880 Schnell School Road, Deer View Apartments 201 - 220, per Mike Pott, Fire Prevention Specialist, El Dorado County Fire District (This fire flow was assigned to all 3 sets of known apartments on Schnell School). This flow rate can not be obtained with a single hydrant located at J1519-01. The model shows that a flow of 1,938 gpm can be obtained without causing the upstream pressure to drop below 20 psi.

   As discussed above, a single fire hydrant can not supply the entire FF demand of 2,250 gpm. Therefore, it seems unreasonable to upsize the 6-inch pipelines connecting the hydrant to the main on Schnell School (upsizing the pipes P518-34 and P1519-02 from 6" to 8" still doesn't quite obtain the required FF) since there is only one hydrant on this dead end

pipeline. It also does not seem necessary to loop the pipeline since it is likely that the hydrant at J1519-01 would be supplemented with flow from either the hydrant at J1518-08 or possibly the 6" EID line with a hydrant located on the east side of the parcel.

Running the model with a FF of 1,250 gpm at J1519-01 (40 psi) and 1,000 gpm at J1518-08 (35 psi) the system stays above the required 20 psi (J1519-03 has lowest pressure of 22 psi). Again, flows through the 8-inch pipelines feeding the zone from the EID reach velocities of 15 ft/sec; however this is the highest velocity in the system. Based on the assumption that the FF will be supplied by two hydrants, no additional improvements are recommended to meet this FF requirement.

3. FF J1419-09 – 1,500 gpm FF required due to Park Facility Zoning. This hydrant is located at Schnell Elementary School. This hydrant is located on a dead end 8" pipeline, but is capable of meeting the required FF (residual pressure of 89 psi at the FF node). Velocities remain below 11 ft/sec.

HGL of this system (static approx. 2436 feet) is much higher than Main Zone. Therefore, no additional manual FFs are necessary because flow is not fed from the Main Plant Zone into this zone and EID PSV 19 is not an issue. All hydrants in this zone are on 6-inch or larger pipelines. Therefore, with the exception of upsizing the bulk meter, no improvements are necessary to meet FF in this zone.

EID Res 4 Zone

Manual FF analyses were performed for the following FF junction located within the EID Res 4 Zone:

1. FF J1517-26 – 1,000 gpm FF required at the hydrant. Hydrant feed by dead end 6-inch pipeline P1517-04 that is 867 feet long. Improvements such as looping the system between J1517-27 and -26 and upsizing P1517-04 do not help achieve the FF requirement. The node is at a high point and has a static pressure of only 25 psi. The only feasible way to get FF to the hydrant is to install a pump station on P1517-04.

The HGL of this system (static approx. 2282 feet) is higher than Main Zone, all hydrants in this zone are on 6-inch or larger pipelines, and all FFs are 1,000 gpm. Therefore, no additional manual FF analysis is required and with the exception of adding the pump station as described above for J1517-26, no improvements are necessary to meet FF in this zone.

Cedar Ravine Zone

Manual FF analyses were performed for the following FF junctions located within the Cedar Ravine Zone:

1. J1219-03 and J1219-05 – 1,000 gpm FF. Add PRV 1219-101 (6" with HGL of 2,456.45 which matches PRV 1119-01 existing 98 psi setting), and pipes P1219-100 (264 feet of 6") and P1219-101 (178 feet of 6") to meet FF requirements. This new PRV will act as a secondary water supply connection. Cut and cap existing pipe P1219-03 and J1219-28 to eliminate negative pressure in pipe during FF scenarios.

All hydrants in this zone are on 6" or larger pipelines and all FFs are 1,000 gpm; therefore no additional manual FF analyses are needed. Other than the improvements listed above, no additional improvements are necessary to meet FF in this zone.

Sierra Plant Zone

Manual FF analyses were performed for the following FF junctions located within the Sierra Plant Zone:

1. FF J1219-22, -24, -30 – 1,000 gpm. Max FF at J1219-22 is 833 gpm, J1219-24 is 779 gpm and J1219-30 is 629 gpm. The EID PRV upstream of the Sierra System is set to an HGL of 2617. Raising the HGL of the Sierra Plant to this HGL does not allow FF to be met at these hydrants and would cause the existing system to experience much higher pressure than in the past. Therefore, it is recommended that the HGL of the system be set at 2,558 ft as it has experienced this pressure in the past. Since the Sierra and Cedar Ravine system loop recommended in 2009 for the Eskaton and Cedar Bluffs developments will allow these hydrants to obtain the 1,000 gpm FF, it is impractical to implement any major improvements in 2005.

2. FFJ1220-03 -1,000 gpm. The hydrant at J1220-03 cannot receive any flow because its static pressure is less than 20 psi. This hydrant is located just downstream of the Sierra Plant. It is recommended that once the hydro-pneumatic system at the Sierra Plant is abandoned as recommended in the text below, the hydrant located at J1220-03 or a new hydrant can be connected to the old hydro-pneumatic system pipeline at J1220-100 and the upstream pipe (P1320-01) can be upsized from a 4” diameter to a 8” diameter pipeline. With these improvements, a FF of 1,000 gpm can be met at J1220-100 with a residual pressure of 31.2 psi at the FF node.

No additional manual FF analyses are needed for this zone because all hydrants in this zone are on 6-inch or larger pipelines and all FFs are 1,000 gpm. As discussed above three of the hydrants in this zone cannot receive the required FF; however, improvement recommends have not been made for 2005 because the addition of the pipelines from the Cedar Bluffs and Eskaton developments will allow these hydrants to receive FF as shown in the 2009 FF scenario.

Sierra Hydro-pneumatic Zone

Review of the upstream HGL of the hydro-pneumatic zone shows that the EID PRV 1220-02 is set to 2,617 feet which equates to a static pressure of 57 psi at J1320-01 at the end of the hydro-pneumatic zone. Therefore, it appears that the hydro-pneumatic system can be removed.

No hydrants currently exist within this system; however as discussed above in the Sierra Plant Zone, the hydrant at J1220-03 cannot receive any flow because its static pressure is less than 20 psi. Therefore, it is recommended that once the hydro-pneumatic system at the Sierra Plant is abandoned, the hydrant located at J1220-03 or a new hydrant can be connected to the old hydro-pneumatic system pipeline at J1220-100 and the upstream pipe (P1320-01) can be upsized from a 4” diameter to an 8” diameter pipeline. With these improvements, a FF of 1,000 gpm can be met at J1220-100 with a residual pressure of 31.2 psi at the FF node. The node at the end of the pipeline maintains a pressure greater than 50 psi during this FF event.

C-3: 2005 Junction Model Output

City of Placerville
Water Modeling Report
2005 Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
EID J1117-02	EID Res 6	2,300.00	0	41.9	2,396.74	0	37.3	2,386.20	0	31.1	2,371.81
EID J1117-03	EID Res 6	2,240.00	0	67.3	2,395.47	0	61.6	2,382.39	0	53.9	2,364.55
EID J1119-04	EID PRV#3S	2,237.00	0	154.9	2,594.98	0	154.6	2,594.43	0	154.3	2,593.74
EID J1219-02	EID PRV#3S	2,397.00	0	90.5	2,606.28	0	90.4	2,605.89	0	90.2	2,605.41
EID J1220-02	EID PRV#3S	2,537.59	0	34	2,616.21	0	34	2,616.16	0	34	2,616.07
EID J1220-06	EID PRV#3S	2,532.00	0	36.4	2,616.21	0	36.4	2,616.18	0	36.4	2,616.13
EID J1516-44	Combellack	2,140.00	0	56.4	2,270.31	0	53.9	2,264.55	0	46.3	2,247.07
EID J1519-04	Upper Schnell School	2,170.00	0	115.1	2,436.01	0	114.9	2,435.61	0	113	2,431.19
EID J1619-07	Upper Schnell School	2,280.00	0	67.5	2,435.92	0	67.5	2,435.92	0	67.5	2,435.91
EID North	Combellack	1,920.00	1,015.32	150.6	2,268.04	1,868.18	146	2,257.52	3,082.50	133.1	2,227.58
EID South	EID Res 6	2,240.00	1,289.69	67.2	2,395.39	2,373.03	61.5	2,382.15	3,915.50	53.6	2,363.92
J1117-01	EID Res 6	2,210.00	0	79.8	2,394.39	0	73.2	2,379.13	0	65.2	2,360.77
J1117-02	EID Res 6	2,237.38	0	68	2,394.65	0	61.7	2,379.89	0	53.8	2,361.64
J1119-01	Cedar Ravine	2,207.00	0.25	107.9	2,456.47	0.55	107.9	2,456.36	0.91	107.8	2,456.15
J1119-02	Cedar Ravine	2,226.32	0	99.6	2,456.53	0	99.6	2,456.52	0	99.6	2,456.49
J1119-03	Cedar Ravine	2,148.00	9.6	133.5	2,456.49	21.12	133.4	2,456.39	34.85	133.3	2,456.19
J1119-04	Sierra Plant	2,355.00	0	87.9	2,558.05	0	87.8	2,558.04	0	87.8	2,558.02
J1216-01	Main Plant	1,945.00	1.75	102.2	2,181.23	3.22	101.9	2,180.41	5.31	100.7	2,177.67
J1216-02	Main Plant	1,903.00	1.59	120.3	2,181.07	2.93	119.8	2,179.96	4.83	118.6	2,177.15
J1216-03	Main Plant	1,910.00	0	117.3	2,181.06	0	116.8	2,179.91	0	115.6	2,177.09
J1216-04	Main Plant	1,891.00	38.85	125.5	2,180.99	71.48	124.9	2,179.71	117.94	123.7	2,176.87
J1216-05	Main Plant	1,965.00	2.13	93.5	2,180.99	3.91	92.9	2,179.73	6.45	91.7	2,176.89
J1216-06	Main Plant	1,898.00	1.59	122.4	2,181.00	2.93	121.9	2,179.73	4.83	120.7	2,176.89
J1216-07	Main Plant	1,998.00	0.26	79.2	2,181.17	0.48	78.8	2,180.22	0.79	77.6	2,177.44
J1216-08	Main Plant	2,003.00	4.36	77.1	2,181.13	8.02	76.6	2,180.09	13.23	75.4	2,177.29
J1216-09	Main Plant	2,040.00	4.84	61	2,181.03	8.91	60.5	2,179.81	14.7	59.3	2,176.97
J1216-10	Main Plant	1,964.00	0.8	93.9	2,180.98	1.47	93.3	2,179.67	2.43	92.1	2,176.77
J1216-11	Main Plant	1,994.00	1.07	80.9	2,180.99	1.97	80.3	2,179.69	3.25	79.1	2,176.83
J1216-12	Main Plant	2,005.00	0	76.1	2,180.99	0	75.6	2,179.69	0	74.3	2,176.83
J1217-01	Main Plant	1,944.00	3.11	102	2,179.68	5.73	100.4	2,176.15	9.45	99.4	2,173.65
J1217-02	EID Res 6	2,180.00	0	92.5	2,393.89	0	85.5	2,377.70	0	77.5	2,359.12
J1217-03	No FF	2,147.00	0	15	2,181.66	0	15	2,181.63	0	13.9	2,179.08
J1217-04	No FF	2,130.00	0.53	22.3	2,181.52	0.98	22.2	2,181.23	1.62	21	2,178.61
J1217-05	Main Plant	2,014.00	3.73	71.6	2,179.47	6.86	69.9	2,175.60	11.32	68.9	2,173.29
J1217-06	Main Plant	1,988.00	3.44	82.9	2,179.56	6.32	81.3	2,175.84	10.43	80.2	2,173.44
J1217-07	Main Plant	1,986.00	0	83.7	2,179.56	0	82.1	2,175.84	0	81.1	2,173.44
J1217-08	Main Plant	2,026.00	1.83	66.5	2,179.64	3.37	64.9	2,176.05	5.56	63.9	2,173.59
J1217-09	Main Plant	1,960.00	1.83	95	2,179.63	3.37	93.5	2,176.03	5.56	92.4	2,173.53
J1217-10	Main Plant	1,953.00	0	98.1	2,179.64	0	96.5	2,176.05	0	95.4	2,173.59
J1217-11	Main Plant	1,933.00	1.14	106.7	2,179.64	2.1	105.2	2,176.05	3.46	104.1	2,173.59
J1217-110	Main Plant	2,022.00	0	68.8	2,181.13	0	68.4	2,180.12	0	67.2	2,177.38
J1217-111	Main Plant	2,028.00	0.9	66.2	2,181.12	1.66	65.8	2,180.10	2.74	64.6	2,177.35
J1217-112	Main Plant	2,023.00	0	68.4	2,181.13	0	68	2,180.12	0	66.8	2,177.38
J1217-113	Main Plant	2,031.00	1.2	65	2,181.13	2.21	64.5	2,180.12	3.65	63.3	2,177.38
J1217-114	Main Plant	2,032.00	1.2	64.5	2,181.13	2.21	64.1	2,180.12	3.65	62.9	2,177.38
J1217-115	Main Plant	2,036.00	1.5	62.8	2,181.13	2.76	62.4	2,180.12	4.55	61.2	2,177.38
J1217-12	Main Plant	1,939.00	0	104.1	2,179.67	0	102.6	2,176.12	0	101.5	2,173.64
J1217-13	Main Plant	1,921.00	2.44	111.9	2,179.66	4.49	110.4	2,176.11	7.41	109.3	2,173.63
J1217-14	Main Plant	2,001.00	1.83	77.3	2,179.75	3.37	75.9	2,176.35	5.56	74.8	2,173.80
J1217-15	Main Plant	1,970.00	0	90.9	2,180.02	0	89.6	2,177.08	0	88.5	2,174.48
J1217-16	Main Plant	1,970.00	0	90.9	2,180.02	0	89.6	2,177.08	0	88.5	2,174.48
J1217-17	Main Plant	1,983.00	1.83	85.2	2,179.99	3.37	83.9	2,176.98	5.56	82.7	2,174.21
J1217-18	Main Plant	1,997.00	0	79.1	2,179.74	0	77.6	2,176.31	0	76.5	2,173.77
J1217-19	Main Plant	1,991.00	2.06	81.7	2,179.73	3.8	80.2	2,176.29	6.27	79.1	2,173.75
J1217-20	Main Plant	1,994.00	0.23	80.4	2,179.73	0.42	78.9	2,176.29	0.69	77.8	2,173.75
J1217-200	Main Plant	1,965.00	0	92.9	2,179.67	0	91.3	2,176.12	0	90.3	2,173.64
J1217-201	Main Plant	2,010.00	1.2	73.4	2,179.67	2.21	71.9	2,176.12	3.65	70.8	2,173.64
J1217-21	Main Plant	1,914.00	3.67	115	2,179.71	6.75	113.5	2,176.24	11.14	112.4	2,173.76
J1217-22	Main Plant	1,905.00	2.15	118.9	2,179.75	3.95	117.4	2,176.36	6.52	116.3	2,173.87
J1217-23	Main Plant	1,915.00	2.36	114.7	2,180.03	4.34	113.4	2,177.10	7.16	112.3	2,174.49
J1217-24	Main Plant	2,004.00	4.39	76.4	2,180.51	8.08	75.5	2,178.41	13.33	74.3	2,175.65
J1217-25	Main Plant	1,925.00	1.14	110.5	2,180.51	2.1	109.6	2,178.42	3.46	108.5	2,175.67

City of Placerville
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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1217-26	Main Plant	1,980.00	2.98	86.8	2,180.62	5.48	86	2,178.70	9.04	84.8	2,175.94
J1217-27	Main Plant	1,985.00	2.66	84.8	2,181.11	4.9	84.4	2,180.07	8.09	83.2	2,177.31
J1217-28	Main Plant	1,952.00	1.87	99.1	2,181.08	3.43	98.6	2,179.98	5.66	97.4	2,177.18
J1217-29	Main Plant	2,037.00	6.44	62.3	2,180.90	11.86	61.6	2,179.49	19.57	60.4	2,176.72
J1217-30	No FF	2,123.00	0	25.3	2,181.46	0	25.1	2,181.08	0	24	2,178.46
J1217-31	Main Plant	2,031.00	0	65	2,181.13	0	64.5	2,180.13	0	63.3	2,177.39
J1218-01	Cedar Ravine	2,146.00	3.99	134.3	2,456.48	8.78	134.3	2,456.35	14.49	134.2	2,456.10
J1218-02	Cedar Ravine	2,223.00	2.4	101	2,456.46	5.28	100.9	2,456.30	8.71	100.8	2,455.98
J1218-04	Main Plant	2,036.00	0.24	62.1	2,179.45	0.44	60.4	2,175.55	0.73	59.3	2,173.16
J1218-05	Main Plant	2,048.00	0.24	56.9	2,179.45	0.44	55.2	2,175.55	0.73	54.2	2,173.16
J1218-06	Main Plant	2,044.00	0	58.6	2,179.45	0	56.9	2,175.55	0	55.9	2,173.16
J1218-07	Main Plant	2,017.00	0.73	70.3	2,179.45	1.35	68.6	2,175.55	2.23	67.6	2,173.16
J1218-08	Main Plant	2,006.00	3.25	75	2,179.45	5.98	73.4	2,175.55	9.87	72.3	2,173.16
J1218-09	Main Plant	1,993.00	0	80.7	2,179.45	0	79	2,175.56	0	78	2,173.17
J1218-10	Main Plant	2,022.00	4.01	68.1	2,179.45	7.38	66.4	2,175.56	12.18	65.4	2,173.18
J1218-11	Main Plant	2,005.00	20.76	75.5	2,179.45	38.2	73.8	2,175.56	63.03	72.8	2,173.19
J1219-01	Sierra Plant	2,410.00	3.33	64.1	2,558.05	7.33	64	2,558.04	12.09	64	2,558.01
J1219-02	Sierra Plant	2,397.00	2.75	69.7	2,558.05	6.04	69.7	2,558.04	9.97	69.7	2,558.02
J1219-03	Cedar Ravine	2,323.00	3.11	57.8	2,456.48	6.85	57.7	2,456.45	11.3	57.7	2,456.38
J1219-04	Cedar Ravine	2,310.00	1.2	63.4	2,456.48	2.64	63.4	2,456.45	4.36	63.3	2,456.39
J1219-05	Cedar Ravine	2,310.00	1.5	63.4	2,456.48	3.3	63.4	2,456.45	5.45	63.3	2,456.39
J1219-06	Cedar Ravine	2,260.00	1.5	85	2,456.47	3.3	85	2,456.40	5.45	84.9	2,456.24
J1219-07	Cedar Ravine	2,235.00	1.5	95.8	2,456.47	3.3	95.8	2,456.37	5.45	95.7	2,456.16
J1219-08	Cedar Ravine	2,226.00	1.49	99.7	2,456.47	3.27	99.7	2,456.36	5.4	99.6	2,456.15
J1219-09	Cedar Ravine	2,208.00	1	107.5	2,456.47	2.19	107.4	2,456.33	3.61	107.3	2,456.05
J1219-10	Cedar Ravine	2,234.00	3.44	96.3	2,456.47	7.56	96.2	2,456.32	12.47	96.1	2,456.02
J1219-11	Cedar Ravine	2,206.00	0.74	108.4	2,456.47	1.64	108.3	2,456.33	2.71	108.2	2,456.06
J1219-12	Cedar Ravine	2,187.00	0	116.6	2,456.47	0	116.5	2,456.34	0	116.4	2,456.06
J1219-13	Cedar Ravine	2,180.00	2.34	119.6	2,456.48	5.14	119.6	2,456.36	8.48	119.5	2,456.11
J1219-14	Cedar Ravine	2,198.00	6.62	111.8	2,456.46	14.57	111.8	2,456.31	24.04	111.6	2,455.99
J1219-15	Cedar Ravine	2,240.00	2.18	93.7	2,456.46	4.8	93.6	2,456.31	7.92	93.4	2,455.99
J1219-16	Cedar Ravine	2,236.00	2.5	95.4	2,456.46	5.51	95.3	2,456.31	9.09	95.2	2,456.00
J1219-17	Cedar Ravine	2,225.00	0	100.1	2,456.46	0	100.1	2,456.31	0	99.9	2,455.99
J1219-18	Cedar Ravine	2,223.00	2.32	101	2,456.46	5.09	100.9	2,456.31	8.4	100.8	2,455.99
J1219-19	Cedar Ravine	2,165.00	0	126.1	2,456.48	0	126.1	2,456.35	0	125.9	2,456.11
J1219-20	Sierra Plant	2,436.00	3.09	52.8	2,557.97	6.8	52.7	2,557.69	11.22	52.4	2,557.14
J1219-21	Sierra Plant	2,412.00	5.15	63.1	2,557.90	11.32	62.9	2,557.30	18.68	62.3	2,556.09
J1219-22	Sierra Plant	2,409.00	0.61	64.4	2,557.90	1.34	64.2	2,557.27	2.21	63.6	2,556.03
J1219-23	Sierra Plant	2,417.00	3.67	61	2,557.89	8.07	60.7	2,557.26	13.32	60.1	2,556.01
J1219-24	Sierra Plant	2,396.00	2.42	70	2,557.89	5.33	69.8	2,557.26	8.79	69.2	2,555.99
J1219-25	Cedar Ravine	2,270.00	0	80.7	2,456.47	0	80.6	2,456.32	0	80.5	2,456.02
J1219-26	Cedar Ravine	2,319.00	2.79	59.5	2,456.47	6.13	59.4	2,456.32	10.11	59.3	2,456.01
J1219-27	Cedar Ravine	2,315.00	0	61.2	2,456.47	0	61.1	2,456.32	0	61	2,456.01
J1219-30	Sierra Plant	2,391.00	1.81	72.2	2,557.89	3.99	71.9	2,557.26	6.58	71.4	2,555.98
J1219-31	Sierra Plant	2,392.50	0	71.6	2,557.89	0	71.3	2,557.26	0	70.7	2,555.98
J1220-01	Sierra Plant	2,417.00	2.12	61	2,558.05	4.66	61	2,558.04	7.69	61	2,558.00
J1220-03	No FF	2,528.60	0	12.7	2,558.00	0	12.7	2,557.98	0	12.7	2,557.92
J1220-04	Sierra Plant	2,464.00	2.4	40.7	2,557.97	5.28	40.5	2,557.72	8.71	40.3	2,557.20
J1220-05	Sierra Plant	2,465.00	0	40.2	2,557.97	0	40.1	2,557.72	0	39.9	2,557.21
J1220-100	Sierra Hydro	2,528.60	0	37.9	2,616.21	0	37.9	2,616.16	0	37.8	2,616.07
J1315-01	Main Plant	1,832.00	0.6	150.9	2,180.70	1.1	150.1	2,178.82	1.82	148.8	2,175.87
J1316-01	Main Plant	1,949.00	0.53	100.4	2,181.08	0.98	99.9	2,179.98	1.62	98.7	2,177.18
J1316-02	Main Plant	1,995.00	2.13	80.3	2,180.69	3.91	79.6	2,178.87	6.45	78.3	2,176.01
J1316-03	Main Plant	1,970.00	2.4	91.2	2,180.69	4.42	90.4	2,178.87	7.29	89.1	2,176.01
J1316-04	Main Plant	1,896.00	0	123.2	2,180.69	0	122.4	2,178.87	0	121.1	2,176.01
J1316-05	Main Plant	1,890.00	2.13	125.8	2,180.69	3.91	125	2,178.87	6.45	123.7	2,176.01
J1316-06	Main Plant	1,909.00	0.82	117.6	2,180.82	1.5	116.9	2,179.21	2.47	115.6	2,176.29
J1316-07	Main Plant	1,885.00	3.81	128	2,180.82	7.02	127.3	2,179.21	11.58	126	2,176.29
J1316-08	Main Plant	1,863.00	0	137.4	2,180.65	0	136.6	2,178.75	0	135.4	2,175.90
J1316-09	Main Plant	1,859.00	0.27	139.2	2,180.67	0.5	138.4	2,178.82	0.82	137.1	2,175.97
J1316-10	Main Plant	1,860.00	0	138.7	2,180.65	0	137.9	2,178.75	0	136.7	2,175.90
J1316-11	Main Plant	1,860.00	0.56	138.7	2,180.65	1.02	137.9	2,178.74	1.68	136.7	2,175.89

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1316-12	Main Plant	1,852.00	0	142.2	2,180.62	0	141.3	2,178.66	0	140.1	2,175.80
J1316-13	Main Plant	1,855.00	0	140.9	2,180.62	0	140	2,178.66	0	138.8	2,175.80
J1316-14	Main Plant	1,839.00	3.58	147.8	2,180.56	6.59	146.9	2,178.50	10.87	145.6	2,175.62
J1316-15	Main Plant	1,835.00	1.01	149.5	2,180.54	1.85	148.6	2,178.43	3.05	147.3	2,175.54
J1316-16	Main Plant	1,943.00	0	102.9	2,180.90	0	102.3	2,179.42	0	101	2,176.53
J1316-17	Main Plant	1,939.00	2.97	104.7	2,180.89	5.46	104	2,179.39	9.01	102.7	2,176.49
J1316-18	Main Plant	1,937.00	0	105.5	2,180.88	0	104.9	2,179.36	0	103.6	2,176.46
J1316-19	Main Plant	1,942.00	0	103.4	2,180.88	0	102.7	2,179.36	0	101.4	2,176.46
J1316-20	Main Plant	1,997.00	0	79.6	2,180.88	0	78.9	2,179.36	0	77.6	2,176.46
J1316-21	Main Plant	1,987.00	0	83.9	2,180.88	0	83.2	2,179.36	0	82	2,176.46
J1316-22	Main Plant	1,991.00	0.71	82.2	2,180.88	1.31	81.5	2,179.36	2.16	80.2	2,176.46
J1316-23	Main Plant	2,085.00	0.26	41.5	2,180.99	0.48	41	2,179.68	0.79	39.7	2,176.80
J1316-24	Main Plant	2,104.00	1.58	33.3	2,180.90	2.91	32.6	2,179.42	4.8	31.4	2,176.52
J1316-25	Main Plant	1,936.00	0	105.9	2,180.88	0	105.3	2,179.36	0	104	2,176.46
J1316-26	Main Plant	1,953.00	2.34	98.5	2,180.61	4.3	97.6	2,178.66	7.09	96.4	2,175.82
J1316-27	Main Plant	1,846.00	7.6	144.7	2,180.56	13.98	143.9	2,178.50	23.07	142.6	2,175.62
J1316-28	Main Plant	1,845.00	0.43	145.2	2,180.61	0.79	144.3	2,178.63	1.3	143.1	2,175.76
J1316-29	Main Plant	1,842.00	3.31	146.5	2,180.57	6.09	145.6	2,178.51	10.05	144.3	2,175.63
J1316-30	Main Plant	1,841.00	3.44	146.9	2,180.54	6.32	146	2,178.44	10.43	144.7	2,175.56
J1316-31	Main Plant	1,842.00	3.65	146.4	2,180.42	6.71	145.4	2,178.08	11.07	144.2	2,175.22
J1316-32	Main Plant	1,842.00	3.32	146.4	2,180.39	6.11	145.4	2,178.01	10.08	144.1	2,175.15
J1316-33	Main Plant	1,845.00	6.85	145.1	2,180.31	12.61	144	2,177.80	20.81	142.8	2,174.98
J1316-34	Main Plant	1,842.00	2.44	146.4	2,180.34	4.49	145.3	2,177.86	7.41	144.1	2,175.01
J1316-35	Main Plant	1,923.00	0	111.1	2,179.81	0	109.7	2,176.47	0	108.8	2,174.46
J1316-36	Main Plant	1,920.00	4.18	112.6	2,180.31	7.69	111.5	2,177.79	12.69	110.3	2,174.86
J1316-37	Main Plant	1,882.00	1.21	129.1	2,180.32	2.22	128	2,177.80	3.66	126.7	2,174.90
J1316-38	Main Plant	1,880.00	0	129.9	2,180.32	0	128.8	2,177.81	0	127.6	2,174.91
J1316-39	Main Plant	1,865.00	0.26	136.4	2,180.33	0.48	135.4	2,177.84	0.79	134.1	2,174.98
J1316-40	Main Plant	1,837.00	0.73	148.6	2,180.54	1.34	147.7	2,178.43	2.21	146.5	2,175.55
J1316-41	Main Plant	1,837.00	1.33	148.6	2,180.53	2.45	147.7	2,178.41	4.04	146.5	2,175.53
J1316-42	Main Plant	1,830.00	0	151.8	2,180.77	0	151	2,179.03	0	149.7	2,176.10
J1316-43	Main Plant	1,822.00	2.05	155.2	2,180.77	3.78	154.5	2,179.03	6.24	153.2	2,176.10
J1316-44	Main Plant	1,822.00	0	155.2	2,180.76	0	154.5	2,179.02	0	153.2	2,176.09
J1316-45	Main Plant	1,911.00	0.82	116.5	2,180.32	1.5	115.4	2,177.80	2.47	114.2	2,174.93
J1316-46	Main Plant	1,893.00	0	124.3	2,180.32	0	123.2	2,177.80	0	122	2,174.93
J1316-47	Main Plant	1,868.00	3.45	135.1	2,180.32	6.34	134	2,177.80	10.46	132.8	2,174.93
J1316-48	Main Plant	1,895.00	4.14	123.4	2,180.24	7.62	122.2	2,177.54	12.57	121	2,174.64
J1316-49	Main Plant	1,893.00	2.19	124.3	2,180.28	4.03	123.1	2,177.62	6.65	121.9	2,174.69
J1316-50	Main Plant	1,855.00	4.89	140.7	2,180.31	9	139.6	2,177.72	14.85	138.4	2,174.81
J1316-51	Main Plant	1,862.00	1.09	137.7	2,180.28	2.01	136.6	2,177.62	3.32	135.3	2,174.71
J1316-52	Main Plant	1,885.00	0	127.8	2,180.28	0	126.6	2,177.62	0	125.3	2,174.71
J1316-53	Main Plant	1,900.00	0.25	121.3	2,180.28	0.46	120.1	2,177.62	0.76	118.8	2,174.69
J1316-54	Main Plant	1,843.00	1.26	145.9	2,180.28	2.31	144.8	2,177.62	3.81	143.5	2,174.69
J1316-55	Main Plant	1,825.00	0	153.7	2,180.27	0	152.6	2,177.62	0	151.3	2,174.68
J1316-56	Main Plant	1,825.00	2.25	153.7	2,180.27	4.15	152.6	2,177.62	6.85	151.3	2,174.68
J1316-57	Main Plant	1,827.00	4.52	152.8	2,180.28	8.31	151.7	2,177.62	13.71	150.4	2,174.69
J1316-58	Main Plant	1,855.00	0	140.8	2,180.33	0	139.6	2,177.77	0	138.4	2,174.79
J1316-59	Main Plant	1,819.00	2	156.5	2,180.76	3.68	155.8	2,179.00	6.07	154.5	2,176.03
J1316-60	Main Plant	1,820.00	1.17	156.1	2,180.70	2.16	155.2	2,178.82	3.56	154	2,175.87
J1316-61	Main Plant	1,819.00	3.14	156.5	2,180.70	5.78	155.7	2,178.82	9.54	154.4	2,175.87
J1316-62	Main Plant	1,881.00	1.75	129.6	2,180.55	3.22	128.7	2,178.40	5.31	127.4	2,175.43
J1316-70	Main Plant	1,856.00	0	140.4	2,180.56	0	139.5	2,178.49	0	138.3	2,175.62
J1316-71	Main Plant	1,847.00	0	144.2	2,180.22	0	143	2,177.54	0	141.8	2,174.86
J1317-01	Main Plant	1,994.00	4.59	80.2	2,179.43	8.45	78.5	2,175.52	13.94	77.6	2,173.29
J1317-02	Main Plant	1,995.00	0	79.8	2,179.39	0	78.1	2,175.45	0	77.1	2,173.31
J1317-03	Main Plant	1,995.00	0.6	79.8	2,179.39	1.1	78.1	2,175.45	1.82	77.1	2,173.31
J1317-04	Main Plant	1,987.00	0.4	83.2	2,179.38	0.73	81.5	2,175.41	1.2	80.6	2,173.32
J1317-05	Main Plant	1,980.00	0.59	86.3	2,179.42	1.08	84.6	2,175.50	1.78	83.6	2,173.24
J1317-06	Main Plant	1,986.00	2.37	83.7	2,179.42	4.36	82	2,175.51	7.19	81	2,173.27
J1317-07	Main Plant	1,994.00	3.13	80.2	2,179.37	5.77	78.5	2,175.40	9.52	77.6	2,173.27
J1317-08	Main Plant	1,980.00	0.81	86.3	2,179.38	1.48	84.5	2,175.41	2.44	83.6	2,173.30
J1317-09	Main Plant	1,984.00	0	84.6	2,179.49	0	82.9	2,175.65	0	81.9	2,173.28

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1317-10	Main Plant	1,965.00	49.28	92.8	2,179.45	90.68	91.1	2,175.57	149.62	90.1	2,173.21
J1317-100	Main Plant	1,982.00	0	85.4	2,179.43	0	83.7	2,175.52	0	82.8	2,173.27
J1317-11	Main Plant	1,972.00	2.01	89.8	2,179.53	3.7	88.2	2,175.74	6.11	87.1	2,173.32
J1317-12	Main Plant	1,940.00	8.92	103.6	2,179.53	16.41	102	2,175.75	27.08	100.9	2,173.32
J1317-13	Main Plant	1,946.00	1.94	101	2,179.53	3.57	99.4	2,175.74	5.89	98.4	2,173.32
J1317-14	Main Plant	1,967.00	1.14	92.4	2,180.62	2.1	91.6	2,178.70	3.46	90.4	2,175.94
J1317-15	Main Plant	1,890.00	5.43	125.4	2,179.77	9.99	123.9	2,176.39	16.48	122.9	2,173.97
J1317-16	Main Plant	1,886.00	1.7	127.1	2,179.81	3.12	125.7	2,176.49	5.15	124.6	2,174.09
J1317-17	Main Plant	1,978.00	0	87.9	2,181.08	0	87.4	2,179.99	0	86.2	2,177.20
J1317-18	Main Plant	1,970.00	0	91.3	2,181.08	0	90.9	2,179.99	0	89.6	2,177.20
J1317-19	Main Plant	2,011.00	1.83	73.4	2,180.69	3.37	72.6	2,178.89	5.56	71.4	2,176.06
J1317-20	Main Plant	2,011.00	1.07	73.4	2,180.69	1.97	72.6	2,178.89	3.25	71.4	2,176.05
J1317-21	Main Plant	1,994.00	1.87	80.8	2,180.69	3.43	80	2,178.88	5.66	78.7	2,176.02
J1317-22	Main Plant	1,961.00	1.59	95	2,180.55	2.93	94.1	2,178.45	4.83	92.7	2,175.15
J1317-23	Main Plant	1,990.00	1.07	82.5	2,180.57	1.97	81.6	2,178.52	3.25	80.2	2,175.34
J1317-24	Main Plant	1,980.00	0.69	86.8	2,180.65	1.27	86	2,178.76	2.1	84.8	2,175.94
J1317-25	Main Plant	1,964.00	0	93.7	2,180.59	0	92.8	2,178.61	0	91.6	2,175.80
J1317-26	Main Plant	1,965.00	3.48	93.3	2,180.59	6.4	92.4	2,178.61	10.56	91.2	2,175.80
J1317-27	Main Plant	1,964.00	0	93.7	2,180.60	0	92.9	2,178.61	0	91.6	2,175.81
J1317-28	Main Plant	1,929.00	6.94	108.9	2,180.62	12.76	108	2,178.67	21.05	106.8	2,175.84
J1317-29	Main Plant	1,951.00	1.4	98.8	2,179.33	2.58	97.1	2,175.32	4.26	96.2	2,173.37
J1317-30	Main Plant	1,938.00	1.01	104.4	2,179.31	1.85	102.7	2,175.29	3.05	101.8	2,173.39
J1317-31	Main Plant	1,910.00	1.01	116.5	2,179.28	1.85	114.8	2,175.23	3.05	114	2,173.48
J1317-32	Main Plant	1,912.00	1.8	115.6	2,179.29	3.32	113.9	2,175.25	5.48	113.1	2,173.48
J1317-33	Main Plant	1,925.00	0	110	2,179.34	0	108.3	2,175.37	0	107.6	2,173.71
J1317-34	Main Plant	1,883.00	2.51	128.2	2,179.34	4.63	126.5	2,175.37	7.64	125.8	2,173.71
J1317-35	Main Plant	1,993.00	5.28	80.8	2,179.84	9.72	79.4	2,176.57	16.04	78.4	2,174.20
J1317-36	Main Plant	1,949.00	0	99.9	2,179.84	0	98.5	2,176.57	0	97.4	2,174.20
J1317-37	Main Plant	1,939.00	0.49	104.2	2,179.84	0.91	102.8	2,176.57	1.5	101.8	2,174.20
J1317-38	Main Plant	1,882.00	0	128.9	2,179.84	0	127.4	2,176.57	0	126.4	2,174.20
J1317-39	Main Plant	1,882.00	0	128.9	2,179.84	0	127.4	2,176.57	0	126.4	2,174.20
J1317-40	Main Plant	1,883.84	2.53	128.1	2,179.84	4.65	126.7	2,176.57	7.67	125.6	2,174.20
J1317-41	Main Plant	1,874.00	2.25	132.4	2,179.92	4.15	131	2,176.78	6.85	130	2,174.50
J1317-42	Main Plant	1,874.00	4.61	132.1	2,179.39	8.48	130.4	2,175.50	13.99	129.7	2,173.85
J1317-43	Main Plant	1,871.00	4.06	133.6	2,179.87	7.46	132.2	2,176.65	12.31	131.3	2,174.46
J1317-44	Main Plant	1,979.00	1.6	87.2	2,180.59	2.95	86.4	2,178.61	4.87	85.1	2,175.79
J1317-45	Main Plant	1,978.00	0	87.7	2,180.60	0	86.8	2,178.61	0	85.6	2,175.81
J1317-46	Main Plant	1,983.00	1.37	85.5	2,180.60	2.53	84.6	2,178.61	4.17	83.4	2,175.81
J1317-47	Main Plant	1,977.00	0.91	88.1	2,180.60	1.68	87.2	2,178.61	2.77	86	2,175.81
J1317-48	Main Plant	1,982.00	1.14	85.9	2,180.60	2.1	85.1	2,178.61	3.46	83.9	2,175.81
J1317-49	Main Plant	1,873.00	0	132.7	2,179.72	0	131.2	2,176.24	0	130.4	2,174.47
J1317-50	Main Plant	1,872.00	0.67	133.1	2,179.72	1.23	131.6	2,176.26	2.03	130.9	2,174.47
J1317-51	Main Plant	1,867.00	7.27	135.4	2,179.86	13.38	134	2,176.63	22.08	133	2,174.46
J1317-52	Main Plant	1,861.00	5.76	138	2,179.87	10.6	136.6	2,176.65	17.49	135.6	2,174.47
J1317-53	Main Plant	1,861.00	0	138	2,179.87	0	136.6	2,176.66	0	135.6	2,174.47
J1317-54	Main Plant	1,860.00	4.85	138.4	2,179.89	8.93	137	2,176.69	14.73	136.1	2,174.49
J1317-55	Main Plant	1,856.00	7.59	140.2	2,180.00	13.96	138.9	2,176.99	23.03	137.8	2,174.59
J1317-56	Main Plant	1,870.00	3.41	134.2	2,180.08	6.27	132.9	2,177.19	10.35	131.8	2,174.69
J1318-01	Main Plant	1,958.00	1.21	95.7	2,179.17	2.22	93.9	2,175.04	3.66	93.2	2,173.49
J1318-05	Main Plant	1,975.00	0	88.3	2,179.17	0	86.6	2,175.05	0	85.9	2,173.52
J1318-06	Main Plant	1,937.00	3.21	104.8	2,179.17	5.9	103	2,175.04	9.73	102.3	2,173.49
J1318-07	Main Plant	1,903.00	1.21	119.5	2,179.17	2.22	117.7	2,175.05	3.66	117	2,173.51
J1318-08	Main Plant	1,918.00	1.6	113.1	2,179.32	2.95	111.3	2,175.31	4.87	110.5	2,173.37
J1318-09	Main Plant	1,987.00	4.41	83.2	2,179.32	8.12	81.5	2,175.31	13.4	80.6	2,173.38
J1318-10	Main Plant	1,987.00	0	83.2	2,179.32	0	81.5	2,175.31	0	80.6	2,173.38
J1318-11	Main Plant	1,987.00	0	83.2	2,179.33	0	81.5	2,175.32	0	80.6	2,173.37
J1319-01	Sierra Plant	2,425.00	0	57.5	2,557.98	0	57.4	2,557.76	0	57.2	2,557.32
J1319-02	Sierra Plant	2,423.00	4.84	58.4	2,557.98	10.65	58.3	2,557.77	17.57	58.1	2,557.35
J1319-03	Main Plant	1,985.00	1.05	84	2,179.08	1.93	82.2	2,174.88	3.18	81.5	2,173.36
J1320-01	Sierra Plant	2,470.00	0	38.1	2,557.99	0	38	2,557.85	0	37.9	2,557.56
J1320-02	EID PRV#3S	2,485.00	2.62	56.8	2,616.20	5.76	56.7	2,616.12	9.5	56.7	2,615.99
J1415-01	Main Plant	1,885.00	1.92	127.7	2,180.23	3.53	126.5	2,177.43	5.82	125.3	2,174.61

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1415-02	Main Plant	1,930.00	1.01	108.4	2,180.48	1.85	107.4	2,178.19	3.05	106.1	2,175.19
J1415-03	Main Plant	1,930.00	0	108.4	2,180.49	0	107.4	2,178.20	0	106.1	2,175.23
J1415-04	Main Plant	1,930.00	6.33	108.4	2,180.48	11.65	107.4	2,178.20	19.22	106.1	2,175.22
J1415-05	Main Plant	1,921.00	0	112.3	2,180.45	0	111.2	2,178.09	0	109.9	2,175.12
J1415-06	Main Plant	1,923.00	14.88	111.4	2,180.42	27.38	110.3	2,178.02	45.18	109	2,175.05
J1415-07	Main Plant	1,944.00	0	102.3	2,180.42	0	101.2	2,178.02	0	100	2,175.05
J1415-08	Main Plant	1,930.00	0	108.3	2,180.34	0	107.2	2,177.76	0	105.9	2,174.81
J1415-09	Main Plant	1,931.00	1.04	107.9	2,180.34	1.91	106.8	2,177.78	3.15	105.5	2,174.83
J1415-10	Main Plant	1,929.00	0	108.8	2,180.38	0	107.7	2,177.88	0	106.4	2,174.92
J1415-100	Main Plant	2,017.00	0	70.7	2,180.31	0	69.5	2,177.67	0	68.2	2,174.70
J1415-101	Main Plant	1,942.00	0	103.1	2,180.34	0	102	2,177.77	0	100.7	2,174.85
J1415-102	Main Plant	1,941.00	0	103.6	2,180.34	0	102.4	2,177.77	0	101.2	2,174.85
J1415-103	Main Plant	1,898.00	0	122.2	2,180.56	0	121.3	2,178.41	0	120	2,175.44
J1415-104	Main Plant	1,897.00	0	122.7	2,180.56	0	121.8	2,178.41	0	120.5	2,175.44
J1415-11	Main Plant	1,963.00	0	94	2,180.27	0	92.8	2,177.57	0	91.6	2,174.72
J1415-12	Main Plant	1,895.00	3.57	123.4	2,180.23	6.57	122.2	2,177.43	10.84	121	2,174.61
J1415-13	Main Plant	1,929.00	0	108.7	2,180.23	0	107.5	2,177.43	0	106.3	2,174.61
J1415-14	Main Plant	1,945.00	3.41	101.8	2,180.23	6.27	100.6	2,177.44	10.35	99.3	2,174.63
J1415-15	Main Plant	1,952.00	0	98.7	2,180.24	0	97.5	2,177.46	0	96.3	2,174.68
J1415-16	Main Plant	1,948.00	0	100.5	2,180.23	0	99.3	2,177.45	0	98.1	2,174.68
J1415-17	Main Plant	2,007.00	1.01	74.9	2,180.03	1.85	73.5	2,176.87	3.05	72.6	2,174.91
J1415-18	Main Plant	2,005.00	0	75.8	2,180.31	0	74.7	2,177.67	0	73.4	2,174.70
J1415-19	Main Plant	2,010.00	2.11	73.7	2,180.31	3.88	72.5	2,177.67	6.4	71.3	2,174.69
J1415-20	Main Plant	2,011.00	1.36	73.3	2,180.31	2.51	72.1	2,177.67	4.14	70.8	2,174.70
J1415-21	Main Plant	2,005.00	0.54	75.8	2,180.31	1	74.7	2,177.67	1.65	73.4	2,174.70
J1415-22	Main Plant	2,010.00	0	73.7	2,180.31	0	72.5	2,177.67	0	71.3	2,174.70
J1415-23	Main Plant	1,978.00	5.69	87.5	2,180.31	10.47	86.4	2,177.67	17.28	85.1	2,174.70
J1415-24	Main Plant	1,990.00	2.44	82.3	2,180.31	4.49	81.2	2,177.67	7.41	79.9	2,174.70
J1415-25	Main Plant	1,971.00	0	90.6	2,180.31	0	89.4	2,177.67	0	88.1	2,174.71
J1415-26	Main Plant	1,986.00	0	84.1	2,180.27	0	82.9	2,177.57	0	81.6	2,174.67
J1415-27	Main Plant	1,984.00	19.35	84.9	2,180.27	35.61	83.7	2,177.57	58.76	82.5	2,174.67
J1415-28	Main Plant	1,923.00	12.68	109.5	2,176.11	23.33	104.6	2,164.70	38.49	94.9	2,142.41
J1415-29	Main Plant	1,917.00	1.26	113.9	2,180.19	2.31	112.6	2,177.33	3.81	111.5	2,174.68
J1415-30	Main Plant	1,938.00	6.01	104.7	2,180.08	11.07	103.4	2,177.01	18.27	102.4	2,174.78
J1415-31	Main Plant	1,942.00	0	103	2,180.11	0	101.7	2,177.09	0	100.7	2,174.75
J1415-32	Main Plant	1,909.00	2	117.3	2,180.18	3.68	116.1	2,177.29	6.07	114.9	2,174.68
J1415-33	Main Plant	1,905.00	0	119.1	2,180.18	0	117.8	2,177.29	0	116.7	2,174.68
J1415-34	Main Plant	1,901.00	1.51	120.8	2,180.18	2.78	119.5	2,177.29	4.59	118.4	2,174.68
J1415-35	Main Plant	1,880.00	0	129.9	2,180.18	0	128.6	2,177.29	0	127.5	2,174.68
J1415-36	Main Plant	1,882.00	0	129	2,180.18	0	127.8	2,177.29	0	126.6	2,174.68
J1415-37	Main Plant	1,934.00	1.75	106.5	2,180.18	3.22	105.3	2,177.29	5.31	104.1	2,174.68
J1415-38	Main Plant	1,850.00	3.23	142.9	2,180.18	5.94	141.6	2,177.28	9.8	140.5	2,174.66
J1415-39	Main Plant	1,854.00	1.26	141.1	2,180.18	2.31	139.9	2,177.29	3.81	138.7	2,174.67
J1415-39a	Combellack	1,859.00	0	177	2,268.04	0	172.4	2,257.53	0	159.5	2,227.60
J1415-40	Main Plant	2,006.00	0	75.4	2,180.31	0	74.3	2,177.67	0	73	2,174.70
J1416-01	Main Plant	1,924.00	0	110.8	2,180.03	0	109.4	2,176.90	0	108.2	2,174.14
J1416-02	Main Plant	1,930.00	2.07	108.2	2,180.03	3.82	106.8	2,176.89	6.3	105.6	2,174.14
J1416-03	Main Plant	1,898.00	1.8	121.9	2,179.81	3.32	120.5	2,176.47	5.48	119.6	2,174.45
J1416-04	Main Plant	1,872.00	0.9	133.2	2,179.81	1.66	131.7	2,176.47	2.74	130.9	2,174.46
J1416-05	Main Plant	1,960.00	0.6	95.2	2,180.01	1.1	93.8	2,176.86	1.82	92.7	2,174.17
J1416-06	Main Plant	1,980.00	1.8	86.5	2,180.01	3.32	85.2	2,176.88	5.48	84	2,174.21
J1416-07	Main Plant	1,974.00	3.46	89.1	2,180.01	6.36	87.8	2,176.88	10.49	86.6	2,174.21
J1416-08	Main Plant	1,944.00	1.37	102.1	2,180.00	2.53	100.7	2,176.85	4.17	99.6	2,174.23
J1416-09	Main Plant	1,960.00	1.37	95.2	2,180.01	2.53	93.8	2,176.86	4.17	92.7	2,174.25
J1416-10	Main Plant	1,957.00	3.24	96.5	2,180.01	5.96	95.1	2,176.86	9.83	94	2,174.27
J1416-11	Main Plant	1,937.00	1.44	105.1	2,180.03	2.64	103.8	2,176.92	4.36	102.7	2,174.27
J1416-12	Main Plant	1,916.00	4.34	114.2	2,180.05	7.98	112.9	2,176.97	13.17	111.7	2,174.27
J1416-13	Main Plant	1,905.00	2.29	119	2,180.07	4.22	117.7	2,177.03	6.96	116.5	2,174.31
J1416-14	Main Plant	1,952.00	2.2	98.6	2,180.00	4.05	97.3	2,176.84	6.68	96.1	2,174.08
J1416-15	Main Plant	1,942.00	0.6	102.9	2,179.93	1.1	101.5	2,176.61	1.82	100.2	2,173.49
J1416-16	Main Plant	1,945.00	1.83	101.7	2,180.03	3.37	100.3	2,176.89	5.56	99.1	2,174.13
J1416-17	Main Plant	1,982.00	3.13	85.7	2,180.03	5.77	84.3	2,176.89	9.52	83.1	2,174.12

City of Placerville
Water Modeling Report
2005 Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1416-18	Main Plant	1,952.00	1.6	98.7	2,180.03	2.95	97.3	2,176.89	4.87	96.1	2,174.12
J1416-19	Main Plant	1,896.00	1.25	122.9	2,180.17	2.29	121.7	2,177.32	3.78	120.4	2,174.36
J1416-20	Main Plant	1,873.00	0	132.9	2,180.20	0	131.7	2,177.39	0	130.5	2,174.53
J1416-21	Main Plant	1,872.00	1.09	133.3	2,180.21	2.01	132.1	2,177.42	3.32	130.9	2,174.55
J1416-22	Main Plant	1,873.00	1.08	132.9	2,180.20	1.99	131.7	2,177.40	3.28	130.5	2,174.53
J1416-23	Main Plant	1,888.00	3.75	126.4	2,180.19	6.9	125.2	2,177.37	11.39	124	2,174.49
J1416-24	Main Plant	1,886.00	18.95	127.3	2,180.19	34.86	126	2,177.34	57.52	124.8	2,174.45
J1416-25	Main Plant	1,886.00	0	127.3	2,180.19	0	126	2,177.34	0	124.8	2,174.45
J1416-26	Main Plant	1,899.00	1.51	121.7	2,180.35	2.78	120.6	2,177.80	4.59	119.3	2,174.63
J1416-27	Main Plant	1,899.00	3.76	121.7	2,180.38	6.92	120.7	2,177.90	11.42	119.4	2,174.87
J1416-28	Main Plant	1,913.00	0	115.6	2,180.24	0	114.4	2,177.49	0	113.2	2,174.58
J1416-29	Main Plant	1,908.00	4.81	117.8	2,180.28	8.85	116.6	2,177.59	14.6	115.4	2,174.65
J1416-30	Main Plant	1,910.00	0	116.9	2,180.29	0	115.8	2,177.63	0	114.5	2,174.69
J1416-31	Main Plant	1,925.00	0	110.3	2,180.03	0	109	2,176.89	0	107.8	2,174.14
J1416-32	Main Plant	1,956.00	0	96.9	2,180.03	0	95.6	2,176.88	0	94.4	2,174.12
J1416-33	Main Plant	1,930.00	0	108.2	2,180.03	0	106.8	2,176.88	0	105.6	2,174.12
J1416-34	Main Plant	1,956.00	0	96.9	2,180.03	0	95.6	2,176.88	0	94.4	2,174.12
J1416-35	Main Plant	1,930.00	1.6	108.2	2,180.03	2.95	106.8	2,176.88	4.87	105.6	2,174.12
J1416-36	Main Plant	1,898.00	0	122.1	2,180.14	0	120.8	2,177.19	0	119.6	2,174.39
J1416-37	Main Plant	1,984.00	1.83	84.8	2,180.02	3.37	83.4	2,176.86	5.56	82.2	2,174.09
J1416-38	Main Plant	2,000.00	3.92	77.8	2,179.83	7.21	76.3	2,176.28	11.9	74.7	2,172.63
J1416-39	Main Plant	1,963.00	0	93.9	2,180.02	0	92.5	2,176.86	0	91.3	2,174.08
J1416-40	Main Plant	1,946.00	1.84	101.3	2,180.02	3.39	99.9	2,176.86	5.59	98.7	2,174.09
J1416-41	Main Plant	1,941.00	6.16	103.4	2,180.02	11.34	102	2,176.86	18.71	100.8	2,174.09
J1416-42	Main Plant	1,966.00	3.28	92.7	2,180.28	6.04	91.5	2,177.59	9.97	90.3	2,174.65
J1416-43	Main Plant	1,931.00	1.37	107.7	2,180.04	2.53	106.4	2,176.91	4.17	105.2	2,174.21
J1416-44	Main Plant	1,911.00	0	116.4	2,180.05	0	115.1	2,176.94	0	113.9	2,174.28
J1416-45	Main Plant	1,910.00	7.67	116.8	2,180.06	14.11	115.5	2,176.97	23.28	114.3	2,174.28
J1416-46	Main Plant	1,910.00	0	116.8	2,180.06	0	115.5	2,176.97	0	114.3	2,174.28
J1416-47	Main Plant	1,922.00	0.54	111.7	2,180.06	1	110.3	2,176.97	1.65	109.2	2,174.28
J1416-48	Main Plant	1,996.00	0	79.6	2,180.02	0	78.2	2,176.86	0	77.1	2,174.09
J1417-01	Main Plant	1,895.00	0.75	123	2,179.25	1.39	121.2	2,175.19	2.29	120.6	2,173.71
J1417-02	Main Plant	1,896.00	6.56	122.5	2,179.22	12.07	120.8	2,175.12	19.92	120.1	2,173.52
J1417-03	Main Plant	1,895.00	0	123	2,179.25	0	121.2	2,175.19	0	120.5	2,173.54
J1417-04	Main Plant	1,895.00	3.45	123	2,179.25	6.34	121.2	2,175.19	10.46	120.5	2,173.52
J1417-05	Main Plant	1,887.00	4.03	126.5	2,179.30	7.42	124.7	2,175.28	12.24	124	2,173.61
J1417-06	Main Plant	1,885.00	0	127.3	2,179.32	0	125.6	2,175.33	0	124.9	2,173.67
J1417-07	Main Plant	1,885.00	0	127.3	2,179.32	0	125.6	2,175.34	0	124.9	2,173.69
J1417-08	Main Plant	1,892.00	0.36	124.3	2,179.33	0.66	122.6	2,175.35	1.09	121.9	2,173.74
J1417-09	Main Plant	1,903.00	1.01	119.5	2,179.28	1.85	117.8	2,175.23	3.05	117.4	2,174.25
J1417-10	Main Plant	1,898.00	0	121.7	2,179.28	0	119.9	2,175.23	0	119.4	2,174.00
J1417-11	Main Plant	1,937.00	1.21	104.8	2,179.29	2.22	103.1	2,175.23	3.66	102.5	2,173.96
J1417-12	Main Plant	1,912.00	0	115.6	2,179.30	0	113.9	2,175.27	0	113.4	2,174.06
J1417-13	Main Plant	1,908.00	1.12	117.4	2,179.30	2.06	115.6	2,175.27	3.4	115.1	2,174.00
J1417-14	Main Plant	1,908.00	0	117.4	2,179.30	0	115.6	2,175.27	0	115.1	2,174.00
J1417-15	Main Plant	1,920.00	0	112.2	2,179.30	0	110.4	2,175.27	0	109.9	2,173.95
J1417-16	Main Plant	1,919.00	1.35	112.6	2,179.30	2.49	110.9	2,175.27	4.11	110.3	2,173.95
J1417-17	Main Plant	1,895.00	0.18	123	2,179.34	0.33	121.3	2,175.38	0.54	120.6	2,173.81
J1417-18	Main Plant	1,887.00	1.48	126.5	2,179.35	2.72	124.8	2,175.39	4.49	124.1	2,173.84
J1417-19	Main Plant	1,965.00	2	92.7	2,179.23	3.68	90.9	2,175.06	6.07	90.2	2,173.41
J1417-20	Main Plant	1,988.00	1.35	82.8	2,179.28	2.49	81	2,175.20	4.11	80.3	2,173.67
J1417-21	Main Plant	1,945.00	0	101.4	2,179.31	0	99.6	2,175.29	0	99	2,173.89
J1417-22	Main Plant	1,942.00	2.25	102.7	2,179.31	4.15	100.9	2,175.29	6.85	100.3	2,173.89
J1417-23	Main Plant	1,949.00	0.9	99.6	2,179.30	1.66	97.9	2,175.25	2.74	97.2	2,173.72
J1417-24	Main Plant	1,927.00	0	109.2	2,179.32	0	107.4	2,175.31	0	106.8	2,173.88
J1417-25	Main Plant	1,926.00	0.9	109.6	2,179.32	1.66	107.9	2,175.31	2.74	107.2	2,173.88
J1417-26	Main Plant	1,906.00	0.9	118.4	2,179.72	1.66	116.9	2,176.26	2.74	116.2	2,174.47
J1417-27	Main Plant	1,921.00	0	111.9	2,179.70	0	110.4	2,176.19	0	109.7	2,174.47
J1417-28	Main Plant	1,887.00	1.28	126.6	2,179.66	2.35	125.1	2,176.09	3.88	124.4	2,174.48
J1417-29	Main Plant	1,888.00	0	126.2	2,179.65	0	124.6	2,176.09	0	123.9	2,174.48
J1417-30	Main Plant	1,921.00	0.9	111.9	2,179.64	1.66	110.3	2,176.03	2.74	109.6	2,174.42
J1417-31	Main Plant	1,895.00	1.8	123.2	2,179.64	3.32	121.6	2,176.06	5.48	120.9	2,174.48

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1417-32	Main Plant	1,923.00	2.7	111	2,179.58	4.97	109.4	2,175.90	8.2	108.8	2,174.58
J1417-33	Main Plant	1,876.00	0.45	131.4	2,179.70	0.83	129.9	2,176.20	1.37	129.1	2,174.47
J1417-34	Main Plant	1,944.00	1.12	102	2,179.65	2.06	100.4	2,176.08	3.4	99.7	2,174.48
J1417-35	Main Plant	1,959.00	0	95.5	2,179.65	0	93.9	2,176.08	0	93.2	2,174.48
J1417-36	Main Plant	1,951.00	1.8	98.9	2,179.65	3.32	97.4	2,176.08	5.48	96.7	2,174.48
J1417-37	Main Plant	1,946.00	0	101.1	2,179.65	0	99.5	2,176.08	0	98.9	2,174.48
J1417-38	Main Plant	1,932.00	0.45	107.1	2,179.65	0.83	105.6	2,176.08	1.37	104.9	2,174.48
J1417-39	Main Plant	1,956.00	0.67	96.8	2,179.65	1.23	95.2	2,176.08	2.03	94.5	2,174.48
J1417-40	Main Plant	1,935.00	0	105.9	2,179.65	0	104.3	2,176.08	0	103.6	2,174.48
J1417-41	Main Plant	1,924.00	1.12	110.6	2,179.65	2.06	109.1	2,176.08	3.4	108.4	2,174.48
J1417-42	Main Plant	1,915.00	0	114.5	2,179.65	0	113	2,176.08	0	112.3	2,174.48
J1417-43	Main Plant	1,948.00	0.67	100.2	2,179.61	1.23	98.6	2,175.99	2.03	98	2,174.52
J1417-44	Main Plant	1,940.00	0	103.7	2,179.64	0	102.1	2,176.04	0	101.5	2,174.50
J1417-45	Main Plant	1,934.00	1.12	106.3	2,179.65	2.06	104.7	2,176.08	3.4	104	2,174.49
J1417-46	Main Plant	1,890.00	0	125.4	2,179.74	0	123.9	2,176.29	0	123.1	2,174.46
J1417-47	Main Plant	1,887.00	2.92	126.7	2,179.75	5.38	125.2	2,176.30	8.88	124.4	2,174.46
J1417-48	Main Plant	1,865.00	1.83	136.2	2,179.81	3.37	134.8	2,176.47	5.56	133.9	2,174.46
J1417-49	Main Plant	1,907.00	0.9	118	2,179.80	1.66	116.6	2,176.45	2.74	115.7	2,174.39
J1417-50	Main Plant	1,864.00	0.47	136.6	2,179.81	0.87	135.2	2,176.48	1.44	134.3	2,174.46
J1417-51	Main Plant	1,987.00	1.21	83.2	2,179.31	2.22	81.5	2,175.28	3.66	81.1	2,174.51
J1417-52	Main Plant	1,975.00	2.21	88.4	2,179.31	4.07	86.7	2,175.28	6.72	86.3	2,174.51
J1417-53	Main Plant	1,913.00	0	115.2	2,179.30	0	113.5	2,175.26	0	113.1	2,174.48
J1417-54	Main Plant	1,916.00	0	113.9	2,179.30	0	112.2	2,175.26	0	111.8	2,174.48
J1417-55	Main Plant	1,917.00	0	113.5	2,179.30	0	111.7	2,175.26	0	111.4	2,174.48
J1417-56	Main Plant	1,945.00	1.01	101.4	2,179.31	1.85	99.6	2,175.27	3.05	99.3	2,174.50
J1417-57	Main Plant	1,938.00	0	104.4	2,179.31	0	102.7	2,175.27	0	102.3	2,174.51
J1417-58	Main Plant	1,944.00	1.61	101.8	2,179.31	2.97	100.1	2,175.27	4.9	99.7	2,174.51
J1417-59	Main Plant	2,001.00	1.01	77.2	2,179.32	1.85	75.4	2,175.31	3.05	75.1	2,174.57
J1417-60	Main Plant	2,000.00	1.61	77.6	2,179.32	2.97	75.8	2,175.31	4.9	75.5	2,174.57
J1417-61	Main Plant	2,009.30	1.41	73.6	2,179.33	2.6	71.8	2,175.33	4.29	71.5	2,174.61
J1417-62	Main Plant	1,973.00	5.15	89.3	2,179.31	9.47	87.5	2,175.28	15.63	87.1	2,174.23
J1417-63	Main Plant	2,004.00	4.06	76	2,179.64	7.46	74.4	2,176.05	12.31	73.8	2,174.46
J1417-64	Main Plant	2,032.00	0	63.7	2,179.33	0	62	2,175.32	0	61.7	2,174.54
J1417-65	Main Plant	2,023.00	2.07	67.7	2,179.42	3.82	66	2,175.52	6.3	65.7	2,174.91
J1417-66	Main Plant	2,006.00	2.9	75	2,179.43	5.34	73.4	2,175.55	8.81	73.1	2,174.86
J1417-67	Main Plant	1,980.00	2.07	86.3	2,179.43	3.82	84.6	2,175.55	6.3	84.3	2,174.87
J1417-68	Main Plant	2,007.00	2.07	74.6	2,179.43	3.82	72.9	2,175.55	6.3	72.6	2,174.87
J1417-69	Main Plant	2,005.00	0	75.5	2,179.44	0	73.8	2,175.56	0	73.5	2,174.86
J1417-70	Main Plant	1,996.00	0	79.4	2,179.47	0	77.7	2,175.63	0	77.4	2,174.80
J1417-71	Main Plant	2,001.00	0	77.3	2,179.61	0	75.7	2,175.98	0	75.1	2,174.52
J1417-72	Main Plant	1,997.00	0	79	2,179.61	0	77.4	2,175.98	0	76.8	2,174.52
J1417-73	Main Plant	2,001.00	1.35	77.3	2,179.61	2.49	75.7	2,175.98	4.11	75.1	2,174.51
J1417-74	Main Plant	1,999.00	0	78.1	2,179.61	0	76.6	2,175.98	0	75.9	2,174.51
J1417-75	Main Plant	1,988.00	0.9	82.9	2,179.61	1.66	81.3	2,175.97	2.74	80.7	2,174.49
J1417-76	Main Plant	1,922.00	1.61	111.6	2,179.83	2.97	110.1	2,176.46	4.9	109.2	2,174.30
J1417-77	Main Plant	1,925.00	1.12	110.2	2,179.73	2.06	108.7	2,176.13	3.4	107.5	2,173.42
J1417-78	Main Plant	1,920.00	0	112.4	2,179.84	0	111	2,176.47	0	110	2,174.30
J1417-79	Main Plant	1,908.00	2.44	117.6	2,179.85	4.49	116.2	2,176.49	7.41	115.2	2,174.29
J1417-80	Main Plant	1,920.00	2.47	112.4	2,179.85	4.55	111	2,176.50	7.51	110	2,174.29
J1417-81	Main Plant	1,925.00	0	110.3	2,179.91	0	108.9	2,176.63	0	107.9	2,174.28
J1417-82	Main Plant	1,945.00	0	101.5	2,179.64	0	100	2,176.06	0	99.3	2,174.48
J1418-01	Main Plant	1,953.00	0	97.8	2,179.12	0	96	2,175.00	0	95.5	2,173.84
J1418-02	Main Plant	1,950.00	0	99.1	2,179.11	0	97.3	2,174.93	0	96.7	2,173.42
J1418-03	Main Plant	1,949.00	4.09	99.6	2,179.11	7.52	97.7	2,174.93	12.41	97.1	2,173.42
J1418-04	Main Plant	1,941.00	0	103	2,179.12	0	101.2	2,175.00	0	100.7	2,173.70
J1418-05	Main Plant	1,945.00	2.99	101.3	2,179.11	5.5	99.5	2,174.97	9.07	98.9	2,173.61
J1418-06	Main Plant	1,945.00	1.8	101.3	2,179.10	3.32	99.5	2,174.93	5.48	98.8	2,173.42
J1418-07	Main Plant	1,930.00	2.33	107.8	2,179.13	4.28	106	2,175.00	7.06	105.4	2,173.58
J1418-08	Main Plant	1,930.00	0	107.8	2,179.13	0	106	2,175.00	0	105.4	2,173.59
J1418-09	Main Plant	1,934.00	0	106.1	2,179.14	0	104.3	2,175.01	0	103.6	2,173.56
J1418-10	Main Plant	1,925.00	0	110	2,179.14	0	108.2	2,175.01	0	107.5	2,173.57
J1418-103	Main Plant	1,946.00	0	100.9	2,179.12	0	99.1	2,175.00	0	98.6	2,173.80

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1418-104	Main Plant	1,944.50	1.81	101.5	2,179.12	5.43	99.7	2,175.00	8.96	99.2	2,173.80
J1418-11	Main Plant	1,919.00	0	112.6	2,179.17	0	110.8	2,175.05	0	110.1	2,173.52
J1418-12	Main Plant	1,934.00	5.32	106.1	2,179.14	9.79	104.3	2,175.01	16.15	103.6	2,173.56
J1418-13	Main Plant	1,922.00	3.96	111.3	2,179.14	7.29	109.5	2,175.01	12.03	108.8	2,173.56
J1418-14	Main Plant	1,927.00	0	109.1	2,179.14	0	107.3	2,175.01	0	106.7	2,173.56
J1418-15	Main Plant	1,931.00	5.84	107.3	2,178.97	10.74	105.3	2,174.45	17.72	104.3	2,172.16
J1418-16	Main Plant	1,923.00	8.29	110.8	2,179.15	15.25	109	2,175.01	25.16	108.4	2,173.56
J1418-17	Main Plant	1,920.00	0	112.1	2,179.15	0	110.3	2,175.02	0	109.7	2,173.54
J1418-18	Main Plant	1,957.00	1.97	96.1	2,179.18	3.62	94.3	2,175.05	5.97	94	2,174.21
J1418-19	Main Plant	1,902.00	1.39	119.9	2,179.17	2.56	118.1	2,175.05	4.22	117.5	2,173.51
J1418-20	Main Plant	1,913.00	0	115.2	2,179.17	0	113.4	2,175.05	0	112.7	2,173.52
J1418-21	Main Plant	1,912.00	13.97	115.6	2,179.17	25.7	113.8	2,175.05	42.4	113.1	2,173.52
J1418-22	Main Plant	1,912.00	0	115.6	2,179.19	0	113.8	2,175.06	0	113.2	2,173.71
J1418-23	Main Plant	1,937.00	0.61	104.8	2,179.18	1.12	103	2,175.06	1.85	102.6	2,174.10
J1418-24	Main Plant	1,996.00	1.05	79.3	2,179.24	1.93	77.5	2,175.15	3.18	77.2	2,174.43
J1418-25	Main Plant	1,954.00	1.01	97.4	2,179.23	1.85	95.7	2,175.10	3.05	95.3	2,174.31
J1418-26	Main Plant	1,906.00	0	118.2	2,179.28	0	116.5	2,175.23	0	116.1	2,174.43
J1418-27	Main Plant	1,992.00	0	81	2,179.12	0	79.2	2,175.01	0	78.7	2,173.99
J1418-28	Main Plant	2,002.00	0	76.6	2,179.12	0	74.9	2,175.02	0	74.5	2,174.26
J1418-29	Main Plant	2,006.00	0	74.9	2,179.12	0	73.1	2,175.02	0	72.8	2,174.32
J1418-30	Main Plant	2,035.00	0	62.4	2,179.11	0	60.6	2,175.03	0	60.4	2,174.72
J1418-31	Main Plant	2,035.00	0.49	62.4	2,179.11	0.91	60.6	2,175.03	1.5	60.4	2,174.72
J1418-32	Main Plant	2,039.00	2.27	60.6	2,179.11	4.18	58.9	2,175.03	6.9	58.7	2,174.72
J1418-33	Main Plant	2,048.00	5.09	56.7	2,179.11	9.37	55	2,175.03	15.46	54.8	2,174.72
J1418-34	Main Plant	2,020.00	0.91	68.9	2,179.16	1.68	67.1	2,175.04	2.77	67	2,174.95
J1418-35	Main Plant	2,036.00	0.68	61.9	2,179.16	1.25	60.2	2,175.04	2.06	60.1	2,174.95
J1418-36	Main Plant	2,026.00	0	66.3	2,179.16	0	64.5	2,175.04	0	64.4	2,174.95
J1418-37	Main Plant	2,039.00	2.04	60.6	2,179.16	3.76	58.9	2,175.04	6.2	58.8	2,174.95
J1418-38	Main Plant	2,026.00	0	66.3	2,179.16	0	64.5	2,175.04	0	64.4	2,174.95
J1418-39	Main Plant	2,021.00	0	68.4	2,179.16	0	66.6	2,175.04	0	66.6	2,174.95
J1418-40	Main Plant	1,980.00	0	86.2	2,179.17	0	84.4	2,175.04	0	84.2	2,174.63
J1418-41	Main Plant	1,944.00	1.36	101.8	2,179.18	2.51	100	2,175.05	4.14	99.6	2,174.20
J1418-42	Main Plant	1,960.00	0	94.8	2,179.18	0	93	2,175.05	0	92.7	2,174.23
J1418-43	Main Plant	1,975.00	2.94	88.3	2,179.17	5.42	86.5	2,175.03	8.94	86.3	2,174.44
J1418-44	Main Plant	1,981.00	2.04	85.7	2,179.17	3.76	83.9	2,175.03	6.2	83.7	2,174.44
J1418-45	Main Plant	1,985.00	1.81	84	2,179.17	3.34	82.2	2,175.03	5.51	82	2,174.44
J1418-46	Main Plant	1,965.00	0	92.7	2,179.17	0	90.9	2,175.04	0	90.6	2,174.45
J1418-47	Main Plant	1,963.00	2.26	93.5	2,179.17	4.16	91.7	2,175.04	6.86	91.5	2,174.45
J1418-48	Main Plant	1,982.00	2.88	85.3	2,179.19	5.3	83.5	2,175.06	8.74	83.2	2,174.22
J1418-49	Main Plant	1,953.00	0	97.9	2,179.31	0	96.2	2,175.28	0	95.8	2,174.51
J1418-50	Main Plant	1,947.00	0.61	100.5	2,179.31	1.12	98.8	2,175.27	1.85	98.4	2,174.50
J1418-51	Main Plant	1,922.00	0.18	111.3	2,179.30	0.33	109.6	2,175.26	0.54	109.2	2,174.49
J1418-52	Main Plant	1,922.00	1.61	111.3	2,179.30	2.97	109.6	2,175.26	4.9	109.2	2,174.49
J1418-53	Main Plant	1,931.00	1.01	107.4	2,179.22	1.85	105.6	2,175.11	3.05	105.3	2,174.49
J1418-54	Main Plant	1,927.00	1.53	109.1	2,179.23	2.82	107.3	2,175.12	4.65	107.1	2,174.49
J1418-55	Main Plant	1,927.00	2.18	109.1	2,179.23	4.01	107.4	2,175.13	6.62	107.1	2,174.47
J1418-56	Main Plant	1,923.00	0	110.9	2,179.24	0	109.1	2,175.14	0	108.8	2,174.46
J1418-57	Main Plant	1,917.00	0	113.5	2,179.24	0	111.7	2,175.15	0	111.4	2,174.44
J1418-58	Main Plant	1,908.00	0	117.4	2,179.28	0	115.6	2,175.22	0	115.3	2,174.43
J1418-61	Main Plant	1,948.00	0	100	2,179.18	0	98.2	2,175.05	0	97.9	2,174.20
J1418-62	Main Plant	1,949.00	0	99.6	2,179.12	0	97.8	2,175.00	0	97.3	2,173.80
J1419-01	No FF	2,130.00	5.46	21.2	2,179.08	10.05	19.4	2,174.86	16.58	18.7	2,173.31
J1419-02	Main Plant	1,960.00	20.38	94.8	2,179.08	37.5	93	2,174.88	61.88	92.3	2,173.36
J1419-03	Main Plant	1,960.00	0	94.8	2,179.08	0	93	2,174.88	0	92.3	2,173.36
J1419-04	Main Plant	1,970.00	0.65	90.5	2,179.12	1.2	88.7	2,175.00	1.98	88.2	2,173.84
J1419-05	Main Plant	2,014.00	2.76	71.4	2,179.11	5.07	69.7	2,174.99	8.37	69.1	2,173.82
J1419-06	Main Plant	1,994.00	1.62	80.1	2,179.11	2.99	78.3	2,174.99	4.93	77.8	2,173.83
J1419-07	Main Plant	1,988.00	0	82.7	2,179.12	0	80.9	2,175.00	0	80.4	2,173.83
J1419-08	Main Plant	1,987.00	2.87	83.1	2,179.12	5.28	81.3	2,175.00	8.71	80.8	2,173.83
J1419-09	Upper Schnell School	2,057.00	4.48	164	2,435.98	8.25	163.6	2,435.05	13.61	159.1	2,424.78
J1515-01	Main Plant	1,977.00	0	87.8	2,180.03	0	86.5	2,176.88	0	85.6	2,174.91
J1515-02	Main Plant	1,974.00	1.36	89.1	2,180.03	2.51	87.8	2,176.87	4.14	86.9	2,174.93

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1515-03	Main Plant	1,955.00	1.65	97.4	2,180.03	3.03	96	2,176.87	5	95.2	2,174.94
J1515-04	Main Plant	1,938.31	0	104.6	2,180.03	0	103.2	2,176.87	0	102.4	2,175.09
J1515-05	Main Plant	1,954.00	0	97.8	2,180.03	0	96.4	2,176.87	0	95.6	2,175.01
J1515-06	Main Plant	1,952.00	0	98.7	2,180.03	0	97.3	2,176.87	0	96.5	2,174.95
J1515-07	Main Plant	1,980.00	0	86.5	2,180.03	0	85.2	2,176.88	0	84.3	2,174.93
J1515-08	Main Plant	1,975.00	1.65	88.7	2,180.03	3.03	87.3	2,176.88	5	86.5	2,174.93
J1515-09	Main Plant	1,987.00	24.47	83.5	2,180.03	45.02	82.1	2,176.87	74.28	81.3	2,174.93
J1515-10	Combellack	1,988.00	3.12	121.2	2,268.04	5.75	116.6	2,257.52	9.49	103.7	2,227.59
J1515-11	Main Plant	1,967.00	1.01	92.2	2,180.04	1.85	90.8	2,176.88	3.05	90	2,174.92
J1515-12	Combellack	1,991.00	0.81	119.9	2,268.04	1.48	115.3	2,257.52	2.44	102.4	2,227.59
J1515-13	Combellack	1,967.00	1.08	130.2	2,268.04	1.99	125.7	2,257.53	3.28	112.7	2,227.60
J1515-14	Combellack	1,943.00	8.58	140.6	2,268.04	15.79	136.1	2,257.53	26.05	123.1	2,227.60
J1515-15	Combellack	1,937.00	0	143.2	2,268.04	0	138.7	2,257.53	0	125.7	2,227.60
J1515-16	Combellack	1,905.00	3.24	157.1	2,268.04	5.96	152.5	2,257.53	9.83	139.6	2,227.60
J1515-17	Combellack	1,896.00	6.88	161	2,268.04	12.67	156.4	2,257.52	20.91	143.5	2,227.58
J1515-18	Combellack	1,883.00	0	166.6	2,268.04	0	162	2,257.53	0	149.1	2,227.60
J1515-19	Combellack	1,879.00	0	168.3	2,268.04	0	163.8	2,257.53	0	150.8	2,227.60
J1515-20	Combellack	1,825.00	0	191.7	2,268.04	0	187.1	2,257.53	0	174.2	2,227.60
J1515-21	Combellack	1,831.00	0	189.1	2,268.04	0	184.5	2,257.53	0	171.6	2,227.60
J1515-22	Combellack	1,965.00	2.59	131.1	2,268.04	4.76	126.6	2,257.53	7.85	113.6	2,227.60
J1515-23	Combellack	1,948.00	2.16	138.5	2,268.04	3.97	133.9	2,257.54	6.55	121	2,227.62
J1515-24	Combellack	1,949.00	1.35	138	2,268.04	2.49	133.5	2,257.54	4.11	120.5	2,227.62
J1515-25	Combellack	1,950.00	1.62	137.6	2,268.04	2.99	133.1	2,257.54	4.93	120.1	2,227.62
J1515-26	Combellack	1,945.78	0	139.4	2,268.05	0	134.9	2,257.56	0	122	2,227.69
J1515-27	Combellack	1,944.00	0	140.2	2,268.05	0	135.7	2,257.55	0	122.7	2,227.65
J1515-28	Combellack	1,933.00	1.62	145	2,268.05	2.99	140.4	2,257.54	4.93	127.5	2,227.63
J1515-29	Combellack	1,931.00	2.8	145.8	2,268.04	5.15	141.3	2,257.53	8.5	128.3	2,227.60
J1515-30	Combellack	1,914.00	0.27	153.2	2,268.04	0.5	148.6	2,257.53	0.82	135.7	2,227.62
J1515-31	Combellack	1,902.00	1.08	158.4	2,268.04	1.99	153.8	2,257.53	3.28	140.9	2,227.61
J1515-32	Combellack	1,942.00	2.66	141.1	2,268.04	4.9	136.5	2,257.52	8.09	123.6	2,227.59
J1515-33	Combellack	1,957.00	2.43	134.6	2,268.04	4.47	130	2,257.53	7.38	117.1	2,227.60
J1515-34	Combellack	1,958.00	0	134.1	2,268.04	0	129.6	2,257.53	0	116.6	2,227.60
J1515-35	Combellack	1,964.00	4.91	131.5	2,268.04	9.04	127	2,257.53	14.92	114	2,227.60
J1515-36	Combellack	1,900.00	0	159.2	2,268.04	0	154.7	2,257.53	0	141.7	2,227.61
J1515-37	Combellack	1,925.00	1.67	148.4	2,268.04	3.07	143.9	2,257.53	5.07	130.9	2,227.60
J1515-38	Combellack	1,975.10	0	127.1	2,268.81	0	123.2	2,259.91	0	111.8	2,233.61
J1515-39	Combellack	1,920.00	0	150.6	2,268.06	0	146.1	2,257.57	0	133.1	2,227.71
J1516-01	Main Plant	2,001.00	2.76	77.5	2,180.02	5.07	76.1	2,176.85	8.37	74.9	2,174.11
J1516-02	Main Plant	1,971.00	0	90.4	2,180.02	0	89.1	2,176.85	0	87.9	2,174.12
J1516-03	Main Plant	1,970.00	0	90.9	2,180.02	0	89.5	2,176.85	0	88.3	2,174.12
J1516-04	Main Plant	1,959.00	2.76	95.6	2,180.02	5.07	94.3	2,176.86	8.37	93.1	2,174.12
J1516-05	Main Plant	1,997.00	1.6	79.2	2,180.03	2.95	77.8	2,176.87	4.87	76.6	2,174.14
J1516-06	Main Plant	1,972.00	0	90	2,180.04	0	88.6	2,176.89	0	87.5	2,174.18
J1516-07	Main Plant	1,934.00	0.93	106.5	2,180.04	1.72	105.1	2,176.91	2.84	103.9	2,174.21
J1516-08	Main Plant	1,986.00	0.69	84	2,180.04	1.27	82.6	2,176.89	2.1	81.4	2,174.18
J1516-09	Main Plant	2,000.00	0.69	77.9	2,180.02	1.27	76.5	2,176.84	2.1	75.3	2,174.10
J1516-10	Main Plant	2,005.00	0	75.7	2,180.02	0	74.4	2,176.85	0	73.2	2,174.12
J1516-11	Main Plant	2,005.00	0.69	75.7	2,180.02	1.27	74.4	2,176.85	2.1	73.2	2,174.12
J1516-12	Main Plant	1,996.00	0.69	79.6	2,180.02	1.27	78.2	2,176.85	2.1	77.1	2,174.13
J1516-13	Main Plant	2,007.00	0	74.9	2,180.02	0	73.5	2,176.85	0	72.3	2,174.13
J1516-14	Main Plant	2,013.00	1.14	72.3	2,180.02	2.1	70.9	2,176.85	3.46	69.7	2,174.13
J1516-15	Main Plant	2,001.00	1.83	77.5	2,180.02	3.37	76.1	2,176.86	5.56	74.9	2,174.14
J1516-16	Main Plant	1,985.00	1.14	84.4	2,180.03	2.1	83	2,176.86	3.46	81.8	2,174.15
J1516-17	Main Plant	2,002.00	0	77	2,180.03	0	75.7	2,176.86	0	74.5	2,174.15
J1516-18	Main Plant	1,999.00	1.37	78.3	2,180.03	2.53	77	2,176.87	4.17	75.8	2,174.17
J1516-19	Main Plant	1,986.00	0.46	83.9	2,180.03	0.85	82.6	2,176.87	1.4	81.4	2,174.17
J1516-20	Main Plant	1,959.00	0.69	95.6	2,180.03	1.27	94.3	2,176.88	2.1	93.1	2,174.22
J1516-21	Main Plant	1,943.00	0.93	102.6	2,180.03	1.72	101.2	2,176.88	2.84	100	2,174.22
J1516-22	Main Plant	1,924.00	0.52	110.8	2,180.04	0.96	109.4	2,176.90	1.58	108.3	2,174.28
J1516-23	Main Plant	1,926.00	5.41	109.9	2,180.03	9.95	108.5	2,176.88	16.42	107.4	2,174.32
J1516-24	Main Plant	1,963.00	0	93.9	2,180.03	0	92.5	2,176.87	0	91.4	2,174.25
J1516-25	EID Res 4	2,052.00	0	95.2	2,271.98	0	94.3	2,269.86	0	91.2	2,262.83

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1516-26	EID Res 4	2,015.00	0.36	111.2	2,271.98	0.66	110.3	2,269.86	1.09	107.2	2,262.83
J1516-27	EID Res 4	2,037.00	0	101.7	2,271.98	0	100.7	2,269.86	0	97.7	2,262.83
J1516-28	EID Res 4	2,018.00	0	109.9	2,271.98	0	109	2,269.86	0	105.9	2,262.83
J1516-29	EID Res 4	1,980.00	0	126.3	2,271.98	0	125.4	2,269.86	0	122.4	2,262.83
J1516-30	EID Res 4	2,017.00	0	110.3	2,271.98	0	109.4	2,269.86	0	106.4	2,262.83
J1516-31	EID Res 4	2,068.00	0	88.3	2,271.98	0	87.3	2,269.85	0	84.3	2,262.82
J1516-32	EID Res 4	2,122.00	0	64.9	2,271.98	0	64	2,269.85	0	60.9	2,262.82
J1516-33	EID Res 4	2,138.00	0	58	2,271.98	0	57	2,269.85	0	54	2,262.82
J1516-34	EID Res 4	2,172.00	3.76	43.3	2,271.98	6.92	42.3	2,269.85	11.42	39.3	2,262.81
J1516-35	Main Plant	2,075.00	1.5	45.4	2,180.02	2.76	44.1	2,176.84	4.55	42.9	2,174.11
J1516-36	Main Plant	2,034.00	2.6	63.2	2,180.02	4.78	61.8	2,176.84	7.89	60.6	2,174.11
J1516-37	Main Plant	1,999.00	0.92	78.3	2,180.00	1.7	76.9	2,176.79	2.81	75.7	2,173.97
J1516-38	Main Plant	1,996.00	0	79.6	2,180.02	0	78.2	2,176.84	0	77.1	2,174.11
J1516-39	Main Plant	1,997.00	2.76	79.2	2,180.02	5.07	77.8	2,176.84	8.37	76.6	2,174.11
J1516-40	Main Plant	2,028.00	3.21	65.8	2,180.02	5.9	64.4	2,176.84	9.73	63.2	2,174.11
J1516-41	Main Plant	2,009.00	4.04	74	2,180.02	7.44	72.6	2,176.85	12.28	71.5	2,174.16
J1516-42	EID Res 4	2,142.29	0	55.7	2,270.95	0	53.8	2,266.64	0	48.1	2,253.52
J1516-43	EID Res 4	2,142.29	2.4	56.1	2,271.98	4.42	55.2	2,269.85	7.29	52.1	2,262.82
J1516-45	Combellack	2,000.00	0	116.5	2,269.28	0	113.1	2,261.36	0	102.9	2,237.84
J1516-46	EID Res 4	2,072.00	0	86.5	2,271.98	0	85.6	2,269.85	0	82.6	2,262.82
J1516-47	EID Res 4	2,122.00	0	64.9	2,271.98	0	64	2,269.85	0	60.9	2,262.82
J1517-01	Main Plant	1,965.00	0	92.7	2,179.31	0	91	2,175.29	0	90.7	2,174.53
J1517-02	Main Plant	1,957.00	0.4	96.2	2,179.31	0.73	94.4	2,175.29	1.2	94.1	2,174.53
J1517-03	Main Plant	1,960.00	0.4	94.9	2,179.31	0.73	93.1	2,175.29	1.2	92.8	2,174.53
J1517-04	Main Plant	1,972.00	1.21	89.7	2,179.31	2.22	88	2,175.29	3.66	87.6	2,174.54
J1517-05	Main Plant	2,026.50	2.07	66.2	2,179.42	3.82	64.5	2,175.52	6.3	64.2	2,174.91
J1517-06	Main Plant	2,029.00	1.61	65.1	2,179.36	2.97	63.3	2,175.40	4.9	63.1	2,174.79
J1517-07	Main Plant	2,022.60	1.01	67.8	2,179.36	1.85	66.1	2,175.40	3.05	65.8	2,174.79
J1517-08	Main Plant	2,037.00	0	61.6	2,179.40	0	59.9	2,175.47	0	59.7	2,175.00
J1517-09	Main Plant	2,036.00	2.07	62	2,179.40	3.82	60.3	2,175.47	6.3	60.1	2,174.99
J1517-10	EID Res 4	2,040.50	0	100.3	2,272.41	0	99.8	2,271.17	0	96.6	2,263.81
J1517-11	EID Res 4	2,064.50	6.23	90	2,272.41	11.47	89.4	2,271.16	18.93	86.3	2,264.06
J1517-12	EID Res 4	2,062.00	4.09	91	2,272.41	7.52	90.5	2,271.17	12.41	87.4	2,264.07
J1517-13	EID Res 4	2,067.00	10.71	88.9	2,272.41	19.71	88.3	2,271.17	32.52	85.4	2,264.39
J1517-14	EID Res 4	2,068.50	0	88.2	2,272.41	0	87.7	2,271.17	0	84.8	2,264.47
J1517-15	EID Res 4	2,068.00	0	88.4	2,272.41	0	87.9	2,271.17	0	85.2	2,264.85
J1517-16	Main Plant	1,983.00	0.9	85	2,179.47	1.66	83.3	2,175.64	2.74	83	2,174.78
J1517-17	Main Plant	1,968.00	0	91.5	2,179.47	0	89.8	2,175.64	0	89.5	2,174.79
J1517-18	Main Plant	1,968.00	0.9	91.5	2,179.47	1.66	89.8	2,175.64	2.74	89.5	2,174.79
J1517-19	EID Res 4	2,019.00	0	109.5	2,271.98	0	108.5	2,269.86	0	105.5	2,262.83
J1517-20	EID Res 4	2,142.49	0	56.2	2,272.42	0	55.7	2,271.19	0	53.7	2,266.59
J1517-21	EID Res 4	2,150.00	0	53	2,272.41	0	52.4	2,271.19	0	50.2	2,266.09
J1517-22	EID Res 4	2,150.00	0	53	2,272.41	0	52.4	2,271.19	0	50.1	2,265.90
J1517-23	EID Res 4	2,050.00	0.36	96	2,271.98	0.66	95.1	2,269.86	1.09	92.1	2,262.83
J1517-24	EID Res 4	2,047.00	0	97.3	2,271.98	0	96.4	2,269.86	0	93.4	2,262.83
J1517-25	EID Res 4	2,043.00	3.18	99.1	2,271.98	5.84	98.1	2,269.86	9.64	95.1	2,262.83
J1517-26	No FF	2,214.00	0	25.1	2,271.99	0	24.2	2,269.86	0	21.1	2,262.84
J1517-27	EID Res 4	2,166.00	0	45.9	2,271.99	0	44.9	2,269.86	0	41.9	2,262.84
J1517-28	EID Res 4	2,120.00	0.36	65.8	2,271.99	0.66	64.8	2,269.86	1.09	61.8	2,262.84
J1517-29	EID Res 4	2,131.00	0	61	2,271.99	0	60.1	2,269.86	0	57	2,262.84
J1517-30	EID Res 4	2,130.00	0	61.6	2,272.42	0	61.1	2,271.20	0	59.1	2,266.70
J1517-31	EID Res 4	2,121.00	0	65.3	2,271.99	0	64.4	2,269.86	0	61.4	2,262.85
J1517-32	EID Res 4	2,117.56	0	66.8	2,271.99	0	65.9	2,269.86	0	62.9	2,262.85
J1518-01	Main Plant	2,024.00	0	67.1	2,179.12	0	65.3	2,175.03	0	65.2	2,174.72
J1518-02	Main Plant	2,032.27	0	63.5	2,179.12	0	61.8	2,175.05	0	61.7	2,174.94
J1518-03	Main Plant	2,053.00	0	54.6	2,179.12	0	52.8	2,175.05	0	52.8	2,175.02
J1518-04	Upper Schnell School	2,050.00	0	167	2,435.98	0	166.6	2,435.05	0	162.2	2,424.79
J1518-05	Upper Schnell School	2,082.00	0	153.2	2,435.98	0	152.8	2,435.10	0	148.6	2,425.37
J1518-06	Upper Schnell School	2,098.00	7.41	146.2	2,435.98	13.63	145.8	2,435.10	22.49	141.6	2,425.37
J1518-07	Upper Schnell School	2,105.00	6.83	143.2	2,435.98	12.57	142.8	2,435.10	20.74	138.6	2,425.38
J1518-08	Upper Schnell School	2,108.96	0	141.5	2,435.99	0	141.1	2,435.15	0	137.1	2,425.93
J1518-09	Upper Schnell School	2,084.00	0	152.3	2,435.98	0	151.9	2,435.10	0	147.7	2,425.39

City of Placerville
Water Modeling Report
2005 Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1518-10	Main Plant	2,046.00	1.36	57.6	2,179.16	2.51	55.8	2,175.04	4.14	55.8	2,174.95
J1518-11	Main Plant	2,042.00	0	59.3	2,179.16	0	57.6	2,175.04	0	57.5	2,174.95
J1518-12	Main Plant	2,008.00	2.04	74.1	2,179.16	3.76	72.3	2,175.04	6.2	72.2	2,174.82
J1518-13	Main Plant	1,942.00	1.61	101.8	2,177.23	2.97	98.2	2,168.92	4.9	93.8	2,158.83
J1518-14	Main Plant	1,949.00	2.82	99.6	2,179.23	5.19	97.8	2,175.11	8.56	97.7	2,174.72
J1518-15	Main Plant	1,946.00	3.02	100.9	2,179.23	5.55	99.1	2,175.11	9.16	99	2,174.72
J1518-16	EID Res 4	1,975.00	0	128.8	2,272.76	0	128.6	2,272.26	0	126.6	2,267.57
J1518-17	EID Res 4	1,980.00	0	126.7	2,272.76	0	126.4	2,272.26	0	124.4	2,267.57
J1518-18	EID Res 4	1,987.00	0	123.6	2,272.76	0	123.4	2,272.26	0	121.4	2,267.60
J1518-19	EID Res 4	1,989.00	2.4	122.8	2,272.76	4.42	122.6	2,272.26	7.29	120.5	2,267.63
J1518-20	Upper Schnell School	2,111.58	0	140.4	2,435.99	0	140	2,435.24	0	136.4	2,426.95
J1518-21	EID Res 4	2,011.00	0.89	113.2	2,272.73	1.64	113	2,272.18	2.71	111.2	2,268.01
J1518-22	EID Res 4	1,988.00	0	123.2	2,272.76	0	123	2,272.27	0	121.2	2,268.23
J1518-23	EID Res 4	1,979.00	0	127.1	2,272.76	0	126.9	2,272.26	0	124.9	2,267.79
J1518-24	EID Res 4	2,010.00	0.45	113.7	2,272.76	0.83	113.5	2,272.27	1.37	111.8	2,268.39
J1518-25	EID Res 4	1,998.00	1.56	118.9	2,272.76	2.87	118.7	2,272.27	4.74	117	2,268.39
J1518-26	EID Res 4	2,033.00	2.22	103.7	2,272.76	4.09	103.5	2,272.26	6.75	101.8	2,268.37
J1518-27	EID Res 4	2,031.00	2	104.6	2,272.76	3.68	104.4	2,272.26	6.07	102.4	2,267.72
J1518-28	EID Res 4	2,015.00	0.67	111.5	2,272.76	1.23	111.3	2,272.26	2.03	109.3	2,267.72
J1518-29	Upper Schnell School	2,062.00	0	161.8	2,435.99	0	161.5	2,435.27	0	158	2,427.30
J1519-01	Upper Schnell School	2,043.00	0	170	2,435.98	0	169.6	2,435.05	0	165.2	2,424.77
J1519-02	Upper Schnell School	2,052.00	0.99	166.1	2,435.98	1.81	165.7	2,435.05	2.99	161.3	2,424.77
J1519-03	Upper Schnell School	2,095.00	5.11	147.5	2,435.96	9.41	147.1	2,434.99	15.53	142.6	2,424.64
J1618-01	EID Res 4	2,110.00	0	70.4	2,272.78	0	70.2	2,272.31	0	69.1	2,269.69
J1618-02	EID Res 4	2,165.00	1.33	46.6	2,272.78	2.45	46.4	2,272.33	4.04	45.5	2,270.19
J1618-03	EID Res 4	2,147.07	0	54.4	2,272.79	0	54.2	2,272.36	0	53.5	2,270.70
J1618-04	EID Res 4	2,149.00	2.67	53.6	2,272.78	4.92	53.4	2,272.33	8.12	52.4	2,270.19
J1618-05	EID Res 4	2,094.80	0	77	2,272.79	0	76.8	2,272.36	0	76.1	2,270.70
J1619-06	Upper Schnell School	2,274.00	0	70.1	2,436.04	0	70.1	2,436.04	0	70.1	2,436.03

C-4: 2005 Pipeline Model Output

City of Placerville
Water Modeling Report
2005 Pipeline Model Output

				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
EID P1117-03	16	69	Galvanized iron	2.06	1,289.69	0.08	1.16	3.79	2,373.03	0.25	3.59	6.25	3,915.50	0.63	9.07
EID P1117-04	16	101	Galvanized iron	1.46	913.27	0.06	0.61	2.58	1,615.50	0.18	1.76	2.78	1,741.68	0.2	2.02
EID P1118-01a	18	2989	Galvanized iron	2.78	2,202.96	5.26	1.76	5.03	3,988.53	15.8	5.29	7.13	5,657.17	30.19	10.1
EID P1118-01b	18	719	Galvanized iron	2.78	2,202.96	1.27	1.76	5.03	3,988.53	3.8	5.29	7.13	5,657.17	7.26	10.1
EID P1119-02	18	2350	Galvanized iron	5.07	4,020.00	12.61	5.36	5.07	4,020.00	12.61	5.36	5.07	4,020.00	12.61	5.37
EID P1119-03	18	438	Galvanized iron	5.07	4,020.00	2.35	5.36	5.07	4,020.00	2.35	5.36	5.07	4,020.00	2.35	5.36
EID P1219-02	18	2072	Galvanized iron	5.11	4,054.57	11.29	5.45	5.15	4,086.65	11.46	5.53	5.2	4,127.24	11.67	5.63
EID P1220-03	18	1792	Galvanized iron	5.16	4,092.10	9.94	5.54	5.26	4,169.18	10.29	5.74	5.38	4,263.68	10.72	5.98
EID P1220-05	18	179	Galvanized iron	5.18	4,105.28	1	5.58	5.3	4,207.59	1.04	5.84	5.46	4,329.53	1.1	6.16
EID P1220-06	18	146	Galvanized iron	5.18	4,105.29	0.81	5.58	5.3	4,207.59	0.85	5.84	5.46	4,329.52	0.9	6.16
EID P1220-07	8	411	Galvanized iron	0.08	13.19	0	0.01	0.25	38.41	0.02	0.05	0.42	65.85	0.06	0.14
EID P1515-35	18	27	Galvanized iron	0	0	0	0	0	0	0	0	0.31	246.07	0	0.03
EID P1515-40	18	109	Galvanized iron	0	0	0	0	0	0	0	0	0.31	246.07	0	0.03
EID P1515-41	18	1648	Galvanized iron	1.34	1,064.19	0.75	0.46	2.47	1,958.14	2.33	1.42	4.07	3,230.93	5.9	3.58
EID P1515-42	18	40	Galvanized iron	1.28	1,015.32	0.02	0.42	2.36	1,868.18	0.05	1.29	3.89	3,082.50	0.13	3.28
EID P1516-47	16	1281	Galvanized iron	1.7	1,064.19	1.04	0.81	3.12	1,958.14	3.22	2.51	5.55	3,477.00	9.32	7.28
EID P1516-48	16	25	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
EID P1516-49	16	177	Galvanized iron	1.7	1,064.19	0.14	0.81	3.12	1,958.14	0.44	2.51	5.55	3,477.00	1.29	7.28
EID P1516-50	16	38	Galvanized iron	1.7	1,064.19	0.03	0.81	3.12	1,958.14	0.1	2.51	5.55	3,477.00	0.28	7.27
EID P1516-51	16	1268	Galvanized iron	1.7	1,064.19	1.03	0.81	3.12	1,958.14	3.19	2.51	5.55	3,477.00	9.23	7.28
EID P1516-52	18	1030	Galvanized iron	1.34	1,064.19	0.47	0.46	2.47	1,958.14	1.46	1.42	4.38	3,477.00	4.22	4.1
EID P1517-02	21	28	Galvanized iron	0.01	10.42	0	0	0.02	19.17	0	0	0.03	31.63	0	0
EID P1517-33	21	1960	Galvanized iron	1	1,074.62	0.43	0.22	1.83	1,977.31	1.33	0.68	3.25	3,508.63	3.86	1.97
EID P1519-01	10	137	Galvanized iron	0.2	48.87	0	0.03	0.37	89.96	0.01	0.08	0.61	148.44	0.03	0.21
EID P1519-03	8	921	Galvanized iron	0.16	24.82	0.02	0.02	0.72	112.88	0.34	0.37	2.67	418.59	3.89	4.22
EID P1617-01	21	1646	Galvanized iron	1.01	1,095.65	0.38	0.23	1.87	2,016.01	1.16	0.71	3.64	3,930.71	4	2.43
EID P1618-02	21	90	Galvanized iron	0.01	14.19	0	0	0.02	26.13	0	0	0.12	130.37	0	0.01
EID P1618-05	27	594	Galvanized iron	1.15	2,045.00	0.13	0.21	1.15	2,045.00	0.13	0.21	1.15	2,045.00	0.13	0.21
EID P1618-06	27	2169	Galvanized iron	1.15	2,045.00	0.46	0.21	1.15	2,045.00	0.46	0.21	1.15	2,045.00	0.46	0.21
EID P1618-07	21	891	Galvanized iron	1.03	1,109.84	0.21	0.23	1.89	2,042.14	0.64	0.72	3.76	4,061.08	2.3	2.58
EID P1619-01	24	223	Galvanized iron	1.47	2,069.82	0.09	0.39	1.53	2,156.64	0.09	0.42	1.75	2,462.77	0.12	0.53
EID P1619-02	24	49	Galvanized iron	1.47	2,069.82	0.02	0.39	1.53	2,157.88	0.02	0.42	1.75	2,463.59	0.03	0.53
EID P1619-03	8	1146	Galvanized iron	0.16	24.82	0.03	0.02	0.72	112.88	0.43	0.37	2.67	418.59	4.84	4.22
EID P1619-04	24	311	Galvanized iron	1.45	2,045.00	0.12	0.38	1.45	2,045.00	0.12	0.38	1.45	2,045.00	0.12	0.38
P1117-01	14	110	Galvanized iron	1.9	913.27	0.13	1.17	3.37	1,615.50	0.37	3.37	3.63	1,741.68	0.43	3.88
P1117-02	16	430	Galvanized iron	1.46	913.27	0.26	0.61	2.58	1,615.50	0.76	1.76	2.78	1,741.68	0.87	2.02
P1119-01	8	893	Unknown Material	0.22	34.57	0.04	0.04	0.43	66.65	0.13	0.14	0.68	107.24	0.3	0.34
P1119-02	8	102	Unknown Material	0.22	34.57	0	0.04	0.43	66.65	0.01	0.14	0.68	107.24	0.03	0.34

City of Placerville
Water Modeling Report
2005 Pipeline Model Output

				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1119-03	8	114	Unknown Material	0.22	34.57	0	0.04	0.43	66.65	0.02	0.14	0.68	107.24	0.04	0.34
P1119-04	6	506	C-900	0	0.25	0	0	0.01	0.55	0	0	0.01	0.91	0	0
P1216-01	8	98	PVC	0	0.26	0	0	0	0.48	0	0	0.01	0.79	0	0
P1216-02	2	222	Unknown Material	0.08	0.8	0.01	0.03	0.15	1.47	0.02	0.1	0.25	2.43	0.06	0.26
P1216-03	12	182	Unknown Material	0.72	254.61	0.04	0.23	1.29	455.48	0.12	0.69	1.38	486.92	0.14	0.78
P1216-04	12	392	Unknown Material	0.74	259.45	0.09	0.24	1.32	464.39	0.28	0.71	1.42	501.62	0.32	0.82
P1216-05	12	163	Asbestos Cement	0.84	296.29	0.04	0.27	1.5	528.22	0.13	0.78	1.63	573.9	0.15	0.91
P1216-06	6	447	Galvanized iron	0.37	32.47	0.07	0.15	0.63	55.81	0.18	0.41	0.67	59.05	0.2	0.46
P1216-07	6	434	Galvanized iron	0.37	32.47	0.07	0.15	0.63	55.81	0.18	0.41	0.67	59.05	0.2	0.46
P1216-08	6	423	Unknown Material	0.02	2.13	0	0	0.04	3.91	0	0	0.07	6.45	0	0.01
P1216-09	6	73	Unknown Material	0.33	28.75	0.01	0.12	0.56	48.97	0.02	0.32	0.54	47.76	0.02	0.31
P1216-10	12	194	Unknown Material	1.02	361.06	0.09	0.45	1.81	639.03	0.25	1.28	1.96	689.18	0.29	1.48
P1216-11	12	402	Ductile Iron	0.96	338.35	0.16	0.39	1.69	597.07	0.45	1.13	1.82	642.71	0.52	1.3
P1216-12	8	490	C-900	0.16	24.3	0.01	0.02	0.29	44.89	0.02	0.05	0.33	51.3	0.03	0.06
P1216-13	12	715	Galvanized iron	0.96	340.1	0.29	0.4	1.7	600.29	0.82	1.14	1.84	648.03	0.94	1.32
P1216-14	12	1295	Asbestos Cement	0.84	296.55	0.35	0.27	1.5	528.7	1.01	0.78	1.63	574.69	1.18	0.91
P1217-01	10	510	Galvanized iron	1.13	276.09	0.34	0.66	1.98	485.51	0.96	1.87	2.11	517.34	1.07	2.11
P1217-02	10	439	Galvanized iron	0.99	241.93	0.23	0.52	1.73	422.47	0.64	1.45	1.78	436.09	0.67	1.54
P1217-03	8	541	Asbestos Cement	0.94	147.56	0.29	0.53	1.63	254.8	0.79	1.45	1.61	252.52	0.77	1.43
P1217-04	8	172	C-900	0.17	26.7	0	0.02	0.31	49.3	0.01	0.06	0.37	58.58	0.01	0.08
P1217-05	6	805	Unknown Material	0.05	4.39	0	0	0.09	8.08	0.01	0.01	0.15	13.33	0.02	0.03
P1217-06	8	178	Unknown Material	0.92	143.44	0.1	0.58	1.58	247.22	0.28	1.59	1.53	240.02	0.27	1.51
P1217-07	6	221	Unknown Material	1.56	137.91	0.48	2.19	2.69	237.04	1.32	5.98	2.53	223.22	1.18	5.35
P1217-08	6	37	Unknown Material	0	0.23	0	0	0	0.42	0	0	0.01	0.69	0	0
P1217-09	6	76	Unknown Material	0.32	27.77	0.01	0.11	0.54	47.4	0.02	0.3	0.49	42.82	0.02	0.25
P1217-10	6	111	Cast iron	0.32	27.77	0.01	0.11	0.54	47.4	0.03	0.3	0.49	42.82	0.03	0.25
P1217-11	4	297	Cast iron	0.76	29.6	0.27	0.91	1.3	50.77	0.74	2.48	1.24	48.38	0.67	2.27
P1217-110	8	46	PVC	0.22	34.16	0	0.03	0.4	63.04	0	0.1	0.52	81.25	0.01	0.15
P1217-111	8	299	PVC	0.19	30.26	0.01	0.02	0.36	55.86	0.02	0.08	0.44	69.4	0.03	0.11
P1217-112	8	364	PVC	0.19	29.36	0.01	0.02	0.35	54.2	0.03	0.07	0.43	66.67	0.04	0.11
P1217-113	8	61	PVC	0.02	3.9	0	0	0.05	7.18	0	0	0.08	11.85	0	0
P1217-114	6	103	PVC	0.01	1.2	0	0	0.03	2.21	0	0	0.04	3.65	0	0
P1217-115	8	470	PVC	0.02	2.7	0	0	0.03	4.97	0	0	0.05	8.2	0	0
P1217-116	6	112	PVC	0.02	1.5	0	0	0.03	2.76	0	0	0.05	4.55	0	0
P1217-12	2	292	PVC	0.19	1.83	0.03	0.12	0.34	3.37	0.1	0.36	0.57	5.56	0.27	0.91
P1217-13	8	95	PVC	0.01	1.83	0	0	0.02	3.37	0	0	0.04	5.56	0	0
P1217-14	8	244	PVC	0.2	31.43	0.01	0.02	0.35	54.14	0.02	0.06	0.34	53.94	0.02	0.06
P1217-15	6	209	Unknown Material	1.18	104.12	0.27	1.3	2.03	178.56	0.74	3.54	1.84	162.12	0.62	2.96

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1217-16	8	119	Unknown Material	0.72	113.41	0.04	0.38	1.23	192.39	0.12	1	1.19	185.71	0.11	0.94
P1217-17	6	589	Galvanized iron	0.49	43.37	0.15	0.26	0.83	73.04	0.4	0.68	0.73	64.63	0.32	0.54
P1217-18	8	359	Unknown Material	0.42	66.37	0.05	0.14	0.72	112.6	0.13	0.37	0.7	109.94	0.13	0.35
P1217-19	6	745	C-900	0.29	25.48	0.05	0.07	0.49	43.18	0.14	0.19	0.41	35.86	0.1	0.14
P1217-20	6	456	Asbestos Cement	0.01	1.14	0	0	0.02	2.1	0	0	0.04	3.46	0	0
P1217-200	8	426	PVC	0.01	1.2	0	0	0.01	2.21	0	0	0.02	3.65	0	0
P1217-201	6	485	PVC	0.01	1.2	0	0	0.03	2.21	0	0	0.04	3.65	0	0
P1217-21	8	96	Unknown Material	0.54	85.1	0.02	0.22	0.91	143.34	0.06	0.58	0.8	125.29	0.04	0.45
P1217-22	8	417	Cast iron	0.51	80.3	0.08	0.2	0.86	134.5	0.22	0.52	0.71	110.7	0.15	0.36
P1217-23	8	409	Unknown Material	0.54	85.17	0.09	0.22	0.9	141.68	0.23	0.57	0.7	110.36	0.15	0.36
P1217-24	8	516	C-900	0.14	21.17	0.01	0.01	0.22	35.24	0.02	0.03	0.15	22.75	0.01	0.01
P1217-25	6	113	Asbestos Cement	0.04	3.66	0	0	0.08	6.74	0	0.01	0.13	11.12	0	0.02
P1217-26	6	409	Asbestos Cement	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0
P1217-27	2	50	Galvanized iron	0.19	1.83	0.01	0.16	0.34	3.37	0.02	0.48	0.57	5.56	0.06	1.21
P1217-28	8	420	Unknown Material	0.19	29.23	0.01	0.03	0.34	53.79	0.04	0.09	0.57	88.75	0.1	0.24
P1217-29	6	413	Galvanized iron	0.4	35.05	0.07	0.17	0.68	59.55	0.19	0.46	0.62	54.54	0.16	0.39
P1217-30	8	513	Asbestos Cement	0.33	52.21	0.04	0.08	0.52	81.03	0.09	0.17	0.07	10.29	0	0
P1217-31	10	294	Galvanized iron	1.13	276.09	0.19	0.66	1.98	485.51	0.55	1.87	2.11	517.34	0.62	2.11
P1217-32	16	188	Galvanized iron	1.46	913.27	0.11	0.61	2.58	1,615.50	0.33	1.76	2.78	1,741.68	0.38	2.02
P1217-33	16	21	Galvanized iron	1.46	913.27	0.01	0.62	2.58	1,615.48	0.04	1.76	2.78	1,741.68	0.04	2.02
P1217-34	12	110	Ductile Iron	1.81	637.18	0.14	1.27	3.21	1,129.97	0.41	3.69	3.47	1,224.34	0.47	4.28
P1217-35	16	816	Unknown Material	1.46	913.27	0.5	0.61	2.58	1,615.50	1.44	1.76	2.78	1,741.68	1.65	2.02
P1217-36	6	152	C-900	0.25	22.37	0.01	0.06	0.42	37.45	0.02	0.15	0.3	26.4	0.01	0.08
P1218-01	8	436	Unknown Material	0.05	8.47	0	0	0.1	15.59	0	0.01	0.16	25.72	0.01	0.02
P1218-02	6	350	Unknown Material	0.05	4.46	0	0	0.09	8.21	0	0.01	0.15	13.55	0.01	0.03
P1218-04	6	329	Unknown Material	0.05	4.46	0	0	0.09	8.21	0	0.01	0.15	13.55	0.01	0.03
P1218-05	6	228	Unknown Material	0.01	0.73	0	0	0.02	1.35	0	0	0.03	2.23	0	0
P1218-06	6	408	Unknown Material	0.01	0.48	0	0	0.01	0.88	0	0	0.02	1.45	0	0
P1218-07	6	43	Unknown Material	0	0.24	0	0	0	0.44	0	0	0.01	0.73	0	0
P1218-08	2	166	Unknown Material	0.02	0.24	0	0	0.04	0.44	0	0.01	0.07	0.73	0	0.03
P1218-09	8	180	Galvanized iron	0.03	3.99	0	0	0.06	8.78	0	0	0.09	14.49	0	0.01
P1218-10	8	245	Galvanized iron	0.03	3.99	0	0	0.06	8.78	0	0	0.09	14.49	0	0.01
P1218-11	8	70	Galvanized iron	0.12	18.64	0	0.01	0.2	31.61	0	0.03	0.32	49.43	0.01	0.08
P1218-12	8	147	Galvanized iron	0.12	18.64	0	0.01	0.2	31.61	0.01	0.03	0.32	49.43	0.01	0.08
P1219-01	6	113	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-04	8	98	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-05	8	401	Unknown Material	0.02	2.79	0	0	0.04	6.13	0	0	0.06	10.12	0	0
P1219-06	6	1018	Unknown Material	0.02	1.81	0	0	0.05	3.99	0	0	0.07	6.59	0.01	0.01

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1219-07	8	407	Unknown Material	0.02	2.79	0	0	0.04	6.13	0	0	0.06	10.12	0	0
P1219-08	6	344	Unknown Material	0.05	4.23	0	0	0.11	9.32	0.01	0.01	0.17	15.38	0.01	0.04
P1219-09	6	183	Unknown Material	0.09	7.9	0	0.01	0.2	17.39	0.01	0.05	0.33	28.7	0.02	0.12
P1219-10	6	474	Unknown Material	0.1	8.51	0.01	0.01	0.21	18.73	0.03	0.05	0.35	30.91	0.07	0.14
P1219-100	6	264	PVC	0.18	15.9	0.01	0.03	0.5	44.37	0.05	0.2	0.86	75.94	0.14	0.55
P1219-101	6	178	PVC	0.18	15.9	0.01	0.03	0.5	44.37	0.04	0.2	0.86	75.94	0.1	0.55
P1219-103	6	24	PVC	0.43	37.53	0	0.14	0.94	82.53	0.02	0.63	1.55	136.43	0.04	1.62
P1219-104	6	24	PVC	0.43	37.53	0	0.15	0.94	82.53	0.02	0.64	1.55	136.44	0.04	1.62
P1219-11	6	566	Unknown Material	0.34	29.56	0.07	0.13	0.84	74.42	0.4	0.7	1.42	125.53	1.04	1.84
P1219-12	6	587	Asbestos Cement	0.04	3.33	0	0	0.19	16.72	0.02	0.04	0.34	30.06	0.07	0.11
P1219-13	8	501	Unknown Material	0.16	24.97	0.01	0.02	0.29	45.53	0.03	0.07	0.46	72.4	0.08	0.16
P1219-14	6	347	Unknown Material	0.02	1.74	0	0	0.06	4.9	0	0	0.09	8.32	0	0.01
P1219-15	6	287	Unknown Material	0.02	1.74	0	0	0.06	4.9	0	0.01	0.09	8.32	0	0.01
P1219-16	6	292	Unknown Material	0.02	2.18	0	0	0.05	4.8	0	0.01	0.09	7.92	0	0.01
P1219-17	6	478	Unknown Material	0.03	2.98	0	0	0.06	5.47	0	0.01	0.1	8.79	0.01	0.01
P1219-18	6	431	Unknown Material	0.11	9.6	0.01	0.02	0.23	20.04	0.03	0.06	0.37	32.83	0.07	0.15
P1219-19	8	399	Unknown Material	0.06	9.04	0	0	0.07	11.58	0	0.01	0.11	16.6	0	0.01
P1219-20	6	222	Unknown Material	0.07	6.42	0	0.01	0.17	15.21	0.01	0.04	0.29	25.33	0.02	0.1
P1219-21	8	351	Unknown Material	0.05	8.3	0	0	0.06	9.94	0	0	0.09	13.89	0	0.01
P1219-22	8	484	Unknown Material	0.08	12.65	0	0.01	0.18	28.9	0.01	0.03	0.31	47.92	0.04	0.08
P1219-23	6	472	Unknown Material	0.06	5.35	0	0.01	0.24	21.16	0.03	0.07	0.43	37.65	0.09	0.2
P1219-24	6	61	Unknown Material	0.08	7.09	0	0.01	0.28	24.98	0.01	0.1	0.5	43.95	0.02	0.26
P1219-25	6	225	Unknown Material	0.1	8.59	0	0.01	0.32	28.28	0.03	0.12	0.56	49.39	0.07	0.33
P1219-26	6	382	Unknown Material	0.11	10.09	0.01	0.02	0.36	31.58	0.05	0.14	0.62	54.84	0.15	0.4
P1219-27	6	360	Galvanized iron	0.03	2.4	0	0	0.06	5.28	0	0.01	0.1	8.71	0	0.01
P1219-28	6	648	Unknown Material	0.33	29.33	0.08	0.12	0.73	64.5	0.35	0.54	1.21	106.69	0.88	1.36
P1219-30	6	468	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1219-31	6	198	Unknown Material	0.06	5.45	0	0	0.14	11.99	0	0.02	0.22	19.78	0.01	0.06
P1219-32	6	357	Asbestos Cement	0.02	2.12	0	0	0.05	4.66	0	0	0.09	7.69	0	0.01
P1219-33	6	441	Unknown Material	0.02	1.5	0	0	0.04	3.3	0	0	0.06	5.45	0	0.01
P1219-34	6	226	Unknown Material	0.04	3.11	0	0	0.08	6.85	0	0.01	0.13	11.3	0	0.02
P1219-35	8	96	Galvanized iron	0.03	3.99	0	0	0.06	8.78	0	0.01	0.09	14.49	0	0.01
P1220-01	6	84	Galvanized iron	0.12	10.57	0	0.02	0.37	32.65	0.01	0.15	0.64	56.34	0.04	0.42
P1220-03	6	46	Asbestos Cement	0.06	5.73	0	0.01	0.25	22	0	0.06	0.44	38.77	0.01	0.18
P1220-04	6	211	Galvanized iron	0.12	10.57	0	0.02	0.37	32.65	0.03	0.15	0.64	56.35	0.09	0.42
P1315-01	8	526	PVC	0	0.6	0	0	0.01	1.1	0	0	0.01	1.82	0	0
P1316-01	8	489	PVC	0.02	3.74	0	0	0.04	6.88	0	0	0.07	11.35	0	0
P1316-02	4	587	Cast iron	0.22	8.73	0.06	0.1	0.38	14.74	0.15	0.25	0.3	11.86	0.1	0.17

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1316-03	4	88	Unknown Material	0.06	2.25	0	0.01	0.11	4.15	0	0.02	0.17	6.85	0.01	0.06
P1316-04	6	338	Unknown Material	0.02	1.96	0	0	0.03	2.28	0	0	0.1	8.7	0	0.01
P1316-05	4	12	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-06	6	334	Asbestos Cement	0	0.12	0	0	0.02	1.58	0	0	0.19	16.71	0.01	0.04
P1316-07	6	195	Asbestos Cement	0.01	0.83	0	0	0.02	1.55	0	0	0.05	4.2	0	0
P1316-08	12	465	Asbestos Cement	0.61	215.83	0.07	0.15	1.1	387.34	0.2	0.44	1.14	402.38	0.22	0.47
P1316-09	3	302	Unknown Material	0.09	2	0.01	0.03	0.17	3.68	0.02	0.08	0.28	6.07	0.06	0.2
P1316-10	6	169	Asbestos Cement	0	0.12	0	0	0.02	1.58	0	0	0.19	16.71	0.01	0.04
P1316-101	8	156	PVC	0	0.58	0	0	0.01	1.09	0	0	0.02	3.44	0	0
P1316-11	8	136	Unknown Material	0.56	88.45	0.03	0.24	1.03	160.93	0.1	0.72	1.01	158.81	0.1	0.7
P1316-12	2	264	Unknown Material	0.16	1.61	0.03	0.12	0.3	2.94	0.1	0.37	0.33	3.21	0.12	0.44
P1316-13	8	840	Cast iron	0.61	94.96	0.23	0.27	1.1	172.87	0.69	0.82	1.13	176.87	0.72	0.86
P1316-14	8	31	Unknown Material	0.54	84.09	0.01	0.21	0.97	151.76	0.02	0.65	0.99	155.1	0.02	0.67
P1316-15	12	10	Unknown Material	0.62	217.83	0	0.17	1.11	391.02	0.01	0.51	1.16	408.46	0.01	0.56
P1316-16	8	275	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-17	4	319	Cast iron	0.37	14.34	0.08	0.24	0.7	27.55	0.26	0.8	0.75	29.34	0.29	0.9
P1316-18	8	296	PVC	0.01	0.82	0	0	0.01	1.5	0	0	0.02	2.47	0	0
P1316-19	4	109	Galvanized iron	0.02	0.82	0	0	0.04	1.5	0	0	0.06	2.47	0	0.01
P1316-20	4	32	Unknown Material	0.48	18.61	0.01	0.38	0.9	35.39	0.04	1.27	1.08	42.28	0.06	1.77
P1316-21	6	304	Cast iron	0.14	12.19	0.01	0.02	0.27	23.56	0.03	0.08	0.29	25.81	0.03	0.1
P1316-22	12	732	Asbestos Cement	0.62	219.88	0.11	0.15	1.12	394.8	0.33	0.45	1.18	414.69	0.36	0.5
P1316-23	8	102	Unknown Material	0.55	85.83	0.02	0.22	0.99	154.95	0.07	0.67	1.02	160.36	0.07	0.72
P1316-24	8	302	Cast iron	0.56	87.24	0.07	0.23	1	157.34	0.21	0.69	0.89	138.78	0.17	0.55
P1316-25	4	222	Cast iron	0.16	6.11	0.01	0.05	0.29	11.21	0.03	0.15	0.45	17.55	0.08	0.35
P1316-26	4	15	Unknown Material	0.14	5.39	0	0.05	0.25	9.91	0	0.11	0.42	16.35	0	0.31
P1316-27	4	230	Cast iron	0.11	4.18	0.01	0.02	0.2	7.69	0.02	0.08	0.32	12.69	0.04	0.19
P1316-28	8	302	PVC	0.16	24.98	0.01	0.02	0.3	47.08	0.02	0.06	0.39	60.62	0.03	0.09
P1316-29	8	476	Asbestos Cement	0.25	39.34	0.02	0.05	0.42	65.45	0.06	0.12	0.28	43.7	0.03	0.06
P1316-30	6	434	Cast iron	0.4	34.96	0.07	0.17	0.69	60.39	0.21	0.48	0.61	53.45	0.16	0.38
P1316-31	6	93	Unknown Material	0.76	66.76	0.05	0.57	1.33	117.02	0.15	1.62	1.27	111.73	0.14	1.49
P1316-32	6	20	Unknown Material	1.19	105.04	0.03	1.32	2.08	183.52	0.07	3.72	1.99	175.26	0.07	3.42
P1316-33	6	147	Unknown Material	0.94	83.22	0.13	0.86	1.65	145.37	0.36	2.42	1.61	141.97	0.34	2.32
P1316-34	8	82	Unknown Material	0.63	98.85	0.02	0.29	1.12	175.25	0.07	0.84	1.14	178.21	0.07	0.87
P1316-35	8	109	Unknown Material	0.74	115.35	0.04	0.39	1.32	206.66	0.12	1.14	1.38	216.87	0.14	1.25
P1316-36	6	143	Asbestos Cement	0.61	53.85	0.05	0.33	1.07	94.46	0.13	0.94	1.1	97.18	0.14	0.99
P1316-37	4	210	Cast iron	0.65	25.47	0.15	0.69	1.15	44.86	0.41	1.98	1.13	44.36	0.41	1.93
P1316-38	12	387	Ductile Iron	0.48	169.63	0.04	0.11	0.86	301.91	0.12	0.32	0.89	315.36	0.13	0.35
P1316-39	6	169	Cast iron	0.77	67.45	0.1	0.58	1.28	113.23	0.26	1.52	0.87	76.34	0.12	0.73

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1316-40	6	365	Cast iron	0.77	67.45	0.21	0.58	1.28	113.23	0.56	1.52	0.87	76.34	0.27	0.73
P1316-41	4	439	C-900	0.06	2.34	0	0.01	0.11	4.3	0.01	0.02	0.18	7.09	0.02	0.05
P1316-42	6	551	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-43	2	700	Galvanized iron	0.03	0.26	0	0	0.05	0.48	0.01	0.01	0.08	0.79	0.02	0.03
P1316-44	6	505	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1316-45	8	922	Asbestos Cement	0.01	1.58	0	0	0.02	2.91	0	0	0.03	4.8	0	0
P1316-46	12	464	Asbestos Cement	0.72	252.48	0.09	0.2	1.28	451.56	0.27	0.58	1.36	480.45	0.3	0.65
P1316-47	4	271	Cast iron	0.03	1.01	0	0	0.05	1.85	0	0.01	0.08	3.05	0	0.01
P1316-48	8	295	Asbestos Cement	0.08	13.19	0	0.01	0.16	25.32	0.01	0.02	0.18	28.62	0.01	0.02
P1316-49	6	133	C-900	0.01	0.71	0	0	0.01	1.31	0	0	0.02	2.16	0	0
P1316-50	8	41	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-51	8	233	Unknown Material	0	0.71	0	0	0.01	1.31	0	0	0.01	2.16	0	0
P1316-52	8	25	Unknown Material	0	0.71	0	0	0.01	1.31	0	0	0.01	2.17	0	0
P1316-53	12	47	Unknown Material	0.63	220.59	0.01	0.18	1.12	396.12	0.02	0.53	1.18	416.86	0.03	0.58
P1316-54	12	52	Unknown Material	0.71	250.9	0.01	0.23	1.27	448.65	0.03	0.67	1.35	475.65	0.04	0.74
P1316-55	8	308	Unknown Material	0.49	76.22	0.06	0.18	0.87	136.22	0.16	0.53	0.91	142.62	0.18	0.57
P1316-56	6	90	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1316-57	6	686	Asbestos Cement	0.31	27.34	0.06	0.09	0.53	47.08	0.18	0.26	0.56	49.78	0.2	0.29
P1316-58	12	742	Cast iron	1	350.96	0.31	0.42	1.75	616.52	0.89	1.2	1.76	619	0.9	1.21
P1316-59	6	363	C-900	0.01	0.53	0	0	0.01	0.98	0	0	0.02	1.62	0	0
P1316-60	8	156	Unknown Material	0.49	76.22	0.03	0.18	0.87	136.22	0.08	0.53	0.91	142.62	0.09	0.57
P1316-61	8	32	Unknown Material	0.35	54.07	0	0.1	0.63	98.68	0.01	0.29	0.69	108.58	0.01	0.35
P1316-62	12	117	Unknown Material	0.63	223.7	0.02	0.18	1.14	400.59	0.06	0.54	1.2	423.94	0.07	0.6
P1316-63	6	49	Cast iron	0.26	22.71	0	0.08	0.44	38.56	0.01	0.2	0.41	35.72	0.01	0.18
P1316-64	4	213	Cast iron	0.02	0.82	0	0	0.04	1.5	0	0	0.06	2.47	0	0.01
P1316-65	6	268	Asbestos Cement	0.03	2.4	0	0	0.05	4.42	0	0	0.08	7.29	0	0.01
P1316-66	6	90	Galvanized iron	0.02	2.13	0	0	0.04	3.91	0	0	0.07	6.45	0	0.01
P1316-67	6	598	Galvanized iron	0.02	2.13	0	0	0.04	3.91	0	0	0.07	6.45	0	0.01
P1316-68	12	876	Ductile Iron	0.36	126.99	0.06	0.06	0.61	215.43	0.15	0.17	0.55	194.24	0.12	0.14
P1316-69	6	303	Asbestos Cement	0.05	4.53	0	0	0.09	8.33	0	0.01	0.16	13.74	0.01	0.03
P1316-70	8	202	PVC	0.13	20.78	0	0.01	0.23	35.61	0.01	0.03	0.19	29.76	0	0.02
P1316-71	4	720	Steel	0.53	20.78	0.48	0.67	0.91	35.61	1.3	1.81	0.76	29.76	0.93	1.29
P1317-01	4	160	Steel	0.44	17.37	0.08	0.48	0.75	29.34	0.2	1.26	0.5	19.41	0.09	0.59
P1317-02	6	154	Cast iron	0.88	77.23	0.12	0.75	1.46	128.61	0.3	1.93	0.83	72.72	0.1	0.67
P1317-03	8	371	Cast iron	0.21	33.32	0.01	0.04	0.33	52.3	0.03	0.09	0.23	36.45	0.02	0.05
P1317-04	8	47	Cast iron	0.21	33.32	0	0.04	0.33	52.3	0	0.09	0.23	36.45	0	0.05
P1317-05	8	382	Cast iron	0.18	27.56	0.01	0.03	0.27	41.7	0.02	0.06	0.12	18.96	0.01	0.01
P1317-06	6	449	Cast iron	0.54	47.8	0.14	0.31	0.92	80.92	0.37	0.82	0.11	9.31	0.01	0.01

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1317-07	6	25	Unknown Material	0.52	46.23	0.01	0.29	0.89	78.03	0.02	0.76	0.16	14.07	0	0.03
P1317-08	8	275	PVC	0.01	1.14	0	0	0.01	2.1	0	0	0.02	3.46	0	0
P1317-09	8	212	PVC	0.01	2.05	0	0	0.02	3.78	0	0	0.04	6.24	0	0
P1317-10	8	184	PVC	0.01	1.6	0	0	0.02	2.95	0	0	0.03	4.87	0	0
P1317-100	6	93	PVC	0	0.29	0	0	0.01	0.53	0	0	0.01	0.88	0	0
P1317-101	8	313	PVC	0.12	18.5	0	0.01	0.18	27.87	0.01	0.02	0.02	3.81	0	0
P1317-11	4	356	Steel	0.04	1.6	0	0.01	0.08	2.95	0.01	0.02	0.12	4.87	0.02	0.05
P1317-12	8	206	Unknown Material	0.18	27.51	0.01	0.03	0.34	52.6	0.02	0.09	0.04	6.19	0	0
P1317-13	8	142	PVC	0.03	5.02	0	0	0.06	9.26	0	0	0.1	15.28	0	0.01
P1317-14	6	356	Cast iron	0.44	39.06	0.08	0.21	0.76	67.38	0.21	0.58	0.24	21.54	0.03	0.07
P1317-15	6	57	Unknown Material	0.52	46.23	0.02	0.29	0.89	78.03	0.04	0.76	0.16	14.07	0	0.03
P1317-16	4	273	Cast iron	0.02	0.9	0	0	0.04	1.66	0	0	0.07	2.74	0	0.01
P1317-17	6	818	Cast iron	0.76	67.07	0.47	0.58	1.23	108.42	1.15	1.4	0.88	77.25	0.61	0.75
P1317-18	8	168	Unknown Material	0.63	98.64	0.05	0.29	1.08	168.48	0.13	0.78	0.53	83.37	0.04	0.21
P1317-19	8	380	Unknown Material	0.52	81.47	0.08	0.2	0.89	138.71	0.21	0.55	1.08	169.18	0.3	0.79
P1317-20	6	400	Unknown Material	0.01	0.78	0	0	0.02	1.44	0	0	0.03	2.38	0	0
P1317-21	12	57	PVC	0.01	4.99	0	0	0.03	9.19	0	0	0.04	15.16	0	0
P1317-22	4	23	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-23	12	461	PVC	0.01	4.99	0	0	0.03	9.19	0	0	0.04	15.16	0	0
P1317-24	8	296	PVC	0.03	5.28	0	0	0.06	9.72	0	0	0.1	16.04	0	0.01
P1317-25	6	501	Unknown Material	0.32	28.03	0.06	0.11	0.5	44.31	0.13	0.27	0.52	45.92	0.14	0.29
P1317-26	8	248	C-900	0.47	73.17	0.03	0.13	0.79	123.43	0.08	0.33	0.92	143.96	0.11	0.44
P1317-27	2	255	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-28	6	401	C-900	0.14	12.61	0.01	0.02	0.2	17.97	0.02	0.04	0.01	0.49	0	0
P1317-29	4	325	Cast iron	0.2	7.98	0.03	0.08	0.27	10.73	0.05	0.14	0.39	15.13	0.09	0.26
P1317-30	4	158	Cast iron	0.23	8.99	0.02	0.1	0.32	12.58	0.03	0.19	0.31	12.07	0.03	0.17
P1317-31	4	467	PVC	0.27	10.52	0.05	0.1	0.38	14.97	0.09	0.19	0.32	12.35	0.06	0.14
P1317-32	8	512	Cast iron	0.32	50.82	0.04	0.09	0.44	69.55	0.08	0.15	0.51	79.99	0.1	0.2
P1317-33	4	223	PVC	0	0.13	0	0	0.01	0.2	0	0	0.12	4.53	0	0.02
P1317-34	6	166	Cast iron	0.29	25.52	0.02	0.1	0.45	39.68	0.04	0.22	0.43	38.28	0.03	0.2
P1317-35	8	885	Cast iron	0.56	87.93	0.21	0.23	0.99	155.81	0.6	0.68	1.05	164	0.66	0.74
P1317-36	6	332	C-900	0.3	26.7	0.03	0.08	0.56	49.3	0.08	0.25	0.66	58.58	0.11	0.34
P1317-37	8	748	Unknown Material	1.16	182.36	0.68	0.91	1.99	311.34	1.83	2.44	1.66	259.4	1.3	1.74
P1317-38	12	65	Unknown Material	0.32	112.69	0	0.05	0.54	189.11	0.01	0.13	0.43	150.81	0.01	0.09
P1317-39	8	29	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-40	8	331	Cast iron	0.47	73.15	0.06	0.17	0.82	128.63	0.16	0.47	0.76	119.15	0.14	0.41
P1317-41	2	249	Unknown Material	0.27	2.66	0.08	0.31	0.5	4.9	0.24	0.96	0.83	8.09	0.6	2.42
P1317-42	2	200	Unknown Material	0.16	1.59	0.02	0.12	0.3	2.93	0.07	0.37	0.49	4.83	0.19	0.93

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1317-43	8	247	Unknown Material	0.49	76.5	0.04	0.18	0.86	134.8	0.13	0.52	0.83	129.33	0.12	0.48
P1317-44	6	42	Galvanized iron	0.11	9.6	0	0.02	0.2	17.64	0	0.05	0.33	29.11	0.01	0.12
P1317-45	6	350	Galvanized iron	0.1	8.53	0	0.01	0.18	15.67	0.01	0.04	0.29	25.86	0.03	0.1
P1317-46	8	88	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1317-47	6	704	Galvanized iron	0.13	11.43	0.02	0.02	0.2	17.78	0.03	0.05	0.34	30.11	0.09	0.13
P1317-48	8	305	C-900	0.46	71.47	0.04	0.12	0.77	120.31	0.1	0.32	0.89	138.82	0.13	0.41
P1317-49	6	719	Asbestos Cement	0.62	54.6	0.24	0.34	1.05	92.54	0.65	0.9	1.05	92.23	0.65	0.9
P1317-50	8	280	Asbestos Cement	0.01	1.94	0	0	0.02	3.57	0	0	0.04	5.89	0	0
P1317-51	10	326	PVC	0.02	3.95	0	0	0.03	7.27	0	0	0.05	12	0	0
P1317-52	6	296	Unknown Material	0.47	41.73	0.07	0.24	0.78	68.86	0.18	0.61	0.6	53.15	0.11	0.38
P1317-53	6	185	Unknown Material	0.4	35.05	0.03	0.17	0.68	59.55	0.09	0.46	0.62	54.54	0.07	0.39
P1317-54	6	282	Asbestos Cement	0.31	27.5	0.03	0.1	0.43	37.73	0.05	0.17	0.48	41.93	0.06	0.21
P1317-55	4	173	Steel	0.08	3.13	0	0.02	0.15	5.77	0.01	0.06	0.24	9.52	0.03	0.16
P1317-56	4	176	Unknown Material	0.4	15.54	0.05	0.28	0.57	22.43	0.1	0.55	0.33	12.79	0.03	0.19
P1317-57	2	182	Unknown Material	0.06	0.59	0	0.02	0.11	1.08	0.01	0.06	0.18	1.78	0.03	0.15
P1317-58	4	149	PVC	0.03	1.08	0	0	0.01	0.21	0	0	0.32	12.4	0.02	0.14
P1317-59	8	161	Unknown Material	0.36	56.03	0.02	0.1	0.52	81.34	0.03	0.2	0.28	43.59	0.01	0.06
P1317-60	4	14	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-61	8	327	Unknown Material	0.36	56.63	0.03	0.1	0.53	82.44	0.07	0.21	0.27	41.77	0.02	0.06
P1317-62	8	452	Cast iron	0.36	56.7	0.05	0.1	0.52	80.82	0.09	0.2	0.37	57.19	0.05	0.11
P1317-63	12	354	Galvanized iron	0.33	117.71	0.02	0.06	0.56	198.37	0.05	0.15	0.47	166.09	0.04	0.11
P1317-64	6	143	Asbestos Cement	0.1	9	0	0.01	0.11	9.86	0	0.01	0.43	38.12	0.02	0.17
P1318-01	8	62	Unknown Material	0.36	56.83	0.01	0.1	0.51	80.62	0.01	0.2	0.39	61.72	0.01	0.12
P1318-02	6	52	Unknown Material	0.07	6.01	0	0.01	0.13	11.07	0	0.02	0.21	18.27	0	0.05
P1318-03	6	607	Asbestos Cement	0.02	1.6	0	0	0.03	2.95	0	0	0.06	4.87	0	0
P1318-04	6	804	C-900	0.05	4.42	0	0	0.09	8.12	0.01	0.01	0.15	13.4	0.02	0.02
P1318-06	6	451	C-900	0.01	1.21	0	0	0.03	2.22	0	0	0.04	3.66	0	0
P1318-07	2	280	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1318-10	4	304	Cast iron	0.58	22.71	0.17	0.56	0.98	38.56	0.45	1.49	0.91	35.72	0.39	1.3
P1319-01	6	622	Asbestos Cement	0.06	5.73	0	0.01	0.25	22	0.04	0.06	0.44	38.77	0.11	0.18
P1319-02	6	161	Asbestos Cement	0.06	5.73	0	0.01	0.25	22	0.01	0.06	0.44	38.77	0.03	0.18
P1319-03	6	583	Asbestos Cement	0.12	10.57	0.01	0.02	0.37	32.65	0.08	0.13	0.64	56.35	0.21	0.36
P1320-01	8	267	PVC	0.02	2.62	0	0	0.04	5.76	0	0	0.06	9.5	0	0
P1320-02	4	723	Galvanized iron	0.07	2.62	0.01	0.01	0.15	5.76	0.03	0.04	0.24	9.5	0.08	0.11
P1320-03	6	859	Galvanized iron	0.12	10.57	0.02	0.02	0.37	32.65	0.13	0.15	0.64	56.35	0.36	0.42
P1415-01	6	71	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-01a	6	130	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-02	6	453	C-900	0.04	3.23	0	0	0.07	5.94	0	0	0.11	9.8	0.01	0.01

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P1415-03	6	293	C-900	0.05	4.49	0	0	0.09	8.25	0	0.01	0.15	13.61	0.01	0.02
P1415-04	6	576	Asbestos Cement	0.02	1.75	0	0	0.04	3.22	0	0	0.06	5.31	0	0
P1415-05	2	30	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1415-06	8	220	Galvanized iron	0.03	4.49	0	0	0.05	8.25	0	0	0.09	13.61	0	0.01
P1415-07	8	84	Galvanized iron	0.04	6	0	0	0.07	11.03	0	0.01	0.12	18.2	0	0.01
P1415-08	8	147	Unknown Material	0.05	7.75	0	0	0.09	14.25	0	0.01	0.15	23.51	0	0.02
P1415-09	6	472	Asbestos Cement	0.39	34.64	0.07	0.15	0.7	61.31	0.2	0.42	0.4	34.97	0.07	0.15
P1415-10	6	169	Galvanized iron	0.39	34.64	0.03	0.17	0.7	61.31	0.08	0.49	0.4	34.97	0.03	0.17
P1415-100	6	219	PVC	0.01	1.18	0	0	0.02	2.17	0	0	0.04	3.59	0	0
P1415-101	8	16	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1415-102	6	24	PVC	0.02	1.58	0	0	0.03	2.9	0	0	0	0.32	0	0
P1415-103	8	22	PVC	0.07	10.25	0	0	0.12	18.46	0	0.01	0.13	20.84	0	0.01
P1415-11	8	224	Galvanized iron	0.28	44.4	0.01	0.07	0.51	79.24	0.04	0.19	0.03	5.39	0	0
P1415-12	2	740	Galvanized iron	1.29	12.68	4.12	5.57	2.38	23.33	12.74	17.22	3.93	38.49	32.21	43.53
P1415-13	8	563	Galvanized iron	0.29	45.66	0.04	0.07	0.52	81.55	0.11	0.2	0.01	1.57	0	0
P1415-14	6	368	Galvanized iron	0.32	28.63	0.04	0.12	0.57	50.24	0.12	0.34	0.6	53.24	0.14	0.38
P1415-15	6	132	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-16	6	663	Cast iron	0.2	17.59	0.03	0.05	0.36	32.04	0.1	0.15	0.23	20.55	0.04	0.06
P1415-17	6	338	Unknown Material	0.03	2.44	0	0	0.05	4.49	0	0	0.08	7.41	0	0.01
P1415-18	6	77	Unknown Material	0.09	7.73	0	0.01	0.16	14.23	0	0.03	0.32	27.96	0.01	0.11
P1415-20	4	97	Unknown Material	0.03	1.36	0	0	0.06	2.51	0	0.01	0.11	4.14	0	0.02
P1415-21	4	369	Cast iron	0.02	0.93	0	0	0.04	1.71	0	0	0.07	2.81	0	0.01
P1415-22	4	181	Cast iron	0.03	1.18	0	0	0.06	2.17	0	0.01	0.09	3.59	0	0.02
P1415-23	6	437	Asbestos Cement	0.29	25.32	0.04	0.08	0.52	46.27	0.11	0.25	0.55	48.51	0.12	0.27
P1415-24	4	811	Steel	0.11	4.41	0.03	0.04	0.21	8.12	0.09	0.12	0.23	8.92	0.11	0.14
P1415-25	6	202	Asbestos Cement	0.01	1.01	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1415-26	8	54	Galvanized iron	0.29	45.66	0	0.07	0.52	81.55	0.01	0.21	0.01	1.57	0	0
P1415-27	6	94	Unknown Material	0.24	21.58	0.01	0.07	0.45	39.7	0.02	0.22	0.74	65.5	0.05	0.55
P1415-28	6	481	Asbestos Cement	0.06	5.49	0	0	0.11	10.1	0.01	0.02	0.19	16.66	0.02	0.04
P1415-29	6	262	Asbestos Cement	0.04	3.57	0	0	0.07	6.57	0	0.01	0.12	10.84	0	0.02
P1415-30	8	268	Unknown Material	0.43	67.24	0.04	0.14	0.77	121.25	0.11	0.43	0.41	63.93	0.03	0.13
P1415-31	6	576	Asbestos Cement	0.02	1.92	0	0	0.04	3.53	0	0	0.07	5.82	0	0.01
P1415-32	4	561	Steel	0.22	8.5	0.07	0.13	0.39	15.24	0.21	0.37	0.4	15.52	0.22	0.39
P1415-33	4	249	Steel	0.04	1.75	0	0.01	0.08	3.22	0.01	0.02	0.14	5.31	0.01	0.05
P1415-34	6	284	Asbestos Cement	0.02	1.76	0	0	0.04	3.57	0	0	0.43	38.2	0.05	0.18
P1415-35	8	270	Asbestos Cement	0.44	69	0.03	0.13	0.8	124.83	0.1	0.39	0.65	102.14	0.07	0.27
P1415-36	8	59	Unknown Material	1.1	172.94	0.05	0.82	1.98	309.76	0.14	2.42	1.83	286.83	0.12	2.1
P1415-37	4	356	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1415-38	8	26	Unknown Material	1.2	187.82	0.02	0.95	2.15	337.14	0.07	2.83	2.12	332.01	0.07	2.75
P1415-39	12	270	Asbestos Cement	0.57	201.83	0.04	0.13	1.03	361.58	0.1	0.39	1.02	359.88	0.1	0.38
P1415-40	12	8	Unknown Material	0.57	199.66	0	0.15	1.02	358	0	0.43	1.03	363.58	0	0.46
P1415-41	2	89	Galvanized iron	0.1	1.01	0	0.05	0.19	1.85	0.01	0.16	0.31	3.05	0.04	0.4
P1415-42	8	104	Unknown Material	0.66	103.95	0.03	0.32	1.18	184.93	0.1	0.93	1.18	184.7	0.1	0.93
P1415-43	8	32	Unknown Material	0.5	77.59	0.01	0.19	0.87	136.75	0.02	0.53	0.85	133.03	0.02	0.5
P1415-44	8	324	Asbestos Cement	0.47	73.17	0.05	0.14	0.82	128.63	0.13	0.41	0.79	124.11	0.12	0.38
P1415-45	4	215	Steel	0.36	14	0.07	0.32	0.62	24.44	0.19	0.9	0.71	27.87	0.25	1.15
p1415-46	6	295	Unknown Material	0	0.4	0	0	0.01	0.73	0	0	0.04	3.28	0	0
P1415-47	6	143	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-48	6	214	Unknown Material	0.01	1.18	0	0	0.02	2.17	0	0	0.04	3.59	0	0
P1415-49	8	512	Asbestos Cement	0.44	69	0.07	0.13	0.8	124.83	0.2	0.39	0.65	102.13	0.14	0.27
P1415-50	12	542	Asbestos Cement	0.57	200.67	0.07	0.13	1.02	359.85	0.21	0.38	1.04	366.63	0.21	0.4
P1415-51	12	985	Asbestos Cement	0.6	210.92	0.14	0.14	1.07	378.3	0.41	0.42	1.1	387.47	0.43	0.44
P1416-01	6	261	Asbestos Cement	0.01	0.54	0	0	0.01	1	0	0	0.02	1.65	0	0
P1416-02	6	30	Unknown Material	0.01	0.54	0	0	0.01	1	0	0	0.02	1.65	0	0
P1416-03	8	146	C-900	0.3	47.4	0.01	0.06	0.55	85.51	0.02	0.17	0.27	41.52	0.01	0.04
P1416-04	6	350	C-900	0.19	16.68	0.01	0.03	0.33	29.13	0.03	0.09	0.48	42.22	0.06	0.18
P1416-05	8	753	Galvanized iron	0.35	55.61	0.08	0.1	0.64	100.62	0.23	0.3	0.42	66.45	0.11	0.14
P1416-06	6	72	Unknown Material	0.01	0.93	0	0	0.02	1.72	0	0	0.03	2.84	0	0
P1416-07	6	265	C-900	0.16	14.38	0.01	0.02	0.28	24.88	0.02	0.07	0.4	35.21	0.03	0.13
P1416-08	2	294	Unknown Material	0.4	3.92	0.19	0.63	0.74	7.21	0.58	1.96	1.21	11.9	1.45	4.95
P1416-09	6	257	Asbestos Cement	0.04	3.92	0	0	0.08	7.21	0	0.01	0.13	11.9	0.01	0.02
P1416-10	6	116	Unknown Material	0.02	1.58	0	0	0.08	7.06	0	0.01	0.01	1.29	0	0
P1416-101	6	254	PVC	0.08	6.93	0	0.01	0.13	11.25	0	0.02	0.01	1.03	0	0
P1416-12	6	352	Asbestos Cement	0.11	9.57	0	0.01	0.25	21.77	0.02	0.06	0.29	25.56	0.03	0.08
P1416-13	8	483	Galvanized iron	0.35	55.61	0.05	0.1	0.64	100.62	0.15	0.3	0.42	66.45	0.07	0.14
P1416-14	6	74	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1416-15	6	18	Unknown Material	0.13	11.17	0	0.03	0.28	24.72	0	0.08	0.35	30.43	0	0.14
P1416-16	4	82	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1416-17	6	117	Unknown Material	0.13	11.17	0	0.02	0.28	24.72	0.01	0.09	0.35	30.43	0.02	0.13
P1416-18	6	30	Unknown Material	0.13	11.17	0	0.02	0.28	24.72	0	0.09	0.35	30.43	0	0.13
P1416-19	4	510	Cast iron	0.22	8.73	0.05	0.1	0.38	14.74	0.13	0.25	0.3	11.86	0.09	0.17
P1416-20	6	521	Asbestos Cement	0.04	3.28	0	0	0.07	6.04	0	0.01	0.11	9.97	0.01	0.01
P1416-21	4	404	Unknown Material	0.27	10.58	0.05	0.14	0.35	13.75	0.09	0.22	0.56	21.96	0.21	0.53
P1416-22	8	88	Asbestos Cement	0.47	73.17	0.01	0.14	0.82	128.63	0.04	0.41	0.79	124.11	0.03	0.38
P1416-23	8	306	Asbestos Cement	0.42	65.08	0.04	0.12	0.73	113.74	0.1	0.33	0.64	99.55	0.08	0.25
P1416-24	2	304	Unknown Material	0.1	1.01	0.02	0.05	0.19	1.85	0.05	0.16	0.31	3.05	0.12	0.4

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1416-25	2	289	Galvanized iron	0.15	1.51	0.03	0.11	0.28	2.78	0.1	0.33	0.47	4.59	0.24	0.85
P1416-26	8	477	Asbestos Cement	0.42	65.08	0.06	0.12	0.73	113.74	0.16	0.33	0.64	99.55	0.12	0.25
P1416-27	4	290	Cast iron	0.26	10.2	0.04	0.13	0.51	19.93	0.13	0.44	0.43	16.77	0.09	0.32
P1416-28	1	400	Galvanized iron	0.29	0.72	0.32	0.79	0.53	1.3	0.97	2.41	0.49	1.2	0.83	2.07
P1416-29	6	10	Unknown Material	0.11	9.48	0	0	0.15	13.13	0	0.02	0.38	33.1	0	0.15
P1416-30	6	443	Unknown Material	0.11	9.47	0.01	0.02	0.25	21.73	0.03	0.07	0.28	24.42	0.04	0.09
P1416-31	6	228	Unknown Material	0.15	13.22	0.01	0.03	0.32	28.63	0.03	0.12	0.41	35.81	0.04	0.18
P1416-32	8	21	Unknown Material	0.61	96.35	0.01	0.28	1.12	175.26	0.02	0.85	0.97	152.24	0.01	0.65
P1416-33	8	21	Unknown Material	0.52	82.05	0	0.2	0.92	144.64	0.01	0.58	0.72	113.14	0.01	0.37
P1416-34	2	287	Galvanized iron	0.13	1.25	0.02	0.08	0.23	2.29	0.07	0.23	0.39	3.78	0.17	0.59
P1416-35	6	264	Asbestos Cement	0.02	1.6	0	0	0.03	2.95	0	0	0.06	4.87	0	0
P1416-36	1	132	Galvanized iron	0.25	0.6	0.08	0.57	0.45	1.1	0.23	1.76	0.74	1.82	0.59	4.45
P1416-37	6	460	Asbestos Cement	0.05	4.73	0	0	0.1	8.72	0.01	0.01	0.16	14.39	0.01	0.03
P1416-38	6	664	C-900	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0
P1416-39	8	617	Unknown Material	0.52	80.8	0.12	0.2	0.91	142.35	0.35	0.57	0.7	109.37	0.22	0.35
P1416-40	3	330	Steel	0.09	2.08	0.01	0.04	0.17	3.85	0.04	0.12	0.33	7.3	0.13	0.39
P1416-41	8	158	Unknown Material	0.43	67.09	0.02	0.14	0.76	118.61	0.06	0.41	0.55	86.78	0.04	0.23
P1416-42	8	338	Galvanized iron	0.27	42.95	0.02	0.06	0.45	70	0.05	0.15	0.11	16.93	0	0.01
P1416-43	8	373	Galvanized iron	0.26	41.51	0.02	0.06	0.43	67.36	0.05	0.14	0.08	12.57	0	0.01
P1416-44	6	294	Asbestos Cement	0.01	0.73	0	0	0	0.17	0	0	0.2	17.81	0.01	0.04
P1416-45	3	158	Steel	0.06	1.37	0	0.02	0.11	2.53	0.01	0.06	0.19	4.17	0.02	0.14
P1416-46	4	483	Asbestos Cement	0.09	3.47	0.01	0.02	0.12	4.89	0.01	0.03	0.24	9.46	0.05	0.1
P1416-47	4	257	Steel	0.29	11.42	0.06	0.22	0.5	19.52	0.15	0.59	0.4	15.62	0.1	0.39
P1416-48	2	242	Unknown Material	0.06	0.6	0	0.02	0.11	1.1	0.01	0.06	0.19	1.82	0.04	0.15
P1416-49	4	101	C-900	0.05	1.8	0	0	0.08	3.32	0	0.01	0.14	5.48	0	0.03
P1416-50	6	363	Asbestos Cement	0.22	19.8	0.02	0.05	0.46	40.63	0.07	0.2	0.64	56.68	0.13	0.36
P1416-51	6	49	Unknown Material	0.1	8.63	0	0.01	0.18	15.91	0	0.04	0.3	26.25	0	0.1
P1416-52	6	469	Galvanized iron	0.44	39.01	0.1	0.21	0.69	61.23	0.23	0.49	0.17	15.07	0.02	0.04
P1416-53	6	504	Asbestos Cement	0.03	2.7	0	0	0.06	4.98	0	0	0.09	8.22	0.01	0.01
P1416-54	6	139	Asbestos Cement	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0.01
P1416-55	6	374	Asbestos Cement	0.02	1.83	0	0	0.04	3.37	0	0	0.06	5.56	0	0.01
P1417-01	6	274	Galvanized iron	0.44	39.01	0.06	0.21	0.69	61.23	0.13	0.49	0.17	15.07	0.01	0.04
P1417-02	6	183	C-900	0.26	23.2	0.01	0.06	0.42	36.85	0.03	0.14	0.18	15.63	0.01	0.03
P1417-03	1	82	PVC	0.46	1.12	0.11	1.37	0.84	2.06	0.35	4.23	1.39	3.4	0.88	10.69
P1417-04	6	58	Unknown Material	0.25	22.08	0	0.08	0.39	34.79	0.01	0.17	0.22	19.03	0	0.06
P1417-05	6	135	C-900	0.15	13.34	0	0.02	0.22	19.83	0.01	0.05	0.08	6.95	0	0.01
P1417-06	6	37	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1417-07	4	125	C-900	0.06	2.25	0	0.01	0.11	4.15	0	0.02	0.17	6.85	0.01	0.05

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-08	4	98	C-900	0.03	1.35	0	0	0.06	2.49	0	0.01	0.1	4.11	0	0.02
P1417-09	2	112	C-900	0.09	0.9	0	0.03	0.17	1.66	0.01	0.1	0.28	2.74	0.03	0.24
P1417-10	4	787	Cast iron	0.52	20.47	0.36	0.46	0.81	31.82	0.82	1.05	0.61	23.93	0.49	0.62
P1417-100	8	440	PVC	0.04	6.03	0	0	0.06	9.48	0	0	0.1	15.63	0	0.01
P1417-11	8	136	Unknown Material	0.55	85.64	0.03	0.22	0.86	135.46	0.07	0.52	0.8	125.06	0.06	0.45
P1417-12	10	36	Ductile Iron	0.35	85.64	0	0.07	0.55	135.46	0.01	0.18	0.51	125.06	0.01	0.15
P1417-13	8	154	Unknown Material	0.01	2.07	0	0	0.02	3.82	0	0	0.04	6.3	0	0
P1417-14	10	43	Unknown Material	0.34	82.74	0	0.07	0.53	130.12	0.01	0.16	0.55	133.87	0.01	0.17
P1417-15	10	234	C-900	0.32	78.6	0.01	0.05	0.5	122.48	0.03	0.11	0.6	146.48	0.04	0.15
P1417-16	6	164	C-900	0.16	14.5	0	0.03	0.25	22.06	0.01	0.06	0.75	65.94	0.07	0.42
P1417-17	10	359	Unknown Material	0.3	74.46	0.02	0.06	0.47	114.84	0.05	0.13	0.65	159.08	0.09	0.24
P1417-18	4	700	Cast iron	0.28	10.9	0.1	0.14	0.39	15.34	0.19	0.27	0.37	14.36	0.17	0.24
P1417-19	6	551	Galvanized iron	0.16	14.5	0.02	0.03	0.25	22.06	0.04	0.07	0.75	65.94	0.31	0.56
P1417-20	8	262	Unknown Material	0.22	34.05	0.01	0.04	0.33	51.33	0.02	0.09	0.46	71.91	0.04	0.16
P1417-21	6	192	Unknown Material	0.01	1.01	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1417-22	8	648	C-900	0.2	31.43	0.02	0.03	0.3	46.51	0.04	0.05	0.41	63.95	0.06	0.1
P1417-23	6	57	Unknown Material	0.01	1.01	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1417-24	4	85	Unknown Material	0.03	1.01	0	0	0.05	1.85	0	0	0.08	3.05	0	0.01
P1417-25	8	221	Unknown Material	0.18	28.81	0.01	0.03	0.27	41.69	0.01	0.06	0.36	56	0.02	0.1
P1417-26	8	29	Unknown Material	0.26	40.8	0	0.05	0.37	57.5	0	0.1	0.48	75.01	0.01	0.18
P1417-27	6	92	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1417-28	6	173	Unknown Material	0.01	1.21	0	0	0.03	2.22	0	0	0.04	3.66	0	0
P1417-29	6	521	Galvanized iron	0.11	9.35	0.01	0.01	0.14	12.59	0.01	0.03	0.57	50.31	0.18	0.34
P1417-30	6	512	C-900	0.12	10.87	0.01	0.02	0.17	15.09	0.01	0.03	0.22	19.32	0.02	0.04
P1417-31	8	287	C-900	0.08	11.98	0	0	0.1	15.82	0	0.01	0.12	19.01	0	0.01
P1417-32	8	254	Unknown Material	0.26	40.8	0.01	0.06	0.37	57.5	0.03	0.11	0.48	75.01	0.04	0.17
P1417-33	6	400	C-900	0.22	19.81	0.02	0.05	0.34	30.21	0.04	0.1	0.49	42.76	0.08	0.19
P1417-34	6	470	C-900	0.03	2.25	0	0	0.05	4.15	0	0	0.08	6.85	0	0.01
P1417-35	2	241	Galvanized iron	0.09	0.9	0.01	0.04	0.17	1.66	0.03	0.13	0.28	2.74	0.08	0.33
P1417-36	6	17	Unknown Material	0.43	37.69	0	0.2	0.74	64.85	0.01	0.55	0.2	17.36	0	0.04
P1417-37	6	404	Cast iron	0.38	33.16	0.06	0.16	0.64	56.5	0.17	0.42	0.04	3.58	0	0
P1417-38	6	33	Unknown Material	0.47	41.13	0.01	0.23	0.75	66.46	0.02	0.57	0.22	19.65	0	0.06
P1417-39	6	361	Galvanized iron	0.47	41.13	0.08	0.23	0.75	66.46	0.2	0.57	0.22	19.65	0.02	0.06
P1417-40	6	86	Galvanized iron	0.45	39.25	0.02	0.22	0.72	63.53	0.04	0.52	0.43	37.78	0.02	0.2
P1417-41	6	96	Unknown Material	0.45	39.25	0.02	0.21	0.72	63.53	0.05	0.52	0.43	37.78	0.02	0.2
P1417-42	6	82	Ductile Iron	0	0.23	0	0	0	0.22	0	0	0.04	3.57	0	0
P1417-43	6	84	Ductile Iron	0	0	0	0	0	0	0	0	0	0	0	0
P1417-44	6	214	Ductile Iron	0	0.23	0	0	0	0.22	0	0	0.04	3.57	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-45	6	94	Galvanized iron	0	0.41	0	0	0.01	0.84	0	0	0	0.08	0	0
P1417-46	6	89	Galvanized iron	0	0.42	0	0	0.01	0.7	0	0	0.03	2.58	0	0
P1417-47	6	117	PVC	0.02	1.34	0	0	0.03	2.67	0	0	0.01	1.2	0	0
P1417-48	6	83	PVC	0.01	0.76	0	0	0.01	0.87	0	0	0.17	14.73	0	0.02
P1417-49	6	59	PVC	0.02	1.34	0	0	0.03	2.67	0	0	0.01	1.2	0	0
P1417-50	6	181	PVC	0.01	1.26	0	0	0.03	2.64	0	0	0.07	5.73	0	0
P1417-51	6	153	PVC	0	0.36	0	0	0.01	1.19	0	0	0.13	11.33	0	0.02
P1417-52	6	251	C-900	0.41	36.33	0.03	0.14	0.66	58.14	0.08	0.33	0.53	46.66	0.06	0.22
P1417-53	6	372	Ductile Iron	0.05	4.4	0	0	0.1	8.63	0	0.01	0.01	0.94	0	0
P1417-54	6	226	Unknown Material	0.41	35.7	0.04	0.18	0.68	60.26	0.11	0.47	0.14	12.13	0.01	0.02
P1417-55	6	192	Unknown Material	0.11	10.09	0	0.02	0.19	16.94	0.01	0.05	0.04	3.32	0	0
P1417-56	6	369	C-900	0.39	34.43	0.05	0.13	0.63	55.63	0.11	0.31	0.2	17.34	0.01	0.04
P1417-57	8	1071	C-900	0.43	66.97	0.11	0.11	0.68	106.95	0.27	0.25	0.61	95.65	0.22	0.21
P1417-58	4	409	Unknown Material	0.26	10.09	0.05	0.12	0.43	16.94	0.13	0.33	0.08	3.32	0.01	0.02
P1417-59	6	25	PVC	0.39	34.42	0	0.13	0.66	57.91	0.01	0.32	0.18	16	0	0.03
P1417-60	6	113	PVC	0.34	30.01	0.01	0.1	0.56	49.28	0.03	0.25	0.19	16.95	0	0.03
P1417-61	2	185	Galvanized iron	0.09	0.9	0.01	0.04	0.17	1.66	0.02	0.13	0.28	2.74	0.06	0.33
P1417-62	6	541	C-900	0.38	33.34	0.06	0.12	0.61	53.78	0.16	0.29	0.46	40.79	0.09	0.17
P1417-63	4	20	Unknown Material	0.02	0.9	0	0	0.04	1.66	0	0.01	0.07	2.74	0	0.01
P1417-64	2	336	Steel	0.09	0.9	0.02	0.06	0.17	1.66	0.06	0.18	0.28	2.74	0.15	0.46
P1417-65	6	156	Unknown Material	0.2	17.78	0.01	0.05	0.33	29.39	0.02	0.13	0.32	28.23	0.02	0.12
P1417-66	4	47	Unknown Material	0.03	1.35	0	0.01	0.06	2.49	0	0.01	0.1	4.11	0	0.02
P1417-67	2	326	Unknown Material	0.14	1.35	0.03	0.09	0.25	2.49	0.09	0.27	0.42	4.11	0.23	0.69
P1417-68	6	204	PVC	0.15	13.37	0	0.02	0.23	20.19	0.01	0.05	0.4	35.6	0.03	0.13
P1417-69	2	379	Unknown Material	0.2	2	0.07	0.18	0.38	3.68	0.21	0.56	0.62	6.07	0.54	1.42
P1417-70	6	263	Unknown Material	0.16	14.18	0.01	0.03	0.26	22.75	0.02	0.08	0.44	39.18	0.06	0.21
P1417-71	6	497	Asbestos Cement	0.15	13.19	0.01	0.02	0.23	19.86	0.03	0.05	0.4	35.06	0.07	0.15
P1417-72	4	264	Cast iron	0.16	6.43	0.01	0.05	0.27	10.55	0.04	0.14	0.54	21.09	0.13	0.49
P1417-73	8	200	Cast iron	0.4	62.43	0.02	0.12	0.55	85.67	0.04	0.22	0.53	82.55	0.04	0.21
P1417-74	4	39	Unknown Material	0.05	2	0	0.01	0.09	3.68	0	0.02	0.16	6.07	0	0.05
P1417-75	6	150	Unknown Material	0.12	10.83	0	0.02	0.19	16.58	0.01	0.04	0.56	49.37	0.05	0.33
P1417-76	6	21	Unknown Material	0.08	7.02	0	0.01	0.09	8.31	0	0.01	0.49	43.25	0.01	0.26
P1417-77	6	182	Unknown Material	0.09	8.14	0	0.01	0.12	10.37	0	0.02	0.53	46.65	0.05	0.3
P1417-78	2	222	PVC	0.12	1.21	0.01	0.05	0.23	2.22	0.04	0.17	0.37	3.66	0.09	0.42
P1417-79	6	519	C-900	0.2	17.84	0.02	0.04	0.28	24.9	0.04	0.07	0.07	6.12	0	0.01
P1417-80	6	274	Galvanized iron	0.05	4.44	0	0	0.04	3.36	0	0	0.97	85.38	0.25	0.9
P1417-81	6	258	Unknown Material	0.15	12.83	0.01	0.03	0.22	19.2	0.01	0.06	0.39	33.97	0.04	0.16
P1417-82	6	123	Cast iron	0.15	12.83	0	0.03	0.22	19.2	0.01	0.06	0.39	33.97	0.02	0.16

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-83	6	99	Unknown Material	0.44	38.35	0.02	0.2	0.67	58.88	0.04	0.45	0.82	72.25	0.07	0.66
P1417-84	6	414	Cast iron	0.32	27.89	0.05	0.11	0.46	40.91	0.1	0.23	0.44	38.91	0.09	0.21
P1417-85	6	28	Unknown Material	0.14	12.1	0	0.03	0.22	19.03	0	0.06	0.74	65.28	0.02	0.55
P1417-86	8	216	Cast iron	0.48	74.77	0.04	0.17	0.65	101.21	0.07	0.31	0.07	11.18	0	0.01
P1417-87	6	266	Cast iron	0.01	1.01	0	0	0.02	1.58	0	0	0.82	72.02	0.18	0.66
P1417-88	6	369	Unknown Material	0.25	22.29	0.03	0.07	0.32	28.25	0.04	0.12	0.9	79.26	0.29	0.79
P1417-89	6	1050	Cast iron	0.23	20.53	0.07	0.06	0.32	28.44	0.12	0.12	0.06	4.95	0	0
P1417-90	10	1030	Asbestos Cement	0.28	68.21	0.04	0.04	0.36	89.14	0.07	0.07	0.04	8.73	0	0
P1417-91	4	394	Cast iron	0.33	13.1	0.08	0.2	0.45	17.45	0.14	0.34	0.17	6.73	0.02	0.06
P1417-92	6	192	Galvanized iron	0.06	5.45	0	0.01	0.06	5.21	0	0.01	1	88.43	0.18	0.96
P1417-94	6	485	Galvanized iron	0.22	19.58	0.03	0.06	0.37	32.71	0.07	0.15	0.26	22.75	0.04	0.08
P1417-95	6	89	PVC	0.01	0.48	0	0	0.01	0.75	0	0	0.03	3.01	0	0
P1417-96	6	94	PVC	0.01	0.48	0	0	0.01	1	0	0	0	0.09	0	0
P1417-97	6	679	Unknown Material	0.05	4.06	0	0	0.08	7.46	0.01	0.01	0.14	12.31	0.02	0.02
P1418-01	4	17	Unknown Material	0.03	1.29	0	0.01	0.03	1.05	0	0	0.01	0.23	0	0
P1418-02	4	430	Cast iron	0.07	2.9	0.01	0.01	0.1	4.02	0.01	0.02	0.13	5.13	0.02	0.04
P1418-03	4	77	Unknown Material	0.09	3.51	0	0.02	0.13	5.14	0	0.03	0.18	6.98	0	0.06
P1418-04	6	189	Unknown Material	0.4	35.34	0.03	0.18	0.59	52.3	0.07	0.36	0.15	13.42	0.01	0.03
P1418-05	8	292	Galvanized iron	0.14	22.7	0.01	0.02	0.22	34.77	0.01	0.04	0.27	41.62	0.02	0.06
P1418-06	8	262	Galvanized iron	0.14	22.7	0	0.02	0.22	34.77	0.01	0.04	0.27	41.62	0.02	0.06
P1418-07	8	283	Unknown Material	0.13	20.52	0	0.02	0.2	30.76	0.01	0.03	0.31	48.24	0.02	0.08
P1418-08	6	172	Unknown Material	0.15	13.15	0	0.03	0.2	17.2	0.01	0.05	0.19	16.63	0.01	0.04
P1418-09	4	457	Asbestos Cement	0.27	10.53	0.05	0.12	0.32	12.38	0.07	0.16	0.22	8.68	0.04	0.08
P1418-10	4	242	Unknown Material	0.13	5.06	0.01	0.03	0.16	6.12	0.01	0.05	0.13	5.07	0.01	0.04
P1418-102	6	175	PVC	0.03	2.46	0	0	0.03	2.83	0	0	0.27	23.96	0.01	0.06
P1418-103	10	64	PVC	0.08	19.49	0	0	0.05	12.55	0	0	0.19	46.01	0	0.02
P1418-104	8	493	PVC	0.08	12.64	0	0	0.11	17.53	0	0.01	0.18	28.2	0.01	0.02
P1418-105	10	248	PVC	0.01	1.81	0	0	0.02	5.43	0	0	0.04	8.96	0	0
P1418-106	6	85	PVC	0.02	1.81	0	0	0.06	5.43	0	0	0.1	8.96	0	0.01
P1418-107	10	251	PVC	0.11	26.03	0	0.01	0.14	33.48	0	0.01	0.06	15.56	0	0
P1418-11	6	428	Asbestos Cement	0.07	5.84	0	0.01	0.12	10.74	0.01	0.02	0.79	69.52	0.23	0.53
P1418-12	1	559	Galvanized iron	0.66	1.61	1.99	3.56	1.21	2.97	6.19	11.08	2	4.9	15.66	28.01
P1418-13	4	180	Unknown Material	0.14	5.54	0.01	0.04	0.14	5.33	0.01	0.04	0.89	35	0.22	1.25
P1418-14	6	23	Unknown Material	0.16	13.82	0	0.03	0.15	13.55	0	0.03	0.38	33.19	0	0.16
P1418-15	6	261	C-900	0.08	6.79	0	0.01	0.14	12.52	0.01	0.02	0.23	20.66	0.01	0.05
P1418-16	6	56	C-900	0.05	4.1	0	0	0.09	7.55	0	0	0.14	12.46	0	0.02
P1418-17	6	495	C-900	0.02	2.06	0	0	0.04	3.79	0	0	0.07	6.25	0	0.01
P1418-18	4	460	C-900	0.02	0.88	0	0	0.04	1.63	0	0	0.07	2.69	0	0.01

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1418-19	6	469	Galvanized iron	0.08	7.03	0	0.01	0.01	1.03	0	0	0.61	53.84	0.18	0.38
P1418-20	6	498	Galvanized iron	0.08	7.03	0	0.01	0.01	1.03	0	0	0.61	53.84	0.19	0.38
P1418-21	6	134	Ductile Iron	0.02	2.04	0	0	0.04	3.76	0	0	0.07	6.2	0	0.01
P1418-22	6	153	Asbestos Cement	0.01	0.91	0	0	0.02	1.68	0	0	0.03	2.77	0	0
P1418-23	6	261	Asbestos Cement	0.02	1.45	0	0	0.03	2.68	0	0	0.05	4.43	0	0
P1418-24	6	161	Asbestos Cement	0.02	1.59	0	0	0.03	2.93	0	0	0.05	4.83	0	0
P1418-25	2	33	Unknown Material	0.01	0.14	0	0	0.03	0.25	0	0.01	0.04	0.41	0	0.01
P1418-26	6	565	Unknown Material	0.01	0.66	0	0	0.01	1.21	0	0	0.02	1.99	0	0
P1418-27	6	65	Unknown Material	0.01	0.49	0	0	0.01	0.91	0	0	0.02	1.5	0	0
P1418-28	8	221	Unknown Material	0.02	3.42	0	0	0.04	6.3	0	0	0.07	10.39	0	0
P1418-29	6	50	Unknown Material	0.05	4.43	0	0	0.09	8.16	0	0.01	0.15	13.47	0	0.03
P1418-30	8	205	Asbestos Cement	0.05	7.85	0	0	0.26	40.84	0.01	0.05	1.56	244.17	0.28	1.34
P1418-31	8	35	Unknown Material	0.05	7.85	0	0	0.26	40.84	0	0.06	1.56	244.17	0.05	1.56
P1418-32	6	238	Asbestos Cement	0.04	3.49	0	0	0.07	6.44	0	0.01	0.12	10.63	0	0.02
P1418-33	2	442	Unknown Material	0.01	0.14	0	0	0.03	0.25	0	0	0.04	0.41	0	0.01
P1418-34	8	261	Unknown Material	0.05	7.85	0	0	0.09	14.46	0	0.01	0.15	23.86	0.01	0.02
P1418-35	8	303	Asbestos Cement	0.05	7.85	0	0	0.26	40.84	0.01	0.05	1.56	244.17	0.41	1.34
P1418-36	6	76	C-900	0.06	5.63	0	0.01	0.12	10.34	0	0.02	0.19	17.06	0	0.04
P1418-37	6	28	Unknown Material	0.4	35.34	0.01	0.18	0.59	52.3	0.01	0.36	0.15	13.42	0	0.03
P1418-38	4	318	Cast iron	0.07	2.64	0	0.01	0.06	2.32	0	0.01	0.47	18.28	0.12	0.37
P1418-40	8	752	Unknown Material	0.04	6.08	0	0	0.03	4.55	0	0	0.09	14.55	0.01	0.01
P1418-41	8	165	Unknown Material	0.04	6.08	0	0	0.03	4.55	0	0	0.09	14.55	0	0.01
P1418-42	4	294	Cast iron	0.05	1.79	0	0	0.11	4.13	0.01	0.02	0.93	36.25	0.39	1.33
P1418-43	6	640	Cast iron	0.21	18.74	0.03	0.05	0.28	24.31	0.06	0.09	0.47	41.2	0.15	0.23
P1418-44	10	534	Galvanized iron	0.25	60.33	0.02	0.04	0.28	67.99	0.03	0.05	0.27	65.69	0.02	0.05
P1418-45	6	109	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-46	6	95	Unknown Material	0.01	0.49	0	0	0.01	0.79	0	0	0.34	29.93	0.01	0.13
P1418-47	2	135	Galvanized iron	0.6	5.84	0.18	1.32	1.1	10.74	0.55	4.09	1.81	17.72	1.4	10.35
P1418-48	4	401	Galvanized iron	0.12	4.61	0.01	0.03	0.04	1.68	0	0	0.04	1.68	0	0
P1418-49	10	272	Galvanized iron	0.25	60.33	0.01	0.04	0.28	67.99	0.01	0.05	0.27	65.69	0.01	0.05
P1418-50	10	119	Asbestos Cement	0.14	34.29	0	0.01	0.14	34.52	0	0.01	0.2	50.13	0	0.02
P1418-51	10	278	Asbestos Cement	0.12	30.33	0	0.01	0.11	27.23	0	0.01	0.25	62.16	0.01	0.04
P1418-52	4	733	Galvanized iron	0.15	5.83	0.03	0.05	0.24	9.45	0.08	0.11	0.32	12.61	0.14	0.19
P1418-53	12	666	Galvanized iron	0.02	7.85	0	0	0.12	40.84	0.01	0.01	0.69	244.17	0.14	0.22
P1418-54	8	182	Asbestos Cement	0.12	19.49	0	0.01	0.08	12.55	0	0.01	0.29	46.01	0.01	0.06
P1418-55	10	164	Unknown Material	0.2	49.83	0	0.03	0.16	39.78	0	0.02	0.44	108.17	0.02	0.12
P1418-56	10	378	Asbestos Cement	0.17	41.74	0.01	0.02	0.1	25.41	0	0.01	0.53	130.43	0.05	0.14
P1418-57	10	195	Galvanized iron	0.17	41.74	0	0.02	0.1	25.41	0	0.01	0.53	130.43	0.03	0.16

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1418-59	4	397	Cast iron	0.04	1.74	0	0	0.05	1.93	0	0.01	0.01	0.2	0	0
P1418-61	6	155	Asbestos Cement	0.09	8.09	0	0.01	0.16	14.38	0	0.03	0.25	22.26	0.01	0.06
P1418-63	4	599	Ductile Iron	0.15	5.76	0.03	0.04	0.26	10.1	0.07	0.12	0.39	15.2	0.16	0.27
P1418-64	6	134	Asbestos Cement	0.27	24.18	0.01	0.08	0.53	46.27	0.03	0.25	0.92	80.79	0.09	0.7
P1418-66	4	93	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-67	10	415	Asbestos Cement	0.03	7.9	0	0	0.06	14.54	0	0	0.1	23.99	0	0.01
P1418-68	4	483	Cast iron	0.15	5.7	0.02	0.04	0.22	8.71	0.05	0.09	0.25	9.92	0.06	0.12
P1418-69	6	436	Asbestos Cement	0.24	21.19	0.03	0.06	0.46	40.77	0.09	0.2	0.81	71.72	0.25	0.56
P1418-71	4	239	Cast iron	0.1	3.82	0	0.02	0.14	5.34	0.01	0.04	0.51	19.82	0.1	0.44
P1418-72	4	34	Cast iron	0.03	1.36	0	0.01	0.06	2.51	0	0.01	0.11	4.14	0	0.02
P1418-74	10	108	Asbestos Cement	0.06	15.75	0	0	0.11	26.3	0	0.01	0.9	220.18	0.04	0.37
P1418-75	10	297	Asbestos Cement	0.07	17.56	0	0	0.09	20.87	0	0	0.86	211.22	0.1	0.35
P1419-01	8	52	Unknown Material	0.03	4.38	0	0	0.05	8.06	0	0	0.08	13.3	0	0.01
P1419-02	8	466	Asbestos Cement	0.03	4.38	0	0	0.05	8.06	0	0	0.08	13.3	0	0.01
P1419-03	8	579	C-900	0.02	2.76	0	0	0.03	5.07	0	0	0.05	8.37	0	0
P1419-04	6	641	Asbestos Cement	0.01	1.05	0	0	0.02	1.93	0	0	0.04	3.18	0	0
P1419-05	8	819	Asbestos Cement	0.05	7.25	0	0	0.09	13.34	0.01	0.01	0.14	22.01	0.01	0.02
P1419-06	6	1322	Asbestos Cement	0.06	5.46	0.01	0	0.11	10.05	0.02	0.01	0.19	16.58	0.05	0.04
P1419-100	8	25	PVC	0.03	4.65	0	0	0.04	6.78	0	0	0.04	6.74	0	0
P1515-01	6	140	C-900	0.02	1.67	0	0	0.03	3.07	0	0	0.06	5.07	0	0
P1515-02	10	103	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-03	6	847	C-900	0.03	2.88	0	0	0.06	5.3	0	0	0.1	8.74	0.01	0.01
P1515-04	6	206	C-900	0.02	2.03	0	0	0.04	3.74	0	0	0.07	6.17	0	0
P1515-05	6	41	C-900	0.02	2.03	0	0	0.04	3.74	0	0.01	0.07	6.17	0	0.01
P1515-06	6	385	C-900	0.03	2.66	0	0	0.06	4.9	0	0	0.09	8.09	0	0.01
P1515-07	6	616	C-900	0.08	7.12	0	0.01	0.15	13.11	0.01	0.02	0.25	21.63	0.03	0.05
P1515-08	10	259	C-900	0.11	27.4	0	0.01	0.21	50.43	0.01	0.02	0.34	83.21	0.01	0.05
P1515-09	6	209	C-900	0.08	7.35	0	0.01	0.15	13.52	0	0.02	0.25	22.31	0.01	0.06
P1515-10	10	169	C-900	0.08	19.78	0	0	0.15	36.41	0	0.01	0.25	60.08	0	0.03
P1515-100	10	371	PVC	0.11	27.62	0	0.01	0.2	48.39	0.01	0.02	0.23	56.29	0.01	0.03
P1515-11	10	231	C-900	0.15	36.14	0	0.01	0.27	66.53	0.01	0.04	0.45	109.78	0.02	0.09
P1515-12	10	218	C-900	0.2	48.87	0	0.02	0.37	89.96	0.01	0.06	0.61	148.44	0.03	0.16
P1515-13	6	175	C-900	0.14	12.73	0	0.02	0.27	23.43	0.01	0.06	0.44	38.66	0.03	0.16
P1515-14	6	112	C-900	0.02	1.35	0	0	0.03	2.49	0	0	0.05	4.11	0	0
P1515-15	6	376	C-900	0.02	2.16	0	0	0.05	3.97	0	0	0.07	6.55	0	0.01
P1515-16	6	395	C-900	0.09	7.6	0	0.01	0.16	13.98	0.01	0.02	0.26	23.07	0.02	0.06
P1515-17	10	374	C-900	0.08	18.7	0	0	0.14	34.42	0	0.01	0.23	56.8	0.01	0.03
P1515-18	6	419	C-900	0.04	3.93	0	0	0.08	7.23	0	0.01	0.14	11.93	0.01	0.02

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1515-19	8	562	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-19a	8	75	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-20	6	53	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-21	10	361	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-22	6	57	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-23	6	352	C-900	0.08	6.88	0	0.01	0.14	12.67	0.01	0.02	0.24	20.91	0.02	0.05
P1515-24	10	190	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-25	6	133	C-900	0.01	1.08	0	0	0.02	1.99	0	0	0.04	3.28	0	0
P1515-26	10	240	Galvanized iron	0.04	10.12	0	0	0.08	18.63	0	0	0.13	30.74	0	0.01
P1515-27	10	110	Galvanized iron	0.04	10.12	0	0	0.08	18.63	0	0	0.13	30.74	0	0.01
P1515-28	6	423	C-900	0.01	0.81	0	0	0.02	1.48	0	0	0.03	2.44	0	0
P1515-29	8	716	Unknown Material	0.05	7.2	0	0	0.09	13.52	0.01	0.01	0.38	60.27	0.08	0.12
P1515-30	8	192	Unknown Material	0.11	17.27	0	0.01	0.2	31.5	0.01	0.04	0.09	14.02	0	0.01
P1515-31	10	42	Unknown Material	0.11	27.62	0	0.01	0.2	48.39	0	0.02	0.23	56.29	0	0.03
P1515-32	10	400	Unknown Material	0.04	8.71	0	0	0.06	13.87	0	0	0.31	75.31	0.02	0.06
P1515-33	10	184	Unknown Material	0.03	7.2	0	0	0.06	13.52	0	0	0.76	185.8	0.06	0.32
P1515-34	10	137	Unknown Material	0	0	0	0	0	0	0	0	1.01	246.07	0.07	0.53
P1515-36	8	43	Unknown Material	0.01	1.51	0	0	0	0.34	0	0	0.71	110.5	0.02	0.36
P1515-37	4	390	Unknown Material	0.03	1.36	0	0	0.06	2.51	0	0.01	0.11	4.14	0.01	0.02
P1515-38	8	102	Unknown Material	0.01	1.5	0	0	0.03	5.2	0	0	0.65	101.36	0.03	0.3
P1515-39	6	586	Asbestos Cement	0.03	2.51	0	0	0.08	7.05	0	0.01	1.12	98.3	0.59	1.01
P1516-01	6	677	Asbestos Cement	0.05	4.46	0	0	0.08	6.96	0	0.01	0.26	22.79	0.05	0.07
P1516-02	6	454	Asbestos Cement	0.01	0.54	0	0	0.02	1.78	0	0	0.05	4.53	0	0
P1516-03	6	539	Galvanized iron	0.02	1.79	0	0	0.03	2.84	0	0	0.1	8.52	0.01	0.01
P1516-04	6	241	Unknown Material	0.01	0.92	0	0	0.02	1.7	0	0	0.03	2.81	0	0
P1516-05	6	506	Unknown Material	0.05	4.22	0	0	0.1	8.55	0.01	0.01	0.08	6.64	0	0.01
P1516-06	2	107	Unknown Material	0.17	0.92	0.02	0.18	0.31	1.7	0.06	0.55	0.51	2.81	0.15	1.38
P1516-07	6	513	Galvanized iron	0.01	0.81	0	0	0.02	1.94	0	0	0.01	0.63	0	0
P1516-08	6	17	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-09	6	735	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-10	6	367	Asbestos Cement	0.04	3.76	0	0	0.08	6.92	0	0.01	0.13	11.42	0.01	0.02
P1516-11	8	328	C-900	0.04	6.16	0	0	0.07	11.34	0	0	0.12	18.71	0	0.01
P1516-13	8	459	C-900	0.04	6.16	0	0	0.07	11.34	0	0	0.12	18.71	0	0.01
P1516-14	8	560	C-900	0.04	6.16	0	0	0.07	11.34	0	0	0.12	18.71	0.01	0.01
P1516-15	6	479	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1516-16	8	93	C-900	0.04	6.16	0	0	0.07	11.34	0	0	0.12	18.72	0	0.01
P1516-17	6	270	C-900	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0
P1516-18	6	167	Unknown Material	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1516-19	8	212	C-900	0.04	6.52	0	0	0.08	12	0	0	0.13	19.81	0	0.01
P1516-20	8	461	C-900	0.06	10.06	0	0	0.12	18.51	0	0.01	0.19	30.53	0.01	0.02
P1516-21	8	405	C-900	0.02	3.54	0	0	0.04	6.5	0	0	0.07	10.72	0	0
P1516-22	8	561	C-900	0.2	30.72	0.01	0.03	0.36	56.37	0.04	0.08	0	0.7	0	0
P1516-23	6	135	Unknown Material	0.19	16.42	0.01	0.04	0.36	31.4	0.02	0.14	0.53	46.82	0.04	0.3
P1516-24	6	213	Unknown Material	0.16	13.78	0.01	0.03	0.27	24.02	0.02	0.09	0.51	44.53	0.06	0.27
P1516-25	6	223	Unknown Material	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-26	6	202	Unknown Material	0.14	12.16	0.01	0.03	0.24	21.03	0.01	0.07	0.45	39.6	0.04	0.22
P1516-27	6	264	Asbestos Cement	0.02	1.37	0	0	0.03	2.53	0	0	0.05	4.17	0	0
P1516-28	6	117	Unknown Material	0.12	10.33	0	0.02	0.2	17.65	0.01	0.05	0.39	34.02	0.02	0.16
P1516-29	6	266	Unknown Material	0.01	1.14	0	0	0.02	2.1	0	0	0.04	3.46	0	0
P1516-30	6	111	Unknown Material	0.1	9.19	0	0.02	0.18	15.55	0	0.04	0.35	30.56	0.01	0.13
P1516-31	6	111	Unknown Material	0.08	7.36	0	0.01	0.14	12.18	0	0.02	0.28	25	0.01	0.09
P1516-32	6	52	Galvanized iron	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-33	6	109	Galvanized iron	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-34	6	131	Unknown Material	0.06	5.53	0	0.01	0.1	8.81	0	0.01	0.22	19.44	0.01	0.06
P1516-35	4	15	Unknown Material	0.02	0.69	0	0	0.03	1.27	0	0.02	0.05	2.1	0	0.02
P1516-36	2	123	Galvanized iron	0.07	0.69	0	0.03	0.13	1.27	0.01	0.08	0.21	2.1	0.02	0.2
P1516-37	6	182	Unknown Material	0.01	0.69	0	0	0.01	1.27	0	0	0.02	2.1	0	0
P1516-38	6	152	C-900	0.05	4.15	0	0	0.07	6.27	0	0.01	0.17	15.25	0	0.03
P1516-39	6	820	Asbestos Cement	0.05	4.18	0	0	0.04	3.54	0	0	0.18	16.2	0.03	0.04
P1516-40	6	20	Unknown Material	0	0.08	0	0	0.03	2.28	0	0	0.1	8.61	0	0.01
P1516-41	6	400	Asbestos Cement	0.06	5.15	0	0	0.14	12.05	0.01	0.02	0.04	3.68	0	0
P1516-42	6	229	Unknown Material	0.14	12.09	0.01	0.02	0.23	20.66	0.01	0.07	0.32	28.25	0.03	0.12
P1516-43	6	200	Unknown Material	0.16	13.69	0.01	0.03	0.27	23.61	0.02	0.08	0.38	33.11	0.03	0.16
P1516-44	6	298	Galvanized iron	0.06	5.07	0	0	0.11	9.77	0	0.02	0.14	12.28	0.01	0.02
P1516-45	6	561	Galvanized iron	0.03	2.31	0	0	0.05	4.7	0	0	0.04	3.92	0	0
P1516-53	6	455	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1516-54	6	336	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-01	8	48	Unknown Material	0.07	10.42	0	0.01	0.12	19.17	0	0.01	0.2	31.63	0	0.04
P1517-03	6	115	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-04	6	867	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-05	6	535	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-06	6	205	C-900	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0
P1517-07	6	346	C-900	0	0.36	0	0	0.01	0.66	0	0	0.01	1.09	0	0
P1517-08	10	132	Galvanized iron	0.09	21.03	0	0.01	0.16	38.7	0	0.02	1.72	422.08	0.19	1.45
P1517-09	10	460	C-900	0.09	21.03	0	0	0.16	38.7	0.01	0.01	1.72	422.08	0.5	1.09
P1517-10	8	319	Unknown Material	0.12	18.67	0	0.01	0.18	28.5	0.01	0.03	0.19	29.4	0.01	0.03

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P1517-100	8	40	PVC	0.12	18.67	0	0.01	0.18	28.5	0	0.02	0.19	29.4	0	0.02
P1517-11	8	303	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1517-12	4	247	Cast iron	0.02	0.9	0	0	0.04	1.66	0	0	0.07	2.74	0	0.01
P1517-13	6	146	Unknown Material	0.02	2.07	0	0	0.04	3.82	0	0	0.07	6.3	0	0.01
P1517-14	8	195	Unknown Material	0.45	69.77	0.03	0.15	0.68	106.2	0.06	0.33	1.18	184.89	0.18	0.93
P1517-15	10	726	Galvanized iron	0.09	21.03	0	0.01	0.16	38.7	0.01	0.02	1.72	422.08	1.05	1.45
P1517-16	10	261	Unknown Material	0.09	21.03	0	0.01	0.16	38.7	0	0.02	1.72	422.08	0.38	1.45
P1517-17	10	51	Galvanized iron	0.09	21.03	0	0	0.16	38.7	0	0.01	1.72	422.08	0.07	1.45
P1517-18	10	260	Galvanized iron	0.04	10.32	0	0	0.08	18.99	0	0	1.59	389.56	0.32	1.25
P1517-19	6	141	Unknown Material	0.07	6.23	0	0.01	0.13	11.47	0	0.02	0.21	18.93	0.01	0.06
P1517-20	10	243	Unknown Material	0	0	0	0	0	0	0	0	1.46	358.23	0.26	1.07
P1517-21	10	58	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-22	10	17	Unknown Material	0.3	72.39	0	0.06	0.45	111.02	0	0.13	0.68	165.38	0	0.26
P1517-23	10	30	Unknown Material	0	0	0	0	0	0	0	0	1.46	358.23	0.03	1.07
P1517-24	10	49	Unknown Material	0	0	0	0	0	0	0	0	1.46	358.22	0.05	1.07
P1517-25	8	204	Unknown Material	0.46	72.39	0.03	0.16	0.71	111.02	0.07	0.36	1.23	192.84	0.21	1.01
P1517-26	8	127	Unknown Material	0.01	1.61	0	0	0.02	2.97	0	0	0.03	4.9	0	0
P1517-27	6	289	C-900	0.16	14.29	0.01	0.02	0.24	21.38	0.02	0.05	0.34	29.7	0.03	0.1
P1517-28	4	318	Cast iron	0.09	3.51	0.01	0.02	0.13	5.14	0.01	0.04	0.18	6.98	0.02	0.06
P1517-29	6	185	Asbestos Cement	0.05	4.32	0	0	0.07	6.61	0	0.01	0.11	9.39	0	0.01
P1517-30	4	86	Unknown Material	0.1	3.92	0	0.02	0.15	5.88	0	0.05	0.21	8.19	0.01	0.09
P1517-31	4	91	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-32	10	81	Galvanized iron	0.09	21.03	0	0.01	0.16	38.7	0	0.02	1.72	422.08	0.12	1.45
P1518-01	4	348	Asbestos Cement	0.06	2.22	0	0.01	0.1	4.09	0.01	0.02	0.17	6.75	0.02	0.05
P1518-02	4	101	Unknown Material	0.01	0.45	0	0	0.02	0.83	0	0	0.03	1.37	0	0
P1518-03	6	209	PVC	0.02	2	0	0	0.04	3.68	0	0	0.07	6.07	0	0
P1518-04	6	119	Unknown Material	0.07	5.96	0	0.01	0.12	10.97	0	0.02	1.2	105.35	0.16	1.33
P1518-05	8	314	PVC	0.03	5.07	0	0	0.06	9.33	0	0	0.66	102.65	0.07	0.23
P1518-06	8	471	PVC	0.02	2.4	0	0	0.03	4.42	0	0	0.6	94.55	0.09	0.2
P1518-07	6	345	Unknown Material	0.06	5.07	0	0	0.11	9.33	0.01	0.01	1.16	102.65	0.44	1.27
P1518-08	2	174	Galvanized iron	0.16	0.89	0.03	0.17	0.3	1.64	0.09	0.51	0.49	2.71	0.23	1.29
P1518-09	6	665	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-10	8	83	Galvanized iron	0.16	24.82	0	0.02	0.72	112.88	0.03	0.37	2.67	418.59	0.35	4.22
P1518-11	8	44	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1518-12	6	34	Unknown Material	0	0	0	0	0	0	0	0	0.99	87.25	0.03	0.94
P1518-13	6	433	Asbestos Cement	0	0	0	0	0	0	0	0	0.99	87.24	0.35	0.81
P1518-14	8	174	PVC	0	0	0	0	0	0	0	0	0.56	87.25	0.03	0.17
P1518-15	8	98	Unknown Material	0	0	0	0	0	0	0	0	0.56	87.25	0.02	0.23

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P1518-16	8	553	Asbestos Cement	0.02	2.82	0	0	0.03	5.19	0	0	0.05	8.56	0	0
P1518-17	8	18	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-18	4	507	Unknown Material	0.03	1.22	0	0	0.02	0.67	0	0	0.38	14.71	0.13	0.25
P1518-19	6	528	Asbestos Cement	0.04	3.77	0	0	0.02	2.06	0	0	0.51	45.34	0.13	0.24
P1518-20	8	567	Unknown Material	0.03	4.48	0	0	0.05	8.25	0	0	0.09	13.61	0	0.01
P1518-21	8	280	Asbestos Cement	0.16	24.82	0.01	0.02	0.72	112.88	0.09	0.32	2.67	418.59	1.02	3.64
P1518-22	6	147	Asbestos Cement	0	0	0	0	0.14	11.93	0	0.02	0.85	75.23	0.09	0.62
P1518-23	6	393	Asbestos Cement	0	0	0	0	0.14	11.92	0.01	0.02	0.85	75.21	0.24	0.62
P1518-24	6	407	Asbestos Cement	0.08	6.83	0	0.01	0.34	30.23	0.05	0.11	1.29	113.98	0.54	1.33
P1518-25	8	274	Unknown Material	0.04	6.83	0	0	0.12	18.3	0	0.01	0.25	38.77	0.01	0.05
P1518-26	8	813	Unknown Material	0	0	0	0	0.04	5.73	0	0	0.12	18.03	0.01	0.01
P1518-27	8	214	Unknown Material	0.05	7.41	0	0	0.05	7.9	0	0	0.03	4.46	0	0
P1518-28	8	241	Unknown Material	0.11	17.99	0	0.01	0.53	82.65	0.05	0.21	1.94	304.61	0.56	2.34
P1518-29	8	256	Unknown Material	0.07	10.58	0	0	0.48	74.76	0.04	0.17	1.92	300.15	0.58	2.28
P1518-30	8	80	Asbestos Cement	0	0	0	0	0.35	55.28	0.01	0.09	1.71	268.03	0.13	1.59
P1518-31	8	21	Asbestos Cement	0	0	0	0	0.35	55.3	0	0.08	1.71	268.03	0.03	1.59
P1518-32	8	50	Asbestos Cement	0	0	0	0	0.35	55.3	0	0.09	1.71	268.03	0.08	1.6
P1518-33	8	134	Asbestos Cement	0	0	0	0	0.35	55.3	0.01	0.09	1.71	268.03	0.21	1.59
P1518-34	6	224	Unknown Material	0.07	6.1	0	0.01	0.13	11.22	0	0.02	0.21	18.52	0.01	0.05
P1519-01	4	490	Unknown Material	0.13	5.11	0.02	0.04	0.24	9.41	0.05	0.11	0.4	15.53	0.14	0.28
P1519-02	6	78	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1519-100	8	33	PVC	0.01	1.09	0	0	0.01	0.92	0	0	0.1	15.12	0	0.01
P1528-01	6	196	Galvanized iron	0.09	8.32	0	0.01	0.15	13.5	0.01	0.03	0.11	10.09	0	0.02
P1602-01	6	178	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1618-01	6	788	Galvanized iron	0.12	10.19	0.01	0.02	0.21	18.76	0.04	0.05	1.34	118.21	1.3	1.65
P1618-03	6	299	Asbestos Cement	0.16	14.19	0.01	0.03	0.3	26.13	0.03	0.09	1.48	130.37	0.51	1.7
P1618-04	4	310	Asbestos Cement	0.03	1.33	0	0	0.06	2.45	0	0.01	0.1	4.04	0.01	0.02
P1618-05	6	304	Galvanized iron	0.12	10.19	0.01	0.02	0.21	18.76	0.02	0.05	1.34	118.21	0.5	1.65
P1628-01	6	504	Galvanized iron	0.1	8.5	0.01	0.01	0.16	14.4	0.02	0.03	0.4	35.07	0.09	0.17
P1630-01	6	387	Galvanized iron	0.1	8.5	0	0.01	0.16	14.4	0.01	0.03	0.4	35.07	0.07	0.17

Appendix D

2009 System Scenarios Model Output

D-1: 2009 Automated Fire Flow Scenario Model Output

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1218-01	Cedar Bluffs	TRUE	1,000	2,507	81	20	J1218-101
J1218-03	Cedar Bluffs	TRUE	1,000	1,447	20	39	J1218-101
J1218-100	Cedar Bluffs	TRUE	1,000	2,105	20	37	J1218-101
J1218-101	Cedar Bluffs	TRUE	1,000	2,277	20	34	J1218-102
J1218-102	Cedar Bluffs	TRUE	1,000	2,302	31	20	J1218-101
J1218-103	Cedar Bluffs	TRUE	1,000	2,361	51	20	J1218-101
J1218-104	Cedar Bluffs	TRUE	1,000	2,374	52	20	J1218-101
J1218-105	Cedar Bluffs	TRUE	1,000	2,441	96	20	J1218-101
J1218-106	Cedar Bluffs	TRUE	1,000	2,196	20	27	J1218-101
J1218-107	Cedar Bluffs	TRUE	1,000	2,301	23	20	J1218-101
J1119-01	Cedar Ravine	TRUE	1,000	2,115	20	50	J1219-03
J1218-02	Cedar Ravine	TRUE	1,000	1,862	20	48	J1219-26
J1219-03	Cedar Ravine	TRUE	1,000	1,747	20	49	J1219-05
J1219-05	Cedar Ravine	TRUE	1,000	1,528	20	51	J1219-03
J1219-09	Cedar Ravine	TRUE	1,000	2,495	67	20	J1219-26
J1219-10	Cedar Ravine	TRUE	1,000	2,297	57	20	J1219-26
J1219-11	Cedar Ravine	TRUE	1,000	2,572	65	20	J1219-26
J1219-14	Cedar Ravine	TRUE	1,000	2,565	33	20	J1219-26
J1219-15	Cedar Ravine	TRUE	1,000	1,979	20	39	J1219-26
J1219-17	Cedar Ravine	TRUE	1,000	2,431	24	20	J1219-26
J1219-25	Cedar Ravine	TRUE	1,000	2,016	41	20	J1219-26
J1219-27	Cedar Ravine	TRUE	1,000	1,767	20	21	J1219-26
J1515-12	Combellack	TRUE	1,000	1,435	20	45	J1515-10
J1515-15	Combellack	TRUE	1,000	4,500	59	28	EID J1516-44
J1515-16	Combellack	TRUE	1,000	4,500	68	28	EID J1516-44
J1515-17	Combellack	TRUE	1,000	3,136	20	36	EID J1516-44
J1515-18	Combellack	TRUE	1,000	4,500	49	28	EID J1516-44
J1515-19	Combellack	TRUE	1,000	4,500	77	28	EID J1516-44
J1515-20	Combellack	TRUE	1,000	4,500	96	28	EID J1516-44
J1515-22	Combellack	TRUE	1,000	2,160	31	20	J1515-12
J1515-23	Combellack	TRUE	1,000	2,443	20	39	EID J1516-44
J1515-25	Combellack	TRUE	1,000	3,473	38	20	J1515-12
J1515-28	Combellack	TRUE	1,000	4,500	76	27	EID J1516-44
J1515-29	Combellack	TRUE	1,000	4,461	20	23	J1515-37
J1515-32	Combellack	TRUE	1,000	2,312	20	40	EID J1516-44
J1515-33	Combellack	TRUE	1,000	3,350	20	22	J1515-34
J1515-35	Combellack	TRUE	1,000	3,169	20	35	EID J1516-44
J1516-25	EID Res 4	TRUE	1,000	4,500	54	26	J1516-34
J1516-26	EID Res 4	TRUE	1,000	2,463	20	34	J1516-34
J1516-29	EID Res 4	TRUE	1,000	2,710	20	32	J1516-34
J1516-30	EID Res 4	TRUE	1,000	4,500	63	25	J1516-34
J1516-33	EID Res 4	TRUE	1,000	2,153	20	33	J1516-34

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1516-34	EID Res 4	TRUE	1,000	1,199	20	42	J1517-27
J1516-46	EID Res 4	TRUE	1,000	2,108	20	34	J1516-34
J1516-47	EID Res 4	TRUE	1,000	1,948	20	34	J1516-34
J1517-10	EID Res 4	TRUE	1,000	3,638	22	20	J1517-11
J1517-101	EID Res 4	TRUE	1,000	3,057	20	34	J1517-22
J1517-102	EID Res 4	TRUE	1,000	3,273	20	32	J1517-22
J1517-11	EID Res 4	TRUE	1,000	2,603	20	39	J1517-22
J1517-12	EID Res 4	TRUE	1,000	3,638	21	20	J1517-11
J1517-13	EID Res 4	TRUE	1,000	3,894	20	21	J1517-11
J1517-15	EID Res 4	TRUE	1,000	4,280	22	20	J1517-22
J1517-19	EID Res 4	TRUE	1,000	3,806	20	29	J1516-34
J1517-20	EID Res 4	TRUE	1,000	4,500	45	35	J1516-34
J1517-22	EID Res 4	TRUE	1,000	4,280	20	26	J1517-21
J1517-23	EID Res 4	TRUE	1,000	1,970	20	35	J1516-34
J1517-25	EID Res 4	TRUE	1,000	4,183	23	20	J1517-23
J1517-26	No FF, EID Res4	FALSE [(a)]	1,000	0	24	-	-
J1517-27	EID Res 4	TRUE	1,000	1,076	20	40	J1516-34
J1518-16	EID Res 4	TRUE	1,000	1,087	38	20	J1518-27
J1518-17	EID Res 4	TRUE	1,000	1,087	36	20	J1518-27
J1518-18	EID Res 4	TRUE	1,000	1,087	34	20	J1518-27
J1518-19	EID Res 4	TRUE	1,000	1,087	34	20	J1518-27
J1518-22	EID Res 4	TRUE	1,000	1,239	39	20	J1518-27
J1518-27	EID Res 4	TRUE	1,000	1,042	20	33	J1518-28
J1618-01	EID Res 4	TRUE	1,000	1,569	20	23	J1618-02
J1318-102	Eskaton	TRUE	2,000	2,406	49	20	J1318-113
J1318-103	Eskaton	TRUE	1,000	2,305	30	20	J1318-113
J1318-104	Eskaton	TRUE	1,000	2,317	49	20	J1318-113
J1318-105	Eskaton	TRUE	1,000	2,328	48	20	J1318-113
J1318-106	Eskaton	TRUE	1,000	2,364	52	20	J1318-113
J1318-107	Eskaton	TRUE	1,000	2,363	32	20	J1318-113
J1318-108	Eskaton	TRUE	1,000	2,364	39	20	J1318-113
J1318-109	Eskaton	TRUE	1,000	2,364	58	20	J1318-113
J1318-110	Eskaton	TRUE	1,000	2,319	60	20	J1318-113
J1318-111	Eskaton	TRUE	1,000	2,315	61	20	J1318-113
J1318-112	Eskaton	TRUE	1,000	2,312	66	20	J1318-113
J1318-113	Eskaton	TRUE	1,000	2,305	20	34	J1318-103
J1318-116	Eskaton	TRUE	1,000	2,364	64	20	J1318-113
J1318-118	Eskaton	TRUE	1,000	2,367	33	20	J1318-113
J1216-01	Main Plant	TRUE	1,000	4,500	94	31	J1316-24
J1216-03	Main Plant	TRUE	1,750	4,500	32	27	J1316-24
J1216-04	Main Plant	TRUE	1,000	4,500	116	30	J1316-24
J1216-05	Main Plant	TRUE	1,000	2,119	20	31	J1316-24

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1216-07	Main Plant	TRUE	1,000	4,500	66	22	J1316-24
J1216-12	Main Plant	TRUE	1,000	3,767	55	20	J1316-23
J1217-01	Main Plant	TRUE	1,000	3,192	32	20	J1217-20
J1217-05	Main Plant	TRUE	1,500	4,500	33	31	J1218-05
J1217-06	Main Plant	TRUE	1,500	4,500	39	30	J1217-08
J1217-07	Main Plant	TRUE	1,500	4,500	21	32	J1316-24
J1217-08	Main Plant	TRUE	1,000	1,536	20	32	J1316-24
J1217-11	Main Plant	TRUE	1,000	4,186	60	20	J1217-08
J1217-111	Main Plant	TRUE	1,000	4,500	35	31	J1316-24
J1217-112	Main Plant	TRUE	1,000	4,500	45	32	J1316-24
J1217-114	Main Plant	TRUE	1,000	3,272	22	20	J1217-115
J1217-13	Main Plant	TRUE	1,000	4,377	63	20	J1217-08
J1217-14	Main Plant	TRUE	1,000	1,906	20	27	J1217-18
J1217-16	Main Plant	TRUE	1,000	3,836	26	20	J1217-17
J1217-19	Main Plant	TRUE	1,000	2,057	21	20	J1217-20
J1217-201	Main Plant	TRUE	1,000	1,574	20	32	J1316-24
J1217-21	Main Plant	TRUE	1,000	4,500	68	29	J1217-08
J1217-24	Main Plant	TRUE	1,000	1,302	20	32	J1316-24
J1217-26	Main Plant	TRUE	1,000	4,500	40	31	J1316-24
J1217-27	Main Plant	TRUE	1,000	4,500	43	31	J1316-24
J1217-28	Main Plant	TRUE	1,000	4,500	65	31	J1316-24
J1217-29	Main Plant	TRUE	1,000	4,500	43	31	J1316-24
J1218-08	Main Plant	TRUE	1,000	1,094	38	20	J1218-05
J1218-09	Main Plant	TRUE	1,000	1,474	44	20	J1218-05
J1218-10	Main Plant	TRUE	1,500	3,343	31	20	J1218-05
J1218-11	Main Plant	TRUE	1,000	4,073	29	20	J1218-05
J1315-01	Main Plant	TRUE	1,000	3,893	42	20	J1316-24
J1316-01	Main Plant	TRUE	1,000	2,744	20	32	J1316-24
J1316-02	Main Plant	TRUE	1,000	1,518	20	31	J1316-03
J1316-04	Main Plant	TRUE	1,000	1,662	20	23	J1316-05
J1316-07	Main Plant	TRUE	1,750	3,192	30	20	J1316-06
J1316-08	Main Plant	TRUE	1,500	4,500	101	29	J1316-24
J1316-09	Main Plant	TRUE	1,500	4,500	128	30	J1316-24
J1316-12	Main Plant	TRUE	1,500	4,500	120	30	J1316-24
J1316-14	Main Plant	TRUE	1,500	4,500	127	30	J1316-24
J1316-17	Main Plant	TRUE	1,000	3,466	91	20	J1316-24
J1316-22	Main Plant	TRUE	1,000	3,130	20	22	J1316-24
J1316-25	Main Plant	TRUE	1,000	2,488	20	25	J1316-24
J1316-28	Main Plant	TRUE	1,500	4,500	130	30	J1316-24
J1316-33	Main Plant	TRUE	1,500	4,500	84	30	J1316-24
J1316-34	Main Plant	TRUE	1,500	4,500	87	30	J1316-24
J1316-35	Main Plant	TRUE	1,000	1,524	20	32	J1316-24
J1316-40	Main Plant	TRUE	1,875	4,500	125	30	J1316-24
J1316-41	Main Plant	TRUE	1,000	4,500	124	30	J1316-24

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1316-42	Main Plant	TRUE	1,500	3,737	108	20	J1316-24
J1316-44	Main Plant	TRUE	1,500	3,740	136	20	J1316-24
J1316-46	Main Plant	TRUE	1,000	3,060	28	20	J1316-45
J1316-47	Main Plant	TRUE	1,000	3,388	39	20	J1316-45
J1316-48	Main Plant	TRUE	1,000	2,108	20	31	J1316-24
J1316-49	Main Plant	TRUE	1,000	2,477	20	22	J1316-53
J1316-50	Main Plant	TRUE	1,000	4,500	92	29	J1316-24
J1316-53	Main Plant	TRUE	1,000	2,499	20	23	J1316-49
J1316-56	Main Plant	TRUE	1,000	1,807	20	20	J1316-55
J1316-58	Main Plant	TRUE	1,000	1,486	20	31	J1316-24
J1316-60	Main Plant	TRUE	1,500	3,893	134	20	J1316-24
J1316-70	Main Plant	TRUE	1,500	4,500	66	30	J1316-24
J1316-71	Main Plant	TRUE	1,500	4,500	62	30	J1316-24
J1317-01	Main Plant	TRUE	1,000	4,500	39	32	J1316-24
J1317-03	Main Plant	TRUE	1,500	4,500	32	32	J1317-02
J1317-06	Main Plant	TRUE	1,500	4,040	20	23	J1317-05
J1317-08	Main Plant	TRUE	1,000	2,801	26	20	J1317-07
J1317-09	Main Plant	TRUE	1,500	3,664	20	32	J1316-24
J1317-11	Main Plant	TRUE	1,500	3,269	20	31	J1317-13
J1317-12	Main Plant	TRUE	1,500	3,466	34	20	J1317-11
J1317-13	Main Plant	TRUE	2,000	3,088	20	27	J1317-11
J1317-15	Main Plant	TRUE	1,500	4,500	74	32	J1316-24
J1317-16	Main Plant	TRUE	1,000	4,500	78	31	J1316-24
J1317-18	Main Plant	TRUE	1,000	4,500	52	31	J1316-24
J1317-20	Main Plant	TRUE	1,000	4,026	20	27	J1316-02
J1317-21	Main Plant	TRUE	1,000	1,939	21	20	J1316-02
J1317-26	Main Plant	TRUE	1,000	4,500	76	31	J1316-24
J1317-28	Main Plant	TRUE	1,000	4,500	93	30	J1316-24
J1317-30	Main Plant	TRUE	1,000	2,037	20	32	J1316-24
J1317-32	Main Plant	TRUE	1,500	4,409	20	32	J1316-24
J1317-34	Main Plant	TRUE	1,500	4,083	38	20	J1317-33
J1317-35	Main Plant	TRUE	1,500	3,776	20	32	J1316-24
J1317-36	Main Plant	TRUE	3,750	4,500	50	31	J1317-35
J1317-40	Main Plant	TRUE	1,000	4,500	84	31	J1316-24
J1317-41	Main Plant	TRUE	1,500	4,500	107	31	J1316-24
J1317-43	Main Plant	TRUE	1,000	4,500	107	31	J1316-24
J1317-45	Main Plant	TRUE	1,000	4,500	34	31	J1316-24
J1317-48	Main Plant	TRUE	1,000	3,844	20	31	J1316-24
J1317-49	Main Plant	TRUE	1,000	4,500	38	21	J1417-63
J1317-51	Main Plant	TRUE	1,500	4,500	103	31	J1316-24
J1317-52	Main Plant	TRUE	2,500	4,500	91	31	J1316-24
J1317-53	Main Plant	TRUE	2,750	4,500	90	31	J1316-24
J1317-54	Main Plant	TRUE	1,500	4,500	87	31	J1316-24
J1317-55	Main Plant	TRUE	1,500	4,500	71	31	J1316-24

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1318-01	Main Plant	TRUE	1,000	1,316	20	33	J1316-24
J1318-06	Main Plant	TRUE	1,000	1,579	29	20	J1318-01
J1318-08	Main Plant	TRUE	1,000	2,041	20	32	J1316-24
J1318-11	Main Plant	TRUE	1,000	4,500	37	32	J1316-24
J1319-03	Main Plant	TRUE	1,000	1,380	20	33	J1316-24
J1415-01	Main Plant	TRUE	1,000	1,626	20	31	J1316-24
J1415-04	Main Plant	TRUE	1,000	4,392	77	20	J1316-24
J1415-08	Main Plant	TRUE	1,000	4,500	68	22	J1316-24
J1415-10	Main Plant	TRUE	1,000	4,500	74	21	J1316-24
J1415-100	Main Plant	TRUE	1,000	1,551	20	23	J1415-22
J1415-102	Main Plant	TRUE	1,000	4,500	51	22	J1316-24
J1415-104	Main Plant	TRUE	1,000	4,220	92	20	J1316-24
J1415-11	Main Plant	TRUE	1,500	4,500	29	23	J1316-24
J1415-12	Main Plant	TRUE	1,000	1,840	20	31	J1316-24
J1415-13	Main Plant	TRUE	1,000	1,988	20	30	J1316-24
J1415-16	Main Plant	TRUE	1,500	4,424	20	22	J1415-15
J1415-19	Main Plant	TRUE	1,000	1,186	20	31	J1316-24
J1415-21	Main Plant	TRUE	1,000	1,835	24	20	J1415-100
J1415-24	Main Plant	TRUE	1,500	1,733	20	30	J1316-24
J1415-27	Main Plant	TRUE	1,500	3,186	21	20	J1415-26
J1415-29	Main Plant	TRUE	1,000	4,138	23	20	J1415-37
J1415-30	Main Plant	TRUE	1,500	3,893	20	30	J1316-24
J1415-34	Main Plant	TRUE	1,000	3,523	26	20	J1415-37
J1415-37	Main Plant	TRUE	1,000	1,854	20	31	J1316-24
J1415-38	Main Plant	TRUE	1,000	2,043	20	31	J1316-24
J1415-39	Main Plant	TRUE	1,000	2,669	20	22	J1415-38
J1415-40	Main Plant	TRUE	1,000	1,832	25	20	J1415-100
J1416-01	Main Plant	TRUE	1,500	2,807	45	20	J1416-17
J1416-04	Main Plant	TRUE	1,000	2,072	42	20	J1316-35
J1416-06	Main Plant	TRUE	1,000	1,381	20	26	J1416-07
J1416-07	Main Plant	TRUE	1,000	1,402	20	22	J1416-06
J1416-09	Main Plant	TRUE	1,000	2,516	20	27	J1416-08
J1416-11	Main Plant	TRUE	1,500	3,962	25	20	J1416-09
J1416-13	Main Plant	TRUE	1,000	4,257	50	20	J1416-06
J1416-16	Main Plant	TRUE	1,000	1,688	20	32	J1316-24
J1416-18	Main Plant	TRUE	1,000	1,525	20	26	J1416-17
J1416-21	Main Plant	TRUE	1,000	4,500	87	27	J1516-35
J1416-23	Main Plant	TRUE	1,000	4,500	42	21	J1516-35
J1416-24	Main Plant	TRUE	1,500	4,140	77	20	J1516-35
J1416-30	Main Plant	TRUE	1,500	4,500	66	24	J1316-24
J1416-36	Main Plant	TRUE	1,000	3,358	78	20	J1516-35
J1416-42	Main Plant	TRUE	1,000	1,972	20	30	J1316-24
J1416-43	Main Plant	TRUE	1,000	2,438	61	20	J1516-35
J1416-44	Main Plant	TRUE	1,000	2,618	85	20	J1516-35

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1416-48	Main Plant	TRUE	1,500	1,945	20	25	J1416-37
J1417-02	Main Plant	TRUE	1,500	4,500	92	32	J1316-24
J1417-04	Main Plant	TRUE	1,500	4,500	98	32	J1316-24
J1417-05	Main Plant	TRUE	1,500	4,500	57	32	J1316-24
J1417-09	Main Plant	TRUE	1,500	4,500	51	32	J1316-24
J1417-12	Main Plant	TRUE	1,000	3,679	31	20	J1417-11
J1417-22	Main Plant	TRUE	1,000	2,926	40	20	J1417-20
J1417-27	Main Plant	TRUE	1,000	3,295	20	32	J1316-24
J1417-29	Main Plant	TRUE	3,500	3,888	63	20	J1417-63
J1417-32	Main Plant	TRUE	1,000	4,500	52	26	J1417-73
J1417-41	Main Plant	TRUE	1,000	3,576	20	20	J1417-38
J1417-45	Main Plant	TRUE	1,000	4,342	31	20	J1417-73
J1417-47	Main Plant	TRUE	1,000	4,500	23	26	J1417-46
J1417-48	Main Plant	TRUE	1,000	4,001	45	20	J1316-35
J1417-51	Main Plant	TRUE	1,000	2,340	20	33	J1316-24
J1417-55	Main Plant	TRUE	1,000	4,500	71	32	J1316-24
J1417-58	Main Plant	TRUE	1,000	4,500	54	32	J1316-24
J1417-59	Main Plant	TRUE	1,000	2,566	20	32	J1316-24
J1417-60	Main Plant	TRUE	1,000	4,500	32	32	J1417-59
J1417-62	Main Plant	TRUE	1,000	2,964	20	32	J1316-24
J1417-63	Main Plant	TRUE	1,000	1,306	20	32	J1316-24
J1417-65	Main Plant	TRUE	1,000	4,500	39	32	J1316-24
J1417-67	Main Plant	TRUE	1,000	4,500	32	32	J1316-24
J1417-68	Main Plant	TRUE	1,000	4,500	43	32	J1316-24
J1417-71	Main Plant	TRUE	1,000	1,744	20	24	J1417-73
J1417-76	Main Plant	TRUE	1,000	2,458	20	25	J1417-77
J1417-81	Main Plant	TRUE	1,500	2,910	20	31	J1316-24
J1417-82	Main Plant	TRUE	1,500	2,946	46	20	J1417-63
J1418-01	Main Plant	TRUE	3,750	4,500	62	32	J1316-24
J1418-06	Main Plant	TRUE	1,000	1,830	20	33	J1316-24
J1418-07	Main Plant	TRUE	1,000	4,483	20	32	J1316-24
J1418-09	Main Plant	TRUE	2,500	4,500	80	32	J1316-24
J1418-10	Main Plant	TRUE	4,250	6,000	55	28	J1419-05
J1418-104	Main Plant	TRUE	1,500	4,467	20	32	J1316-24
J1418-12	Main Plant	TRUE	1,500	4,500	81	32	J1316-24
J1418-17	Main Plant	TRUE	1,500	4,500	87	32	J1316-24
J1418-19	Main Plant	TRUE	1,500	3,634	44	20	J1318-01
J1418-20	Main Plant	TRUE	1,500	4,500	68	32	J1316-24
J1418-21	Main Plant	TRUE	1,500	4,500	87	32	J1316-24
J1418-24	Main Plant	TRUE	1,000	3,282	20	32	J1316-24
J1418-29	Main Plant	TRUE	1,000	4,500	29	21	J1418-33
J1418-31	Main Plant	TRUE	1,000	2,569	20	32	J1418-32
J1418-32	Main Plant	TRUE	1,000	2,967	20	22	J1418-31
J1418-33	Main Plant	TRUE	2,250	2,866	20	32	J1418-32

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1418-36	Main Plant	TRUE	1,000	1,542	24	20	J1418-35
J1418-40	Main Plant	TRUE	1,000	2,561	20	33	J1316-24
J1418-43	Main Plant	TRUE	1,000	1,617	20	33	J1316-24
J1418-44	Main Plant	TRUE	1,000	1,872	20	23	J1418-45
J1418-46	Main Plant	TRUE	1,000	2,522	29	20	J1418-45
J1418-48	Main Plant	TRUE	1,000	1,905	20	33	J1316-24
J1418-51	Main Plant	TRUE	1,000	4,500	54	32	J1316-24
J1418-53	Main Plant	TRUE	1,000	3,176	28	20	J1518-13
J1418-56	Main Plant	TRUE	2,250	4,249	34	20	J1418-24
J1418-61	Main Plant	TRUE	1,000	2,120	20	22	J1418-41
J1419-01	No FF, Main Plant	FALSE [(b)]	1,000	0	19	-	-
J1419-02	Main Plant	TRUE	1,000	2,318	31	20	J1319-03
J1419-03	Main Plant	TRUE	1,000	2,309	31	20	J1319-03
J1419-04	Main Plant	TRUE	1,500	4,419	39	20	J1419-05
J1419-05	Main Plant	TRUE	1,500	1,754	20	33	J1316-24
J1419-07	Main Plant	TRUE	1,500	2,409	31	20	J1419-05
J1515-05	Main Plant	TRUE	1,000	4,500	81	31	J1316-24
J1515-06	Main Plant	TRUE	1,000	4,500	79	31	J1316-24
J1515-08	Main Plant	TRUE	1,000	4,500	63	31	J1316-24
J1515-09	Main Plant	TRUE	1,000	4,500	50	31	J1316-24
J1515-11	Main Plant	TRUE	1,500	4,500	58	31	J1316-24
J1516-01	Main Plant	TRUE	1,000	1,382	48	20	J1516-35
J1516-05	Main Plant	TRUE	1,000	2,243	35	20	J1516-35
J1516-06	Main Plant	TRUE	1,000	2,340	42	20	J1516-35
J1516-13	Main Plant	TRUE	1,000	1,892	32	20	J1516-35
J1516-15	Main Plant	TRUE	1,000	1,963	37	20	J1516-35
J1516-21	Main Plant	TRUE	1,000	2,267	61	20	J1516-35
J1516-22	Main Plant	TRUE	1,000	2,486	81	20	J1516-35
J1516-23	Main Plant	TRUE	1,000	2,527	79	20	J1516-35
J1516-24	Main Plant	TRUE	1,000	2,127	44	20	J1516-35
J1516-35	Main Plant	TRUE	1,000	1,110	20	32	J1316-24
J1516-36	Main Plant	TRUE	1,000	1,281	32	20	J1516-35
J1516-38	Main Plant	TRUE	1,000	1,614	21	20	J1516-37
J1516-40	Main Plant	TRUE	1,000	1,569	33	20	J1516-35
J1516-41	Main Plant	TRUE	1,000	1,835	26	20	J1516-35
J1517-02	Main Plant	TRUE	1,000	1,933	24	20	J1517-01
J1517-05	Main Plant	TRUE	1,000	2,810	20	32	J1316-24
J1517-06	Main Plant	TRUE	1,000	4,377	20	32	J1316-24
J1517-07	Main Plant	TRUE	1,000	4,500	39	32	J1316-24
J1517-18	Main Plant	TRUE	1,000	4,142	27	20	J1517-16
J1518-11	Main Plant	TRUE	1,000	2,393	21	20	J1518-10
J1518-15	Main Plant	TRUE	1,000	2,966	21	20	J1518-14
J1220-100	Sierra Hydro	TRUE	1,000	1,804	20	20	J1220-100

City of Placerville Water Model
2009 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1119-03	Sierra Plant	TRUE	1,000	2,361	124	20	J1219-31
J1119-04	Sierra Plant	TRUE	1,000	1,979	20	36	J1320-01
J1219-01	Sierra Plant	TRUE	1,000	2,182	23	20	J1220-01
J1219-13	Sierra Plant	TRUE	1,000	2,128	111	20	J1219-31
J1219-20	Sierra Plant	TRUE	1,000	1,761	28	20	J1220-05
J1219-21	Sierra Plant	TRUE	1,000	1,658	20	27	J1220-05
J1219-22	Sierra Plant	TRUE	1,000	1,549	20	20	J1219-23
J1219-24	Sierra Plant	TRUE	1,000	1,619	21	20	J1219-23
J1219-30	Sierra Plant	TRUE	1,000	1,998	21	20	J1219-31
J1220-01	Sierra Plant	TRUE	1,000	1,486	20	38	J1320-01
J1220-04	Sierra Plant	TRUE	1,000	1,188	20	20	J1220-05
J1319-01	Sierra Plant	TRUE	1,000	1,323	29	20	J1320-01
J1320-01	Sierra Plant	TRUE	1,000	1,073	20	31	J1220-05
J1419-09	Upper Schnell School	TRUE	1,500	2,241	20	27	J1519-03
J1518-06	Upper Schnell School	TRUE	1,000	2,393	20	21	J1518-07
J1518-07	Upper Schnell School	TRUE	2,250	2,256	20	32	J1518-09
J1518-08	Upper Schnell School	TRUE	1,000	2,471	20	22	J1518-07
J1519-01	Upper Schnell School	FALSE [(c)]	2,250	1,963	32	20	J1519-03

(a) Pump added for J1517-26 in 2005.

(b) Pump added for J1419-01 (Lane Drive) in 2005.

(c) Split the flow between J1519-01 & 1518-03 or EID hydrant (since the entire flow cannot be supplied by one hydrant) and FF can be met.

D-2: 2009 Manual Fire Flow Scenario Notes

Appendix D-2: 2009 Manual Fire Flow Scenario Notes

Appendix D-2 contains a summary of the 2009 manual fire flow (FF) analyses performed and related results and improvement recommendations for each zone is included in the sections below.

Main Plant Zone

Based on WaterCAD's automated FF analysis all hydrants in the Main Plant Zone are capable of obtaining their required FF with the exception of J1418-01 located on Lane Drive. This hydrant will obtain FF with the pump recommended in 2005 (pump was not input into the model as the pump needs to be designed and a curve selected prior to input into the model).

Manual FF analyses were performed for the following Main Plant Zone FF junctions:

1. FF J1418-01 –3,750 gpm FF. The required FF can be obtained with a residual pressure at the FF node of 77 psi. The upstream pressure in EID PSV 19 is 60.6 psi, and maximum velocity is 12 ft/sec. Flow comes from all directions to feed the fire; PRV1518-03 flows at 1,745 gpm, PRV 1217-100 flows at 1,782 gpm and PRV1418-101 flows at 1,500 gpm. The Sierra Plant pressures remain above 20 psi (with the exception of J1220-03 which is located just downstream of the plant and has a static pressure less than 20 psi).

   When the FF is split between the three hydrants located at J1418-06 (750 gpm), J1418-01 (1,500 gpm), and J1419-04 (1,500 gpm, new hydrant location as part of 2005 improvements) the required FF can be met. PRV1418-101 flows at 1,500 gpm without pressure problems, PSV upstream pressure is 60.5 psi and velocities are less than 12 ft/sec.

2. FF J1418-33 - 2,250 gpm FF. The required FF can be obtained with a residual pressure at the node of 34 psi. The upstream pressure in EID PSV 19 is 60.9 psi. PRV 1418-101 flows at 568 gpm during this FF with no pressure issues in the Sierra Plant Zone. As explained in the 2005 FF scenario, velocities in pipeline P1418-34 (8" diameter, 261 feet) leading the apartments reaches 14.5 ft/sec during this fire flow event. In the model velocity in the 6-inch pipe P1418-29 leading to J1418-33 exceeds 20 ft/sec; however a single hydrant cannot be used to obtain the entire fire flow. Therefore, some of the flow would go to the hydrant at J1418-32 reducing the flow and velocity through the 6-inch pipe to below 14.5 ft/sec.

3. FF J1317-36 – 3,750 gpm FF. The required FF at this node, causes the upstream pressure of the EID PSV19 to drop below 55 psi (54.9 psi). Therefore, the FF was rerun with the PSV active. When maintaining an upstream pressure of 55 psi at the PSV, flow through PRV1217-100 is limited to 2,908 gpm and the downstream pressure is reduced to 14.9 psi. The required FF at J1317-36 can be obtained residual pressure of 63 psi at the FF node and velocities less than 16 ft/sec (15.5 ft/sec through P1317-19). With the PSV active, 521 gpm flows through PRV1218-102 and 588 gpm through PRV1418-101 to help achieve the required FF (no pressure issues).

   As discussed in the 2005 FF scenario, a single fire hydrant cannot supply the full 3,750 gpm FF; therefore the hydrant at J1317-36 would have to be supplemented with flow from a hydrant at J1317-35 and a third hydrant at J1317-42 (both of which can obtain more than 1,500 gpm). Running the FF using all three hydrants, the FF can be met, the PSV no longer

controls the flow through PRV1217-100, and the velocity through P1317-19 drops below 12.5 ft/sec. No improvements necessary to meet this FF requirement in 2009.

4. FF J1418-10 – 4,250 gpm FF. As discussed in the 2005 FF scenario, a hydrant does not exist at J1418-10; therefore, the FF would be split between three hydrants. Running the FF using the hydrants at J1418-12 (1,500 gpm), J1418-09 (1,500 gpm) and J1418-07 (1,250 gpm) the FF can be achieved with velocities less than 13 ft/sec and the required FF can be supplied with a residual pressure of 83 psi at the FF nodes.

   PRV1418-101 is located very close to this FF; therefore if FCV1418-101 was not installed to keep flows below 1,500 gpm, J1219-31 in the Sierra Plant Zone drop below 20 psi, and flows through the new 8" pipe upstream of PRV1418-101 would exceed 10 ft/sec. With the flow limited to 1,500 gpm through PRV1418-101 during this FF, and the EID PSV19 maintains an upstream pressure of 59.7 psi and there are no pressure problems in the Sierra Plant Zone.

5. FF J1418-09 – 2,500 gpm. Residual at node is 100 psi, velocities below 10 ft/sec, PSV upstream pressure is greater than 55 psi, and PRV1418-101 contributes it full 1,500 gpm flow without pressure issue upstream. Since the hydrant at J1418-09 cannot achieve the full 2,500 gpm flow due to hydrant limitations (max flow of 1,500 gpm); it will need to be supplemented with flow from the hydrant at J1418-12 (splitting the flow results in the same max velocity, PSV pressure and flow through PRV1418-01). No improvements necessary.

6. FF J1316-07 – 1,750 gpm. Existing 4" and 6" pipes can supply required FF. Residual at node is 95 psi, velocities below 15 ft/sec and PSV upstream pressure is greater than 55 psi. If the hydrant at J1316-07 cannot achieve the full 1,750 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1216-03 and vice versa. No improvements necessary.

7. FF J1216-03 – 1,750 gpm. Existing 6" pipes can supply required FF. Residual at node is 101 psi, velocities below 11 ft/sec and PSV upstream pressure is 55.1 psi. If the hydrant at J1216-03 cannot achieve the full 1,750 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1316-07 and vice versa. No improvements necessary.

8. FF J1316-40 – 1,875 gpm. Existing 8" pipes can supply required FF. Residual at node is 142 psi, velocities below 8 ft/sec, PSV upstream pressure is greater than 55 psi, and flow through PRV1418-101 is less than 250 gpm. If the hydrant at J1316-40 cannot achieve the full 1,850 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1316-12. No improvements necessary.

9. FF J1418-56 – 2,250 gpm. Existing 8" pipes can supply required FF. Residual at node is 89 psi, velocities below 13 ft/sec and PSV upstream pressure is greater than 55 psi. A single hydrant cannot achieve the full 2,250 gpm flow due to hydrant limitations (max flow of 1,500 gpm); therefore J1418-56 will need to be supplemented with flow from the hydrant at J1417-55 and velocities would likely drop to below 7 ft/sec with both hydrants flowing. PRV1418-101 supplies approximately 387 gpm during this FF event. No improvements necessary.

10. FF J1317-53 (2,750 FF) and J1317-52 (2,500 gpm). FF at the nodes can be met with a residual pressure of 117 psi at the FF node, velocities less than 11 ft/sec, an upstream pressure greater than 55 psi at EID PRV19, and a flow less than 400 gpm from PRV1418-101. Since a single hydrant cannot supply the full 2,700 gpm FF due to hydrant limitations

(max flow of 1,500 gpm), each of the hydrants can help supplement the full flow from the other. No improvements necessary.

11. FF J1417-29 – 3,500 gpm. FF at this node can be met with a residual pressure of 74 psi at the FF node, velocities less than 15.5 ft/sec (P1417-60 is 6" pipe that has high velocity), an upstream pressure greater than 55 psi at EID PRV19, and a flow less than 400 gpm from PRV1418-101. Using the three hydrants recommended in the 2005 scenario including J1317-49 and a new hydrant at J1417-82, the FF can be obtained with a maximum velocity of 15.5 ft/sec.

12. FF J1317-32, -34, -42 - 1,500 gpm. Existing 4" and 6" pipes can supply required FF. Residual at FF nodes is 99 to 119 psi, max velocity below 11 ft/sec and PSV upstream pressure greater than 55 psi. No improvements necessary.

13. FF J1416-01 - 1,500 gpm. Existing 6" pipes can supply required FF. Residual at FF nodes is 88 psi, max velocity below 12 ft/sec and PSV upstream pressure greater than 55 psi. No improvements necessary.

14. FF J1316-08 - 1,500 gpm. Existing 6" and 4" pipes can supply required FF. Residual at FF node is 131 psi, max velocity below 15 ft/sec (49' of 6" pipe at 14.9 ft/sec, rest of the system has velocities less than 7 ft/sec) and PSV upstream pressure greater than 55 psi. No improvements necessary.

15. FF J1415-19 – 1,000 gpm FF. Existing 4" pipes can supply required FF. Residual pressure at the FF node is 34 psi and velocities through the system do not exceed 15 ft/sec (181' of the 4" that feed the hydrant is at a velocity of 14.4 ft/sec, all other velocities below 12 ft/sec). Proposed improvements are within the existing roadway.

16. FFJ1218-08 – 1,000 gpm FF. With the Cedar Bluff to Main Plant Zone loop, this hydrant can obtain the required FF with a residual pressure of 43.5 psi at the FF node and residual pressures greater than 25 psi downstream of the FF node. Velocities during the FF event do not exceed 12 ft/sec. PRV1218-103 supplies approximately 500 gpm for the FF. No improvement necessary.

17. FFJ1317-20 – 1,000 gpm FF. Checked this FF because it is on 4" line, but velocities remain below 12 ft/sec so no improvement recommendation necessary.

Based on the automated FF analysis and the manual FF analyses described above, other than the addition of FCV 1418-101, no improvements are required to meet FF in the Main Plant Zone in 2009.

Combellack Zone

Based on WaterCAD's automated FF analysis all hydrants in the Combellack Zone are capable of obtaining their required FF. Since the Combellack Zone has a much higher HGL than the Main Plant Zone, there is no need to run manual FF to check EID PSV19 upstream pressure or the flow through PRV1418-101. In addition, all hydrants in this zone are on 6" or larger pipelines and all FFs are 1,000 gpm. Therefore no manual FF were run for this zone and no improvements are necessary to meet FF in this zone.

Upper Schnell School Zone

Based on WaterCAD's automated FF analysis one of the hydrants in the Upper Schnell School Zone cannot obtain the required FF (J1519-01). Manual FF analyses were performed for the hydrants located at J1518-07 and J1519-01 and are summarized below.

1. FF J1518-07 - 2,250 gpm FF. With the addition of PRV1418-101, this flow rate can now be obtained at J1518-07; however the full flow cannot be obtained with a single hydrant due to hydrant flow limitations. The model shows that splitting the fire flow between the hydrant at J1518-07 (1,250 gpm) and J1518-06 (1,000 gpm) would allow pressures to remain above 25 psi. Flows through the 8-inch pipelines feeding the zone from the EID would reach velocities of 14.9 ft/sec. PRV1418-101 would feed approximately 78 gpm into the Main Zone during this FF event and the upstream pressure of EID PSV19 remains above 61 psi. Based on the assumption that the FF will be supplied by two hydrants, no additional improvements are recommended to meet this FF requirement.

2. FF J1519-01 - 2,250 gpm FF. As discussed in the 2005 FF scenario, this flow rate cannot be obtained with a single hydrant located at J1519-01. The model shows that a flow of 1,963 gpm can be obtained without causing the upstream pressure to drop below 20 psi. However, running the model with a FF of 1,250 gpm at J1519-01 (40 psi) and 1,000 gpm at J1518-08 (35 psi) the system stays above the required 20 psi (J1519-03 has lowest pressure of 22 psi). Again flows through the 8-inch pipelines feeding the zone from the EID could reach velocities of up to 15 ft/sec. PRV1418-101 would feed approximately 78 gpm into the Main Zone during this FF event and the upstream pressure of EID PSV19 remains above 61 psi. Based on the assumption that the FF will be supplied by two hydrants, no additional improvements are recommended to meet this FF requirement.

All other hydrants in this zone require 1,000 to 1,500 gpm FF and are on 6" or larger pipelines; therefore, no other manual FF runs were ran and no improvements are necessary to meet FF in this zone.

Res 4 Zone

Based on WaterCAD's automated FF analysis all hydrants in the Res4 Zone are capable of obtaining their required FF with the exception of J1517-26 located at the top of Poverty Hill. This hydrant will obtain FF with the pump recommended in 2005 (pump was not input into the model as the pump needs to be designed and a curve selected prior to input into the model). Since the Res4 Zone does not receive flow from the Main Plant Zone, there is no need to run manual FF to check EID PSV19 upstream pressure or the flow through PRV1418-101. In addition, all hydrants in this zone are on 6" or larger pipelines and all FFs are 1,000 gpm. Therefore no manual FFs were run for this zone and no improvements are necessary to meet FF in this zone.

Cedar Ravine, Sierra Plant, Eskaton, and Cedar Bluffs Zones

Based on WaterCAD's automated FF analysis all hydrants in the Cedar Ravine, Sierra Plant, Eskaton, and Cedar Bluffs Zones are capable of obtaining their required FF. Since the Main Plant Zone does not feed into these zones, there is no need to run manual FF to check EID PSV19 upstream pressure or the flow through PRV1418-101. All hydrants in this zone are on 6" or larger pipelines and require FFs of 1,000 gpm, with the exception of J1318-102 which requires a FF of 2,000 gpm. Therefore, J1318-102 was the only manual FF analyzed for these zones.

FF J1318-102 – 2,000 gpm FF. During this FF event, the residual pressure at the FF node is 70 psi, and the lowest pressures in the system (ignoring the No FF nodes) are 20.2 psi and 20.8 psi at J1219-31 and J1219-30, respectively. Velocities remain below 10 ft/sec with the exception of the 8" pipe feeding the FF which had a velocity of 12.8 ft/sec. No recommended improvements are necessary to meet this FF; however, the City may want to lower the setting of the PRV/FCV 1418-101 setting if actual pressures within the Sierra Zone are found to drop below 20 psi.

No necessary improvements are recommended to meet FFs in the Cedar Ravine, Sierra Plant, Eskaton, and Cedar Bluffs Zones.

Sierra Hydro-pneumatic Zone

The only hydrant that exists in the Sierra Hydro-pneumatic Zone is the hydrant that was proposed in 2005 (J1220-100) to replace the hydrant at J1220-03 (hydrant just downstream of the Sierra Plant). The new hydrant J1220-100 can obtain the required 1,000 gpm FF with a residual pressure of 31.6 psi at the FF node. No improvements are necessary for this zone.

D-3: 2009 Junction Model Output

City of Placerville
Water Modeling Report
2009 Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
EID J1117-02	EID Res 6	2,300.00	0	41.3	2,395.55	0	35.9	2,383.09	0	31	2,371.71
EID J1117-03	EID Res 6	2,240.00	0	66.6	2,393.99	0	59.9	2,378.54	0	53.8	2,364.43
EID J1119-04	EID PRV#3S	2,237.00	0	153	2,590.55	0	152.1	2,588.66	0	149.4	2,582.31
EID J1219-02	EID PRV#3S	2,397.00	0	89.6	2,604.10	0	89.1	2,602.97	0	87.6	2,599.37
EID J1220-02	EID PRV#3S	2,537.59	0	33.9	2,616.04	0	33.9	2,615.91	0	33.7	2,615.44
EID J1220-06	EID PRV#3S	2,532.00	0	36.4	2,616.05	0	36.3	2,615.95	0	36.2	2,615.64
EID J1516-44	Combellack	2,140.00	0	56	2,269.48	0	52.8	2,261.93	0	41.7	2,236.36
EID J1519-04	Upper Schnell School	2,170.00	0	115.1	2,436.00	0	114.9	2,435.66	0	113.9	2,433.22
EID J1619-07	Upper Schnell School	2,280.00	0.00	67.4	2,435.88	0.00	67.4	2,435.88	0.00	67.4	2,435.87
EID North	Combellack	1,920.00	1162.81	149.9	2,266.54	2139.58	144	2,252.83	3530.31	125.4	2,209.84
EID South	EID Res 6	2,240.00	1,477.05	66.6	2,393.89	2,717.77	59.8	2,378.22	4,484.32	53.5	2,363.62
J1117-01	EID Res 6	2,210.00	0	79.1	2,392.75	0	71.4	2,375.03	0	66	2,362.65
J1117-02	EID Res 6	2,237.38	0	67.4	2,393.05	0	59.9	2,375.84	0	54.4	2,363.07
J1119-01	Cedar Ravine	2,207.00	0.27	107.9	2,456.38	0.6	107.7	2,456.01	0.99	107.6	2,455.71
J1119-02	Sierra Plant	2,226.32	0	143.5	2,558.10	0	143.5	2,557.98	0	143.1	2,556.96
J1119-03	Sierra Plant	2,148.00	10.34	177.4	2,557.92	22.75	176.9	2,556.90	37.54	173	2,547.91
J1119-04	Sierra Plant	2,355.00	0	87.9	2,558.05	0	87.8	2,558.03	0	87.8	2,557.92
J1216-01	Main Plant	1,945.00	1.89	102.2	2,181.17	3.47	101.8	2,180.32	5.73	99	2,173.79
J1216-02	Main Plant	1,903.00	1.72	120.3	2,180.99	3.16	119.8	2,179.84	5.21	117	2,173.54
J1216-03	Main Plant	1,910.00	0	117.2	2,180.97	0	116.7	2,179.77	0	114	2,173.47
J1216-04	Main Plant	1,891.00	41.84	125.4	2,180.89	76.99	124.9	2,179.57	127.03	122.2	2,173.40
J1216-05	Main Plant	1,965.00	2.29	93.4	2,180.90	4.22	92.8	2,179.59	6.96	90.2	2,173.40
J1216-06	Main Plant	1,898.00	1.72	122.4	2,180.90	3.16	121.8	2,179.59	5.21	119.2	2,173.40
J1216-07	Main Plant	1,998.00	0.28	79.2	2,181.10	0.52	78.8	2,180.10	0.86	76	2,173.62
J1216-08	Main Plant	2,003.00	4.7	77	2,181.05	8.64	76.6	2,179.96	14.26	73.8	2,173.55
J1216-09	Main Plant	2,040.00	5.21	61	2,180.94	9.6	60.4	2,179.66	15.84	57.7	2,173.37
J1216-10	Main Plant	1,964.00	0.86	93.8	2,180.88	1.58	93.2	2,179.49	2.61	90.5	2,173.23
J1216-11	Main Plant	1,994.00	1.15	80.9	2,180.89	2.12	80.3	2,179.52	3.5	77.6	2,173.30
J1216-12	Main Plant	2,005.00	0	76.1	2,180.89	0	75.5	2,179.52	0	72.8	2,173.30
J1217-01	Main Plant	1,944.00	3.35	101.8	2,179.40	6.17	100.4	2,175.97	10.18	99	2,172.88
J1217-02	EID Res 6	2,180.00	0	91.8	2,392.18	0	83.7	2,373.49	0	78.7	2,361.84
J1217-03	No FF	2,147.00	0	15	2,181.66	0	15	2,181.63	0	11.9	2,174.48
J1217-04	No FF	2,130.00	0.58	22.3	2,181.49	1.06	22.1	2,181.19	1.75	19.1	2,174.25
J1217-05	Main Plant	2,014.00	4.02	71.5	2,179.16	7.39	69.9	2,175.45	12.19	68.8	2,172.99
J1217-06	Main Plant	1,988.00	3.7	82.7	2,179.26	6.81	81.2	2,175.67	11.24	80	2,172.90
J1217-07	Main Plant	1,986.00	0	83.6	2,179.26	0	82.1	2,175.68	0	80.8	2,172.86
J1217-08	Main Plant	2,026.00	1.98	66.3	2,179.35	3.63	64.8	2,175.88	5.99	63.5	2,172.88
J1217-09	Main Plant	1,960.00	1.98	94.9	2,179.35	3.63	93.4	2,175.85	5.99	92.1	2,172.81
J1217-10	Main Plant	1,953.00	0	97.9	2,179.35	0	96.4	2,175.88	0	95.1	2,172.88
J1217-11	Main Plant	1,933.00	1.23	106.6	2,179.35	2.26	105.1	2,175.88	3.73	103.8	2,172.88
J1217-110	Main Plant	2,022.00	0	68.8	2,181.05	0	68.4	2,180.03	0	65.6	2,173.72
J1217-111	Main Plant	2,028.00	0.9	66.2	2,181.04	1.66	65.8	2,180.00	2.74	63	2,173.69
J1217-112	Main Plant	2,023.00	0	68.4	2,181.05	0	67.9	2,180.03	0	65.2	2,173.72
J1217-113	Main Plant	2,031.00	1.2	64.9	2,181.05	2.21	64.5	2,180.03	3.65	61.7	2,173.72
J1217-114	Main Plant	2,032.00	1.2	64.5	2,181.05	2.21	64	2,180.03	3.65	61.3	2,173.72
J1217-115	Main Plant	2,036.00	1.5	62.8	2,181.05	2.76	62.3	2,180.03	4.55	59.6	2,173.72
J1217-12	Main Plant	1,939.00	0	104	2,179.39	0	102.5	2,175.95	0	101.2	2,172.88
J1217-13	Main Plant	1,921.00	2.63	111.8	2,179.38	4.84	110.3	2,175.93	7.99	109	2,172.88
J1217-14	Main Plant	2,001.00	1.98	77.2	2,179.48	3.63	75.8	2,176.17	5.99	74.4	2,172.88
J1217-15	Main Plant	1,970.00	0	90.8	2,179.79	0	89.5	2,176.91	0	87.8	2,172.98
J1217-16	Main Plant	1,970.00	0	90.8	2,179.79	0	89.5	2,176.91	0	87.8	2,172.98
J1217-17	Main Plant	1,983.00	1.98	85.1	2,179.75	3.63	83.8	2,176.79	5.99	82.1	2,172.68
J1217-18	Main Plant	1,997.00	0	78.9	2,179.47	0	77.5	2,176.13	0	76.1	2,172.88
J1217-19	Main Plant	1,991.00	2.22	81.5	2,179.46	4.09	80.1	2,176.11	6.75	78.7	2,172.88
J1217-20	Main Plant	1,994.00	0.25	80.2	2,179.46	0.46	78.8	2,176.11	0.76	77.4	2,172.88
J1217-200	Main Plant	1,965.00	0	92.8	2,179.39	0	91.3	2,175.95	0	89.9	2,172.88
J1217-201	Main Plant	2,010.00	1.29	73.3	2,179.39	2.38	71.8	2,175.95	3.93	70.5	2,172.88
J1217-21	Main Plant	1,914.00	3.95	114.8	2,179.44	7.27	113.4	2,176.06	12	112	2,172.88
J1217-22	Main Plant	1,905.00	2.31	118.8	2,179.49	4.26	117.3	2,176.18	7.03	115.9	2,172.88
J1217-23	Main Plant	1,915.00	2.54	114.6	2,179.80	4.67	113.3	2,176.93	7.71	111.6	2,172.98
J1217-24	Main Plant	2,004.00	4.73	76.3	2,180.34	8.7	75.4	2,178.26	14.36	73.2	2,173.18
J1217-25	Main Plant	1,925.00	1.23	110.5	2,180.35	2.26	109.6	2,178.27	3.73	107.4	2,173.21

City of Placerville
Water Modeling Report
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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1217-26	Main Plant	1,980.00	3.21	86.7	2,180.47	5.9	85.9	2,178.56	9.73	83.6	2,173.27
J1217-27	Main Plant	1,985.00	2.87	84.8	2,181.03	5.28	84.4	2,179.97	8.71	81.6	2,173.66
J1217-28	Main Plant	1,952.00	2.01	99.1	2,181.00	3.7	98.6	2,179.86	6.11	95.9	2,173.56
J1217-29	Main Plant	2,037.00	6.94	62.2	2,180.79	12.77	61.6	2,179.37	21.07	59	2,173.47
J1217-30	No FF	2,123.00	0	25.3	2,181.43	0	25.1	2,181.05	0	22.2	2,174.21
J1217-31	Main Plant	2,031.00	0	64.9	2,181.05	0	64.5	2,180.03	0	61.8	2,173.73
J1218-01	Cedar Bluffs	2,146.00	4.3	114.3	2,410.09	9.46	114.3	2,410.08	15.61	114.2	2,410.03
J1218-02	Cedar Ravine	2,223.00	2.4	100.9	2,456.32	5.28	100.7	2,455.77	8.71	100.5	2,455.34
J1218-03	Main Plant	2,151.00	2.16	64.5	2,300.04	3.97	64.5	2,300.04	6.56	64.3	2,299.73
J1218-04	Main Plant	2,036.00	0.26	61.9	2,179.14	0.48	60.3	2,175.40	0.79	59.5	2,173.45
J1218-05	Main Plant	2,048.00	0.26	56.7	2,179.14	0.48	55.1	2,175.40	0.79	54.3	2,173.45
J1218-06	Main Plant	2,044.00	0	58.5	2,179.14	0	56.9	2,175.40	0	56	2,173.45
J1218-07	Main Plant	2,017.00	0.79	70.2	2,179.14	1.45	68.5	2,175.40	2.39	67.7	2,173.45
J1218-08	Main Plant	2,006.00	3.5	74.9	2,179.14	6.44	73.3	2,175.40	10.63	72.4	2,173.45
J1218-09	Main Plant	1,993.00	0	80.5	2,179.14	0	78.9	2,175.40	0	78.1	2,173.46
J1218-10	Main Plant	2,022.00	2.16	68	2,179.15	3.97	66.4	2,175.41	6.56	65.5	2,173.47
J1218-100	Cedar Bluffs	2,239.00	1.8	74	2,410.07	3.96	74	2,410.05	6.53	73.9	2,409.81
J1218-101	Cedar Bluffs	2,312.00	1.2	42.4	2,410.07	2.64	42.4	2,410.04	4.36	42.3	2,409.72
J1218-102	Cedar Bluffs	2,285.00	4.2	54.1	2,410.07	9.24	54.1	2,410.04	15.25	54	2,409.71
J1218-103	Cedar Bluffs	2,223.00	1.5	80.9	2,410.07	3.3	80.9	2,410.05	5.45	80.8	2,409.80
J1218-104	Cedar Bluffs	2,220.00	3	82.2	2,410.07	6.6	82.2	2,410.05	10.89	82.1	2,409.81
J1218-105	Cedar Bluffs	2,112.00	1.8	129	2,410.08	3.96	129	2,410.06	6.53	128.9	2,409.92
J1218-106	Cedar Bluffs	2,257.00	2.4	66.2	2,410.07	5.28	66.2	2,410.03	8.71	65.7	2,408.82
J1218-107	Cedar Bluffs	2,280.00	1.5	56.3	2,410.07	3.3	56.3	2,410.04	5.45	56	2,409.44
J1218-11	Main Plant	2,005.00	22.36	75.3	2,179.15	41.14	73.7	2,175.41	67.88	72.7	2,173.12
J1218-110	Main Plant	2,070.00	0	99.5	2,300.04	0	99.5	2,300.04	0	99.4	2,299.73
J1219-01	Sierra Plant	2,410.00	3.59	64.1	2,558.05	7.9	64	2,558.02	13.03	64	2,557.90
J1219-02	Sierra Plant	2,397.00	2.96	69.7	2,558.05	6.51	69.7	2,558.03	10.74	69.6	2,557.92
J1219-03	Cedar Ravine	2,323.00	3.35	57.7	2,456.46	7.38	57.7	2,456.38	12.18	57.7	2,456.29
J1219-04	Cedar Ravine	2,310.00	1.2	63.4	2,456.46	2.64	63.3	2,456.38	4.36	63.3	2,456.30
J1219-05	Cedar Ravine	2,310.00	1.5	63.4	2,456.46	3.3	63.3	2,456.38	5.45	63.3	2,456.29
J1219-06	Cedar Ravine	2,260.00	1.5	85	2,456.41	3.5	84.9	2,456.16	5.78	84.8	2,455.94
J1219-07	Cedar Ravine	2,235.00	1.5	95.8	2,456.38	3.3	95.6	2,456.04	5.45	95.5	2,455.76
J1219-08	Cedar Ravine	2,226.00	1.6	99.7	2,456.38	3.53	99.5	2,456.01	5.82	99.4	2,455.71
J1219-09	Cedar Ravine	2,208.00	1.07	107.4	2,456.33	2.36	107.2	2,455.81	3.89	107	2,455.43
J1219-10	Cedar Ravine	2,234.00	3.7	96.2	2,456.33	8.15	96	2,455.79	13.45	95.8	2,455.38
J1219-11	Cedar Ravine	2,206.00	0.8	108.3	2,456.33	1.76	108.1	2,455.80	2.9	107.9	2,455.42
J1219-12	Cedar Ravine	2,187.00	0	116.5	2,456.33	0	116.3	2,455.80	0	116.1	2,455.42
J1219-13	Sierra Plant	2,180.00	2.52	163.5	2,557.85	5.54	162.9	2,556.40	9.14	157.2	2,543.34
J1219-14	Cedar Ravine	2,198.00	7.13	111.8	2,456.32	15.69	111.5	2,455.77	25.89	111.3	2,455.35
J1219-15	Cedar Ravine	2,240.00	2.35	93.6	2,456.32	5.17	93.4	2,455.78	8.53	93.2	2,455.35
J1219-16	Cedar Ravine	2,236.00	2.7	95.3	2,456.32	5.94	95.1	2,455.78	9.8	94.9	2,455.36
J1219-17	Cedar Ravine	2,225.00	0	100.1	2,456.32	0	99.8	2,455.78	0	99.7	2,455.35
J1219-18	Cedar Ravine	2,223.00	2.49	100.9	2,456.32	5.49	100.7	2,455.77	9.06	100.5	2,455.35
J1219-19	Sierra Plant	2,165.00	0	170	2,557.82	0	169.2	2,556.17	0	162.8	2,541.32
J1219-20	Sierra Plant	2,436.00	3.33	52.8	2,557.93	7.33	52.5	2,557.26	12.09	51	2,553.84
J1219-21	Sierra Plant	2,412.00	5.54	63.1	2,557.79	12.19	62.4	2,556.25	20.11	58.7	2,547.79
J1219-22	Sierra Plant	2,409.00	0.65	64.4	2,557.79	1.44	63.7	2,556.18	2.38	59.2	2,545.80
J1219-23	Sierra Plant	2,417.00	3.95	60.9	2,557.79	8.69	60.2	2,556.16	14.34	55.4	2,545.06
J1219-24	Sierra Plant	2,396.00	2.61	70	2,557.80	5.74	69.3	2,556.14	9.47	64	2,543.84
J1219-25	Cedar Ravine	2,270.00	0	80.6	2,456.33	0	80.4	2,455.79	0	80.2	2,455.38
J1219-26	Cedar Ravine	2,319.00	3	59.4	2,456.33	6.61	59.2	2,455.79	10.91	59	2,455.38
J1219-27	Cedar Ravine	2,315.00	0	61.1	2,456.33	0	60.9	2,455.79	0	60.7	2,455.38
J1219-30	Sierra Plant	2,391.00	1.95	72.2	2,557.81	4.3	71.4	2,556.10	7.09	64.7	2,540.57
J1219-31	Sierra Plant	2,392.50	0	71.5	2,557.81	0	70.8	2,556.10	0	64.1	2,540.57
J1220-01	Sierra Plant	2,417.00	2.28	61	2,558.05	5.02	61	2,558.02	8.28	61	2,557.90
J1220-03	No FF	2,528.60	0	12.7	2,558.00	0	12.7	2,557.94	0	12.6	2,557.64
J1220-04	Sierra Plant	2,464.00	2.58	40.6	2,557.93	5.69	40.4	2,557.34	9.39	39.1	2,554.38
J1220-05	Sierra Plant	2,465.00	0	40.2	2,557.94	0	40	2,557.35	0	38.7	2,554.43
J1220-100	Sierra Hydro	2,528.60	0	37.8	2,616.04	0	37.8	2,615.91	0	37.6	2,615.44
J1315-01	Main Plant	1,832.00	0.64	150.8	2,180.55	1.18	149.9	2,178.56	1.95	147.5	2,172.81
J1316-01	Main Plant	1,949.00	0.58	100.4	2,181.00	1.06	99.9	2,179.86	1.75	97.2	2,173.56

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2009 Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1316-02	Main Plant	1,995.00	2.29	80.3	2,180.55	4.22	79.5	2,178.70	6.96	77	2,173.07
J1316-03	Main Plant	1,970.00	2.58	91.1	2,180.55	4.76	90.3	2,178.70	7.85	87.9	2,173.07
J1316-04	Main Plant	1,896.00	0	123.1	2,180.55	0	122.3	2,178.70	0	119.9	2,173.08
J1316-05	Main Plant	1,890.00	2.29	125.7	2,180.55	4.22	124.9	2,178.70	6.96	122.5	2,173.08
J1316-06	Main Plant	1,909.00	0.88	117.6	2,180.70	1.62	116.8	2,179.00	2.67	114.2	2,173.06
J1316-07	Main Plant	1,885.00	4.11	127.9	2,180.70	7.56	127.2	2,179.01	12.47	124.6	2,173.06
J1316-08	Main Plant	1,863.00	0	137.4	2,180.51	0	136.5	2,178.56	0	134.1	2,173.01
J1316-09	Main Plant	1,859.00	0.29	139.1	2,180.53	0.54	138.3	2,178.63	0.89	135.9	2,173.05
J1316-10	Main Plant	1,860.00	0	138.7	2,180.50	0	137.8	2,178.56	0	135.4	2,173.02
J1316-11	Main Plant	1,860.00	0.6	138.7	2,180.50	1.1	137.8	2,178.55	1.82	135.4	2,173.01
J1316-12	Main Plant	1,852.00	0	142.1	2,180.47	0	141.2	2,178.46	0	138.9	2,172.96
J1316-13	Main Plant	1,855.00	0	140.8	2,180.47	0	139.9	2,178.46	0	137.6	2,172.96
J1316-14	Main Plant	1,839.00	3.86	147.7	2,180.41	7.1	146.8	2,178.28	11.72	144.5	2,172.87
J1316-15	Main Plant	1,835.00	1.08	149.4	2,180.38	1.99	148.5	2,178.20	3.28	146.2	2,172.83
J1316-16	Main Plant	1,943.00	0	102.9	2,180.79	0	102.2	2,179.22	0	99.6	2,173.14
J1316-17	Main Plant	1,939.00	3.19	104.6	2,180.77	5.88	103.9	2,179.19	9.7	101.3	2,173.12
J1316-18	Main Plant	1,937.00	0	105.5	2,180.76	0	104.8	2,179.16	0	102.2	2,173.11
J1316-19	Main Plant	1,942.00	0	103.3	2,180.76	0	102.6	2,179.16	0	100	2,173.11
J1316-20	Main Plant	1,997.00	0	79.5	2,180.76	0	78.8	2,179.16	0	76.2	2,173.11
J1316-21	Main Plant	1,987.00	0	83.8	2,180.76	0	83.1	2,179.16	0	80.5	2,173.11
J1316-22	Main Plant	1,991.00	0.76	82.1	2,180.76	1.41	81.4	2,179.16	2.33	78.8	2,173.11
J1316-23	Main Plant	2,085.00	0.28	41.5	2,180.89	0.52	40.9	2,179.51	0.86	38.2	2,173.27
J1316-24	Main Plant	2,104.00	1.7	33.2	2,180.79	3.14	32.5	2,179.22	5.18	29.9	2,173.14
J1316-25	Main Plant	1,936.00	0	105.9	2,180.76	0	105.2	2,179.16	0	102.6	2,173.11
J1316-26	Main Plant	1,953.00	2.52	98.4	2,180.46	4.63	97.5	2,178.47	7.64	95.2	2,173.01
J1316-27	Main Plant	1,846.00	8.18	144.7	2,180.40	15.06	143.8	2,178.28	24.85	141.4	2,172.90
J1316-28	Main Plant	1,845.00	0.46	145.1	2,180.46	0.85	144.3	2,178.42	1.4	141.9	2,172.95
J1316-29	Main Plant	1,842.00	3.57	146.4	2,180.41	6.56	145.5	2,178.29	10.82	143.2	2,172.88
J1316-30	Main Plant	1,841.00	3.7	146.8	2,180.38	6.81	145.9	2,178.21	11.24	143.6	2,172.85
J1316-31	Main Plant	1,842.00	3.93	146.3	2,180.24	7.23	145.3	2,177.84	11.93	143.1	2,172.76
J1316-32	Main Plant	1,842.00	3.58	146.3	2,180.20	6.58	145.3	2,177.76	10.86	143.1	2,172.75
J1316-33	Main Plant	1,845.00	7.38	145	2,180.12	13.58	143.9	2,177.55	22.41	141.8	2,172.72
J1316-34	Main Plant	1,842.00	2.63	146.3	2,180.14	4.84	145.2	2,177.60	7.99	143.1	2,172.71
J1316-35	Main Plant	1,923.00	0	111	2,179.54	0	109.6	2,176.24	0	108.1	2,172.82
J1316-36	Main Plant	1,920.00	4.5	112.5	2,180.12	8.29	111.4	2,177.52	13.68	109.3	2,172.54
J1316-37	Main Plant	1,882.00	1.3	129	2,180.12	2.39	127.9	2,177.54	3.94	125.7	2,172.59
J1316-38	Main Plant	1,880.00	0	129.8	2,180.13	0	128.7	2,177.54	0	126.6	2,172.60
J1316-39	Main Plant	1,865.00	0.28	136.3	2,180.14	0.52	135.2	2,177.58	0.86	133.1	2,172.68
J1316-40	Main Plant	1,837.00	0.79	148.6	2,180.38	1.45	147.6	2,178.20	2.39	145.3	2,172.83
J1316-41	Main Plant	1,837.00	1.43	148.6	2,180.37	2.64	147.6	2,178.18	4.36	145.3	2,172.82
J1316-42	Main Plant	1,830.00	0	151.7	2,180.63	0	150.9	2,178.79	0	148.4	2,172.92
J1316-43	Main Plant	1,822.00	2.21	155.2	2,180.63	4.07	154.4	2,178.79	6.72	151.8	2,172.92
J1316-44	Main Plant	1,822.00	0	155.2	2,180.63	0	154.4	2,178.79	0	151.8	2,172.92
J1316-45	Main Plant	1,911.00	0.88	116.4	2,180.12	1.62	115.3	2,177.53	2.67	113.2	2,172.62
J1316-46	Main Plant	1,893.00	0	124.2	2,180.12	0	123.1	2,177.53	0	121	2,172.62
J1316-47	Main Plant	1,868.00	3.71	135	2,180.12	6.83	133.9	2,177.53	11.27	131.8	2,172.62
J1316-48	Main Plant	1,895.00	4.46	123.3	2,180.04	8.2	122.1	2,177.22	13.53	120	2,172.32
J1316-49	Main Plant	1,893.00	2.36	124.2	2,180.07	4.34	123	2,177.29	7.16	120.8	2,172.26
J1316-50	Main Plant	1,855.00	5.27	140.7	2,180.11	9.7	139.5	2,177.41	16	137.3	2,172.36
J1316-51	Main Plant	1,862.00	1.17	137.6	2,180.07	2.16	136.4	2,177.30	3.56	134.3	2,172.31
J1316-52	Main Plant	1,885.00	0	127.7	2,180.07	0	126.5	2,177.30	0	124.3	2,172.29
J1316-53	Main Plant	1,900.00	0.27	121.2	2,180.07	0.5	120	2,177.29	0.82	117.8	2,172.26
J1316-54	Main Plant	1,843.00	1.35	145.8	2,180.07	2.49	144.6	2,177.29	4.11	142.5	2,172.26
J1316-55	Main Plant	1,825.00	0	153.6	2,180.07	0	152.4	2,177.29	0	150.2	2,172.24
J1316-56	Main Plant	1,825.00	2.43	153.6	2,180.07	4.47	152.4	2,177.29	7.38	150.2	2,172.24
J1316-57	Main Plant	1,827.00	4.87	152.8	2,180.07	8.95	151.6	2,177.29	14.77	149.4	2,172.25
J1316-58	Main Plant	1,855.00	0	140.7	2,180.14	0	139.5	2,177.44	0	137.3	2,172.27
J1316-59	Main Plant	1,819.00	2.16	156.5	2,180.62	3.97	155.7	2,178.76	6.55	153.1	2,172.85
J1316-60	Main Plant	1,820.00	1.26	156	2,180.55	2.33	155.1	2,178.56	3.84	152.6	2,172.81
J1316-61	Main Plant	1,819.00	3.39	156.4	2,180.55	6.23	155.6	2,178.56	10.28	153.1	2,172.81
J1316-62	Main Plant	1,881.00	1.89	129.5	2,180.39	3.47	128.5	2,178.10	5.73	126.2	2,172.58
J1316-70	Main Plant	1,856.00	0	140.4	2,180.40	0	139.4	2,178.27	0	137.1	2,172.89

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1316-71	Main Plant	1,847.00	0	144.1	2,180.01	0	142.9	2,177.30	0	140.9	2,172.73
J1317-01	Main Plant	1,994.00	4.94	80.1	2,179.11	9.1	78.5	2,175.37	15.02	77.4	2,172.99
J1317-02	Main Plant	1,995.00	0	79.6	2,179.07	0	78	2,175.32	0	77	2,173.06
J1317-03	Main Plant	1,995.00	0.64	79.6	2,179.07	1.18	78	2,175.32	1.95	77	2,173.06
J1317-04	Main Plant	1,987.00	0.43	83.1	2,179.05	0.79	81.5	2,175.30	1.3	80.5	2,173.10
J1317-05	Main Plant	1,980.00	0.63	86.1	2,179.11	1.16	84.5	2,175.36	1.91	83.4	2,172.87
J1317-06	Main Plant	1,986.00	2.55	83.6	2,179.11	4.69	81.9	2,175.37	7.74	80.9	2,172.90
J1317-07	Main Plant	1,994.00	3.38	80.1	2,179.05	6.21	78.4	2,175.29	10.25	77.5	2,173.03
J1317-08	Main Plant	1,980.00	0.87	86.1	2,179.05	1.6	84.5	2,175.30	2.64	83.5	2,173.06
J1317-09	Main Plant	1,984.00	0	84.4	2,179.18	0	82.8	2,175.49	0	81.6	2,172.69
J1317-10	Main Plant	1,965.00	53.09	92.7	2,179.14	97.68	91	2,175.40	161.17	89.8	2,172.61
J1317-100	Main Plant	1,982.00	0	85.3	2,179.11	0	83.7	2,175.37	0	82.6	2,172.89
J1317-11	Main Plant	1,972.00	2.17	89.7	2,179.22	3.99	88.1	2,175.57	6.58	86.8	2,172.61
J1317-12	Main Plant	1,940.00	9.61	103.5	2,179.23	17.68	101.9	2,175.57	29.17	100.6	2,172.61
J1317-13	Main Plant	1,946.00	2.09	100.9	2,179.22	3.84	99.3	2,175.57	6.34	98	2,172.61
J1317-14	Main Plant	1,967.00	1.23	92.4	2,180.47	2.26	91.5	2,178.56	3.73	89.2	2,173.27
J1317-15	Main Plant	1,890.00	5.85	125.3	2,179.50	10.76	123.8	2,176.21	17.75	122.4	2,172.82
J1317-16	Main Plant	1,886.00	1.83	127	2,179.54	3.36	125.6	2,176.30	5.54	124.1	2,172.83
J1317-17	Main Plant	1,978.00	0	87.8	2,181.00	0	87.3	2,179.88	0	84.6	2,173.57
J1317-18	Main Plant	1,970.00	0	91.3	2,181.00	0	90.8	2,179.88	0	88.1	2,173.57
J1317-19	Main Plant	2,011.00	1.98	73.4	2,180.55	3.63	72.6	2,178.72	5.99	70.1	2,173.13
J1317-20	Main Plant	2,011.00	1.15	73.4	2,180.55	2.12	72.6	2,178.72	3.5	70.1	2,173.12
J1317-21	Main Plant	1,994.00	2.01	80.7	2,180.55	3.7	79.9	2,178.70	6.11	77.5	2,173.08
J1317-22	Main Plant	1,961.00	1.72	94.9	2,180.39	3.16	94	2,178.23	5.21	91.4	2,172.18
J1317-23	Main Plant	1,990.00	1.15	82.4	2,180.41	2.12	81.5	2,178.31	3.5	78.9	2,172.39
J1317-24	Main Plant	1,980.00	0.74	86.7	2,180.50	1.37	85.9	2,178.58	2.26	83.5	2,173.08
J1317-25	Main Plant	1,964.00	0	93.6	2,180.44	0	92.8	2,178.42	0	90.4	2,173.04
J1317-26	Main Plant	1,965.00	3.75	93.2	2,180.44	6.9	92.3	2,178.42	11.39	90	2,173.04
J1317-27	Main Plant	1,964.00	0	93.6	2,180.44	0	92.8	2,178.43	0	90.4	2,173.04
J1317-28	Main Plant	1,929.00	7.47	108.8	2,180.46	13.75	107.9	2,178.48	22.69	105.6	2,173.04
J1317-29	Main Plant	1,951.00	1.51	98.6	2,179.00	2.78	97	2,175.23	4.59	96.2	2,173.25
J1317-30	Main Plant	1,938.00	1.08	104.3	2,178.98	1.99	102.6	2,175.21	3.28	101.8	2,173.33
J1317-31	Main Plant	1,910.00	1.08	116.4	2,178.94	1.99	114.7	2,175.18	3.28	114	2,173.56
J1317-32	Main Plant	1,912.00	1.94	115.5	2,178.95	3.57	113.9	2,175.19	5.89	113.1	2,173.52
J1317-33	Main Plant	1,925.00	0	109.9	2,179.01	0	108.3	2,175.29	0	107.5	2,173.45
J1317-34	Main Plant	1,883.00	2.71	128.1	2,179.01	4.98	126.5	2,175.29	8.22	125.7	2,173.45
J1317-35	Main Plant	1,993.00	5.69	80.7	2,179.58	10.47	79.3	2,176.38	17.28	77.8	2,172.84
J1317-36	Main Plant	1,949.00	0	99.8	2,179.58	0	98.4	2,176.38	0	96.8	2,172.85
J1317-37	Main Plant	1,939.00	0.53	104.1	2,179.58	0.98	102.7	2,176.38	1.62	101.2	2,172.85
J1317-38	Main Plant	1,882.00	0	128.7	2,179.58	0	127.4	2,176.38	0	125.8	2,172.85
J1317-39	Main Plant	1,882.00	0	128.7	2,179.58	0	127.4	2,176.38	0	125.8	2,172.85
J1317-40	Main Plant	1,883.84	2.72	128	2,179.58	5.01	126.6	2,176.38	8.27	125	2,172.85
J1317-41	Main Plant	1,874.00	2.43	132.2	2,179.67	4.47	130.9	2,176.58	7.38	129.3	2,172.91
J1317-42	Main Plant	1,874.00	4.97	132	2,179.07	9.14	130.4	2,175.40	15.08	129.5	2,173.38
J1317-43	Main Plant	1,871.00	4.37	133.5	2,179.61	8.04	132.2	2,176.45	13.27	130.6	2,172.91
J1317-44	Main Plant	1,979.00	1.73	87.2	2,180.44	3.18	86.3	2,178.42	5.25	83.9	2,173.02
J1317-45	Main Plant	1,978.00	0	87.6	2,180.44	0	86.7	2,178.43	0	84.4	2,173.04
J1317-46	Main Plant	1,983.00	1.48	85.4	2,180.44	2.72	84.6	2,178.43	4.49	82.2	2,173.04
J1317-47	Main Plant	1,977.00	0.98	88	2,180.44	1.81	87.1	2,178.43	2.99	84.8	2,173.04
J1317-48	Main Plant	1,982.00	1.23	85.9	2,180.44	2.26	85	2,178.43	3.73	82.7	2,173.03
J1317-49	Main Plant	1,873.00	0	132.6	2,179.44	0	131.1	2,176.04	0	129.8	2,173.05
J1317-50	Main Plant	1,872.00	0.72	133	2,179.44	1.33	131.6	2,176.06	2.19	130.2	2,173.04
J1317-51	Main Plant	1,867.00	7.83	135.2	2,179.60	14.41	133.9	2,176.42	23.78	132.3	2,172.90
J1317-52	Main Plant	1,861.00	6.21	137.8	2,179.61	11.42	136.5	2,176.44	18.84	134.9	2,172.84
J1317-53	Main Plant	1,861.00	0.32	137.9	2,179.62	0.59	136.5	2,176.44	0.97	134.9	2,172.84
J1317-54	Main Plant	1,860.00	5.23	138.3	2,179.63	9.62	136.9	2,176.47	15.87	135.3	2,172.81
J1317-55	Main Plant	1,856.00	8.17	140.1	2,179.76	15.04	138.8	2,176.76	24.82	137	2,172.76
J1317-56	Main Plant	1,870.00	3.67	134.1	2,179.85	6.75	132.8	2,176.95	11.14	131	2,172.76
J1318-01	Main Plant	1,958.00	1.3	95.5	2,178.82	2.39	93.9	2,175.07	3.94	93.5	2,174.00
J1318-05	Main Plant	1,975.00	0	88.2	2,178.82	0	86.6	2,175.08	0	86.1	2,174.09
J1318-06	Main Plant	1,937.00	3.45	104.6	2,178.82	6.36	103	2,175.07	10.49	102.5	2,174.00
J1318-07	Main Plant	1,903.00	1.3	119.3	2,178.82	2.39	117.7	2,175.08	3.94	117.3	2,174.02

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1318-08	Main Plant	1,918.00	1.73	112.9	2,178.99	3.18	111.3	2,175.22	5.25	110.4	2,173.28
J1318-09	Main Plant	1,987.00	4.75	83.1	2,178.99	8.74	81.4	2,175.22	14.42	80.6	2,173.29
J1318-10	Main Plant	1,987.00	0	83.1	2,178.99	0	81.4	2,175.23	0	80.6	2,173.29
J1318-101	Eskaton	2,030.00	0	137.4	2,347.57	0	137.3	2,347.38	0	136.1	2,344.49
J1318-102	Eskaton	2,176.00	2.86	74.2	2,347.57	6.29	74.2	2,347.56	10.38	74.2	2,347.43
J1318-103	Eskaton	2,223.00	1.04	53.9	2,347.57	2.29	53.9	2,347.49	3.78	53.5	2,346.70
J1318-104	Eskaton	2,176.00	1.04	74.2	2,347.57	2.29	74.2	2,347.50	3.78	73.9	2,346.76
J1318-105	Eskaton	2,177.50	1.04	73.6	2,347.57	2.29	73.6	2,347.50	3.78	73.3	2,346.83
J1318-106	Eskaton	2,147.00	4.7	86.8	2,347.57	10.34	86.8	2,347.51	17.06	86.6	2,347.06
J1318-107	Eskaton	2,185.00	0	70.3	2,347.57	0	70.3	2,347.51	0	70.1	2,347.06
J1318-108	Eskaton	2,175.00	2.6	74.7	2,347.57	5.72	74.6	2,347.51	9.44	74.4	2,347.06
J1318-109	Eskaton	2,138.00	3.12	90.7	2,347.57	6.86	90.6	2,347.51	11.32	90.5	2,347.06
J1318-11	Main Plant	1,987.00	0	83.1	2,179.00	0	81.4	2,175.23	0	80.6	2,173.26
J1318-110	Eskaton	2,162.00	3.38	80.3	2,347.57	7.44	80.3	2,347.49	12.28	79.9	2,346.71
J1318-111	Eskaton	2,155.00	2.6	83.3	2,347.57	5.72	83.3	2,347.48	9.44	82.9	2,346.53
J1318-112	Eskaton	2,143.00	2.6	88.5	2,347.57	5.72	88.5	2,347.49	9.44	88.1	2,346.62
J1318-113	Eskaton	2,255.00	2.6	40	2,347.57	5.72	40	2,347.49	9.44	39.7	2,346.70
J1318-114	Eskaton	2,188.00	0	69	2,347.57	0	69	2,347.50	0	68.7	2,346.76
J1318-115	Eskaton	2,176.00	0	74.2	2,347.57	0	74.2	2,347.50	0	73.9	2,346.83
J1318-116	Eskaton	2,145.00	2.86	87.6	2,347.57	6.29	87.6	2,347.51	10.38	87.4	2,347.07
J1318-117	Eskaton	2,180.00	2.08	72.5	2,347.57	4.58	72.5	2,347.56	7.56	72.4	2,347.43
J1318-118	Eskaton	2,224.00	0	53.5	2,347.57	0	53.4	2,347.53	0	53.3	2,347.18
J1318-119	Sierra Plant	2,284.00	0	118.5	2,557.80	0	117.7	2,555.98	0	110.5	2,539.41
J1318-120	Eskaton	2,195.00	0	66	2,347.57	0	66	2,347.51	0	65.8	2,347.06
J1319-01	Sierra Plant	2,425.00	0	57.5	2,557.94	0	57.3	2,557.46	0	56.3	2,555.11
J1319-02	Sierra Plant	2,423.00	5.21	58.4	2,557.95	11.47	58.2	2,557.49	18.93	57.2	2,555.28
J1319-03	Main Plant	1,985.00	1.13	83.8	2,178.72	2.08	82.2	2,174.90	3.43	81.9	2,174.28
J1320-01	Sierra Plant	2,470.00	0	38.1	2,557.97	0	37.9	2,557.65	0	37.3	2,556.15
J1320-02	EID PRV#3S	2,485.00	2.82	56.7	2,616.03	6.21	56.6	2,615.87	10.25	56.4	2,615.34
J1415-01	Main Plant	1,885.00	2.07	127.6	2,180.02	3.8	126.3	2,177.03	6.27	124.3	2,172.27
J1415-02	Main Plant	1,930.00	1.08	108.3	2,180.31	1.99	107.2	2,177.87	3.28	104.9	2,172.46
J1415-03	Main Plant	1,930.00	0	108.3	2,180.31	0	107.2	2,177.88	0	104.9	2,172.50
J1415-04	Main Plant	1,930.00	6.82	108.3	2,180.31	12.54	107.2	2,177.88	20.69	104.9	2,172.50
J1415-05	Main Plant	1,921.00	0	112.2	2,180.27	0	111.1	2,177.77	0	108.8	2,172.45
J1415-06	Main Plant	1,923.00	16.03	111.3	2,180.24	29.49	110.2	2,177.68	48.66	107.9	2,172.42
J1415-07	Main Plant	1,944.00	0	102.2	2,180.24	0	101.1	2,177.68	0	98.8	2,172.42
J1415-08	Main Plant	1,930.00	0	108.2	2,180.14	0	107	2,177.41	0	104.8	2,172.32
J1415-09	Main Plant	1,931.00	1.12	107.8	2,180.15	2.06	106.6	2,177.42	3.4	104.4	2,172.33
J1415-10	Main Plant	1,929.00	0	108.7	2,180.19	0	107.5	2,177.53	0	105.3	2,172.38
J1415-100	Main Plant	2,017.00	0	70.6	2,180.10	0	69.4	2,177.30	0	67.2	2,172.24
J1415-101	Main Plant	1,942.00	0	103	2,180.15	0	101.9	2,177.41	0	99.7	2,172.37
J1415-102	Main Plant	1,941.00	0	103.5	2,180.15	0	102.3	2,177.41	0	100.1	2,172.37
J1415-103	Main Plant	1,898.00	0	122.2	2,180.39	0	121.2	2,178.11	0	118.8	2,172.60
J1415-104	Main Plant	1,897.00	0	122.6	2,180.39	0	121.6	2,178.11	0	119.2	2,172.60
J1415-11	Main Plant	1,963.00	0	93.9	2,180.07	0	92.7	2,177.19	0	90.6	2,172.35
J1415-12	Main Plant	1,895.00	3.85	123.3	2,180.01	7.08	122	2,177.03	11.68	120	2,172.27
J1415-13	Main Plant	1,929.00	0	108.6	2,180.02	0	107.3	2,177.03	0	105.3	2,172.27
J1415-14	Main Plant	1,945.00	3.67	101.7	2,180.02	6.75	100.4	2,177.04	11.14	98.3	2,172.29
J1415-15	Main Plant	1,952.00	0	98.7	2,180.03	0	97.4	2,177.06	0	95.3	2,172.35
J1415-16	Main Plant	1,948.00	0	100.4	2,180.02	0	99.1	2,177.05	0	97.1	2,172.36
J1415-17	Main Plant	2,007.00	1.08	74.8	2,179.79	1.99	73.3	2,176.44	3.28	72.5	2,174.54
J1415-18	Main Plant	2,005.00	0	75.8	2,180.10	0	74.5	2,177.30	0	72.4	2,172.24
J1415-19	Main Plant	2,010.00	2.27	73.6	2,180.10	4.17	72.4	2,177.29	6.88	70.2	2,172.23
J1415-20	Main Plant	2,011.00	1.47	73.2	2,180.10	2.7	71.9	2,177.30	4.45	69.8	2,172.23
J1415-21	Main Plant	2,005.00	1.08	75.8	2,180.10	1.08	74.5	2,177.30	1.78	72.4	2,172.24
J1415-22	Main Plant	2,010.00	0	73.6	2,180.10	0	72.4	2,177.30	0	70.2	2,172.24
J1415-23	Main Plant	1,978.00	6.13	87.4	2,180.10	11.28	86.2	2,177.30	18.61	84	2,172.24
J1415-24	Main Plant	1,990.00	2.63	82.2	2,180.10	4.84	81	2,177.29	7.99	78.8	2,172.23
J1415-25	Main Plant	1,971.00	0	90.5	2,180.11	0	89.3	2,177.30	0	87.1	2,172.25
J1415-26	Main Plant	1,986.00	0	84	2,180.07	0	82.7	2,177.19	0	80.6	2,172.24
J1415-27	Main Plant	1,984.00	20.85	84.8	2,180.07	38.36	83.6	2,177.19	63.29	81.4	2,172.24
J1415-28	Main Plant	1,923.00	13.66	109.2	2,175.29	25.13	103.6	2,162.42	41.46	91.9	2,135.32

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1415-29	Main Plant	1,917.00	1.35	113.8	2,179.98	2.49	112.5	2,176.93	4.11	110.5	2,172.51
J1415-30	Main Plant	1,938.00	6.48	104.6	2,179.85	11.92	103.2	2,176.58	19.67	102	2,173.66
J1415-31	Main Plant	1,942.00	0	102.9	2,179.88	0	101.5	2,176.67	0	100.1	2,173.34
J1415-32	Main Plant	1,909.00	2.16	117.2	2,179.96	3.97	115.9	2,176.88	6.55	114	2,172.57
J1415-33	Main Plant	1,905.00	0	119	2,179.96	0	117.6	2,176.88	0	115.8	2,172.56
J1415-34	Main Plant	1,901.00	1.63	120.7	2,179.96	2.99	119.4	2,176.88	4.93	117.5	2,172.56
J1415-35	Main Plant	1,880.00	0	129.8	2,179.96	0	128.4	2,176.88	0	126.6	2,172.56
J1415-36	Main Plant	1,882.00	0	128.9	2,179.96	0	127.6	2,176.88	0	125.7	2,172.56
J1415-37	Main Plant	1,934.00	1.89	106.4	2,179.96	3.47	105.1	2,176.88	5.73	103.2	2,172.56
J1415-38	Main Plant	1,850.00	3.48	142.8	2,179.96	6.4	141.4	2,176.87	10.56	139.6	2,172.55
J1415-39	Main Plant	1,854.00	1.35	141	2,179.96	2.49	139.7	2,176.87	4.11	137.8	2,172.55
J1415-39a	Combellack	1,859.00	0	176.3	2,266.53	0	170.4	2,252.81	0	151.8	2,209.81
J1415-40	Main Plant	2,006.00	0	75.3	2,180.10	0	74.1	2,177.30	0	71.9	2,172.24
J1416-01	Main Plant	1,924.00	0	110.7	2,179.79	0	109.2	2,176.49	0	107.3	2,172.00
J1416-02	Main Plant	1,930.00	2.23	108.1	2,179.79	4.11	106.6	2,176.49	6.78	104.7	2,172.00
J1416-03	Main Plant	1,898.00	1.94	121.8	2,179.54	3.57	120.4	2,176.24	5.89	118.9	2,172.82
J1416-04	Main Plant	1,872.00	0.97	133.1	2,179.54	1.79	131.6	2,176.24	2.95	130.2	2,172.82
J1416-05	Main Plant	1,960.00	0.64	95.1	2,179.77	1.18	93.7	2,176.49	1.95	91.7	2,171.99
J1416-06	Main Plant	1,980.00	1.94	86.4	2,179.77	3.57	85	2,176.51	5.89	83.1	2,172.03
J1416-07	Main Plant	1,974.00	3.72	89	2,179.77	6.85	87.6	2,176.50	11.3	85.7	2,172.03
J1416-08	Main Plant	1,944.00	1.48	102	2,179.76	2.72	100.6	2,176.48	4.49	98.7	2,172.08
J1416-09	Main Plant	1,960.00	1.48	95.1	2,179.76	2.72	93.7	2,176.49	4.49	91.8	2,172.10
J1416-10	Main Plant	1,957.00	3.49	96.4	2,179.76	6.42	95	2,176.49	10.59	93.1	2,172.12
J1416-11	Main Plant	1,937.00	1.55	105	2,179.79	2.85	103.6	2,176.54	4.7	101.7	2,172.11
J1416-12	Main Plant	1,916.00	4.67	114.1	2,179.81	8.6	112.7	2,176.59	14.19	110.8	2,172.11
J1416-13	Main Plant	1,905.00	2.47	118.9	2,179.84	4.55	117.5	2,176.66	7.51	115.6	2,172.12
J1416-14	Main Plant	1,952.00	2.37	98.5	2,179.76	4.36	97.1	2,176.46	7.19	95.1	2,171.88
J1416-15	Main Plant	1,942.00	0.64	102.8	2,179.67	1.18	101.3	2,176.20	1.95	99.2	2,171.21
J1416-16	Main Plant	1,945.00	1.98	101.6	2,179.79	3.63	100.2	2,176.49	5.99	98.2	2,172.00
J1416-17	Main Plant	1,982.00	3.38	85.6	2,179.79	6.21	84.1	2,176.48	10.25	82.2	2,171.98
J1416-18	Main Plant	1,952.00	1.73	98.6	2,179.79	3.18	97.1	2,176.48	5.25	95.2	2,171.98
J1416-19	Main Plant	1,896.00	1.34	122.9	2,179.96	2.47	121.6	2,176.96	4.08	119.4	2,172.03
J1416-20	Main Plant	1,873.00	0	132.8	2,179.98	0	131.5	2,177.03	0	129.5	2,172.22
J1416-21	Main Plant	1,872.00	1.17	133.3	2,179.99	2.16	132	2,177.07	3.56	129.9	2,172.23
J1416-22	Main Plant	1,873.00	1.16	132.8	2,179.99	2.14	131.5	2,177.05	3.53	129.5	2,172.23
J1416-23	Main Plant	1,888.00	4.04	126.3	2,179.98	7.44	125	2,177.01	12.28	123	2,172.21
J1416-24	Main Plant	1,886.00	20.41	127.2	2,179.97	37.55	125.9	2,176.96	61.96	123.8	2,172.20
J1416-25	Main Plant	1,886.00	0	127.2	2,179.97	0	125.9	2,176.96	0	123.8	2,172.21
J1416-26	Main Plant	1,899.00	1.63	121.6	2,180.16	2.99	120.5	2,177.45	4.93	118.1	2,172.01
J1416-27	Main Plant	1,899.00	4.05	121.7	2,180.19	7.46	120.5	2,177.56	12.31	118.2	2,172.29
J1416-28	Main Plant	1,913.00	0	115.5	2,180.03	0	114.3	2,177.12	0	112.2	2,172.24
J1416-29	Main Plant	1,908.00	5.18	117.7	2,180.07	9.53	116.5	2,177.23	15.72	114.3	2,172.26
J1416-30	Main Plant	1,910.00	0	116.9	2,180.09	0	115.6	2,177.26	0	113.5	2,172.27
J1416-31	Main Plant	1,925.00	0	110.2	2,179.79	0	108.8	2,176.49	0	106.9	2,172.00
J1416-32	Main Plant	1,956.00	0	96.8	2,179.79	0	95.4	2,176.47	0	93.5	2,171.99
J1416-33	Main Plant	1,930.00	0	108.1	2,179.79	0	106.6	2,176.47	0	104.7	2,171.99
J1416-34	Main Plant	1,956.00	0	96.8	2,179.79	0	95.4	2,176.47	0	93.4	2,171.99
J1416-35	Main Plant	1,930.00	1.73	108.1	2,179.79	3.18	106.6	2,176.47	5.25	104.7	2,171.99
J1416-36	Main Plant	1,898.00	0	122	2,179.91	0	120.6	2,176.80	0	118.6	2,172.21
J1416-37	Main Plant	1,984.00	1.98	84.7	2,179.78	3.63	83.3	2,176.43	5.99	81.3	2,171.98
J1416-38	Main Plant	2,000.00	4.22	77.7	2,179.57	7.77	76	2,175.77	12.82	73.7	2,170.31
J1416-39	Main Plant	1,963.00	0	93.8	2,179.78	0	92.3	2,176.43	0	90.4	2,171.98
J1416-40	Main Plant	1,946.00	1.99	101.1	2,179.78	3.66	99.7	2,176.43	6.04	97.8	2,171.98
J1416-41	Main Plant	1,941.00	6.64	103.3	2,179.78	12.21	101.9	2,176.44	20.15	99.9	2,171.98
J1416-42	Main Plant	1,966.00	3.53	92.6	2,180.07	6.5	91.4	2,177.22	10.73	89.2	2,172.25
J1416-43	Main Plant	1,931.00	1.48	107.6	2,179.80	2.72	106.2	2,176.48	4.49	104.3	2,172.15
J1416-44	Main Plant	1,911.00	0	116.3	2,179.82	0	114.9	2,176.52	0	113	2,172.21
J1416-45	Main Plant	1,910.00	8.26	116.7	2,179.83	15.2	115.3	2,176.54	25.08	113.4	2,172.21
J1416-46	Main Plant	1,910.00	0	116.7	2,179.83	0	115.3	2,176.54	0	113.4	2,172.21
J1416-47	Main Plant	1,922.00	0.59	111.5	2,179.83	1.08	110.1	2,176.54	1.78	108.3	2,172.21
J1416-48	Main Plant	1,996.00	0	79.5	2,179.78	0	78.1	2,176.44	0	76.1	2,171.98
J1417-01	Main Plant	1,895.00	0.81	122.8	2,178.91	1.5	121.2	2,175.14	2.47	120.7	2,173.90

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1417-02	Main Plant	1,896.00	7.07	122.4	2,178.87	13	120.8	2,175.11	21.45	120.2	2,173.86
J1417-03	Main Plant	1,895.00	0	122.8	2,178.91	0	121.2	2,175.15	0	120.6	2,173.75
J1417-04	Main Plant	1,895.00	3.71	122.8	2,178.91	6.83	121.2	2,175.15	11.27	120.6	2,173.72
J1417-05	Main Plant	1,887.00	4.35	126.3	2,178.97	8	124.7	2,175.22	13.2	124	2,173.52
J1417-06	Main Plant	1,885.00	0	127.2	2,178.99	0	125.6	2,175.26	0	124.8	2,173.49
J1417-07	Main Plant	1,885.00	0	127.2	2,178.99	0	125.6	2,175.26	0	124.8	2,173.49
J1417-08	Main Plant	1,892.00	0.38	124.2	2,179.00	0.71	122.6	2,175.27	1.17	121.8	2,173.48
J1417-09	Main Plant	1,903.00	1.08	119.4	2,178.94	1.99	117.8	2,175.16	3.28	117.4	2,174.24
J1417-10	Main Plant	1,898.00	0	121.6	2,178.94	0	119.9	2,175.16	0	119.4	2,174.01
J1417-11	Main Plant	1,937.00	1.3	104.7	2,178.95	2.39	103	2,175.14	3.94	102.5	2,173.90
J1417-12	Main Plant	1,912.00	0	115.5	2,178.97	0	113.9	2,175.19	0	113.4	2,174.01
J1417-13	Main Plant	1,908.00	1.21	117.2	2,178.96	2.22	115.6	2,175.18	3.66	115.1	2,173.96
J1417-14	Main Plant	1,908.00	0	117.2	2,178.96	0	115.6	2,175.18	0	115.1	2,173.95
J1417-15	Main Plant	1,920.00	0	112	2,178.97	0	110.4	2,175.19	0	109.8	2,173.84
J1417-16	Main Plant	1,919.00	1.46	112.5	2,178.97	2.68	110.8	2,175.19	4.42	110.3	2,173.84
J1417-17	Main Plant	1,895.00	0.19	122.9	2,179.01	0.35	121.3	2,175.29	0.58	120.5	2,173.48
J1417-18	Main Plant	1,887.00	1.59	126.3	2,179.02	2.93	124.7	2,175.30	4.83	123.9	2,173.48
J1417-19	Main Plant	1,965.00	2.16	92.5	2,178.89	3.97	90.8	2,174.94	6.55	90.1	2,173.21
J1417-20	Main Plant	1,988.00	1.46	82.6	2,178.94	2.68	81	2,175.11	4.42	80.2	2,173.43
J1417-21	Main Plant	1,945.00	0	101.2	2,178.98	0	99.6	2,175.21	0	98.9	2,173.69
J1417-22	Main Plant	1,942.00	2.43	102.5	2,178.98	4.47	100.9	2,175.21	7.38	100.2	2,173.69
J1417-23	Main Plant	1,949.00	0.97	99.5	2,178.96	1.79	97.8	2,175.16	2.95	97.1	2,173.45
J1417-24	Main Plant	1,927.00	0	109	2,178.99	0	107.4	2,175.23	0	106.7	2,173.63
J1417-25	Main Plant	1,926.00	0.97	109.5	2,178.99	1.79	107.8	2,175.23	2.95	107.1	2,173.63
J1417-26	Main Plant	1,906.00	0.97	118.3	2,179.44	1.79	116.8	2,176.06	2.95	115.5	2,173.04
J1417-27	Main Plant	1,921.00	0	111.8	2,179.41	0	110.3	2,175.99	0	109.1	2,173.08
J1417-28	Main Plant	1,887.00	1.38	126.5	2,179.37	2.53	125	2,175.89	4.17	123.8	2,173.13
J1417-29	Main Plant	1,888.00	0	126.1	2,179.37	0	124.6	2,175.88	0	123.4	2,173.14
J1417-30	Main Plant	1,921.00	0.97	111.8	2,179.35	1.79	110.3	2,175.83	2.95	109.1	2,173.10
J1417-31	Main Plant	1,895.00	1.94	123	2,179.35	3.57	121.5	2,175.86	5.89	120.4	2,173.17
J1417-32	Main Plant	1,923.00	2.91	110.9	2,179.28	5.36	109.3	2,175.72	8.84	108.4	2,173.53
J1417-33	Main Plant	1,876.00	0.49	131.3	2,179.42	0.89	129.8	2,176.00	1.47	128.5	2,173.08
J1417-34	Main Plant	1,944.00	1.21	101.8	2,179.37	2.22	100.3	2,175.88	3.66	99.1	2,173.14
J1417-35	Main Plant	1,959.00	0	95.3	2,179.37	0	93.8	2,175.88	0	92.6	2,173.14
J1417-36	Main Plant	1,951.00	1.94	98.8	2,179.37	3.57	97.3	2,175.88	5.89	96.1	2,173.14
J1417-37	Main Plant	1,946.00	0	101	2,179.37	0	99.5	2,175.88	0	98.3	2,173.14
J1417-38	Main Plant	1,932.00	0.49	107	2,179.37	0.89	105.5	2,175.88	1.47	104.3	2,173.14
J1417-39	Main Plant	1,956.00	0.72	96.6	2,179.37	1.33	95.1	2,175.88	2.19	93.9	2,173.14
J1417-40	Main Plant	1,935.00	0	105.7	2,179.37	0	104.2	2,175.88	0	103	2,173.14
J1417-41	Main Plant	1,924.00	1.21	110.5	2,179.37	2.22	109	2,175.88	3.66	107.8	2,173.14
J1417-42	Main Plant	1,915.00	0	114.4	2,179.37	0	112.9	2,175.88	0	111.7	2,173.14
J1417-43	Main Plant	1,948.00	0.72	100.1	2,179.32	1.33	98.6	2,175.79	2.19	97.5	2,173.32
J1417-44	Main Plant	1,940.00	0	103.6	2,179.34	0	102	2,175.83	0	100.9	2,173.22
J1417-45	Main Plant	1,934.00	1.21	106.2	2,179.37	2.22	104.6	2,175.88	3.66	103.5	2,173.14
J1417-46	Main Plant	1,890.00	0	125.2	2,179.46	0	123.8	2,176.06	0	122.4	2,172.91
J1417-47	Main Plant	1,887.00	3.15	126.5	2,179.47	5.79	125.1	2,176.08	9.55	123.7	2,172.89
J1417-48	Main Plant	1,865.00	1.98	136.1	2,179.54	3.63	134.7	2,176.25	5.99	133.2	2,172.82
J1417-49	Main Plant	1,907.00	0.97	117.9	2,179.53	1.79	116.5	2,176.22	2.95	115	2,172.73
J1417-50	Main Plant	1,864.00	0.51	136.5	2,179.55	0.93	135.1	2,176.26	1.53	133.6	2,172.82
J1417-51	Main Plant	1,987.00	1.3	83.1	2,178.97	2.39	81.4	2,175.19	3.94	81.1	2,174.48
J1417-52	Main Plant	1,975.00	2.38	88.2	2,178.97	4.38	86.6	2,175.19	7.23	86.3	2,174.48
J1417-53	Main Plant	1,913.00	0	115.1	2,178.96	0	113.4	2,175.18	0	113.1	2,174.46
J1417-54	Main Plant	1,916.00	0	113.8	2,178.96	0	112.1	2,175.18	0	111.8	2,174.46
J1417-55	Main Plant	1,917.00	0	113.3	2,178.96	0	111.7	2,175.18	0	111.4	2,174.46
J1417-56	Main Plant	1,945.00	1.08	101.2	2,178.97	1.99	99.6	2,175.19	3.28	99.3	2,174.48
J1417-57	Main Plant	1,938.00	0	104.3	2,178.97	0	102.6	2,175.19	0	102.3	2,174.48
J1417-58	Main Plant	1,944.00	1.74	101.7	2,178.97	3.2	100	2,175.19	5.28	99.7	2,174.48
J1417-59	Main Plant	2,001.00	1.08	77	2,178.99	1.99	75.4	2,175.22	3.28	75.1	2,174.54
J1417-60	Main Plant	2,000.00	1.74	77.4	2,178.99	3.2	75.8	2,175.22	5.28	75.5	2,174.54
J1417-61	Main Plant	2,009.30	1.52	73.4	2,179.00	2.8	71.8	2,175.23	4.62	71.5	2,174.58
J1417-62	Main Plant	1,973.00	5.54	89.1	2,178.98	10.2	87.5	2,175.19	16.83	87	2,174.19
J1417-63	Main Plant	2,004.00	4.37	75.9	2,179.35	8.04	74.4	2,175.85	13.27	73.2	2,173.14

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1417-64	Main Plant	2,032.00	0	63.6	2,179.00	0	62	2,175.23	0	61.7	2,174.51
J1417-65	Main Plant	2,023.00	2.23	67.5	2,179.10	4.11	65.9	2,175.38	6.78	65.6	2,174.70
J1417-66	Main Plant	2,006.00	3.13	74.9	2,179.11	5.75	73.3	2,175.41	9.49	72.9	2,174.56
J1417-67	Main Plant	1,980.00	2.23	86.1	2,179.11	4.11	84.5	2,175.40	6.78	84.2	2,174.59
J1417-68	Main Plant	2,007.00	2.23	74.5	2,179.11	4.11	72.9	2,175.40	6.78	72.5	2,174.59
J1417-69	Main Plant	2,005.00	0	75.3	2,179.12	0	73.7	2,175.42	0	73.4	2,174.54
J1417-70	Main Plant	1,996.00	0	79.2	2,179.15	0	77.7	2,175.48	0	77.2	2,174.33
J1417-71	Main Plant	2,001.00	0	77.2	2,179.32	0	75.6	2,175.79	0	74.6	2,173.31
J1417-72	Main Plant	1,997.00	0	78.9	2,179.32	0	77.4	2,175.79	0	76.3	2,173.31
J1417-73	Main Plant	2,001.00	1.46	77.2	2,179.32	2.68	75.6	2,175.78	4.42	74.5	2,173.30
J1417-74	Main Plant	1,999.00	0	78	2,179.32	0	76.5	2,175.79	0	75.4	2,173.31
J1417-75	Main Plant	1,988.00	0.97	82.8	2,179.32	1.79	81.2	2,175.77	2.95	80.2	2,173.27
J1417-76	Main Plant	1,922.00	1.74	111.4	2,179.57	3.2	110	2,176.16	5.28	108.3	2,172.42
J1417-77	Main Plant	1,925.00	1.21	110.1	2,179.44	2.22	108.5	2,175.77	3.66	106.6	2,171.40
J1417-78	Main Plant	1,920.00	0	112.3	2,179.57	0	110.8	2,176.17	0	109.2	2,172.41
J1417-79	Main Plant	1,908.00	2.63	117.5	2,179.58	4.84	116	2,176.19	7.99	114.4	2,172.38
J1417-80	Main Plant	1,920.00	2.66	112.3	2,179.59	4.9	110.8	2,176.19	8.09	109.2	2,172.37
J1417-81	Main Plant	1,925.00	0	110.2	2,179.65	0	108.7	2,176.30	0	107	2,172.28
J1417-82	Main Plant	1,945.00	0	101.4	2,179.36	0	99.9	2,175.86	0	98.7	2,173.16
J1418-01	Main Plant	1,953.00	0	97.7	2,178.76	0	96.1	2,175.03	0	95.9	2,174.67
J1418-02	Main Plant	1,950.00	0	99	2,178.74	0	97.3	2,174.96	0	97.1	2,174.40
J1418-03	Main Plant	1,949.00	4.4	99.4	2,178.74	8.1	97.8	2,174.96	13.36	97.5	2,174.40
J1418-04	Main Plant	1,941.00	0	102.9	2,178.76	0	101.3	2,175.03	0	101.1	2,174.63
J1418-05	Main Plant	1,945.00	3.22	101.1	2,178.75	5.92	99.5	2,175.00	9.77	99.3	2,174.53
J1418-06	Main Plant	1,945.00	1.94	101.1	2,178.74	3.57	99.5	2,174.96	5.89	99.2	2,174.39
J1418-07	Main Plant	1,930.00	2.51	107.6	2,178.77	4.61	106	2,175.05	7.61	105.8	2,174.62
J1418-08	Main Plant	1,930.00	0	107.6	2,178.77	0	106	2,175.05	0	105.8	2,174.63
J1418-09	Main Plant	1,934.00	0	105.9	2,178.78	0	104.3	2,175.06	0	104.1	2,174.60
J1418-10	Main Plant	1,925.00	0	109.8	2,178.78	0	108.2	2,175.06	0	108	2,174.63
J1418-103	Main Plant	1,946.00	0	100.7	2,178.76	0	99.1	2,175.03	0	98.9	2,174.66
J1418-104	Main Plant	1,944.50	1.81	101.4	2,178.76	5.43	99.7	2,175.03	8.96	99.6	2,174.65
J1418-11	Main Plant	1,919.00	0	112.4	2,178.82	0	110.8	2,175.08	0	110.4	2,174.09
J1418-12	Main Plant	1,934.00	5.73	105.9	2,178.78	10.55	104.3	2,175.06	17.41	104.1	2,174.60
J1418-13	Main Plant	1,922.00	4.27	111.1	2,178.78	7.85	109.5	2,175.07	12.95	109.3	2,174.66
J1418-14	Main Plant	1,927.00	0	108.9	2,178.78	0	107.3	2,175.07	0	107.1	2,174.60
J1418-15	Main Plant	1,931.00	6.29	107.1	2,178.59	11.57	105.3	2,174.38	19.09	104.4	2,172.36
J1418-16	Main Plant	1,923.00	8.93	110.7	2,178.79	16.43	109	2,175.02	27.11	108.6	2,173.96
J1418-17	Main Plant	1,920.00	0	112	2,178.79	0	110.4	2,175.07	0	110.1	2,174.43
J1418-18	Main Plant	1,957.00	2.12	96	2,178.83	3.9	94.3	2,175.03	6.43	94	2,174.26
J1418-19	Main Plant	1,902.00	1.5	119.8	2,178.82	2.76	118.1	2,175.08	4.55	117.7	2,174.03
J1418-20	Main Plant	1,913.00	0	115	2,178.82	0	113.4	2,175.08	0	113	2,174.09
J1418-21	Main Plant	1,912.00	15.05	115.4	2,178.82	27.69	113.8	2,175.08	45.69	113.4	2,174.10
J1418-22	Main Plant	1,912.00	0	115.4	2,178.83	0	113.8	2,175.05	0	113.3	2,173.97
J1418-23	Main Plant	1,937.00	0.65	104.6	2,178.83	1.2	103	2,175.04	1.98	102.6	2,174.19
J1418-24	Main Plant	1,996.00	1.13	79.1	2,178.90	2.08	77.5	2,175.10	3.43	77.2	2,174.42
J1418-25	Main Plant	1,954.00	1.08	97.3	2,178.88	1.99	95.6	2,175.04	3.28	95.3	2,174.28
J1418-26	Main Plant	1,906.00	0	118.1	2,178.94	0	116.5	2,175.16	0	116.1	2,174.42
J1418-27	Main Plant	1,992.00	0	80.8	2,178.76	0	79.2	2,175.04	0	79	2,174.71
J1418-28	Main Plant	2,002.00	0	76.5	2,178.76	0	74.9	2,175.04	0	74.8	2,174.79
J1418-29	Main Plant	2,006.00	0	74.7	2,178.75	0	73.1	2,175.04	0	73	2,174.81
J1418-30	Main Plant	2,035.00	0	62.2	2,178.75	0	60.6	2,175.04	0	60.5	2,174.93
J1418-31	Main Plant	2,035.00	0.53	62.2	2,178.75	0.98	60.6	2,175.04	1.62	60.5	2,174.93
J1418-32	Main Plant	2,039.00	2.45	60.5	2,178.75	4.51	58.9	2,175.04	7.44	58.8	2,174.93
J1418-33	Main Plant	2,048.00	5.49	56.6	2,178.75	10.09	55	2,175.04	16.65	54.9	2,174.93
J1418-34	Main Plant	2,020.00	0.98	68.7	2,178.80	1.81	67.1	2,175.03	2.99	67	2,174.94
J1418-35	Main Plant	2,036.00	0.73	61.8	2,178.80	1.35	60.2	2,175.03	2.23	60.1	2,174.94
J1418-36	Main Plant	2,026.00	0	66.1	2,178.80	0	64.5	2,175.03	0	64.4	2,174.94
J1418-37	Main Plant	2,039.00	2.2	60.5	2,178.80	4.05	58.9	2,175.03	6.68	58.8	2,174.94
J1418-38	Main Plant	2,026.00	0	66.1	2,178.80	0	64.5	2,175.03	0	64.4	2,174.94
J1418-39	Main Plant	2,021.00	0	68.3	2,178.80	0	66.6	2,175.03	0	66.6	2,174.94
J1418-40	Main Plant	1,980.00	0	86	2,178.81	0	84.4	2,175.03	0	84.2	2,174.63
J1418-41	Main Plant	1,944.00	1.47	101.6	2,178.83	2.7	100	2,175.03	4.45	99.6	2,174.26

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1418-42	Main Plant	1,960.00	0	94.7	2,178.83	0	93	2,175.03	0	92.7	2,174.27
J1418-43	Main Plant	1,975.00	3.17	88.2	2,178.81	5.84	86.5	2,175.02	9.64	86.3	2,174.44
J1418-44	Main Plant	1,981.00	2.2	85.6	2,178.81	4.05	83.9	2,175.02	6.68	83.7	2,174.44
J1418-45	Main Plant	1,985.00	1.95	83.9	2,178.81	3.59	82.2	2,175.02	5.92	82	2,174.44
J1418-46	Main Plant	1,965.00	0	92.5	2,178.82	0	90.9	2,175.03	0	90.6	2,174.45
J1418-47	Main Plant	1,963.00	2.44	93.4	2,178.82	4.49	91.7	2,175.03	7.41	91.5	2,174.45
J1418-48	Main Plant	1,982.00	3.1	85.2	2,178.84	5.71	83.5	2,175.04	9.42	83.2	2,174.27
J1418-49	Main Plant	1,953.00	0	97.8	2,178.97	0	96.1	2,175.19	0	95.8	2,174.48
J1418-50	Main Plant	1,947.00	0.65	100.4	2,178.97	1.2	98.7	2,175.19	1.98	98.4	2,174.47
J1418-51	Main Plant	1,922.00	0.19	111.2	2,178.96	0.35	109.5	2,175.18	0.58	109.2	2,174.46
J1418-52	Main Plant	1,922.00	1.74	111.2	2,178.96	3.2	109.5	2,175.18	5.28	109.2	2,174.46
J1418-53	Main Plant	1,931.00	1.08	107.2	2,178.88	1.99	105.6	2,175.07	3.28	105.3	2,174.48
J1418-54	Main Plant	1,927.00	1.65	109	2,178.88	3.03	107.3	2,175.08	5	107.1	2,174.48
J1418-55	Main Plant	1,927.00	2.35	109	2,178.89	4.32	107.3	2,175.08	7.13	107.1	2,174.46
J1418-56	Main Plant	1,923.00	0	110.7	2,178.89	0	109.1	2,175.09	0	108.8	2,174.44
J1418-57	Main Plant	1,917.00	0	113.3	2,178.90	0	111.7	2,175.10	0	111.4	2,174.43
J1418-58	Main Plant	1,908.00	0	117.2	2,178.94	0	115.6	2,175.15	0	115.3	2,174.42
J1418-61	Main Plant	1,948.00	0	99.9	2,178.83	0	98.2	2,175.03	0	97.9	2,174.26
J1418-62	Main Plant	1,949.00	0	99.4	2,178.76	0	97.8	2,175.03	0	97.6	2,174.66
J1419-01	No FF	2,130.00	5.88	21.1	2,178.71	10.82	19.4	2,174.88	17.85	19.1	2,174.22
J1419-02	Main Plant	1,960.00	21.95	94.6	2,178.72	40.4	93	2,174.90	66.66	92.7	2,174.28
J1419-03	Main Plant	1,960.00	0	94.6	2,178.72	0	93	2,174.90	0	92.7	2,174.28
J1419-04	Main Plant	1,970.00	0.7	90.3	2,178.76	1.29	88.7	2,175.03	2.13	88.5	2,174.66
J1419-05	Main Plant	2,014.00	2.97	71.3	2,178.75	5.46	69.7	2,175.03	9.01	69.5	2,174.64
J1419-06	Main Plant	1,994.00	1.75	79.9	2,178.75	3.22	78.3	2,175.03	5.31	78.2	2,174.64
J1419-07	Main Plant	1,988.00	0	82.5	2,178.75	0	80.9	2,175.03	0	80.8	2,174.65
J1419-08	Main Plant	1,987.00	3.09	83	2,178.75	5.69	81.4	2,175.03	9.39	81.2	2,174.65
J1419-09	Upper Schnell School	2,057.00	4.83	164	2,435.97	8.89	163.6	2,435.19	14.67	161.2	2,429.60
J1515-01	Main Plant	1,977.00	0	87.7	2,179.79	0	86.3	2,176.44	0	85.5	2,174.54
J1515-02	Main Plant	1,974.00	1.47	89	2,179.79	2.7	87.6	2,176.43	4.45	86.8	2,174.64
J1515-03	Main Plant	1,955.00	1.77	97.3	2,179.79	3.26	95.8	2,176.44	5.38	95	2,174.65
J1515-04	Main Plant	1,938.31	0	104.5	2,179.79	0	103	2,176.43	0	102.4	2,175.08
J1515-05	Main Plant	1,954.00	0	97.7	2,179.79	0	96.2	2,176.43	0	95.6	2,174.87
J1515-06	Main Plant	1,952.00	0	98.6	2,179.79	0	97.1	2,176.44	0	96.4	2,174.70
J1515-07	Main Plant	1,980.00	0	86.4	2,179.80	0	85	2,176.44	0	84.2	2,174.62
J1515-08	Main Plant	1,975.00	1.77	88.6	2,179.79	3.26	87.2	2,176.44	5.38	86.4	2,174.63
J1515-09	Main Plant	1,987.00	26.36	83.4	2,179.79	48.5	82	2,176.43	80.03	81.2	2,174.64
J1515-10	Combellack	1,988.00	3.36	120.5	2,266.54	6.19	114.6	2,252.83	10.21	96	2,209.84
J1515-11	Main Plant	1,967.00	1.08	92.1	2,179.80	1.99	90.6	2,176.45	3.28	89.8	2,174.56
J1515-12	Combellack	1,991.00	0.87	119.2	2,266.54	1.6	113.3	2,252.83	2.64	94.7	2,209.84
J1515-13	Combellack	1,967.00	1.16	129.6	2,266.54	2.14	123.7	2,252.83	3.53	105.1	2,209.85
J1515-14	Combellack	1,943.00	9.24	140	2,266.53	17.01	134	2,252.82	28.07	115.4	2,209.82
J1515-15	Combellack	1,937.00	0	142.6	2,266.53	0	136.6	2,252.82	0	118	2,209.82
J1515-16	Combellack	1,905.00	3.49	156.4	2,266.53	6.42	150.5	2,252.81	10.59	131.9	2,209.81
J1515-17	Combellack	1,896.00	7.42	160.3	2,266.53	13.65	154.4	2,252.81	22.52	135.8	2,209.79
J1515-18	Combellack	1,883.00	8.4	165.9	2,266.53	15.46	160	2,252.81	25.51	141.4	2,209.80
J1515-19	Combellack	1,879.00	0	167.7	2,266.53	0	161.7	2,252.81	0	143.1	2,209.81
J1515-20	Combellack	1,825.00	0	191	2,266.53	0	185.1	2,252.81	0	166.5	2,209.81
J1515-21	Combellack	1,831.00	0	188.4	2,266.53	0	182.5	2,252.81	0	163.9	2,209.81
J1515-22	Combellack	1,965.00	2.79	130.5	2,266.54	5.13	124.5	2,252.83	8.46	105.9	2,209.85
J1515-23	Combellack	1,948.00	2.33	137.8	2,266.54	4.28	131.9	2,252.84	7.06	113.3	2,209.88
J1515-24	Combellack	1,949.00	1.46	137.4	2,266.54	2.68	131.5	2,252.84	4.42	112.9	2,209.88
J1515-25	Combellack	1,950.00	1.75	137	2,266.54	3.22	131	2,252.84	5.31	112.4	2,209.88
J1515-26	Combellack	1,945.78	0	138.8	2,266.55	0	132.9	2,252.88	0	114.3	2,209.96
J1515-27	Combellack	1,944.00	0	139.6	2,266.55	0	133.6	2,252.86	0	115	2,209.91
J1515-28	Combellack	1,933.00	1.75	144.3	2,266.54	3.22	138.4	2,252.84	5.31	119.8	2,209.88
J1515-29	Combellack	1,931.00	3.01	145.2	2,266.54	5.55	139.2	2,252.83	9.16	120.6	2,209.84
J1515-30	Combellack	1,914.00	0.29	152.5	2,266.54	0.54	146.6	2,252.83	0.89	128	2,209.85
J1515-31	Combellack	1,902.00	1.16	157.7	2,266.54	2.14	151.8	2,252.83	3.53	133.2	2,209.84
J1515-32	Combellack	1,942.00	2.87	140.4	2,266.54	5.28	134.5	2,252.82	8.71	115.9	2,209.83
J1515-33	Combellack	1,957.00	2.62	133.9	2,266.54	4.82	128	2,252.82	7.95	109.4	2,209.84
J1515-34	Combellack	1,958.00	0	133.5	2,266.54	0	127.6	2,252.82	0	109	2,209.84

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1515-35	Combellack	1,964.00	5.29	130.9	2,266.54	9.74	125	2,252.82	16.07	106.4	2,209.83
J1515-36	Combellack	1,900.00	0	158.6	2,266.54	0	152.7	2,252.83	0	134.1	2,209.84
J1515-37	Combellack	1,925.00	1.79	147.8	2,266.54	3.3	141.8	2,252.83	5.45	123.2	2,209.84
J1515-38	Combellack	1,975.10	0	126.5	2,267.54	0	121.5	2,255.92	0	104.9	2,217.65
J1515-39	Combellack	1,920.00	0	149.9	2,266.56	0	144	2,252.89	0	125.5	2,210.01
J1516-01	Main Plant	2,001.00	2.97	77.3	2,179.78	5.46	75.9	2,176.41	9.01	74	2,172.07
J1516-02	Main Plant	1,971.00	0	90.3	2,179.78	0	88.9	2,176.42	0	87	2,172.07
J1516-03	Main Plant	1,970.00	0	90.8	2,179.78	0	89.3	2,176.42	0	87.4	2,172.07
J1516-04	Main Plant	1,959.00	2.97	95.5	2,179.78	5.46	94.1	2,176.43	9.01	92.2	2,172.07
J1516-05	Main Plant	1,997.00	1.73	79.1	2,179.79	3.18	77.6	2,176.45	5.25	75.8	2,172.09
J1516-06	Main Plant	1,972.00	0	89.9	2,179.80	0	88.5	2,176.46	0	86.6	2,172.12
J1516-07	Main Plant	1,934.00	1	106.3	2,179.80	1.85	104.9	2,176.48	3.05	103	2,172.15
J1516-08	Main Plant	1,986.00	0.74	83.8	2,179.80	1.37	82.4	2,176.46	2.26	80.5	2,172.12
J1516-09	Main Plant	2,000.00	0.74	77.8	2,179.78	1.37	76.3	2,176.41	2.26	74.4	2,172.05
J1516-10	Main Plant	2,005.00	0	75.6	2,179.78	0	74.2	2,176.42	0	72.3	2,172.08
J1516-11	Main Plant	2,005.00	0.74	75.6	2,179.78	1.37	74.2	2,176.42	2.26	72.3	2,172.08
J1516-12	Main Plant	1,996.00	0.74	79.5	2,179.78	1.37	78.1	2,176.42	2.26	76.2	2,172.09
J1516-13	Main Plant	2,007.00	0	74.8	2,179.78	0	73.3	2,176.42	0	71.4	2,172.09
J1516-14	Main Plant	2,013.00	1.23	72.2	2,179.78	2.26	70.7	2,176.42	3.73	68.8	2,172.09
J1516-15	Main Plant	2,001.00	1.98	77.4	2,179.78	3.63	75.9	2,176.42	5.99	74	2,172.10
J1516-16	Main Plant	1,985.00	1.23	84.3	2,179.79	2.26	82.8	2,176.43	3.73	81	2,172.12
J1516-17	Main Plant	2,002.00	0	76.9	2,179.79	0	75.5	2,176.43	0	73.6	2,172.12
J1516-18	Main Plant	1,999.00	1.48	78.2	2,179.79	2.72	76.8	2,176.43	4.49	74.9	2,172.15
J1516-19	Main Plant	1,986.00	0.5	83.8	2,179.79	0.91	82.4	2,176.43	1.5	80.5	2,172.15
J1516-20	Main Plant	1,959.00	0.74	95.5	2,179.79	1.37	94.1	2,176.45	2.26	92.2	2,172.20
J1516-21	Main Plant	1,943.00	1	102.4	2,179.79	1.85	101	2,176.45	3.05	99.2	2,172.20
J1516-22	Main Plant	1,924.00	0.56	110.7	2,179.80	1.04	109.2	2,176.47	1.72	107.4	2,172.28
J1516-23	Main Plant	1,926.00	5.82	109.8	2,179.80	10.72	108.4	2,176.44	17.69	106.7	2,172.51
J1516-24	Main Plant	1,963.00	0	93.8	2,179.79	0	92.3	2,176.43	0	90.6	2,172.38
J1516-25	EID Res 4	2,052.00	0	95	2,271.66	0	93.8	2,268.84	0	89.3	2,258.46
J1516-26	EID Res 4	2,015.00	0.38	111	2,271.66	0.71	109.8	2,268.84	1.17	105.3	2,258.45
J1516-27	EID Res 4	2,037.00	0	101.5	2,271.66	0	100.3	2,268.84	0	95.8	2,258.45
J1516-28	EID Res 4	2,018.00	0	109.7	2,271.66	0	108.5	2,268.84	0	104	2,258.45
J1516-29	EID Res 4	1,980.00	0	126.2	2,271.65	0	125	2,268.84	0	120.5	2,258.45
J1516-30	EID Res 4	2,017.00	0	110.2	2,271.65	0	109	2,268.84	0	104.5	2,258.45
J1516-31	EID Res 4	2,068.00	0	88.1	2,271.65	0	86.9	2,268.83	0	82.4	2,258.43
J1516-32	EID Res 4	2,122.00	0	64.7	2,271.65	0	63.5	2,268.82	0	59	2,258.42
J1516-33	EID Res 4	2,138.00	0	57.8	2,271.65	0	56.6	2,268.82	0	52.1	2,258.41
J1516-34	EID Res 4	2,172.00	4.05	43.1	2,271.65	7.46	41.9	2,268.82	12.31	37.4	2,258.41
J1516-35	Main Plant	2,075.00	1.61	45.3	2,179.78	2.97	43.9	2,176.41	4.9	42	2,172.07
J1516-36	Main Plant	2,034.00	2.8	63.1	2,179.78	5.15	61.6	2,176.41	8.5	59.7	2,172.07
J1516-37	Main Plant	1,999.00	0.99	78.2	2,179.76	1.83	76.7	2,176.34	3.02	74.8	2,171.90
J1516-38	Main Plant	1,996.00	0	79.5	2,179.78	0	78.1	2,176.41	0	76.2	2,172.07
J1516-39	Main Plant	1,997.00	2.97	79.1	2,179.78	5.46	77.6	2,176.41	9.01	75.7	2,172.07
J1516-40	Main Plant	2,028.00	3.45	65.7	2,179.78	6.36	64.2	2,176.41	10.49	62.3	2,172.09
J1516-41	Main Plant	2,009.00	4.36	73.9	2,179.78	8.02	72.4	2,176.41	13.23	70.6	2,172.20
J1516-42	EID Res 4	2,142.29	0	55.4	2,270.31	0	53	2,264.69	0	44.7	2,245.53
J1516-43	EID Res 4	2,142.29	2.58	56	2,271.65	4.76	54.7	2,268.82	7.85	50.2	2,258.41
J1516-45	Combellack	2,000.00	0	116	2,268.15	0	111.5	2,257.81	0	96.7	2,223.53
J1516-46	EID Res 4	2,072.00	3	86.4	2,271.65	5.52	85.2	2,268.83	9.11	80.7	2,258.42
J1516-47	EID Res 4	2,122.00	3	64.7	2,271.65	5.52	63.5	2,268.82	9.11	59	2,258.42
J1517-01	Main Plant	1,965.00	0	92.6	2,178.98	0	90.9	2,175.20	0	90.6	2,174.50
J1517-02	Main Plant	1,957.00	0.43	96	2,178.98	0.79	94.4	2,175.20	1.3	94.1	2,174.50
J1517-03	Main Plant	1,960.00	0.43	94.7	2,178.98	0.79	93.1	2,175.20	1.3	92.8	2,174.50
J1517-04	Main Plant	1,972.00	1.3	89.6	2,178.98	2.39	87.9	2,175.20	3.94	87.6	2,174.51
J1517-05	Main Plant	2,026.50	2.23	66	2,179.10	4.11	64.4	2,175.38	6.78	64.1	2,174.70
J1517-06	Main Plant	2,029.00	1.74	64.9	2,179.03	3.2	63.3	2,175.28	5.28	63.1	2,174.76
J1517-07	Main Plant	2,022.60	1.08	67.7	2,179.03	1.99	66.1	2,175.28	3.28	65.8	2,174.76
J1517-08	Main Plant	2,037.00	0	61.5	2,179.07	0	59.9	2,175.34	0	59.7	2,174.96
J1517-09	Main Plant	2,036.00	2.23	61.9	2,179.07	4.11	60.3	2,175.34	6.78	60.1	2,174.95
J1517-10	EID Res 4	2,040.50	0	100.2	2,272.21	0	99.5	2,270.55	0	94.5	2,258.85
J1517-101	EID Res 4	2,050.00	4.8	96.1	2,272.21	8.83	95.4	2,270.55	14.57	91.1	2,260.57

City of Placerville
Water Modeling Report
2009 Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1517-102	EID Res 4	2,025.00	4.8	107	2,272.21	8.83	106.2	2,270.55	14.57	101.9	2,260.57
J1517-11	EID Res 4	2,064.50	6.72	89.9	2,272.21	12.36	89.1	2,270.54	20.39	84.3	2,259.29
J1517-12	EID Res 4	2,062.00	4.4	90.9	2,272.21	8.1	90.2	2,270.55	13.36	85.4	2,259.30
J1517-13	EID Res 4	2,067.00	11.54	88.8	2,272.21	21.23	88.1	2,270.55	35.03	83.4	2,259.84
J1517-14	EID Res 4	2,068.50	0	88.1	2,272.21	0	87.4	2,270.55	0	82.8	2,259.96
J1517-15	EID Res 4	2,068.00	0	88.4	2,272.21	0	87.6	2,270.56	0	83.3	2,260.58
J1517-16	Main Plant	1,983.00	0.97	84.9	2,179.16	1.79	83.3	2,175.48	2.95	82.8	2,174.29
J1517-17	Main Plant	1,968.00	0	91.4	2,179.16	0	89.8	2,175.48	0	89.3	2,174.30
J1517-18	Main Plant	1,968.00	0.97	91.4	2,179.16	1.79	89.8	2,175.48	2.95	89.3	2,174.29
J1517-19	EID Res 4	2,019.00	1	109.3	2,271.66	1.84	108.1	2,268.84	3.04	103.6	2,258.46
J1517-20	EID Res 4	2,142.49	0	56.1	2,272.23	0	55.4	2,270.60	0	52.4	2,263.71
J1517-21	EID Res 4	2,150.00	0	52.9	2,272.22	0	52.2	2,270.59	0	48.8	2,262.81
J1517-22	EID Res 4	2,150.00	0	52.9	2,272.22	0	52.2	2,270.58	0	48.7	2,262.47
J1517-23	EID Res 4	2,050.00	0.38	95.9	2,271.66	0.71	94.7	2,268.84	1.17	90.2	2,258.46
J1517-24	EID Res 4	2,047.00	0	97.2	2,271.66	0	96	2,268.84	0	91.5	2,258.46
J1517-25	EID Res 4	2,043.00	3.42	98.9	2,271.66	6.29	97.7	2,268.84	10.38	93.2	2,258.46
J1517-26	No FF	2,214.00	1	24.9	2,271.66	1.84	23.7	2,268.85	3.04	19.3	2,258.49
J1517-27	EID Res 4	2,166.00	1	45.7	2,271.66	1.84	44.5	2,268.85	3.04	40	2,258.49
J1517-28	EID Res 4	2,120.00	0.38	65.6	2,271.66	0.71	64.4	2,268.85	1.17	59.9	2,258.50
J1517-29	EID Res 4	2,131.00	0	60.9	2,271.66	0	59.6	2,268.85	0	55.2	2,258.49
J1517-30	EID Res 4	2,130.00	0	61.5	2,272.23	0	60.8	2,270.61	0	57.9	2,263.92
J1517-31	EID Res 4	2,121.00	0	65.2	2,271.66	0	64	2,268.86	0	59.5	2,258.50
J1517-32	EID Res 4	2,117.56	0	66.7	2,271.66	0	65.5	2,268.86	0	61	2,258.50
J1518-01	Main Plant	2,024.00	0	67	2,178.75	0	65.3	2,175.04	0	65.3	2,174.93
J1518-02	Main Plant	2,032.27	0	63.4	2,178.75	0	61.8	2,175.05	0	61.8	2,175.01
J1518-03	Main Plant	2,053.00	0	54.4	2,178.75	0	52.8	2,175.05	0	52.8	2,175.04
J1518-04	Upper Schnell School	2,050.00	0	167	2,435.97	0	166.7	2,435.20	0	164.2	2,429.60
J1518-05	Upper Schnell School	2,082.00	0	153.1	2,435.97	0	152.8	2,435.22	0	150.5	2,429.85
J1518-06	Upper Schnell School	2,098.00	7.98	146.2	2,435.97	14.68	145.9	2,435.22	24.22	143.6	2,429.84
J1518-07	Upper Schnell School	2,105.00	7.36	143.2	2,435.97	13.54	142.9	2,435.22	22.34	140.5	2,429.84
J1518-08	Upper Schnell School	2,108.96	0	141.5	2,435.97	0	141.2	2,435.26	0	139	2,430.17
J1518-09	Upper Schnell School	2,084.00	0	152.3	2,435.97	0	152	2,435.22	0	149.6	2,429.84
J1518-10	Main Plant	2,046.00	1.47	57.5	2,178.80	2.7	55.8	2,175.04	4.45	55.8	2,174.95
J1518-11	Main Plant	2,042.00	0	59.2	2,178.80	0	57.6	2,175.04	0	57.5	2,174.95
J1518-12	Main Plant	2,008.00	2.2	73.9	2,178.81	4.05	72.3	2,175.03	6.68	72.2	2,174.82
J1518-13	Main Plant	1,942.00	1.74	101.5	2,176.58	3.2	97.8	2,167.96	5.28	92.8	2,156.50
J1518-14	Main Plant	1,949.00	3.04	99.5	2,178.88	5.59	97.8	2,175.07	9.22	97.7	2,174.71
J1518-15	Main Plant	1,946.00	3.25	100.8	2,178.88	5.98	99.1	2,175.07	9.87	99	2,174.71
J1518-16	EID Res 4	1,975.00	0	128.8	2,272.69	0	128.5	2,272.00	0	126.1	2,266.39
J1518-17	EID Res 4	1,980.00	0	126.6	2,272.69	0	126.3	2,272.00	0	123.9	2,266.39
J1518-18	EID Res 4	1,987.00	0	123.6	2,272.69	0	123.3	2,272.00	0	120.9	2,266.42
J1518-19	EID Res 4	1,989.00	2.58	122.7	2,272.69	4.76	122.4	2,272.00	7.85	120	2,266.45
J1518-20	Upper Schnell School	2,111.58	0	140.4	2,435.98	0	140.1	2,435.34	0	138.1	2,430.76
J1518-21	EID Res 4	2,011.00	0.96	113.2	2,272.66	1.77	112.9	2,271.91	2.92	110.7	2,266.82
J1518-22	EID Res 4	1,988.00	0	123.2	2,272.69	0	122.9	2,272.01	0	120.7	2,267.08
J1518-23	EID Res 4	1,979.00	0	127.1	2,272.69	0	126.8	2,272.00	0	124.4	2,266.62
J1518-24	EID Res 4	2,010.00	0.49	113.7	2,272.69	0.89	113.4	2,272.02	1.47	111.3	2,267.25
J1518-25	EID Res 4	1,998.00	1.68	118.8	2,272.69	3.09	118.6	2,272.02	5.1	116.5	2,267.25
J1518-26	EID Res 4	2,033.00	2.39	103.7	2,272.69	4.4	103.4	2,272.01	7.26	101.3	2,267.23
J1518-27	EID Res 4	2,031.00	2.16	104.6	2,272.69	3.97	104.3	2,272.00	6.55	101.9	2,266.55
J1518-28	EID Res 4	2,015.00	0.72	111.5	2,272.69	1.33	111.2	2,272.00	2.19	108.8	2,266.55
J1518-29	Upper Schnell School	2,062.00	0	161.8	2,435.98	0	161.5	2,435.37	0	159.6	2,430.96
J1519-01	Upper Schnell School	2,043.00	0	170	2,435.96	0	169.7	2,435.19	0	167.3	2,429.59
J1519-02	Upper Schnell School	2,052.00	1.06	166.1	2,435.96	1.95	165.8	2,435.19	3.22	163.4	2,429.59
J1519-03	Upper Schnell School	2,095.00	5.51	147.5	2,435.94	10.14	147.2	2,435.13	16.73	144.7	2,429.43
J1618-01	EID Res 4	2,110.00	0	70.4	2,272.71	0	70.1	2,272.08	0	68.6	2,268.63
J1618-02	EID Res 4	2,165.00	1.43	46.6	2,272.71	2.64	46.3	2,272.11	4.36	45.1	2,269.15
J1618-03	EID Res 4	2,147.07	0	54.4	2,272.72	0	54.1	2,272.15	0	53.1	2,269.70
J1618-04	EID Res 4	2,149.00	2.88	53.5	2,272.71	5.3	53.3	2,272.11	8.74	52	2,269.16
J1618-05	EID Res 4	2,094.80	0	77	2,272.72	0	76.7	2,272.15	0	75.7	2,269.71
J1619-06	Upper Schnell School	2,274.00	0	70.1	2,436.03	0	70.1	2,436.03	0	70.1	2,436.03

D-4: 2009 Pipeline Model Output

City of Placerville
Water Modeling Report
2009 Pipeline Model Output

Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
EID P1117-03	16	69	Galvanized iron	2.36	1,477.05	0.1	1.49	4.34	2717.77	0.32	4.61	7.16	4484.32	0.80	11.66
EID P1117-04	16	101	Galvanized iron	1.57	981.98	0.07	0.7	2.68	1677.04	0.19	1.89	1.89	1182.4	0.10	0.99
EID P1118-01a	18	2989	Galvanized iron	3.1	2,459.03	6.45	2.16	5.54	4394.81	18.91	6.33	7.14	5666.72	30.29	10.13
EID P1118-01b	18	719	Galvanized iron	3.1	2,459.03	1.55	2.16	5.54	4394.81	4.55	6.33	7.14	5666.72	7.29	10.13
EID P1119-02	18	2350	Galvanized iron	5.54	4,395.00	14.87	6.33	5.54	4395	14.87	6.33	5.54	4395	14.87	6.33
EID P1119-03	18	438	Galvanized iron	5.54	4,395.00	2.77	6.33	5.54	4395	2.77	6.33	5.54	4395	2.77	6.33
EID P1219-02	18	2072	Galvanized iron	5.64	4,474.05	13.55	6.54	5.81	4608.48	14.32	6.91	6.39	5066.1	17.06	8.23
EID P1220-03	18	1792	Galvanized iron	5.7	4,519.82	11.94	6.67	5.96	4726.51	12.98	7.24	6.73	5341.48	16.27	9.08
EID P1220-05	18	179	Galvanized iron	5.72	4,538.28	1.2	6.72	6.03	4781.86	1.32	7.4	6.89	5461.84	1.69	9.46
EID P1220-06	18	146	Galvanized iron	5.72	4,538.27	0.98	6.72	6.03	4782.44	1.08	7.4	6.9	5473.07	1.39	9.5
EID P1220-07	8	411	Galvanized iron	0.12	18.45	0.01	0.01	0.36	55.93	0.04	0.1	0.84	131.59	0.2	0.5
EID P1515-35	18	27	Galvanized iron	0	0	0	0	0	0	0	0	0.55	439.94	0	0.09
EID P1515-40	18	109	Galvanized iron	0	0	0	0	0	0	0	0	0.55	439.94	0.01	0.09
EID P1515-41	18	1648	Galvanized iron	1.54	1,223.86	0.98	0.59	2.84	2251.95	3.02	1.83	4.68	3715.72	7.64	4.64
EID P1515-42	18	40	Galvanized iron	1.47	1,162.81	0.02	0.54	2.7	2139.58	0.07	1.67	4.45	3530.31	0.17	4.22
EID P1516-47	16	1281	Galvanized iron	1.95	1,223.86	1.35	1.05	3.59	2251.96	4.17	3.26	6.63	4155.66	12.97	10.13
EID P1516-48	16	25	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
EID P1516-49	16	177	Galvanized iron	1.95	1,223.86	0.19	1.05	3.59	2251.96	0.58	3.26	6.63	4155.66	1.79	10.13
EID P1516-50	16	38	Galvanized iron	1.95	1,223.86	0.04	1.05	3.59	2251.96	0.12	3.26	6.63	4155.66	0.38	10.13
EID P1516-51	16	1268	Galvanized iron	1.95	1,223.86	1.33	1.05	3.59	2251.96	4.13	3.26	6.63	4155.66	12.84	10.13
EID P1516-52	18	1030	Galvanized iron	1.54	1,223.86	0.61	0.59	2.84	2251.96	1.89	1.83	5.24	4155.66	5.88	5.71
EID P1517-02	21	28	Galvanized iron	0.02	20.19	0	0	0.03	37.2	0	0	0.06	61.38	0	0
EID P1517-33	21	1960	Galvanized iron	1.15	1,244.06	0.57	0.29	2.12	2289.16	1.75	0.89	3.91	4217.04	5.42	2.77
EID P1519-01	10	137	Galvanized iron	0.25	61.05	0.01	0.04	0.46	112.37	0.02	0.12	0.76	185.41	0.04	0.32
EID P1519-03	8	921	Galvanized iron	0.17	26.74	0.02	0.03	0.66	104.16	0.3	0.32	1.99	311.96	2.26	2.45
EID P1617-01	21	1646	Galvanized iron	1.18	1,276.32	0.5	0.3	2.18	2348.51	1.54	0.94	4.44	4796.89	5.78	3.51
EID P1618-02	21	90	Galvanized iron	0.01	15.29	0	0	0.03	31.52	0	0	0.13	135.15	0	0.01
EID P1618-05	27	594	Galvanized iron	1.33	2,380.00	0.17	0.28	1.33	2380	0.17	0.28	1.33	2380	0.17	0.28
EID P1618-06	27	2169	Galvanized iron	1.33	2,380.00	0.61	0.28	1.33	2380	0.61	0.28	1.33	2380	0.61	0.28
EID P1618-07	21	891	Galvanized iron	1.2	1,291.61	0.28	0.31	2.2	2380.03	0.85	0.96	4.57	4932.04	3.29	3.7
EID P1619-01	24	223	Galvanized iron	1.71	2,406.74	0.11	0.51	1.76	2484.15	0.12	0.54	1.91	2691.94	0.14	0.63
EID P1619-02	24	49	Galvanized iron	1.71	2,406.74	0.03	0.51	1.76	2484.16	0.03	0.54	1.91	2691.96	0.03	0.63
EID P1619-03	8	1146	Galvanized iron	0.17	26.74	0.03	0.03	0.66	104.16	0.37	0.32	1.99	311.96	2.81	2.45
EID P1619-04	24	311	Galvanized iron	1.69	2,380.00	0.16	0.5	1.69	2380	0.16	0.5	1.69	2380	0.16	0.5
P1117-01	14	110	Galvanized iron	2.05	981.98	0.15	1.34	3.5	1677.04	0.40	3.62	2.46	1182.4	0.21	1.89
P1117-02	16	430	Galvanized iron	1.57	981.98	0.3	0.7	2.68	1677.04	0.81	1.89	1.89	1182.4	0.42	0.99
P1119-01	8	893	Unknown Material	0.5	79.05	0.17	0.19	1.36	213.49	1.08	1.21	4.29	671.69	9.05	10.14
P1119-02	8	102	Unknown Material	0.5	79.05	0.02	0.19	1.36	213.48	0.12	1.21	4.28	671.1	1.03	10.12
P1119-03	8	114	Unknown Material	0.5	79.05	0.02	0.19	1.36	213.49	0.14	1.21	4.29	671.69	1.16	10.14
P1119-04	6	506	C-900	0	0.27	0	0	0.01	0.6	0	0	0.01	0.99	0	0
P1216-01	8	98	PVC	0	0.28	0	0	0	0.52	0	0	0.01	0.86	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1216-02	2	222	Unknown Material	0.09	0.86	0.01	0.04	0.16	1.58	0.03	0.12	0.27	2.61	0.07	0.3
P1216-03	12	182	Unknown Material	0.78	274.17	0.05	0.27	1.36	478.03	0.14	0.75	0.97	342.46	0.07	0.4
P1216-04	12	392	Unknown Material	0.79	279.38	0.11	0.28	1.38	487.63	0.3	0.78	1.02	358.3	0.17	0.44
P1216-05	12	163	Asbestos Cement	0.9	318.9	0.05	0.31	1.57	552.56	0.14	0.84	1.15	406.61	0.08	0.48
P1216-06	6	447	Galvanized iron	0.4	34.82	0.08	0.17	0.64	56.29	0.19	0.42	0.39	34.06	0.07	0.16
P1216-07	6	434	Galvanized iron	0.4	34.82	0.07	0.17	0.64	56.29	0.18	0.42	0.39	34.06	0.07	0.16
P1216-08	6	423	Unknown Material	0.03	2.29	0	0	0.05	4.22	0	0	0.08	6.96	0	0.01
P1216-09	6	73	Unknown Material	0.35	30.81	0.01	0.14	0.55	48.91	0.02	0.32	0.25	21.88	0.01	0.07
P1216-10	12	194	Unknown Material	1.1	388.41	0.1	0.51	1.88	664.05	0.27	1.38	1.34	472.18	0.14	0.73
P1216-11	12	402	Ductile Iron	1.03	363.75	0.18	0.45	1.75	618.49	0.49	1.21	1.23	433.28	0.25	0.62
P1216-12	8	490	C-900	0.17	26.38	0.01	0.02	0.31	48.72	0.03	0.06	0.28	44.11	0.02	0.05
P1216-13	12	715	Galvanized iron	1.04	365.64	0.33	0.46	1.76	621.96	0.87	1.22	1.25	439	0.46	0.64
P1216-14	12	1295	Asbestos Cement	0.91	319.18	0.4	0.31	1.57	553.08	1.1	0.85	1.16	407.47	0.62	0.48
P1217-01	10	510	Galvanized iron	1.21	296.6	0.38	0.75	2.05	500.94	1.01	1.99	1.37	334.18	0.48	0.94
P1217-02	10	439	Galvanized iron	1.06	259.96	0.26	0.59	1.77	433.33	0.67	1.52	1.06	258.91	0.26	0.59
P1217-03	8	541	Asbestos Cement	1.01	158.35	0.33	0.6	1.65	258.28	0.81	1.49	0.78	122.54	0.2	0.37
P1217-04	8	172	C-900	0.18	28.97	0	0.02	0.34	53.48	0.01	0.07	0.33	51.97	0.01	0.07
P1217-05	6	805	Unknown Material	0.05	4.73	0	0	0.1	8.7	0.01	0.01	0.16	14.36	0.03	0.03
P1217-06	8	178	Unknown Material	0.98	153.91	0.12	0.66	1.6	250.12	0.29	1.63	0.7	109.08	0.06	0.35
P1217-07	6	221	Unknown Material	1.68	147.95	0.55	2.5	2.71	239.16	1.34	6.08	1.03	90.99	0.22	1.02
P1217-08	6	37	Unknown Material	0	0.25	0	0	0.01	0.46	0	0	0.01	0.76	0	0
P1217-09	6	76	Unknown Material	0.34	29.75	0.01	0.13	0.54	47.44	0.02	0.3	0.12	10.99	0	0.02
P1217-10	6	111	Cast iron	0.34	29.75	0.01	0.13	0.54	47.44	0.03	0.31	0.12	10.99	0	0.02
P1217-11	4	297	Cast iron	0.81	31.73	0.31	1.04	1.3	51.07	0.75	2.51	0.43	16.98	0.1	0.33
P1217-110	8	46	PVC	0.23	36.64	0	0.03	0.43	67.6	0.01	0.11	0.48	75.26	0.01	0.13
P1217-111	8	299	PVC	0.21	32.74	0.01	0.03	0.39	60.42	0.03	0.09	0.4	63.42	0.03	0.1
P1217-112	8	364	PVC	0.2	31.84	0.01	0.03	0.38	58.76	0.03	0.08	0.39	60.68	0.03	0.09
P1217-113	8	61	PVC	0.02	3.9	0	0	0.05	7.18	0	0	0.08	11.85	0	0
P1217-114	6	103	PVC	0.01	1.2	0	0	0.03	2.21	0	0	0.04	3.65	0	0
P1217-115	8	470	PVC	0.02	2.7	0	0	0.03	4.97	0	0	0.05	8.2	0	0
P1217-116	6	112	PVC	0.02	1.5	0	0	0.03	2.76	0	0	0.05	4.55	0	0
P1217-12	2	292	PVC	0.2	1.98	0.04	0.13	0.37	3.63	0.12	0.41	0.61	5.99	0.3	1.04
P1217-13	8	95	PVC	0.01	1.98	0	0	0.02	3.63	0	0	0.04	5.99	0	0
P1217-14	8	244	PVC	0.22	33.71	0.01	0.03	0.35	54.7	0.02	0.06	0.15	22.97	0	0.01
P1217-15	6	209	Unknown Material	1.27	111.7	0.31	1.48	2.04	179.79	0.75	3.58	0.68	60.32	0.1	0.47
P1217-16	8	119	Unknown Material	0.77	121.2	0.05	0.42	1.22	190.71	0.12	0.98	0.18	28.24	0	0.03
P1217-17	6	589	Galvanized iron	0.53	46.34	0.17	0.29	0.82	71.87	0.39	0.66	0.18	16.15	0.02	0.04
P1217-18	8	359	Unknown Material	0.45	70.91	0.06	0.16	0.71	111.57	0.13	0.37	0	0.09	0	0
P1217-19	6	745	C-900	0.31	27.28	0.06	0.08	0.49	42.89	0.14	0.19	0.04	3.48	0	0
P1217-20	6	456	Asbestos Cement	0.01	1.23	0	0	0.03	2.26	0	0	0.04	3.73	0	0
P1217-200	8	426	PVC	0.01	1.29	0	0	0.02	2.38	0	0	0.03	3.93	0	0

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1217-201	6	485	PVC	0.01	1.29	0	0	0.03	2.38	0	0	0.04	3.93	0	0
P1217-21	8	96	Unknown Material	0.58	90.92	0.02	0.25	0.9	141.07	0.05	0.56	0.12	18.53	0	0.01
P1217-22	8	417	Cast iron	0.55	85.73	0.09	0.22	0.84	131.55	0.21	0.5	0.22	34.23	0.02	0.04
P1217-23	8	409	Unknown Material	0.58	90.62	0.1	0.25	0.88	137.26	0.22	0.54	0.54	85.08	0.09	0.22
P1217-24	8	516	C-900	0.14	22.64	0.01	0.01	0.22	34.34	0.02	0.03	0.07	10.63	0	0
P1217-25	6	113	Asbestos Cement	0.04	3.96	0	0	0.08	7.26	0	0.01	0.14	11.98	0	0.02
P1217-26	6	409	Asbestos Cement	0.02	1.98	0	0	0.04	3.63	0	0	0.07	5.99	0	0.01
P1217-27	2	50	Galvanized iron	0.2	1.98	0.01	0.18	0.37	3.63	0.03	0.55	0.61	5.99	0.07	1.39
P1217-28	8	420	Unknown Material	0.19	29.33	0.01	0.03	0.34	53.96	0.04	0.09	0.66	103.3	0.13	0.32
P1217-29	6	413	Galvanized iron	0.43	37.75	0.08	0.2	0.67	59.36	0.19	0.46	0.63	55.77	0.17	0.41
P1217-30	8	513	Asbestos Cement	0.37	57.27	0.05	0.09	0.48	75.9	0.08	0.15	0.04	6.02	0	0
P1217-31	10	294	Galvanized iron	1.21	296.6	0.22	0.75	2.05	500.94	0.58	1.99	1.37	334.18	0.28	0.94
P1217-32	16	188	Galvanized iron	1.57	981.98	0.13	0.7	2.68	1677.04	0.35	1.89	1.89	1182.4	0.19	0.99
P1217-33	16	21	Galvanized iron	1.57	982	0.01	0.7	2.68	1677.03	0.04	1.88	1.89	1182.4	0.02	0.99
P1217-34	12	110	Ductile Iron	1.94	685.4	0.16	1.46	3.34	1176.1	0.44	3.97	2.41	848.22	0.24	2.17
P1217-35	16	816	Unknown Material	1.57	981.98	0.57	0.7	2.68	1677.04	1.54	1.89	1.89	1182.4	0.81	0.99
P1217-36	6	152	C-900	0.27	23.93	0.01	0.07	0.42	36.72	0.02	0.14	0.08	6.7	0	0.01
P1218-01	8	436	Unknown Material	0.04	6.97	0	0	0.08	12.82	0	0.01	1.09	171.18	0.35	0.81
P1218-02	6	350	Unknown Material	0.05	4.81	0	0	0.1	8.85	0	0.01	0.17	14.6	0.01	0.03
P1218-03	6	385	Unknown Material	0	0	0	0	0	0	0	0	2.18	192.34	1.56	4.06
P1218-03a	6	48	Unknown Material	0	0	0	0	0	0	0	0	2.18	192.34	0.2	4.06
P1218-03b	6	528	Unknown Material	0.02	2.16	0	0	0.05	3.97	0	0	0.07	6.56	0	0.01
P1218-04	6	329	Unknown Material	0.05	4.81	0	0	0.1	8.85	0	0.01	0.17	14.6	0.01	0.03
P1218-05	6	228	Unknown Material	0.01	0.79	0	0	0.02	1.45	0	0	0.03	2.39	0	0
P1218-06	6	408	Unknown Material	0.01	0.52	0	0	0.01	0.96	0	0	0.02	1.58	0	0
P1218-07	6	43	Unknown Material	0	0.26	0	0	0.01	0.48	0	0	0.01	0.79	0	0
P1218-08	2	166	Unknown Material	0.03	0.26	0	0	0.05	0.48	0	0.01	0.08	0.79	0.01	0.03
P1218-09	8	180	Galvanized iron	0.15	23.86	0	0.02	0.27	43.06	0.01	0.06	0.68	106.46	0.06	0.34
P1218-10	8	245	Galvanized iron	0.42	66.19	0.03	0.14	1.18	185.2	0.23	0.93	3.83	600.76	2.02	8.24
P1218-100	8	715	PVC	0.03	4.56	0	0	0.06	9.26	0	0	1.33	207.61	0.62	0.87
P1218-101	8	127	PVC	0.08	12.96	0	0	0.12	19.08	0	0.01	0.43	66.9	0.01	0.11
P1218-102	8	636	PVC	0.11	17.76	0.01	0.01	0.19	29.64	0.02	0.02	0.54	84.32	0.1	0.16
P1218-103	8	611	PVC	0.12	19.56	0.01	0.01	0.21	33.6	0.02	0.03	0.58	90.86	0.11	0.19
P1218-104	8	542	PVC	0	0	0	0	0.06	8.66	0	0	1.09	171.21	0.33	0.61
P1218-105	8	294	PVC	0.04	6.06	0	0	0.08	12.56	0	0	1.36	213.06	0.27	0.91
P1218-106	8	174	PVC	0.07	10.26	0	0	0.08	13.14	0	0	0.36	57.1	0.01	0.08
P1218-107	8	813	PVC	0.07	11.46	0	0	0.1	15.78	0.01	0.01	0.39	61.45	0.07	0.09
P1218-108	6	375	PVC	0.02	1.8	0	0	0.04	3.96	0	0	0.07	6.53	0	0.01
P1218-109	12	1255	PVC	0.12	42.33	0.01	0.01	0.4	142.14	0.07	0.06	1.4	494.29	0.75	0.6
P1218-11	8	70	Galvanized iron	0	0	0	0	0	0	0	0	0.15	24.25	0	0.02
P1218-12	8	147	Galvanized iron	0	0	0	0	0	0	0	0	0.15	24.25	0	0.02

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P1218-122	8	388	PVC	0.01	2.16	0	0	0.03	3.98	0	0	1.27	198.9	0.31	0.8
P1218-123	8	341	PVC	0.01	2.16	0	0	0.03	3.98	0	0	1.27	198.9	0.27	0.8
P1219-01	6	113	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-04	8	98	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-05	8	401	Unknown Material	0.02	3	0	0	0.04	6.61	0	0	0.07	10.91	0	0
P1219-06	6	1018	Unknown Material	0.09	7.85	0.01	0.01	0.17	15.07	0.04	0.04	1.92	169.28	3.26	3.21
P1219-07	8	407	Unknown Material	0.02	3	0	0	0.04	6.61	0	0	0.07	10.91	0	0
P1219-08	6	344	Unknown Material	0.06	5.24	0	0	0.24	20.81	0.02	0.07	2.03	178.75	1.22	3.55
P1219-09	6	183	Unknown Material	0.01	1.29	0	0	0.33	29.5	0.02	0.13	2.19	193.09	0.75	4.09
P1219-10	6	474	Unknown Material	0.01	0.64	0	0	0.35	30.94	0.07	0.14	2.22	195.46	1.98	4.18
P1219-100	6	264	PVC	0.41	36.56	0.04	0.14	0.92	80.7	0.16	0.61	1.24	108.9	0.28	1.06
P1219-101	6	178	PVC	0.41	36.56	0.03	0.14	0.92	80.7	0.11	0.61	1.24	108.9	0.19	1.06
P1219-103	6	24	PVC	0.52	45.77	0.01	0.21	1.34	118.03	0.03	1.23	3.12	275.38	0.14	5.93
P1219-104	6	24	PVC	0.52	45.78	0.01	0.21	1.34	118.03	0.03	1.23	3.13	275.53	0.14	5.94
P1219-105	8	459	PVC	0	0	0	0	0.06	8.66	0	0	1.09	171.2	0.28	0.61
P1219-11	6	566	Unknown Material	0.47	41.46	0.13	0.24	1.41	123.83	1.02	1.8	3.68	324.48	6.06	10.7
P1219-12	6	587	Asbestos Cement	0.09	7.84	0.01	0.01	0.37	32.56	0.08	0.13	1.06	93.1	0.54	0.91
P1219-13	8	501	Unknown Material	0.44	68.71	0.07	0.15	1.22	190.74	0.49	0.98	4.05	634.15	4.57	9.11
P1219-14	6	347	Unknown Material	0.04	3.35	0	0	0.08	7.37	0	0.01	0.11	9.76	0.01	0.02
P1219-15	6	287	Unknown Material	0.04	3.35	0	0	0.08	7.37	0	0.01	0.11	9.76	0	0.02
P1219-16	6	292	Unknown Material	0.03	2.35	0	0	0.06	5.17	0	0.01	0.1	8.53	0	0.01
P1219-17	6	478	Unknown Material	0.02	1.54	0	0	0.04	3.4	0	0	0.09	8.01	0.01	0.01
P1219-18	6	431	Unknown Material	0.1	8.67	0.01	0.01	0.22	19.09	0.02	0.06	0.38	33.9	0.07	0.16
P1219-19	8	399	Unknown Material	0.06	8.67	0	0	0.12	19.09	0.01	0.01	0.06	9.65	0	0
P1219-20	6	222	Unknown Material	0.1	8.4	0	0.01	0.21	18.48	0.01	0.05	0.32	28.09	0.03	0.12
P1219-21	8	351	Unknown Material	0.06	9.47	0	0	0.13	20.85	0.01	0.02	0.08	12.55	0	0.01
P1219-22	8	484	Unknown Material	0.1	15.1	0	0.01	0.21	33.24	0.02	0.04	0.33	52.44	0.04	0.09
P1219-23	6	472	Unknown Material	0.29	25.64	0.05	0.1	0.64	56.45	0.2	0.42	0.78	68.89	0.29	0.61
P1219-24	6	61	Unknown Material	0.31	27.51	0.01	0.11	0.69	60.58	0.03	0.48	0.86	75.71	0.04	0.72
P1219-25	6	225	Unknown Material	0.33	29.01	0.03	0.12	0.72	63.88	0.12	0.53	0.92	81.15	0.18	0.82
P1219-26	6	382	Unknown Material	0.35	30.51	0.05	0.13	0.76	67.38	0.22	0.58	0.99	86.93	0.36	0.93
P1219-27	6	360	Galvanized iron	0.03	2.4	0	0	0.06	5.28	0	0.01	0.1	8.71	0	0.01
P1219-28	6	648	Unknown Material	0.42	36.95	0.12	0.19	1.12	98.6	0.76	1.18	2.76	243.47	4.07	6.28
P1219-30	6	468	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1219-31	6	198	Unknown Material	0.07	5.87	0	0.01	0.15	12.92	0.01	0.03	0.24	21.32	0.01	0.07
P1219-32	6	357	Asbestos Cement	0.03	2.28	0	0	0.06	5.02	0	0	0.09	8.28	0	0.01
P1219-33	6	441	Unknown Material	0.02	1.5	0	0	0.04	3.3	0	0	0.06	5.45	0	0.01
P1219-34	6	226	Unknown Material	0.04	3.35	0	0	0.08	7.38	0	0.01	0.14	12.18	0.01	0.02
P1219-35	8	96	Galvanized iron	0.15	23.86	0	0.02	0.27	43.06	0.01	0.06	0.68	106.46	0.03	0.33
P1220-01	6	84	Galvanized iron	0.18	15.63	0	0.04	0.56	49.72	0.03	0.33	1.38	121.35	0.15	1.73
P1220-03	6	46	Asbestos Cement	0.12	10.42	0	0.02	0.43	38.25	0.01	0.18	1.16	102.49	0.05	1.09

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1220-04	6	211	Galvanized iron	0.18	15.63	0.01	0.04	0.56	49.72	0.07	0.33	1.38	121.42	0.37	1.73
P1315-01	8	526	PVC	0	0.64	0	0	0.01	1.18	0	0	0.01	1.95	0	0
P1316-01	8	489	PVC	0.03	4.03	0	0	0.05	7.41	0	0	0.08	12.23	0	0
P1316-02	4	587	Cast iron	0.24	9.35	0.06	0.11	0.37	14.55	0.14	0.25	0.13	5.09	0.02	0.03
P1316-03	4	88	Unknown Material	0.06	2.43	0	0.01	0.11	4.47	0	0.03	0.19	7.38	0.01	0.07
P1316-04	6	338	Unknown Material	0.02	2.05	0	0	0.01	1.12	0	0	0.19	17.05	0.02	0.05
P1316-05	4	12	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-06	6	334	Asbestos Cement	0	0.19	0	0	0.03	3.07	0	0	0.3	26.17	0.03	0.09
P1316-07	6	195	Asbestos Cement	0.01	0.89	0	0	0.02	1.7	0	0	0.06	5	0	0
P1316-08	12	465	Asbestos Cement	0.66	232.52	0.08	0.17	1.16	407.79	0.22	0.48	0.79	278.03	0.11	0.24
P1316-09	3	302	Unknown Material	0.1	2.16	0.01	0.03	0.18	3.97	0.03	0.09	0.3	6.55	0.07	0.23
P1316-10	6	169	Asbestos Cement	0	0.19	0	0	0.03	3.07	0	0	0.3	26.17	0.01	0.09
P1316-101	8	156	PVC	0	0.62	0	0	0.01	1.2	0	0	0.03	4.18	0	0
P1316-11	8	136	Unknown Material	0.61	95.39	0.04	0.27	1.09	171.32	0.11	0.81	0.76	119.12	0.06	0.41
P1316-12	2	264	Unknown Material	0.18	1.74	0.04	0.14	0.32	3.14	0.11	0.42	0.3	2.98	0.1	0.38
P1316-13	8	840	Cast iron	0.65	102.4	0.26	0.31	1.18	184.16	0.78	0.92	0.88	138.11	0.45	0.54
P1316-14	8	31	Unknown Material	0.58	90.62	0.01	0.24	1.02	160.47	0.02	0.72	0.73	114.32	0.01	0.39
P1316-15	12	10	Unknown Material	0.67	234.68	0	0.2	1.17	411.76	0.01	0.59	0.81	284.58	0	0.29
P1316-16	8	275	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-17	4	319	Cast iron	0.4	15.53	0.09	0.28	0.78	30.58	0.31	0.97	0.77	30.02	0.3	0.94
P1316-18	8	296	PVC	0.01	0.88	0	0	0.01	1.62	0	0	0.02	2.67	0	0
P1316-19	4	109	Galvanized iron	0.02	0.88	0	0	0.04	1.62	0	0	0.07	2.67	0	0.01
P1316-20	4	32	Unknown Material	0.51	20.12	0.01	0.45	1	39.03	0.05	1.53	1.12	43.96	0.06	1.9
P1316-21	6	304	Cast iron	0.15	13.21	0.01	0.03	0.3	26.33	0.03	0.1	0.32	28.14	0.04	0.12
P1316-22	12	732	Asbestos Cement	0.67	236.89	0.13	0.18	1.18	415.83	0.37	0.5	0.83	291.29	0.19	0.26
P1316-23	8	102	Unknown Material	0.59	92.49	0.03	0.26	1.05	163.91	0.08	0.74	0.77	120	0.04	0.42
P1316-24	8	302	Cast iron	0.6	94.03	0.08	0.27	1.06	166.09	0.23	0.76	0.57	89.39	0.07	0.24
P1316-25	4	222	Cast iron	0.17	6.57	0.01	0.06	0.31	12.07	0.04	0.17	0.48	18.74	0.09	0.39
P1316-26	4	15	Unknown Material	0.15	5.8	0	0.03	0.27	10.68	0	0.13	0.45	17.62	0.01	0.36
P1316-27	4	230	Cast iron	0.11	4.5	0.01	0.03	0.21	8.29	0.02	0.09	0.35	13.68	0.05	0.22
P1316-28	8	302	PVC	0.17	26.97	0.01	0.02	0.33	51.62	0.02	0.07	0.41	63.56	0.03	0.1
P1316-29	8	476	Asbestos Cement	0.27	42.19	0.02	0.05	0.41	63.97	0.05	0.11	0.13	20.34	0.01	0.01
P1316-30	6	434	Cast iron	0.43	37.57	0.09	0.2	0.7	61.31	0.21	0.49	0.22	19.8	0.03	0.06
P1316-31	6	93	Unknown Material	0.81	71.8	0.06	0.66	1.37	120.43	0.16	1.71	0.58	51.2	0.03	0.35
P1316-32	6	20	Unknown Material	1.28	112.94	0.03	1.51	2.14	188.32	0.08	3.91	0.93	81.86	0.02	0.84
P1316-33	6	147	Unknown Material	1.02	89.48	0.14	0.98	1.69	149.15	0.37	2.54	0.79	69.54	0.09	0.62
P1316-34	8	82	Unknown Material	0.68	106.38	0.03	0.34	1.16	182.29	0.07	0.91	0.7	108.91	0.03	0.35
P1316-35	8	109	Unknown Material	0.79	124.23	0.05	0.44	1.39	217.07	0.14	1.25	0.97	151.98	0.07	0.65
P1316-36	6	143	Asbestos Cement	0.66	57.9	0.05	0.38	1.1	97.35	0.14	0.99	0.68	59.5	0.06	0.4
P1316-37	4	210	Cast iron	0.7	27.4	0.17	0.79	1.18	46.4	0.44	2.1	0.62	24.26	0.13	0.63
P1316-38	12	387	Ductile Iron	0.52	182.59	0.05	0.13	0.89	315.28	0.13	0.35	0.6	212.88	0.06	0.17

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1316-39	6	169	Cast iron	0.82	72.38	0.11	0.66	1.27	111.7	0.25	1.49	0.26	22.94	0.01	0.08
P1316-40	6	365	Cast iron	0.82	72.38	0.24	0.66	1.27	111.7	0.54	1.48	0.26	22.94	0.03	0.08
P1316-41	4	439	C-900	0.06	2.52	0	0.01	0.12	4.63	0.01	0.02	0.2	7.64	0.02	0.06
P1316-42	6	551	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-43	2	700	Galvanized iron	0.03	0.28	0	0	0.05	0.52	0.01	0.01	0.09	0.86	0.03	0.04
P1316-44	6	505	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1316-45	8	922	Asbestos Cement	0.01	1.7	0	0	0.02	3.14	0	0	0.03	5.18	0	0
P1316-46	12	464	Asbestos Cement	0.77	271.88	0.11	0.23	1.34	473.81	0.29	0.64	0.95	335.5	0.16	0.34
P1316-47	4	271	Cast iron	0.03	1.08	0	0	0.05	1.99	0	0.01	0.08	3.28	0	0.02
P1316-48	8	295	Asbestos Cement	0.09	14.28	0	0.01	0.18	28.22	0.01	0.02	0.21	32.24	0.01	0.03
P1316-49	6	133	C-900	0.01	0.76	0	0	0.02	1.41	0	0	0.03	2.33	0	0
P1316-50	8	41	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-51	8	233	Unknown Material	0	0.76	0	0	0.01	1.41	0	0	0.01	2.33	0	0
P1316-52	8	25	Unknown Material	0	0.76	0	0	0.01	1.41	0	0	0.01	2.33	0	0
P1316-53	12	47	Unknown Material	0.67	237.66	0.01	0.21	1.18	417.24	0.03	0.58	0.83	293.62	0.01	0.3
P1316-54	12	52	Unknown Material	0.77	270.18	0.01	0.26	1.34	470.67	0.04	0.73	0.94	330.32	0.02	0.38
P1316-55	8	308	Unknown Material	0.52	82.07	0.06	0.21	0.91	142.78	0.18	0.58	0.63	99.47	0.09	0.29
P1316-56	6	90	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1316-57	6	686	Asbestos Cement	0.33	29.33	0.07	0.11	0.54	47.55	0.18	0.26	0.31	26.99	0.06	0.09
P1316-58	12	742	Cast iron	1.07	377.38	0.36	0.48	1.8	635.97	0.94	1.27	1.04	367.02	0.34	0.46
P1316-59	6	363	C-900	0.01	0.58	0	0	0.01	1.06	0	0	0.02	1.75	0	0
P1316-60	8	156	Unknown Material	0.52	82.07	0.03	0.21	0.91	142.78	0.09	0.58	0.63	99.48	0.05	0.3
P1316-61	8	32	Unknown Material	0.37	58.33	0	0.11	0.67	105.51	0.01	0.33	0.57	89.45	0.01	0.24
P1316-62	12	117	Unknown Material	0.68	240.93	0.02	0.21	1.19	420.79	0.07	0.59	0.86	302.33	0.04	0.32
P1316-63	6	49	Cast iron	0.28	24.34	0	0.09	0.44	38.37	0.01	0.2	0.13	11.84	0	0.02
P1316-64	4	213	Cast iron	0.02	0.88	0	0	0.04	1.62	0	0	0.07	2.67	0	0.01
P1316-65	6	268	Asbestos Cement	0.03	2.58	0	0	0.05	4.76	0	0	0.09	7.85	0	0.01
P1316-66	6	90	Galvanized iron	0.03	2.29	0	0	0.05	4.22	0	0	0.08	6.96	0	0.01
P1316-67	6	598	Galvanized iron	0.03	2.29	0	0	0.05	4.22	0	0	0.08	6.96	0.01	0.01
P1316-68	12	876	Ductile Iron	0.39	136.16	0.06	0.07	0.61	214.64	0.15	0.17	0.18	63.8	0.02	0.02
P1316-69	6	303	Asbestos Cement	0.06	4.87	0	0	0.1	8.98	0	0.01	0.17	14.82	0.01	0.03
P1316-70	8	202	PVC	0.14	22.32	0	0.01	0.23	35.89	0.01	0.03	0.07	10.4	0	0
P1316-71	4	720	Steel	0.57	22.32	0.55	0.76	0.92	35.89	1.32	1.83	0.27	10.4	0.13	0.18
P1317-01	4	160	Steel	0.48	18.65	0.09	0.54	0.74	29.14	0.2	1.25	0.02	0.74	0	0
P1317-02	6	154	Cast iron	0.94	82.86	0.13	0.85	1.43	125.8	0.28	1.85	0.55	48.5	0.05	0.32
P1317-03	8	371	Cast iron	0.23	35.62	0.02	0.04	0.3	47.62	0.03	0.08	0.31	49.06	0.03	0.08
P1317-04	8	47	Cast iron	0.23	35.3	0	0.05	0.3	47.03	0	0.07	0.32	50.03	0	0.08
P1317-05	8	382	Cast iron	0.19	29.09	0.01	0.03	0.23	35.61	0.02	0.04	0.44	68.87	0.06	0.15
P1317-06	6	449	Cast iron	0.58	51.41	0.16	0.35	0.92	80.68	0.36	0.81	0.55	48.86	0.14	0.32
P1317-07	6	25	Unknown Material	0.56	49.72	0.01	0.33	0.88	77.56	0.02	0.75	0.61	54	0.01	0.38
P1317-08	8	275	PVC	0.01	1.23	0	0	0.01	2.26	0	0	0.02	3.73	0	0

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				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1317-09	8	212	PVC	0.01	2.21	0	0	0.03	4.07	0	0	0.04	6.72	0	0
P1317-10	8	184	PVC	0.01	1.73	0	0	0.02	3.18	0	0	0.03	5.25	0	0
P1317-100	6	93	PVC	0	0.31	0	0	0.01	0.57	0	0	0.01	0.94	0	0
P1317-101	8	313	PVC	0.13	20.03	0	0.01	0.16	24.67	0.01	0.02	0.13	19.69	0	0.01
P1317-11	4	356	Steel	0.04	1.73	0	0.01	0.08	3.18	0.01	0.02	0.13	5.25	0.02	0.05
P1317-12	8	206	Unknown Material	0.19	30.15	0.01	0.03	0.38	59.48	0.02	0.11	0.28	43.79	0.01	0.07
P1317-13	8	142	PVC	0.03	5.42	0	0	0.06	9.97	0	0	0.1	16.45	0	0.01
P1317-14	6	356	Cast iron	0.48	42.02	0.09	0.24	0.78	68.56	0.21	0.6	0.17	15.32	0.01	0.04
P1317-15	6	57	Unknown Material	0.56	49.72	0.02	0.33	0.88	77.56	0.04	0.76	0.61	54	0.02	0.39
P1317-16	4	273	Cast iron	0.02	0.97	0	0	0.05	1.79	0	0.01	0.08	2.95	0	0.01
P1317-17	6	818	Cast iron	0.82	71.94	0.54	0.66	1.17	102.94	1.04	1.28	0.76	66.82	0.47	0.57
P1317-18	8	168	Unknown Material	0.68	106.46	0.06	0.33	1.09	170.46	0.13	0.8	0.06	9.76	0	0
P1317-19	8	380	Unknown Material	0.55	86.87	0.09	0.23	0.88	137.44	0.2	0.54	0.48	74.97	0.07	0.17
P1317-20	6	400	Unknown Material	0.01	0.84	0	0	0.02	1.55	0	0	0.03	2.56	0	0
P1317-21	12	57	PVC	0.02	5.38	0	0	0.03	9.9	0	0	0.05	16.33	0	0
P1317-22	4	23	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-23	12	461	PVC	0.02	5.38	0	0	0.03	9.9	0	0	0.05	16.33	0	0
P1317-24	8	296	PVC	0.04	5.69	0	0	0.07	10.47	0	0	0.11	17.28	0	0.01
P1317-25	6	501	Unknown Material	0.34	30.02	0.07	0.13	0.47	41.01	0.12	0.23	0.35	31.27	0.07	0.14
P1317-26	8	248	C-900	0.5	77.93	0.03	0.14	0.77	120.98	0.08	0.32	0.31	47.81	0.01	0.06
P1317-27	2	255	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-28	6	401	C-900	0.15	13.52	0.01	0.02	0.16	14.51	0.01	0.03	0.34	30.26	0.04	0.1
P1317-29	4	325	Cast iron	0.22	8.71	0.03	0.1	0.21	8.16	0.03	0.08	0.6	23.6	0.2	0.6
P1317-30	4	158	Cast iron	0.25	9.79	0.02	0.12	0.26	10.15	0.02	0.13	0.52	20.32	0.07	0.46
P1317-31	4	467	PVC	0.29	11.44	0.06	0.12	0.31	12.33	0.06	0.14	0.58	22.75	0.2	0.42
P1317-32	8	512	Cast iron	0.35	55.27	0.05	0.1	0.35	54.16	0.05	0.1	0.87	136.64	0.27	0.53
P1317-33	4	223	PVC	0	0.14	0	0	0.02	0.6	0	0	0.18	7.01	0.01	0.05
P1317-34	6	166	Cast iron	0.31	27.31	0.02	0.11	0.41	36.03	0.03	0.18	0.45	39.49	0.04	0.22
P1317-35	8	885	Cast iron	0.6	94.67	0.24	0.27	1.04	162.28	0.65	0.73	0.74	115.3	0.34	0.39
P1317-36	6	332	C-900	0.33	28.97	0.03	0.09	0.61	53.48	0.09	0.29	0.59	51.97	0.09	0.27
P1317-37	8	748	Unknown Material	1.25	195.76	0.77	1.03	1.99	312.37	1.84	2.46	0.46	72.59	0.12	0.16
P1317-38	12	65	Unknown Material	0.34	120.75	0	0.06	0.53	186.29	0.01	0.13	0.05	17.02	0	0
P1317-39	8	29	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-40	8	331	Cast iron	0.5	78.76	0.06	0.19	0.85	132.98	0.17	0.51	0.43	66.95	0.05	0.14
P1317-41	2	249	Unknown Material	0.29	2.87	0.09	0.35	0.54	5.28	0.27	1.1	0.89	8.71	0.69	2.78
P1317-42	2	200	Unknown Material	0.18	1.72	0.03	0.14	0.32	3.16	0.08	0.42	0.53	5.21	0.21	1.07
P1317-43	8	247	Unknown Material	0.53	82.37	0.05	0.21	0.89	139.63	0.14	0.55	0.5	77.93	0.05	0.19
P1317-44	6	42	Galvanized iron	0.12	10.32	0	0.02	0.22	19.02	0	0.05	0.36	31.38	0.01	0.14
P1317-45	6	350	Galvanized iron	0.1	9.17	0.01	0.01	0.19	16.9	0.02	0.05	0.32	27.89	0.04	0.11
P1317-46	8	88	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1317-47	6	704	Galvanized iron	0.13	11.81	0.02	0.02	0.17	15.19	0.03	0.04	0.28	25.06	0.07	0.09

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1317-48	8	305	C-900	0.49	76.1	0.04	0.14	0.75	117.62	0.09	0.3	0.27	42.27	0.01	0.05
P1317-49	6	719	Asbestos Cement	0.66	58.44	0.28	0.39	1.04	91.67	0.64	0.89	0.56	49.57	0.2	0.28
P1317-50	8	280	Asbestos Cement	0.01	2.09	0	0	0.02	3.84	0	0	0.04	6.34	0	0
P1317-51	10	326	PVC	0.02	4.26	0	0	0.03	7.83	0	0	0.05	12.92	0	0
P1317-52	6	296	Unknown Material	0.51	44.57	0.08	0.27	0.75	66.16	0.17	0.56	0.08	7.48	0	0.01
P1317-53	6	185	Unknown Material	0.43	37.75	0.04	0.2	0.67	59.36	0.09	0.46	0.63	55.77	0.08	0.41
P1317-54	6	282	Asbestos Cement	0.33	29.22	0.03	0.11	0.32	27.84	0.03	0.1	1.11	97.92	0.28	1
P1317-55	4	173	Steel	0.09	3.38	0	0.02	0.16	6.21	0.01	0.07	0.26	10.25	0.03	0.18
P1317-56	4	176	Unknown Material	0.43	16.85	0.06	0.32	0.48	18.82	0.07	0.4	0.75	29.34	0.16	0.9
P1317-57	2	182	Unknown Material	0.06	0.63	0	0.02	0.12	1.16	0.01	0.07	0.2	1.91	0.03	0.17
P1317-58	4	149	PVC	0.03	1.17	0	0	0.03	1.31	0	0	0.5	19.48	0.05	0.32
P1317-59	8	161	Unknown Material	0.39	60.88	0.02	0.12	0.44	68.79	0.02	0.15	0.57	89.17	0.04	0.24
P1317-60	4	14	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-61	8	327	Unknown Material	0.39	61.52	0.04	0.12	0.45	69.97	0.05	0.15	0.56	87.23	0.08	0.23
P1317-62	8	452	Cast iron	0.39	61.62	0.05	0.12	0.43	66.69	0.06	0.14	0.7	109.96	0.16	0.35
P1317-63	12	354	Galvanized iron	0.36	126.17	0.02	0.06	0.56	196.26	0.05	0.14	0.09	33.47	0	0.01
P1317-64	6	143	Asbestos Cement	0.1	9.19	0	0.01	0.04	3.17	0	0	0.89	78.23	0.09	0.66
P1318-01	8	62	Unknown Material	0.39	61.75	0.01	0.12	0.42	66.08	0.01	0.14	0.75	116.98	0.02	0.4
P1318-02	6	52	Unknown Material	0.07	6.48	0	0.01	0.14	11.92	0	0.02	0.22	19.67	0	0.06
P1318-03	6	607	Asbestos Cement	0.02	1.73	0	0	0.04	3.18	0	0	0.06	5.25	0	0
P1318-04	6	804	C-900	0.05	4.75	0	0	0.1	8.75	0.01	0.01	0.16	14.44	0.02	0.03
P1318-06	6	451	C-900	0.01	1.3	0	0	0.03	2.39	0	0	0.04	3.94	0	0
P1318-07	2	280	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1318-10	4	304	Cast iron	0.62	24.34	0.19	0.64	0.98	38.37	0.45	1.48	0.3	11.84	0.05	0.17
P1318-100	8	181	PVC	0.08	13.12	0	0.01	0.46	71.68	0.02	0.12	1.73	270.97	0.26	1.42
P1318-101	8	460	PVC	0.09	14.46	0	0.01	0.39	61.7	0.04	0.09	1.25	196.35	0.36	0.78
P1318-102	8	525	PVC	0.01	1.18	0	0	0.21	32.49	0.01	0.03	0.95	148.16	0.24	0.46
P1318-103	8	156	PVC	0	0.14	0	0	0.19	30.2	0	0.03	0.92	144.38	0.07	0.44
P1318-104	8	145	PVC	0.01	0.9	0	0	0.18	27.91	0	0.02	0.9	140.6	0.06	0.42
P1318-105	8	171	PVC	0	0.13	0	0	0.21	32.76	0	0.03	0.96	151.18	0.08	0.48
P1318-106	8	216	PVC	0.02	2.73	0	0	0.17	27.04	0	0.02	0.9	141.74	0.09	0.43
P1318-107	8	165	PVC	0.03	5.33	0	0	0.33	51.37	0.01	0.07	1.5	234.9	0.18	1.09
P1318-108	8	332	PVC	0.08	13.12	0	0.01	0.46	71.68	0.04	0.12	1.73	270.97	0.47	1.42
P1318-109	8	323	PVC	0.03	4.41	0	0	0.08	12.87	0	0	0.15	23.8	0	0.02
P1318-110	8	245	PVC	0.07	10.42	0	0	0.15	22.92	0	0.01	0.24	37.82	0.01	0.04
P1318-111	8	261	PVC	0.02	3.24	0	0	0.05	7.12	0	0	0.07	11.75	0	0
P1318-112	8	99	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1318-113	8	179	PVC	0.03	4.06	0	0	0.06	8.94	0	0	0.09	14.75	0	0.01
P1318-114	8	243	PVC	0	0.64	0	0	0.01	1.4	0	0	0.01	2.31	0	0
P1318-115	8	91	PVC	0.01	1.04	0	0	0.01	2.29	0	0	0.02	3.78	0	0
P1318-116	8	120	PVC	0.01	1.04	0	0	0.01	2.29	0	0	0.02	3.78	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1318-117	8	129	PVC	0.01	1.04	0	0	0.01	2.29	0	0	0.02	3.78	0	0
P1318-118	8	149	PVC	0.02	2.86	0	0	0.04	6.29	0	0	0.07	10.38	0	0
P1318-119	10	98	PVC	0.13	32.52	0	0.01	0.59	144.25	0.01	0.15	1.98	485.26	0.14	1.41
P1318-120	10	822	PVC	0.13	32.52	0.01	0.01	0.59	144.25	0.12	0.15	1.98	485.27	1.16	1.41
P1318-121	8	141	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1318-122	8	817	PVC	0	0	0	0	0.46	72.7	0.1	0.12	2.34	367.2	2.03	2.49
P1318-123	10	1163	PVC	0.13	32.52	0.01	0.01	0.59	144.25	0.17	0.15	1.98	485.27	1.64	1.41
P1319-01	6	622	Asbestos Cement	0.12	10.42	0.01	0.02	0.43	38.25	0.11	0.18	1.16	102.49	0.68	1.09
P1319-02	6	161	Asbestos Cement	0.12	10.42	0	0.02	0.43	38.25	0.03	0.18	1.16	102.49	0.18	1.09
P1319-03	6	583	Asbestos Cement	0.18	15.63	0.02	0.03	0.56	49.72	0.17	0.29	1.38	121.42	0.87	1.49
P1320-01	8	267	PVC	0.02	2.82	0	0	0.04	6.21	0	0	0.07	10.25	0	0
P1320-02	4	723	Galvanized iron	0.07	2.82	0.01	0.01	0.16	6.21	0.04	0.05	0.26	10.25	0.09	0.13
P1320-03	6	859	Galvanized iron	0.18	15.63	0.03	0.04	0.56	49.72	0.28	0.33	1.38	121.42	1.49	1.73
P1415-01	6	71	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-01a	6	130	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-02	6	453	C-900	0.04	3.48	0	0	0.07	6.4	0	0.01	0.12	10.56	0.01	0.01
P1415-03	6	293	C-900	0.05	4.83	0	0	0.1	8.89	0	0.01	0.17	14.67	0.01	0.03
P1415-04	6	576	Asbestos Cement	0.02	1.89	0	0	0.04	3.47	0	0	0.06	5.73	0	0.01
P1415-05	2	30	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1415-06	8	220	Galvanized iron	0.03	4.83	0	0	0.06	8.89	0	0	0.09	14.67	0	0.01
P1415-07	8	84	Galvanized iron	0.04	6.46	0	0	0.08	11.88	0	0.01	0.13	19.6	0	0.01
P1415-08	8	147	Unknown Material	0.05	8.35	0	0	0.1	15.35	0	0.01	0.16	25.33	0	0.02
P1415-09	6	472	Asbestos Cement	0.42	37.2	0.08	0.17	0.72	63.7	0.21	0.45	1.44	127.22	0.77	1.63
P1415-10	6	169	Galvanized iron	0.42	37.2	0.03	0.19	0.72	63.7	0.09	0.53	1.44	127.22	0.32	1.89
P1415-100	6	219	PVC	0.01	1.27	0	0	0.03	2.33	0	0	0.04	3.86	0	0
P1415-101	8	16	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1415-102	6	24	PVC	0.01	1.27	0	0	0.04	3.13	0	0	0.02	1.57	0	0
P1415-103	8	22	PVC	0.07	11.04	0	0.01	0.12	19.5	0	0.01	0.1	16.13	0	0.01
P1415-11	8	224	Galvanized iron	0.3	47.71	0.02	0.08	0.53	83.02	0.05	0.21	0.61	95.34	0.06	0.27
P1415-12	2	740	Galvanized iron	1.4	13.66	4.73	6.39	2.57	25.13	14.62	19.76	4.23	41.46	36.97	49.96
P1415-13	8	563	Galvanized iron	0.31	49.06	0.04	0.08	0.55	85.51	0.13	0.22	0.58	91.23	0.14	0.25
P1415-14	6	368	Galvanized iron	0.35	30.72	0.05	0.14	0.59	51.78	0.13	0.36	1.67	146.89	0.91	2.47
P1415-15	6	132	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-16	6	663	Cast iron	0.21	18.78	0.04	0.05	0.39	34.2	0.11	0.17	0.08	6.91	0.01	0.01
P1415-17	6	338	Unknown Material	0.03	2.63	0	0	0.05	4.84	0	0.01	0.09	7.99	0	0.01
P1415-18	6	77	Unknown Material	0.1	8.76	0	0.01	0.17	15.33	0	0.03	0.36	32.03	0.01	0.15
P1415-20	4	97	Unknown Material	0.04	1.47	0	0.01	0.07	2.7	0	0.01	0.11	4.45	0	0.03
P1415-21	4	369	Cast iron	0.03	1	0	0	0.05	1.84	0	0.01	0.08	3.02	0	0.01
P1415-22	4	181	Cast iron	0.03	1.27	0	0	0.06	2.33	0	0.01	0.1	3.86	0	0.02
P1415-23	6	437	Asbestos Cement	0.31	27.54	0.04	0.1	0.56	49.52	0.12	0.28	0.44	38.94	0.08	0.18
P1415-24	4	811	Steel	0.12	4.82	0.04	0.04	0.22	8.74	0.11	0.13	0.2	7.69	0.09	0.11

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P1415-25	6	202	Asbestos Cement	0.01	1.08	0	0	0.02	1.99	0	0	0.04	3.28	0	0
P1415-26	8	54	Galvanized iron	0.31	49.06	0	0.08	0.55	85.51	0.01	0.22	0.58	91.23	0.01	0.25
P1415-27	6	94	Unknown Material	0.26	23.25	0.01	0.08	0.49	42.76	0.02	0.25	0.8	70.55	0.06	0.63
P1415-28	6	481	Asbestos Cement	0.07	5.92	0	0.01	0.12	10.88	0.01	0.02	0.2	17.95	0.02	0.04
P1415-29	6	262	Asbestos Cement	0.04	3.85	0	0	0.08	7.08	0	0.01	0.13	11.68	0.01	0.02
P1415-30	8	268	Unknown Material	0.46	72.31	0.04	0.16	0.82	128.27	0.13	0.47	0.13	20.68	0	0.02
P1415-31	6	576	Asbestos Cement	0.02	2.07	0	0	0.04	3.8	0	0	0.07	6.27	0	0.01
P1415-32	4	561	Steel	0.23	9.15	0.08	0.15	0.41	16.03	0.23	0.41	0.27	10.4	0.1	0.18
P1415-33	4	249	Steel	0.05	1.89	0	0.01	0.09	3.47	0.01	0.02	0.15	5.73	0.02	0.06
P1415-34	6	284	Asbestos Cement	0.02	2.07	0	0	0.05	4.16	0	0	0.64	56.39	0.1	0.36
P1415-35	8	270	Asbestos Cement	0.47	74.38	0.04	0.15	0.85	132.44	0.12	0.43	0.23	35.71	0.01	0.04
P1415-36	8	59	Unknown Material	1.19	186.38	0.06	0.94	2.08	325.56	0.16	2.65	1.03	161.26	0.04	0.72
P1415-37	4	356	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-38	8	26	Unknown Material	1.29	202.41	0.03	1.1	2.27	355.05	0.08	3.12	1.34	209.92	0.03	1.17
P1415-39	12	270	Asbestos Cement	0.62	217.44	0.04	0.15	1.08	380.05	0.11	0.42	0.66	232.26	0.05	0.17
P1415-40	12	8	Unknown Material	0.61	215.11	0	0.18	1.07	376.56	0	0.49	0.69	242.54	0	0.21
P1415-41	2	89	Galvanized iron	0.11	1.08	0.01	0.06	0.2	1.99	0.02	0.18	0.34	3.28	0.04	0.46
P1415-42	8	104	Unknown Material	0.71	112	0.04	0.37	1.23	193.13	0.1	1.01	0.8	125.55	0.05	0.46
P1415-43	8	32	Unknown Material	0.53	83.34	0.01	0.21	0.9	141.55	0.02	0.56	0.53	83.22	0.01	0.21
P1415-44	8	324	Asbestos Cement	0.5	78.52	0.05	0.16	0.85	132.8	0.14	0.43	0.48	75.53	0.05	0.15
P1415-45	4	215	Steel	0.38	15.03	0.08	0.37	0.64	25	0.2	0.94	0.57	22.33	0.16	0.76
p1415-46	6	295	Unknown Material	0	0	0	0	0.01	0.79	0	0	0.06	5.43	0	0.01
P1415-47	6	143	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-48	6	214	Unknown Material	0.01	1.27	0	0	0.03	2.33	0	0	0.04	3.87	0	0
P1415-49	8	512	Asbestos Cement	0.47	74.38	0.08	0.15	0.85	132.43	0.22	0.43	0.23	35.71	0.02	0.04
P1415-50	12	542	Asbestos Cement	0.61	216.19	0.08	0.15	1.07	378.55	0.23	0.42	0.7	245.83	0.1	0.19
P1415-51	12	985	Asbestos Cement	0.64	227.23	0.16	0.16	1.13	398.05	0.45	0.46	0.74	261.96	0.21	0.21
P1416-01	6	261	Asbestos Cement	0.01	0.59	0	0	0.01	1.08	0	0	0.02	1.78	0	0
P1416-02	6	30	Unknown Material	0.01	0.59	0	0	0.01	1.08	0	0	0.02	1.78	0	0
P1416-03	8	146	C-900	0.33	51.02	0.01	0.06	0.58	90.29	0.03	0.19	0.19	29.59	0	0.02
P1416-04	6	350	C-900	0.2	17.92	0.01	0.04	0.34	29.73	0.03	0.1	0.47	41.08	0.06	0.18
P1416-05	8	753	Galvanized iron	0.38	59.87	0.09	0.12	0.68	106.57	0.25	0.33	0.02	2.73	0	0
P1416-06	6	72	Unknown Material	0.01	1	0	0	0.02	1.85	0	0	0.03	3.05	0	0
P1416-07	6	265	C-900	0.18	15.44	0.01	0.03	0.29	25.16	0.02	0.07	0.38	33.54	0.03	0.12
P1416-08	2	294	Unknown Material	0.43	4.22	0.21	0.72	0.79	7.77	0.66	2.25	1.31	12.82	1.67	5.68
P1416-09	6	257	Asbestos Cement	0.05	4.22	0	0	0.09	7.77	0	0.01	0.15	12.82	0.01	0.02
P1416-10	6	116	Unknown Material	0.02	1.83	0	0	0.13	11.76	0	0.02	0.11	9.64	0	0.01
P1416-101	6	254	PVC	0.08	7.44	0	0.01	0.12	10.6	0	0.01	0.01	0.78	0	0
P1416-12	6	352	Asbestos Cement	0.12	10.45	0.01	0.02	0.31	27.6	0.03	0.1	0.19	16.49	0.01	0.04
P1416-13	8	483	Galvanized iron	0.38	59.87	0.06	0.12	0.68	106.57	0.16	0.34	0.02	2.73	0	0
P1416-14	6	74	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0

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P1416-15	6	18	Unknown Material	0.14	12.18	0	0.03	0.35	30.79	0	0.14	0.25	21.74	0	0.07
P1416-16	4	82	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1416-17	6	117	Unknown Material	0.14	12.18	0	0.02	0.35	30.79	0.02	0.14	0.25	21.74	0.01	0.07
P1416-18	6	30	Unknown Material	0.14	12.18	0	0.02	0.35	30.79	0	0.14	0.25	21.74	0	0.07
P1416-19	4	510	Cast iron	0.24	9.35	0.06	0.11	0.37	14.55	0.13	0.25	0.13	5.09	0.02	0.03
P1416-20	6	521	Asbestos Cement	0.04	3.53	0	0	0.07	6.5	0	0.01	0.12	10.73	0.01	0.02
P1416-21	4	404	Unknown Material	0.29	11.35	0.06	0.15	0.28	11.04	0.06	0.15	0.47	18.42	0.15	0.38
P1416-22	8	88	Asbestos Cement	0.5	78.52	0.01	0.16	0.85	132.8	0.04	0.44	0.48	75.53	0.01	0.15
P1416-23	8	306	Asbestos Cement	0.45	69.81	0.04	0.13	0.75	116.77	0.1	0.34	0.31	49.08	0.02	0.07
P1416-24	2	304	Unknown Material	0.11	1.08	0.02	0.06	0.2	1.99	0.05	0.18	0.34	3.28	0.14	0.46
P1416-25	2	289	Galvanized iron	0.17	1.63	0.04	0.12	0.31	2.99	0.11	0.38	0.5	4.93	0.28	0.97
P1416-26	8	477	Asbestos Cement	0.45	69.81	0.06	0.13	0.75	116.77	0.16	0.34	0.31	49.08	0.03	0.07
P1416-27	4	290	Cast iron	0.28	11.07	0.04	0.15	0.57	22.38	0.16	0.55	0.42	16.49	0.09	0.31
P1416-28	1	400	Galvanized iron	0.32	0.77	0.37	0.91	0.57	1.39	1.08	2.71	0.46	1.11	0.72	1.8
P1416-29	6	10	Unknown Material	0.11	9.94	0	0	0.12	10.21	0	0	0.59	51.81	0	0.34
P1416-30	6	443	Unknown Material	0.12	10.47	0.01	0.02	0.31	27.34	0.05	0.11	0.12	10.15	0.01	0.02
P1416-31	6	228	Unknown Material	0.16	14.51	0.01	0.03	0.39	34.78	0.04	0.17	0.25	22.42	0.02	0.08
P1416-32	8	21	Unknown Material	0.66	103.93	0.01	0.31	1.19	186.31	0.02	0.94	0.65	102.31	0.01	0.31
P1416-33	8	21	Unknown Material	0.56	88.26	0.01	0.24	0.95	149.39	0.01	0.63	0.49	76.36	0	0.17
P1416-34	2	287	Galvanized iron	0.14	1.34	0.02	0.09	0.25	2.47	0.08	0.27	0.42	4.08	0.2	0.68
P1416-35	6	264	Asbestos Cement	0.02	1.73	0	0	0.04	3.18	0	0	0.06	5.25	0	0
P1416-36	1	132	Galvanized iron	0.26	0.64	0.09	0.65	0.48	1.18	0.26	2	0.8	1.95	0.67	5.07
P1416-37	6	460	Asbestos Cement	0.06	5.11	0	0	0.11	9.39	0.01	0.01	0.18	15.49	0.02	0.03
P1416-38	6	664	C-900	0.02	1.98	0	0	0.04	3.63	0	0	0.07	5.99	0	0
P1416-39	8	617	Unknown Material	0.55	86.92	0.14	0.23	0.94	146.92	0.37	0.61	0.46	72.28	0.1	0.16
P1416-40	3	330	Steel	0.1	2.24	0.01	0.04	0.19	4.15	0.05	0.14	0.36	8.03	0.15	0.46
P1416-41	8	158	Unknown Material	0.46	72.19	0.03	0.16	0.78	122.86	0.07	0.44	0.32	49.7	0.01	0.08
P1416-42	8	338	Galvanized iron	0.29	46.02	0.02	0.07	0.42	66.35	0.05	0.14	0.09	14.5	0	0.01
P1416-43	8	373	Galvanized iron	0.28	44.47	0.02	0.07	0.41	63.5	0.05	0.13	0.12	19.2	0.01	0.01
P1416-44	6	294	Asbestos Cement	0.01	0.76	0	0	0.02	1.69	0	0	0.24	21.06	0.02	0.06
P1416-45	3	158	Steel	0.07	1.48	0	0.02	0.12	2.72	0.01	0.06	0.2	4.49	0.02	0.16
P1416-46	4	483	Asbestos Cement	0.09	3.72	0.01	0.02	0.1	3.75	0.01	0.02	0.31	12.09	0.07	0.15
P1416-47	4	257	Steel	0.31	12.26	0.06	0.25	0.5	19.51	0.15	0.59	0.39	15.08	0.09	0.37
P1416-48	2	242	Unknown Material	0.07	0.64	0.01	0.02	0.12	1.18	0.02	0.07	0.2	1.95	0.04	0.17
P1416-49	4	101	C-900	0.05	1.94	0	0	0.09	3.57	0	0.01	0.15	5.89	0	0.04
P1416-50	6	363	Asbestos Cement	0.24	21.5	0.02	0.06	0.54	47.92	0.1	0.27	0.57	50	0.1	0.29
P1416-51	6	49	Unknown Material	0.11	9.32	0	0.01	0.19	17.13	0	0.04	0.32	28.26	0.01	0.12
P1416-52	6	469	Galvanized iron	0.47	41.74	0.11	0.24	0.63	55.39	0.19	0.4	0.58	50.85	0.16	0.35
P1416-53	6	504	Asbestos Cement	0.03	2.91	0	0	0.06	5.36	0	0	0.1	8.85	0.01	0.01
P1416-54	6	139	Asbestos Cement	0.02	1.98	0	0	0.04	3.63	0	0	0.07	5.99	0	0.01
P1416-55	6	374	Asbestos Cement	0.02	1.98	0	0	0.04	3.63	0	0	0.07	5.99	0	0.01

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-01	6	274	Galvanized iron	0.47	41.74	0.07	0.24	0.63	55.39	0.11	0.41	0.58	50.85	0.09	0.35
P1417-02	6	183	C-900	0.28	24.85	0.01	0.07	0.39	34.06	0.02	0.12	0.46	40.65	0.03	0.17
P1417-03	1	82	PVC	0.49	1.21	0.13	1.58	0.91	2.22	0.4	4.86	1.5	3.66	1.01	12.28
P1417-04	6	58	Unknown Material	0.27	23.64	0	0.08	0.36	31.84	0.01	0.15	0.5	44.31	0.02	0.27
P1417-05	6	135	C-900	0.16	14.23	0	0.02	0.19	16.43	0	0.03	0.21	18.29	0.01	0.04
P1417-06	6	37	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1417-07	4	125	C-900	0.06	2.43	0	0.01	0.11	4.47	0	0.02	0.19	7.38	0.01	0.05
P1417-08	4	98	C-900	0.04	1.46	0	0	0.07	2.68	0	0.01	0.11	4.42	0	0.02
P1417-09	2	112	C-900	0.1	0.97	0	0.03	0.18	1.79	0.01	0.11	0.3	2.95	0.03	0.28
P1417-10	4	787	Cast iron	0.56	21.9	0.41	0.52	0.73	28.64	0.68	0.86	1.27	49.59	1.87	2.38
P1417-100	8	440	PVC	0.04	6.47	0	0	0.06	8.71	0	0	0.17	25.95	0.01	0.02
P1417-11	8	136	Unknown Material	0.59	91.78	0.03	0.25	0.8	124.84	0.06	0.45	1.57	246.68	0.22	1.59
P1417-12	10	36	Ductile Iron	0.37	91.78	0	0.09	0.51	124.84	0.01	0.15	1.01	246.68	0.02	0.54
P1417-13	8	154	Unknown Material	0.01	2.23	0	0	0.03	4.11	0	0	0.04	6.78	0	0
P1417-14	10	43	Unknown Material	0.36	88.65	0	0.08	0.49	119.09	0.01	0.14	1.05	256.17	0.02	0.57
P1417-15	10	234	C-900	0.34	84.19	0.01	0.06	0.45	110.87	0.02	0.09	1.1	269.73	0.11	0.47
P1417-16	6	164	C-900	0.18	15.49	0	0.03	0.22	19.43	0.01	0.04	0.76	67.31	0.07	0.44
P1417-17	10	359	Unknown Material	0.33	79.73	0.02	0.07	0.42	102.65	0.04	0.11	1.16	283.3	0.25	0.69
P1417-18	4	700	Cast iron	0.3	11.6	0.11	0.16	0.3	11.59	0.11	0.16	0.67	26.27	0.51	0.73
P1417-19	6	551	Galvanized iron	0.18	15.49	0.02	0.04	0.22	19.43	0.03	0.06	0.76	67.31	0.32	0.58
P1417-20	8	262	Unknown Material	0.23	36.45	0.01	0.05	0.28	44.54	0.02	0.07	0.44	69.65	0.04	0.15
P1417-21	6	192	Unknown Material	0.01	1.08	0	0	0.02	1.99	0	0	0.04	3.28	0	0
P1417-22	8	648	C-900	0.21	33.63	0.02	0.03	0.25	39.35	0.03	0.04	0.39	61.09	0.06	0.09
P1417-23	6	57	Unknown Material	0.01	1.08	0	0	0.02	1.99	0	0	0.04	3.28	0	0
P1417-24	4	85	Unknown Material	0.03	1.08	0	0	0.05	1.99	0	0.01	0.08	3.28	0	0.02
P1417-25	8	221	Unknown Material	0.2	30.81	0.01	0.03	0.22	34.16	0.01	0.04	0.34	52.53	0.02	0.09
P1417-26	8	29	Unknown Material	0.28	43.61	0	0.06	0.29	45.25	0	0.07	0.44	68.66	0	0.15
P1417-27	6	92	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1417-28	6	173	Unknown Material	0.01	1.3	0	0	0.03	2.39	0	0	0.04	3.94	0	0
P1417-29	6	521	Galvanized iron	0.11	9.95	0.01	0.02	0.1	9.23	0.01	0.01	0.57	50.48	0.18	0.34
P1417-30	6	512	C-900	0.13	11.62	0.01	0.02	0.13	11.56	0.01	0.02	0.2	17.38	0.02	0.04
P1417-31	8	287	C-900	0.08	12.79	0	0.01	0.07	11.08	0	0	0.1	16.14	0	0.01
P1417-32	8	254	Unknown Material	0.28	43.6	0.02	0.06	0.29	45.25	0.02	0.07	0.44	68.66	0.04	0.15
P1417-33	6	400	C-900	0.24	21.21	0.02	0.05	0.3	26.57	0.03	0.08	0.47	41.69	0.07	0.18
P1417-34	6	470	C-900	0.03	2.43	0	0	0.05	4.47	0	0	0.08	7.38	0	0.01
P1417-35	2	241	Galvanized iron	0.1	0.97	0.01	0.05	0.18	1.79	0.04	0.15	0.3	2.95	0.09	0.37
P1417-36	6	17	Unknown Material	0.46	40.54	0	0.22	0.75	65.84	0.01	0.56	0.22	19.8	0	0.06
P1417-37	6	404	Cast iron	0.4	35.65	0.07	0.18	0.65	56.85	0.17	0.43	0.39	34.64	0.07	0.17
P1417-38	6	33	Unknown Material	0.5	44.09	0.01	0.26	0.71	62.66	0.02	0.5	0.8	70.47	0.02	0.63
P1417-39	6	361	Galvanized iron	0.5	44.09	0.1	0.27	0.71	62.66	0.18	0.51	0.8	70.47	0.23	0.63
P1417-40	6	86	Galvanized iron	0.48	42.11	0.02	0.24	0.68	60.14	0.04	0.47	1	87.72	0.08	0.95

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-41	6	96	Unknown Material	0.48	42.11	0.02	0.24	0.68	60.14	0.05	0.47	1	87.72	0.09	0.95
P1417-42	6	82	Ductile Iron	0	0.23	0	0	0	0.04	0	0	0.03	3.08	0	0
P1417-43	6	84	Ductile Iron	0	0	0	0	0	0	0	0	0	0	0	0
P1417-44	6	214	Ductile Iron	0	0.23	0	0	0	0.04	0	0	0.03	3.08	0	0
P1417-45	6	94	Galvanized iron	0.01	0.45	0	0	0.01	1.04	0	0	0	0.27	0	0
P1417-46	6	89	Galvanized iron	0	0.44	0	0	0.01	0.59	0	0	0.03	2.44	0	0
P1417-47	6	117	PVC	0.02	1.47	0	0	0.04	3.15	0	0	0.02	2.05	0	0
P1417-48	6	83	PVC	0.01	0.77	0	0	0	0.3	0	0	0.15	13.59	0	0.02
P1417-49	6	59	PVC	0.02	1.47	0	0	0.04	3.15	0	0	0.02	2.05	0	0
P1417-50	6	181	PVC	0.02	1.39	0	0	0.04	3.21	0	0	0.05	4.65	0	0
P1417-51	6	153	PVC	0	0.44	0	0	0.02	1.92	0	0	0.11	9.92	0	0.01
P1417-52	6	251	C-900	0.44	38.96	0.04	0.16	0.62	54.34	0.07	0.29	1.1	97.29	0.22	0.86
P1417-53	6	372	Ductile Iron	0.05	4.8	0	0	0.11	9.93	0.01	0.02	0.04	3.29	0	0
P1417-54	6	226	Unknown Material	0.44	38.39	0.05	0.21	0.68	59.92	0.11	0.47	0.49	42.79	0.06	0.25
P1417-55	6	192	Unknown Material	0.12	10.84	0	0.02	0.19	16.75	0.01	0.04	0.14	12.69	0	0.03
P1417-56	6	369	C-900	0.42	36.95	0.05	0.14	0.6	52.79	0.1	0.28	0.57	50.62	0.1	0.26
P1417-57	8	1071	C-900	0.46	71.81	0.13	0.12	0.64	99.78	0.24	0.22	1.22	191.18	0.8	0.74
P1417-58	4	409	Unknown Material	0.28	10.84	0.06	0.14	0.43	16.75	0.13	0.32	0.32	12.69	0.08	0.19
P1417-59	6	25	PVC	0.42	37.01	0	0.15	0.65	57.39	0.01	0.33	0.53	46.96	0.01	0.22
P1417-60	6	113	PVC	0.37	32.21	0.01	0.11	0.54	47.46	0.03	0.23	0.57	50.25	0.03	0.25
P1417-61	2	185	Galvanized iron	0.1	0.97	0.01	0.05	0.18	1.79	0.03	0.15	0.3	2.95	0.07	0.37
P1417-62	6	541	C-900	0.41	35.77	0.07	0.14	0.58	50.81	0.14	0.26	0.97	85.05	0.36	0.67
P1417-63	4	20	Unknown Material	0.02	0.97	0	0	0.05	1.79	0	0	0.08	2.95	0	0.01
P1417-64	2	336	Steel	0.1	0.97	0.02	0.07	0.18	1.79	0.07	0.21	0.3	2.95	0.18	0.53
P1417-65	6	156	Unknown Material	0.22	19.15	0.01	0.06	0.33	28.7	0.02	0.12	0.61	54.17	0.06	0.39
P1417-66	4	47	Unknown Material	0.04	1.46	0	0.01	0.07	2.68	0	0.01	0.11	4.42	0	0.03
P1417-67	2	326	Unknown Material	0.15	1.46	0.03	0.1	0.27	2.68	0.1	0.31	0.45	4.42	0.26	0.79
P1417-68	6	204	PVC	0.16	14.26	0.01	0.03	0.2	17.58	0.01	0.04	0.08	7.19	0	0.01
P1417-69	2	379	Unknown Material	0.22	2.16	0.08	0.21	0.41	3.97	0.25	0.65	0.67	6.55	0.62	1.64
P1417-70	6	263	Unknown Material	0.17	15.26	0.01	0.04	0.24	21.55	0.02	0.07	0.75	65.97	0.15	0.56
P1417-71	6	497	Asbestos Cement	0.16	14.07	0.01	0.03	0.2	17.23	0.02	0.04	0.09	7.77	0	0.01
P1417-72	4	264	Cast iron	0.17	6.75	0.02	0.06	0.25	9.92	0.03	0.12	0.02	0.77	0	0
P1417-73	8	200	Cast iron	0.43	67.72	0.03	0.15	0.43	66.69	0.03	0.14	1.09	170.19	0.16	0.8
P1417-74	4	39	Unknown Material	0.06	2.16	0	0.01	0.1	3.97	0	0.02	0.17	6.55	0	0.06
P1417-75	6	150	Unknown Material	0.13	11.64	0	0.02	0.17	14.9	0.01	0.03	0.87	76.94	0.11	0.74
P1417-76	6	21	Unknown Material	0.08	7.44	0	0.01	0.05	4.62	0	0	0.49	42.87	0.01	0.26
P1417-77	6	182	Unknown Material	0.1	8.65	0	0.01	0.08	6.84	0	0.01	0.53	46.54	0.05	0.29
P1417-78	2	222	PVC	0.13	1.3	0.01	0.06	0.24	2.39	0.04	0.19	0.4	3.94	0.11	0.48
P1417-79	6	519	C-900	0.22	19.08	0.02	0.04	0.22	19.52	0.02	0.04	0.39	34.07	0.06	0.12
P1417-80	6	274	Galvanized iron	0.05	4.54	0	0	0.02	2.02	0	0	0.93	82.15	0.23	0.84
P1417-81	6	258	Unknown Material	0.16	13.69	0.01	0.03	0.19	16.52	0.01	0.04	0.1	8.94	0	0.01

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P1417-82	6	123	Cast iron	0.16	13.69	0	0.03	0.19	16.52	0.01	0.04	0.1	8.94	0	0.01
P1417-83	6	99	Unknown Material	0.47	41.01	0.02	0.23	0.6	52.55	0.04	0.37	0.55	48.43	0.03	0.32
P1417-84	6	414	Cast iron	0.34	29.9	0.05	0.13	0.39	34.63	0.07	0.17	0.69	60.86	0.2	0.48
P1417-85	6	28	Unknown Material	0.15	13.44	0	0.03	0.23	20.59	0	0.07	1.04	91.97	0.03	1.03
P1417-86	8	216	Cast iron	0.51	80.47	0.04	0.2	0.47	73.89	0.04	0.17	0.96	150.36	0.14	0.63
P1417-87	6	266	Cast iron	0.01	0.67	0	0	0.09	8.31	0	0.01	0.75	66.19	0.15	0.56
P1417-88	6	369	Unknown Material	0.27	23.62	0.03	0.08	0.2	17.5	0.02	0.05	0.55	48.08	0.11	0.31
P1417-89	6	1050	Cast iron	0.25	22.14	0.08	0.07	0.28	24.32	0.09	0.09	0.23	20.59	0.07	0.06
P1417-90	10	1030	Asbestos Cement	0.3	73.4	0.05	0.05	0.25	60.89	0.04	0.03	0.7	171.81	0.24	0.24
P1417-91	4	394	Cast iron	0.36	14.11	0.09	0.23	0.31	12.28	0.07	0.18	0.66	25.78	0.28	0.71
P1417-92	6	192	Galvanized iron	0.06	5.62	0	0.01	0	0.03	0	0	0.97	85.43	0.17	0.9
P1417-94	6	485	Galvanized iron	0.24	21.09	0.03	0.07	0.37	32.28	0.07	0.15	0.55	48.26	0.15	0.31
P1417-95	6	89	PVC	0.01	0.51	0	0	0.01	0.69	0	0	0.03	2.84	0	0
P1417-96	6	94	PVC	0.01	0.53	0	0	0.01	1.22	0	0	0	0.31	0	0
P1417-97	6	679	Unknown Material	0.05	4.37	0	0	0.09	8.04	0.01	0.01	0.15	13.27	0.02	0.03
P1418-01	4	17	Unknown Material	0.03	1.37	0	0	0	0.13	0	0	0.02	0.67	0	0
P1418-02	4	430	Cast iron	0.08	3.11	0.01	0.01	0.08	3.07	0.01	0.01	0.12	4.61	0.01	0.03
P1418-03	4	77	Unknown Material	0.1	3.76	0	0.02	0.11	4.27	0	0.03	0.17	6.59	0	0.06
P1418-04	6	189	Unknown Material	0.43	37.99	0.04	0.2	0.51	45.28	0.05	0.28	0.19	16.77	0.01	0.04
P1418-05	8	292	Galvanized iron	0.16	24.43	0.01	0.02	0.19	30.16	0.01	0.03	0.27	41.9	0.02	0.06
P1418-06	8	262	Galvanized iron	0.16	24.43	0.01	0.02	0.19	30.16	0.01	0.03	0.27	41.9	0.02	0.06
P1418-07	8	283	Unknown Material	0.14	22.08	0.01	0.02	0.16	25.84	0.01	0.03	0.31	49.03	0.02	0.08
P1418-08	6	172	Unknown Material	0.16	14.14	0.01	0.03	0.17	14.62	0.01	0.03	0.18	15.58	0.01	0.04
P1418-09	4	457	Asbestos Cement	0.29	11.32	0.06	0.13	0.24	9.43	0.04	0.09	0.18	7.02	0.03	0.06
P1418-10	4	242	Unknown Material	0.14	5.45	0.01	0.04	0.13	5	0.01	0.03	0.13	4.91	0.01	0.03
P1418-100	8	89	PVC	0	0	0	0	0.46	72.7	0.01	0.12	2.34	367.2	0.22	2.49
P1418-101	8	603	PVC	0	0	0	0	0.46	72.7	0.07	0.12	2.34	367.2	1.5	2.49
P1418-102	6	175	PVC	0.03	2.69	0	0	0.03	2.28	0	0	0.22	19.52	0.01	0.04
P1418-103	10	64	PVC	0.09	20.94	0	0	0.07	15.93	0	0	0.34	82.14	0	0.05
P1418-104	8	493	PVC	0.09	13.56	0	0.01	0.1	15.11	0	0.01	0.16	25.13	0.01	0.02
P1418-105	10	248	PVC	0.01	1.81	0	0	0.02	5.43	0	0	0.04	8.96	0	0
P1418-106	6	85	PVC	0.02	1.81	0	0	0.06	5.43	0	0	0.1	8.96	0	0.01
P1418-107	10	251	PVC	0.11	28.03	0	0.01	0.19	46.58	0	0.02	0.04	9.52	0	0
P1418-108	8	85	PVC	0	0	0	0	0.46	72.69	0.01	0.12	2.34	367.2	0.21	2.49
P1418-11	6	428	Asbestos Cement	0.07	6.29	0	0.01	0.09	8.2	0	0.01	0.79	69.61	0.23	0.53
P1418-12	1	559	Galvanized iron	0.71	1.74	2.3	4.12	1.31	3.2	7.11	12.72	2.16	5.28	17.98	32.16
P1418-13	4	180	Unknown Material	0.15	6.02	0.01	0.05	0.09	3.38	0	0.02	0.79	30.86	0.18	0.99
P1418-14	6	23	Unknown Material	0.17	14.9	0	0.04	0.09	8.32	0	0.01	0.35	31.25	0	0.14
P1418-15	6	261	C-900	0.08	7.32	0	0.01	0.15	13.48	0.01	0.02	0.25	22.24	0.01	0.06
P1418-16	6	56	C-900	0.05	4.42	0	0	0.09	8.13	0	0.01	0.15	13.42	0	0.02
P1418-17	6	495	C-900	0.03	2.22	0	0	0.05	4.08	0	0	0.08	6.74	0	0.01

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1418-18	4	460	C-900	0.02	0.95	0	0	0.04	1.76	0	0	0.07	2.9	0	0.01
P1418-19	6	469	Galvanized iron	0.09	7.58	0	0.01	0.06	5.16	0	0	0.61	53.49	0.18	0.38
P1418-20	6	498	Galvanized iron	0.09	7.58	0.01	0.01	0.06	5.16	0	0	0.61	53.49	0.19	0.38
P1418-21	6	134	Ductile Iron	0.02	2.2	0	0	0.05	4.05	0	0	0.08	6.68	0	0.01
P1418-22	6	153	Asbestos Cement	0.01	0.98	0	0	0.02	1.81	0	0	0.03	2.99	0	0
P1418-23	6	261	Asbestos Cement	0.02	1.56	0	0	0.03	2.89	0	0	0.05	4.77	0	0
P1418-24	6	161	Asbestos Cement	0.02	1.71	0	0	0.04	3.16	0	0	0.06	5.21	0	0
P1418-25	2	33	Unknown Material	0.02	0.15	0	0.01	0.03	0.27	0	0	0.04	0.44	0	0.01
P1418-26	6	565	Unknown Material	0.01	0.71	0	0	0.01	1.3	0	0	0.02	2.14	0	0
P1418-27	6	65	Unknown Material	0.01	0.53	0	0	0.01	0.98	0	0	0.02	1.62	0	0
P1418-28	8	221	Unknown Material	0.02	3.69	0	0	0.04	6.79	0	0	0.07	11.2	0	0.01
P1418-29	6	50	Unknown Material	0.05	4.78	0	0	0.1	8.79	0	0.01	0.16	14.51	0	0.03
P1418-30	8	205	Asbestos Cement	0.05	8.47	0	0	0.13	20.25	0	0.01	0.82	128.54	0.08	0.41
P1418-31	8	35	Unknown Material	0.05	8.47	0	0.01	0.13	20.25	0	0.01	0.82	128.54	0.02	0.47
P1418-32	6	238	Asbestos Cement	0.04	3.76	0	0	0.08	6.94	0	0.01	0.13	11.46	0	0.02
P1418-33	2	442	Unknown Material	0.02	0.15	0	0	0.03	0.27	0	0	0.04	0.44	0	0.01
P1418-34	8	261	Unknown Material	0.05	8.47	0	0	0.1	15.58	0	0.01	0.16	25.71	0.01	0.02
P1418-35	8	303	Asbestos Cement	0.05	8.47	0	0	0.13	20.25	0	0.01	0.82	128.54	0.12	0.41
P1418-36	6	76	C-900	0.07	6.05	0	0.01	0.13	11.14	0	0.02	0.21	18.38	0	0.04
P1418-37	6	28	Unknown Material	0.43	37.99	0.01	0.2	0.51	45.28	0.01	0.28	0.19	16.77	0	0.05
P1418-38	4	318	Cast iron	0.07	2.8	0	0.01	0.01	0.33	0	0	0.35	13.9	0.07	0.23
P1418-40	8	752	Unknown Material	0.04	6.56	0	0	0.01	1.62	0	0	0.31	48.71	0.06	0.08
P1418-41	8	165	Unknown Material	0.04	6.56	0	0	0.01	1.62	0	0	0.31	48.71	0.01	0.08
P1418-42	4	294	Cast iron	0.05	2.01	0	0.01	0.15	5.85	0.01	0.05	0.69	26.99	0.23	0.77
P1418-43	6	640	Cast iron	0.23	20.13	0.04	0.06	0.21	18.47	0.03	0.05	0.07	6.4	0	0.01
P1418-44	10	534	Galvanized iron	0.27	64.91	0.02	0.05	0.13	31.58	0.01	0.01	1.09	266.21	0.33	0.62
P1418-45	6	109	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-46	6	95	Unknown Material	0.01	0.57	0	0	0.02	1.62	0	0	0.29	25.95	0.01	0.1
P1418-47	2	135	Galvanized iron	0.64	6.29	0.21	1.52	1.18	11.57	0.63	4.7	1.95	19.09	1.6	11.88
P1418-48	4	401	Galvanized iron	0.13	4.91	0.01	0.03	0.24	9.53	0.04	0.11	1.02	39.8	0.63	1.58
P1418-49	10	272	Galvanized iron	0.27	64.91	0.01	0.04	0.13	31.58	0	0.01	1.09	266.21	0.17	0.62
P1418-50	10	119	Asbestos Cement	0.15	36.88	0	0.01	0.06	15.01	0	0	1.05	256.69	0.06	0.5
P1418-51	10	278	Asbestos Cement	0.13	32.61	0	0.01	0.2	49.84	0.01	0.02	0.4	97.56	0.02	0.08
P1418-52	4	733	Galvanized iron	0.16	6.27	0.04	0.05	0.27	10.57	0.1	0.14	0.39	15.42	0.2	0.27
P1418-53	12	666	Galvanized iron	0.02	8.47	0	0	0.06	20.25	0	0	0.36	128.54	0.04	0.07
P1418-54	8	182	Asbestos Cement	0.13	20.94	0	0.01	0.1	15.93	0	0.01	0.52	82.14	0.03	0.18
P1418-55	10	164	Unknown Material	0.22	53.54	0.01	0.03	0.27	65.77	0.01	0.05	0.06	15.42	0	0
P1418-56	10	378	Asbestos Cement	0.18	44.83	0.01	0.02	0.2	50.09	0.01	0.02	0.04	10.49	0	0
P1418-57	10	195	Galvanized iron	0.18	44.83	0	0.02	0.2	50.09	0.01	0.03	0.04	10.49	0	0
P1418-59	4	397	Cast iron	0.05	1.87	0	0.01	0.06	2.47	0	0.01	0.05	2.05	0	0.01
P1418-61	6	155	Asbestos Cement	0.1	8.71	0	0.01	0.18	15.68	0.01	0.03	0.29	25.91	0.01	0.09

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1418-63	4	599	Ductile Iron	0.16	6.2	0.03	0.05	0.28	11.07	0.09	0.15	0.47	18.3	0.23	0.38
P1418-64	6	134	Asbestos Cement	0.3	26.05	0.01	0.09	0.56	49.25	0.04	0.28	0.94	83.25	0.1	0.74
P1418-66	4	93	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-67	10	415	Asbestos Cement	0.03	8.51	0	0	0.06	15.66	0	0	0.11	25.84	0	0.01
P1418-68	4	483	Cast iron	0.16	6.13	0.02	0.05	0.25	9.97	0.06	0.12	0.37	14.46	0.12	0.24
P1418-69	6	436	Asbestos Cement	0.26	22.83	0.03	0.07	0.49	43.33	0.1	0.22	0.83	73.48	0.26	0.59
P1418-71	4	239	Cast iron	0.11	4.16	0.01	0.02	0.13	4.98	0.01	0.03	0.38	15.06	0.06	0.26
P1418-72	4	34	Cast iron	0.04	1.47	0	0.01	0.07	2.7	0	0.01	0.11	4.45	0	0.03
P1418-74	10	108	Asbestos Cement	0.07	16.98	0	0	0.02	4.59	0	0	0.42	102.7	0.01	0.09
P1418-75	10	297	Asbestos Cement	0.08	18.79	0	0	0	0.84	0	0	0.38	93.74	0.02	0.08
P1419-01	8	52	Unknown Material	0.03	4.72	0	0	0.06	8.68	0	0	0.09	14.32	0	0.01
P1419-02	8	466	Asbestos Cement	0.03	4.72	0	0	0.06	8.68	0	0	0.09	14.32	0	0.01
P1419-03	8	579	C-900	0.02	2.97	0	0	0.03	5.46	0	0	0.06	9.01	0	0
P1419-04	6	641	Asbestos Cement	0.01	1.13	0	0	0.02	2.08	0	0	0.04	3.43	0	0
P1419-05	8	819	Asbestos Cement	0.05	7.81	0	0	0.09	14.37	0.01	0.01	0.15	23.71	0.01	0.02
P1419-06	6	1322	Asbestos Cement	0.07	5.88	0.01	0.01	0.12	10.82	0.02	0.02	0.2	17.85	0.06	0.04
P1419-100	8	25	PVC	0.03	5	0	0	0.05	7.89	0	0	0.07	11.03	0	0
P1515-01	6	140	C-900	0.02	1.79	0	0	0.04	3.3	0	0	0.06	5.45	0	0
P1515-02	10	103	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-03	6	847	C-900	0.03	2.65	0	0	0.06	4.87	0	0	0.09	8.03	0.01	0.01
P1515-04	6	206	C-900	0.03	2.64	0	0	0.06	4.87	0	0	0.09	8.04	0	0.01
P1515-05	6	41	C-900	0.03	2.64	0	0	0.06	4.87	0	0	0.09	8.04	0	0.01
P1515-06	6	385	C-900	0.03	2.87	0	0	0.06	5.28	0	0	0.1	8.71	0	0.01
P1515-07	6	616	C-900	0.09	8.13	0.01	0.01	0.17	14.97	0.02	0.03	0.28	24.71	0.04	0.07
P1515-08	10	259	C-900	0.15	37.45	0	0.01	0.28	68.94	0.01	0.04	0.46	113.75	0.02	0.1
P1515-09	6	209	C-900	0.08	7.45	0	0.01	0.16	13.72	0	0.02	0.26	22.63	0.01	0.06
P1515-10	10	169	C-900	0.12	29.71	0	0.01	0.22	54.68	0	0.02	0.37	90.23	0.01	0.06
P1515-100	10	371	PVC	0.12	29.64	0	0.01	0.2	49.79	0.01	0.02	0.61	150.17	0.06	0.16
P1515-11	10	231	C-900	0.19	47.33	0	0.02	0.36	87.13	0.01	0.06	0.59	143.77	0.03	0.15
P1515-12	10	218	C-900	0.25	61.05	0.01	0.03	0.46	112.37	0.02	0.09	0.76	185.41	0.05	0.24
P1515-13	6	175	C-900	0.16	13.72	0	0.02	0.29	25.24	0.01	0.07	0.47	41.65	0.03	0.18
P1515-14	6	112	C-900	0.02	1.46	0	0	0.03	2.68	0	0	0.05	4.42	0	0
P1515-15	6	376	C-900	0.03	2.33	0	0	0.05	4.28	0	0	0.08	7.06	0	0.01
P1515-16	6	395	C-900	0.09	8.18	0	0.01	0.17	15.06	0.01	0.03	0.28	24.85	0.03	0.07
P1515-17	10	374	C-900	0.12	28.55	0	0.01	0.21	52.54	0.01	0.02	0.35	86.69	0.02	0.06
P1515-18	6	419	C-900	0.05	4.23	0	0	0.09	7.79	0	0.01	0.15	12.85	0.01	0.02
P1515-19	8	562	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-19a	8	75	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-20	6	53	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-21	10	361	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-22	6	57	PVC	0.1	8.4	0	0.01	0.18	15.46	0	0.03	0.29	25.51	0	0.07

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P1515-23	6	352	C-900	0.08	7.42	0	0.01	0.15	13.65	0.01	0.02	0.26	22.52	0.02	0.06
P1515-24	10	190	C-900	0.03	8.4	0	0	0.06	15.46	0	0	0.1	25.51	0	0.01
P1515-25	6	133	C-900	0.01	1.16	0	0	0.02	2.14	0	0	0.04	3.53	0	0
P1515-26	10	240	Galvanized iron	0.08	19.31	0	0.01	0.15	35.53	0	0.01	0.24	58.63	0.01	0.04
P1515-27	10	110	Galvanized iron	0.08	19.31	0	0	0.15	35.53	0	0.02	0.24	58.63	0	0.04
P1515-28	6	423	C-900	0.01	0.87	0	0	0.02	1.6	0	0	0.03	2.64	0	0
P1515-29	8	716	Unknown Material	0.05	7.77	0	0	0.09	14.8	0.01	0.01	0.67	105.23	0.23	0.33
P1515-30	8	192	Unknown Material	0.12	18.59	0	0.01	0.22	33.7	0.01	0.04	0.16	25.2	0	0.02
P1515-31	10	42	Unknown Material	0.12	29.64	0	0.01	0.2	49.79	0	0.03	0.61	150.17	0.01	0.22
P1515-32	10	400	Unknown Material	0.04	9.28	0	0	0.05	12.83	0	0	0.53	130.35	0.07	0.16
P1515-33	10	184	Unknown Material	0.03	7.77	0	0	0.06	14.8	0	0	1.37	334.72	0.17	0.94
P1515-34	10	137	Unknown Material	0	0	0	0	0	0	0	0	1.8	439.94	0.21	1.56
P1515-36	8	43	Unknown Material	0.01	1.51	0	0	0.01	1.97	0	0	1.3	204.37	0.05	1.12
P1515-37	4	390	Unknown Material	0.04	1.47	0	0	0.07	2.7	0	0.01	0.11	4.45	0.01	0.03
P1515-38	8	102	Unknown Material	0.01	1.73	0	0	0.05	7.93	0	0	1.24	194.53	0.1	1.02
P1515-39	6	586	Asbestos Cement	0.03	2.81	0	0	0.11	9.92	0.01	0.01	2.17	191.25	2.03	3.47
P1516-01	6	677	Asbestos Cement	0.05	4.75	0	0	0.07	6.29	0	0.01	0.43	37.8	0.12	0.17
P1516-02	6	454	Asbestos Cement	0.01	0.61	0	0	0.03	2.66	0	0	0.16	13.9	0.01	0.03
P1516-03	6	539	Galvanized iron	0.02	1.91	0	0	0.03	2.59	0	0	0.15	13.4	0.02	0.03
P1516-04	6	241	Unknown Material	0.01	0.99	0	0	0.02	1.83	0	0	0.03	3.02	0	0
P1516-05	6	506	Unknown Material	0.05	4.57	0	0	0.11	9.95	0.01	0.02	0.02	1.87	0	0
P1516-06	2	107	Unknown Material	0.18	0.99	0.02	0.2	0.33	1.83	0.07	0.63	0.55	3.02	0.17	1.59
P1516-07	6	513	Galvanized iron	0.01	0.89	0	0	0.03	2.56	0	0	0.06	4.9	0	0
P1516-08	6	17	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-09	6	735	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-10	6	367	Asbestos Cement	0.05	4.05	0	0	0.08	7.46	0	0.01	0.14	12.31	0.01	0.02
P1516-11	8	328	C-900	0.04	6.63	0	0	0.08	12.22	0	0	0.13	20.16	0	0.01
P1516-13	8	459	C-900	0.06	9.63	0	0	0.11	17.74	0	0.01	0.19	29.27	0.01	0.02
P1516-14	8	560	C-900	0.08	12.63	0	0	0.15	23.26	0.01	0.02	0.24	38.38	0.02	0.04
P1516-15	6	479	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1516-16	8	93	C-900	0.08	12.63	0	0.01	0.15	23.26	0	0.02	0.24	38.38	0	0.04
P1516-17	6	270	C-900	0	0.38	0	0	0.01	0.71	0	0	0.01	1.17	0	0
P1516-18	6	167	Unknown Material	0	0.38	0	0	0.01	0.71	0	0	0.01	1.17	0	0
P1516-19	8	212	C-900	0.08	13.01	0	0	0.15	23.97	0	0.01	0.25	39.55	0.01	0.04
P1516-20	8	461	C-900	0.11	17.81	0	0.01	0.21	32.81	0.01	0.03	0.35	54.14	0.03	0.07
P1516-21	8	405	C-900	0.03	4.8	0	0	0.06	8.84	0	0	0.09	14.59	0	0.01
P1516-22	8	561	C-900	0.21	33.1	0.02	0.03	0.39	60.55	0.05	0.09	0.45	70.67	0.07	0.12
P1516-23	6	135	Unknown Material	0.2	17.74	0.01	0.05	0.4	34.95	0.02	0.17	1.39	122.53	0.24	1.76
P1516-24	6	213	Unknown Material	0.17	14.8	0.01	0.03	0.28	24.56	0.02	0.09	0.57	50.15	0.07	0.34
P1516-25	6	223	Unknown Material	0.01	0.74	0	0	0.02	1.37	0	0	0.03	2.26	0	0
P1516-26	6	202	Unknown Material	0.15	13.06	0.01	0.03	0.24	21.34	0.01	0.07	0.51	44.83	0.06	0.27

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1516-27	6	264	Asbestos Cement	0.02	1.48	0	0	0.03	2.72	0	0	0.05	4.49	0	0
P1516-28	6	117	Unknown Material	0.13	11.08	0	0.02	0.2	17.71	0.01	0.05	0.44	38.84	0.02	0.21
P1516-29	6	266	Unknown Material	0.01	1.23	0	0	0.03	2.26	0	0	0.04	3.73	0	0
P1516-30	6	111	Unknown Material	0.11	9.85	0	0.02	0.18	15.45	0	0.04	0.4	35.11	0.02	0.17
P1516-31	6	111	Unknown Material	0.09	7.87	0	0.01	0.13	11.82	0	0.02	0.33	29.12	0.01	0.12
P1516-32	6	52	Galvanized iron	0.01	0.74	0	0	0.02	1.37	0	0	0.03	2.26	0	0
P1516-33	6	109	Galvanized iron	0.01	0.74	0	0	0.02	1.37	0	0	0.03	2.26	0	0
P1516-34	6	131	Unknown Material	0.07	5.9	0	0.01	0.09	8.19	0	0.01	0.26	23.14	0.01	0.08
P1516-35	4	15	Unknown Material	0.02	0.74	0	0	0.03	1.37	0	0.02	0.06	2.26	0	0
P1516-36	2	123	Galvanized iron	0.08	0.74	0	0.03	0.14	1.37	0.01	0.09	0.23	2.26	0.03	0.23
P1516-37	6	182	Unknown Material	0.01	0.74	0	0	0.02	1.37	0	0	0.03	2.26	0	0
P1516-38	6	152	C-900	0.05	4.42	0	0	0.06	5.45	0	0	0.21	18.61	0.01	0.04
P1516-39	6	820	Asbestos Cement	0.05	4.38	0	0	0	0.33	0	0	0.32	28.5	0.08	0.1
P1516-40	6	20	Unknown Material	0	0.16	0	0	0.05	4.49	0	0	0.23	20.49	0	0.06
P1516-41	6	400	Asbestos Cement	0.06	5.62	0	0	0.18	15.49	0.01	0.03	0.13	11.48	0.01	0.02
P1516-42	6	229	Unknown Material	0.15	12.97	0.01	0.03	0.23	20.61	0.01	0.07	0.3	26.03	0.02	0.1
P1516-43	6	200	Unknown Material	0.17	14.7	0.01	0.04	0.27	23.79	0.02	0.09	0.35	31.28	0.03	0.14
P1516-44	6	298	Galvanized iron	0.06	5.47	0	0.01	0.12	10.99	0.01	0.02	0.1	9	0	0.01
P1516-45	6	561	Galvanized iron	0.03	2.5	0	0	0.06	5.53	0	0.01	0	0	0	0
P1516-53	6	455	PVC	0.03	3	0	0	0.06	5.52	0	0	0.1	9.11	0	0.01
P1516-54	6	336	PVC	0.03	3	0	0	0.06	5.52	0	0	0.1	9.11	0	0.01
P1517-01	8	48	Unknown Material	0.13	20.19	0	0.02	0.24	37.2	0	0.05	0.39	61.38	0.01	0.12
P1517-03	6	115	Unknown Material	0.02	2	0	0	0.04	3.68	0	0	0.07	6.07	0	0.01
P1517-04	6	867	C-900	0.01	1	0	0	0.02	1.84	0	0	0.03	3.04	0	0
P1517-05	6	535	C-900	0.01	1	0	0	0.02	1.84	0	0	0.03	3.04	0	0
P1517-06	6	205	C-900	0	0.38	0	0	0.01	0.71	0	0	0.01	1.17	0	0
P1517-07	6	346	C-900	0	0.38	0	0	0.01	0.71	0	0	0.01	1.17	0	0
P1517-08	10	132	Galvanized iron	0.13	32.26	0	0.01	0.24	59.35	0.01	0.04	2.37	579.85	0.34	2.6
P1517-09	10	460	C-900	0.13	32.26	0	0.01	0.24	59.35	0.01	0.03	2.37	579.85	0.9	1.96
P1517-10	8	319	Unknown Material	0.13	19.96	0	0.02	0.16	25.06	0.01	0.02	0.35	55.5	0.03	0.1
P1517-100	8	40	PVC	0.13	19.96	0	0.01	0.16	25.06	0	0.02	0.35	55.5	0	0.08
P1517-101	8	726	PVC	0.03	4.8	0	0	0.06	8.83	0	0	0.09	14.57	0	0.01
P1517-102	8	712	PVC	0.03	4.8	0	0	0.06	8.83	0	0	0.09	14.57	0	0.01
P1517-11	8	303	C-900	0.01	1	0	0	0.01	1.84	0	0	0.02	3.04	0	0
P1517-12	4	247	Cast iron	0.02	0.97	0	0	0.05	1.79	0	0	0.08	2.95	0	0.01
P1517-13	6	146	Unknown Material	0.03	2.23	0	0	0.05	4.11	0	0	0.08	6.78	0	0.01
P1517-14	8	195	Unknown Material	0.48	74.68	0.03	0.17	0.6	93.35	0.05	0.26	1.17	183.28	0.18	0.91
P1517-15	10	726	Galvanized iron	0.13	32.26	0.01	0.01	0.24	59.35	0.03	0.04	2.37	579.85	1.89	2.6
P1517-16	10	261	Unknown Material	0.09	22.66	0	0.01	0.17	41.69	0.01	0.02	2.25	550.71	0.62	2.37
P1517-17	10	51	Galvanized iron	0.09	22.66	0	0	0.17	41.69	0	0.02	2.25	550.71	0.12	2.36
P1517-18	10	260	Galvanized iron	0.05	11.12	0	0	0.08	20.46	0	0	2.11	515.68	0.54	2.1

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1517-19	6	141	Unknown Material	0.08	6.72	0	0.01	0.14	12.36	0	0.03	0.23	20.39	0.01	0.06
P1517-20	10	243	Unknown Material	0	0	0	0	0	0	0	0	1.97	481.92	0.45	1.85
P1517-21	10	58	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-22	10	17	Unknown Material	0.32	77.5	0	0.06	0.4	98.54	0	0.1	1.18	290.08	0.01	0.72
P1517-23	10	30	Unknown Material	0	0	0	0	0	0	0	0	1.97	481.92	0.06	1.85
P1517-24	10	49	Unknown Material	0	0	0	0	0	0	0	0	1.97	481.92	0.09	1.85
P1517-25	8	204	Unknown Material	0.49	77.5	0.04	0.19	0.63	98.54	0.06	0.29	1.22	191.84	0.2	1
P1517-26	8	127	Unknown Material	0.01	1.74	0	0	0.02	3.2	0	0	0.03	5.28	0	0
P1517-27	6	289	C-900	0.17	15.3	0.01	0.03	0.21	18.33	0.01	0.04	0.32	28.56	0.03	0.09
P1517-28	4	318	Cast iron	0.1	3.76	0.01	0.02	0.11	4.27	0.01	0.03	0.17	6.59	0.02	0.06
P1517-29	6	185	Asbestos Cement	0.05	4.62	0	0	0.07	5.85	0	0.01	0.1	9.2	0	0.01
P1517-30	4	86	Unknown Material	0.11	4.19	0	0.02	0.13	5.06	0	0.03	0.2	7.89	0.01	0.08
P1517-31	4	91	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-32	10	81	Galvanized iron	0.13	32.26	0	0.01	0.24	59.35	0	0.04	2.37	579.85	0.21	2.6
P1518-01	4	348	Asbestos Cement	0.06	2.39	0	0.01	0.11	4.4	0.01	0.02	0.19	7.26	0.02	0.06
P1518-02	4	101	Unknown Material	0.01	0.49	0	0	0.02	0.89	0	0	0.04	1.47	0	0
P1518-03	6	209	PVC	0.02	2.16	0	0	0.05	3.97	0	0	0.07	6.55	0	0.01
P1518-04	6	119	Unknown Material	0.07	6.42	0	0.01	0.17	15.2	0	0.04	1.23	108.22	0.17	1.4
P1518-05	8	314	PVC	0.03	5.46	0	0	0.09	13.43	0	0.01	0.67	105.3	0.08	0.25
P1518-06	8	471	PVC	0.02	2.58	0	0	0.05	8.13	0	0	0.62	96.56	0.1	0.21
P1518-07	6	345	Unknown Material	0.06	5.46	0	0.01	0.15	13.43	0.01	0.03	1.19	105.3	0.46	1.33
P1518-08	2	174	Galvanized iron	0.17	0.96	0.03	0.19	0.32	1.77	0.1	0.59	0.53	2.92	0.26	1.49
P1518-09	6	665	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-10	8	83	Galvanized iron	0.17	26.74	0	0.03	0.66	104.16	0.03	0.32	1.99	311.96	0.2	2.45
P1518-11	8	44	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1518-12	6	34	Unknown Material	0	0	0	0	0.04	3.37	0	0	1.01	88.7	0.03	0.97
P1518-13	6	433	Asbestos Cement	0	0	0	0	0.04	3.37	0	0	1.01	88.7	0.36	0.84
P1518-14	8	174	PVC	0	0	0	0	0.02	3.37	0	0	0.57	88.7	0.03	0.18
P1518-15	8	98	Unknown Material	0	0	0	0	0.02	3.37	0	0	0.57	88.7	0.02	0.24
P1518-16	8	553	Asbestos Cement	0.02	3.04	0	0	0.04	5.59	0	0	0.06	9.22	0	0
P1518-17	8	18	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-18	4	507	Unknown Material	0.03	1.32	0	0	0.06	2.26	0	0.01	0.38	14.74	0.13	0.25
P1518-19	6	528	Asbestos Cement	0.05	4.06	0	0	0.08	6.96	0	0.01	0.52	45.43	0.13	0.24
P1518-20	8	567	Unknown Material	0.03	4.83	0	0	0.06	8.89	0	0	0.09	14.67	0	0.01
P1518-21	8	280	Asbestos Cement	0.17	26.74	0.01	0.02	0.66	104.16	0.08	0.28	1.99	311.96	0.59	2.11
P1518-22	6	147	Asbestos Cement	0	0	0	0	0.22	19.12	0.01	0.05	0.87	76.53	0.09	0.64
P1518-23	6	393	Asbestos Cement	0	0	0	0	0.22	19.12	0.02	0.05	0.87	76.53	0.25	0.64
P1518-24	6	407	Asbestos Cement	0.08	7.36	0	0.01	0.33	29.35	0.04	0.11	0.99	87.66	0.33	0.82
P1518-25	8	274	Unknown Material	0.05	7.36	0	0	0.07	10.23	0	0	0.07	11.13	0	0.01
P1518-26	8	813	Unknown Material	0	0	0	0	0.02	3.31	0	0	0.07	11.21	0	0.01
P1518-27	8	214	Unknown Material	0.05	7.98	0	0	0.11	17.99	0	0.01	0.23	35.43	0.01	0.04

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1518-28	8	241	Unknown Material	0.12	19.39	0	0.01	0.48	74.81	0.04	0.17	1.43	224.29	0.32	1.33
P1518-29	8	256	Unknown Material	0.07	11.4	0	0.01	0.36	56.81	0.03	0.1	1.21	188.87	0.25	0.97
P1518-30	8	80	Asbestos Cement	0	0	0	0	0.23	35.83	0	0.04	0.98	154.25	0.05	0.57
P1518-31	8	21	Asbestos Cement	0	0	0	0	0.23	35.83	0	0.03	0.98	154.25	0.01	0.57
P1518-32	8	50	Asbestos Cement	0	0	0	0	0.23	35.83	0	0.04	0.98	154.25	0.03	0.58
P1518-33	8	134	Asbestos Cement	0	0	0	0	0.23	35.83	0.01	0.04	0.98	154.25	0.08	0.57
P1518-34	6	224	Unknown Material	0.07	6.57	0	0.01	0.14	12.09	0.01	0.03	0.23	19.95	0.01	0.06
P1519-01	4	490	Unknown Material	0.14	5.51	0.02	0.04	0.26	10.14	0.06	0.13	0.43	16.73	0.16	0.32
P1519-02	6	78	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1519-100	8	33	PVC	0.01	1.17	0	0	0.02	2.53	0	0	0.1	15.18	0	0.01
P1528-01	6	196	Galvanized iron	0.1	8.59	0	0.01	0.14	12.51	0.01	0.03	0.45	39.61	0.04	0.22
P1602-01	6	178	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1618-01	6	788	Galvanized iron	0.12	10.98	0.02	0.02	0.27	23.58	0.07	0.08	1.38	122.05	1.38	1.75
P1618-03	6	299	Asbestos Cement	0.17	15.29	0.01	0.03	0.36	31.52	0.04	0.12	1.53	135.15	0.54	1.82
P1618-04	4	310	Asbestos Cement	0.04	1.43	0	0	0.07	2.64	0	0.01	0.11	4.36	0.01	0.02
P1618-05	6	304	Galvanized iron	0.12	10.98	0.01	0.02	0.27	23.58	0.03	0.08	1.38	122.05	0.53	1.75
P1628-01	6	504	Galvanized iron	0.1	9.11	0.01	0.01	0.16	14.31	0.02	0.03	0.58	51.03	0.18	0.35
P1630-01	6	387	Galvanized iron	0.1	9.11	0.01	0.01	0.16	14.31	0.01	0.03	0.58	51.03	0.13	0.35

Appendix E

2015 System Scenarios Model Output

E-1: 2015 Automated Fire Flow Scenario Model Output

City of Placerville Water Model
2015 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1218-01	Cedar Bluffs	TRUE	1,000	3,199	74	20	J1218-101
J1218-03	Cedar Bluffs	TRUE	1,000	1,447	20	32	J1316-24
J1218-100	Cedar Bluffs	TRUE	1,000	2,107	20	37	J1218-101
J1218-101	Cedar Bluffs	TRUE	1,000	2,731	20	35	J1218-102
J1218-102	Cedar Bluffs	TRUE	1,000	2,791	30	20	J1218-101
J1218-103	Cedar Bluffs	TRUE	1,000	2,905	48	20	J1218-101
J1218-104	Cedar Bluffs	TRUE	1,000	2,930	48	20	J1218-101
J1218-105	Cedar Bluffs	TRUE	1,000	3,060	90	20	J1218-101
J1218-106	Cedar Bluffs	TRUE	1,000	2,389	20	32	J1218-101
J1218-107	Cedar Bluffs	TRUE	1,000	2,762	20	21	J1218-101
J1119-01	Cedar Ravine	TRUE	1,000	2,120	20	51	J1219-03
J1218-02	Cedar Ravine	TRUE	1,000	1,888	20	49	J1219-26
J1219-03	Cedar Ravine	TRUE	1,000	1,727	20	49	J1219-05
J1219-05	Cedar Ravine	TRUE	1,000	1,516	20	50	J1219-03
J1219-09	Cedar Ravine	TRUE	1,000	2,674	67	20	J1219-26
J1219-10	Cedar Ravine	TRUE	1,000	2,423	57	20	J1219-26
J1219-11	Cedar Ravine	TRUE	1,000	2,780	65	20	J1219-26
J1219-14	Cedar Ravine	TRUE	1,000	2,782	27	20	J1219-26
J1219-15	Cedar Ravine	TRUE	1,000	2,029	20	41	J1219-26
J1219-17	Cedar Ravine	TRUE	1,000	2,594	20	20	J1219-26
J1219-25	Cedar Ravine	TRUE	1,000	2,098	41	20	J1219-26
J1219-27	Cedar Ravine	TRUE	1,000	1,766	20	21	J1219-26
J1515-12	Combellack	TRUE	1,000	1,397	20	43	J1515-10
J1515-15	Combellack	TRUE	1,000	4,500	56	26	EID J1516-44
J1515-16	Combellack	TRUE	1,000	4,500	65	26	EID J1516-44
J1515-17	Combellack	TRUE	1,000	3,081	20	33	EID J1516-44
J1515-18	Combellack	TRUE	1,000	4,500	46	26	EID J1516-44
J1515-19	Combellack	TRUE	1,000	4,500	74	26	EID J1516-44
J1515-20	Combellack	TRUE	1,000	4,500	93	26	EID J1516-44
J1515-22	Combellack	TRUE	1,000	2,091	31	20	J1515-12
J1515-23	Combellack	TRUE	1,000	2,392	20	37	EID J1516-44
J1515-25	Combellack	TRUE	1,000	3,355	38	20	J1515-12
J1515-28	Combellack	TRUE	1,000	4,500	73	25	EID J1516-44
J1515-29	Combellack	TRUE	1,000	4,369	20	23	J1515-37
J1515-32	Combellack	TRUE	1,000	2,274	20	38	EID J1516-44
J1515-33	Combellack	TRUE	1,000	3,260	20	21	J1515-34
J1515-35	Combellack	TRUE	1,000	3,084	20	32	EID J1516-44
J1516-25	EID Res 4	TRUE	1,000	4,500	53	24	J1516-34
J1516-26	EID Res 4	TRUE	1,000	2,441	20	32	J1516-34
J1516-29	EID Res 4	TRUE	1,000	2,689	20	31	J1516-34
J1516-30	EID Res 4	TRUE	1,000	4,500	61	23	J1516-34
J1516-33	EID Res 4	TRUE	1,000	2,089	20	31	J1516-34

City of Placerville Water Model
2015 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1516-34	EID Res 4	TRUE	1,000	1,148	20	42	J1517-27
J1516-46	EID Res 4	TRUE	1,000	2,081	20	32	J1516-34
J1516-47	EID Res 4	TRUE	1,000	1,907	20	33	J1516-34
J1517-10	EID Res 4	TRUE	1,000	3,595	22	20	J1517-11
J1517-101	EID Res 4	TRUE	1,000	3,028	20	34	J1517-22
J1517-102	EID Res 4	TRUE	1,000	2,715	43	20	J1517-103
J1517-103	EID Res 4	TRUE	1,000	2,291	20	38	J1516-34
J1517-104	EID Res 4	TRUE	1,000	2,291	26	20	J1517-103
J1517-11	EID Res 4	TRUE	1,000	2,578	20	38	J1517-22
J1517-12	EID Res 4	TRUE	1,000	3,595	21	20	J1517-11
J1517-13	EID Res 4	TRUE	1,000	3,845	20	21	J1517-11
J1517-15	EID Res 4	TRUE	1,000	4,117	24	20	J1517-103
J1517-19	EID Res 4	TRUE	1,000	3,767	20	27	J1516-34
J1517-20	EID Res 4	TRUE	1,000	4,500	44	34	J1516-34
J1517-22	EID Res 4	TRUE	1,000	4,192	20	26	J1517-21
J1517-23	EID Res 4	TRUE	1,000	1,952	20	34	J1516-34
J1517-25	EID Res 4	TRUE	1,000	4,130	23	20	J1517-23
J1517-26	No FF, EID Res4	FALSE [(a)]	1,000	0	23	-	-
J1517-27	EID Res 4	TRUE	1,000	1,056	20	39	J1516-34
J1518-16	EID Res 4	TRUE	1,000	1,085	38	20	J1518-27
J1518-17	EID Res 4	TRUE	1,000	1,085	36	20	J1518-27
J1518-18	EID Res 4	TRUE	1,000	1,085	34	20	J1518-27
J1518-19	EID Res 4	TRUE	1,000	1,085	34	20	J1518-27
J1518-22	EID Res 4	TRUE	1,000	1,236	39	20	J1518-27
J1518-27	EID Res 4	TRUE	1,000	1,039	20	33	J1518-28
J1618-01	EID Res 4	TRUE	1,000	1,565	20	23	J1618-02
J1318-102	Eskaton	TRUE	2,000	3,015	46	20	J1318-113
J1318-103	Eskaton	TRUE	1,000	2,817	28	20	J1318-113
J1318-104	Eskaton	TRUE	1,000	2,838	46	20	J1318-113
J1318-105	Eskaton	TRUE	1,000	2,860	45	20	J1318-113
J1318-106	Eskaton	TRUE	1,000	2,931	45	20	J1318-113
J1318-107	Eskaton	TRUE	1,000	2,930	23	20	J1318-113
J1318-108	Eskaton	TRUE	1,000	2,930	32	20	J1318-113
J1318-109	Eskaton	TRUE	1,000	2,931	52	20	J1318-113
J1318-110	Eskaton	TRUE	1,000	2,844	59	20	J1318-113
J1318-111	Eskaton	TRUE	1,000	2,836	60	20	J1318-113
J1318-112	Eskaton	TRUE	1,000	2,829	65	20	J1318-113
J1318-113	Eskaton	TRUE	1,000	2,817	20	34	J1318-103
J1318-116	Eskaton	TRUE	1,000	2,930	62	20	J1318-113
J1318-118	Eskaton	TRUE	1,000	2,937	32	20	J1318-113
J1216-01	Main Plant	TRUE	1,000	4,500	94	30	J1316-24
J1216-03	Main Plant	TRUE	1,750	4,500	32	26	J1316-24

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2015 WaterCAD Automated Fire Flow Analysis Results
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Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1216-04	Main Plant	TRUE	1,000	4,500	116	30	J1316-24
J1216-05	Main Plant	TRUE	1,000	2,118	20	31	J1316-24
J1216-07	Main Plant	TRUE	1,000	4,500	66	22	J1316-24
J1216-12	Main Plant	TRUE	1,000	3,752	55	20	J1316-23
J1217-01	Main Plant	TRUE	1,000	3,218	32	20	J1217-20
J1217-05	Main Plant	TRUE	1,500	4,500	37	32	J1316-24
J1217-06	Main Plant	TRUE	1,500	4,500	42	32	J1316-24
J1217-07	Main Plant	TRUE	1,500	4,500	23	32	J1316-24
J1217-08	Main Plant	TRUE	1,000	1,541	20	32	J1316-24
J1217-11	Main Plant	TRUE	1,000	4,284	60	20	J1217-08
J1217-111	Main Plant	TRUE	1,000	4,500	35	31	J1316-24
J1217-112	Main Plant	TRUE	1,000	4,500	45	31	J1316-24
J1217-114	Main Plant	TRUE	1,000	3,271	22	20	J1217-115
J1217-13	Main Plant	TRUE	1,000	4,486	62	20	J1217-08
J1217-14	Main Plant	TRUE	1,000	1,911	20	27	J1217-18
J1217-16	Main Plant	TRUE	1,000	3,858	26	20	J1217-17
J1217-19	Main Plant	TRUE	1,000	2,063	21	20	J1217-20
J1217-201	Main Plant	TRUE	1,000	1,578	20	32	J1316-24
J1217-21	Main Plant	TRUE	1,000	4,500	70	31	J1217-08
J1217-24	Main Plant	TRUE	1,000	1,302	20	32	J1316-24
J1217-26	Main Plant	TRUE	1,000	4,500	40	31	J1316-24
J1217-27	Main Plant	TRUE	1,000	4,500	43	31	J1316-24
J1217-28	Main Plant	TRUE	1,000	4,500	65	31	J1316-24
J1217-29	Main Plant	TRUE	1,000	4,500	43	31	J1316-24
J1218-08	Main Plant	TRUE	1,000	2,916	25	20	J1218-07
J1218-09	Main Plant	TRUE	1,000	3,340	20	32	J1218-07
J1218-10	Main Plant	TRUE	1,500	4,500	27	32	J1316-24
J1218-11	Main Plant	TRUE	1,000	4,500	31	32	J1316-24
J1315-01	Main Plant	TRUE	1,000	3,864	43	20	J1316-24
J1316-01	Main Plant	TRUE	1,000	2,743	20	32	J1316-24
J1316-02	Main Plant	TRUE	1,000	1,516	20	31	J1316-03
J1316-04	Main Plant	TRUE	1,000	1,661	20	23	J1316-05
J1316-07	Main Plant	TRUE	1,750	3,189	30	20	J1316-06
J1316-08	Main Plant	TRUE	1,500	4,500	100	29	J1316-24
J1316-09	Main Plant	TRUE	1,500	4,500	128	30	J1316-24
J1316-12	Main Plant	TRUE	1,500	4,500	120	30	J1316-24
J1316-14	Main Plant	TRUE	1,500	4,500	127	30	J1316-24
J1316-17	Main Plant	TRUE	1,000	3,440	91	20	J1316-24
J1316-22	Main Plant	TRUE	1,000	3,125	20	22	J1316-24
J1316-25	Main Plant	TRUE	1,000	2,482	20	25	J1316-24
J1316-28	Main Plant	TRUE	1,500	4,500	130	30	J1316-24
J1316-33	Main Plant	TRUE	1,500	4,500	84	30	J1316-24
J1316-34	Main Plant	TRUE	1,500	4,500	87	30	J1316-24
J1316-35	Main Plant	TRUE	1,000	1,523	20	32	J1316-24

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2015 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1316-40	Main Plant	TRUE	1,875	4,500	124	30	J1316-24
J1316-41	Main Plant	TRUE	1,000	4,500	124	30	J1316-24
J1316-42	Main Plant	TRUE	1,500	3,709	108	20	J1316-24
J1316-44	Main Plant	TRUE	1,500	3,712	136	20	J1316-24
J1316-46	Main Plant	TRUE	1,000	3,056	28	20	J1316-45
J1316-47	Main Plant	TRUE	1,000	3,384	39	20	J1316-45
J1316-48	Main Plant	TRUE	1,000	2,106	20	31	J1316-24
J1316-49	Main Plant	TRUE	1,000	2,473	20	22	J1316-53
J1316-50	Main Plant	TRUE	1,000	4,500	92	29	J1316-24
J1316-53	Main Plant	TRUE	1,000	2,496	20	23	J1316-49
J1316-56	Main Plant	TRUE	1,000	1,806	20	20	J1316-55
J1316-58	Main Plant	TRUE	1,000	1,484	20	31	J1316-24
J1316-60	Main Plant	TRUE	1,500	3,864	134	20	J1316-24
J1316-70	Main Plant	TRUE	1,500	4,500	66	30	J1316-24
J1316-71	Main Plant	TRUE	1,500	4,500	62	30	J1316-24
J1317-01	Main Plant	TRUE	1,000	4,500	41	32	J1316-24
J1317-03	Main Plant	TRUE	1,500	4,500	33	32	J1316-24
J1317-06	Main Plant	TRUE	1,500	4,103	20	23	J1317-05
J1317-08	Main Plant	TRUE	1,000	2,819	26	20	J1317-07
J1317-09	Main Plant	TRUE	1,500	3,710	20	32	J1316-24
J1317-11	Main Plant	TRUE	1,500	3,290	20	31	J1317-13
J1317-12	Main Plant	TRUE	1,500	3,491	34	20	J1317-11
J1317-13	Main Plant	TRUE	2,000	3,103	20	27	J1317-11
J1317-15	Main Plant	TRUE	1,500	4,500	74	31	J1316-24
J1317-16	Main Plant	TRUE	1,000	4,500	79	31	J1316-24
J1317-18	Main Plant	TRUE	1,000	4,500	52	31	J1316-24
J1317-20	Main Plant	TRUE	1,000	4,024	20	27	J1316-02
J1317-21	Main Plant	TRUE	1,000	1,937	21	20	J1316-02
J1317-26	Main Plant	TRUE	1,000	4,500	76	30	J1316-24
J1317-28	Main Plant	TRUE	1,000	4,500	93	30	J1316-24
J1317-30	Main Plant	TRUE	1,000	2,039	20	32	J1316-24
J1317-32	Main Plant	TRUE	1,500	4,417	20	32	J1316-24
J1317-34	Main Plant	TRUE	1,500	4,084	38	20	J1317-33
J1317-35	Main Plant	TRUE	1,500	3,782	20	32	J1316-24
J1317-36	Main Plant	TRUE	3,750	4,500	50	31	J1317-35
J1317-40	Main Plant	TRUE	1,000	4,500	85	31	J1316-24
J1317-41	Main Plant	TRUE	1,500	4,500	107	31	J1316-24
J1317-43	Main Plant	TRUE	1,000	4,500	107	31	J1316-24
J1317-45	Main Plant	TRUE	1,000	4,500	34	30	J1316-24
J1317-48	Main Plant	TRUE	1,000	3,841	20	31	J1316-24
J1317-49	Main Plant	TRUE	1,000	4,500	38	21	J1417-63
J1317-51	Main Plant	TRUE	1,500	4,500	103	31	J1316-24
J1317-52	Main Plant	TRUE	2,500	4,500	90	31	J1316-24
J1317-53	Main Plant	TRUE	2,750	4,500	89	31	J1316-24

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Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1317-54	Main Plant	TRUE	1,500	4,500	87	31	J1316-24
J1317-55	Main Plant	TRUE	1,500	4,500	70	31	J1316-24
J1318-01	Main Plant	TRUE	1,000	1,315	20	32	J1316-24
J1318-06	Main Plant	TRUE	1,000	1,578	29	20	J1318-01
J1318-08	Main Plant	TRUE	1,000	2,043	20	32	J1316-24
J1318-11	Main Plant	TRUE	1,000	4,500	38	32	J1316-24
J1319-03	Main Plant	TRUE	1,000	1,378	20	32	J1316-24
J1415-01	Main Plant	TRUE	1,000	1,624	20	31	J1316-24
J1415-04	Main Plant	TRUE	1,000	4,357	77	20	J1316-24
J1415-08	Main Plant	TRUE	1,000	4,500	67	22	J1316-24
J1415-10	Main Plant	TRUE	1,000	4,500	73	21	J1316-24
J1415-100	Main Plant	TRUE	1,000	1,547	20	23	J1415-22
J1415-102	Main Plant	TRUE	1,000	4,500	51	22	J1316-24
J1415-104	Main Plant	TRUE	1,000	4,188	93	20	J1316-24
J1415-11	Main Plant	TRUE	1,500	4,500	29	23	J1316-24
J1415-12	Main Plant	TRUE	1,000	1,837	20	31	J1316-24
J1415-13	Main Plant	TRUE	1,000	1,985	20	30	J1316-24
J1415-16	Main Plant	TRUE	1,500	4,412	20	22	J1415-15
J1415-19	Main Plant	TRUE	1,000	1,184	20	31	J1316-24
J1415-21	Main Plant	TRUE	1,000	1,831	24	20	J1415-100
J1415-24	Main Plant	TRUE	1,500	1,729	20	30	J1316-24
J1415-27	Main Plant	TRUE	1,500	3,176	21	20	J1415-26
J1415-29	Main Plant	TRUE	1,000	4,129	23	20	J1415-37
J1415-30	Main Plant	TRUE	1,500	3,888	20	30	J1316-24
J1415-34	Main Plant	TRUE	1,000	3,516	26	20	J1415-37
J1415-37	Main Plant	TRUE	1,000	1,851	20	31	J1316-24
J1415-38	Main Plant	TRUE	1,000	2,041	20	31	J1316-24
J1415-39	Main Plant	TRUE	1,000	2,666	20	22	J1415-38
J1415-40	Main Plant	TRUE	1,000	1,827	25	20	J1415-100
J1416-01	Main Plant	TRUE	1,500	2,799	45	20	J1416-17
J1416-04	Main Plant	TRUE	1,000	2,070	42	20	J1316-35
J1416-06	Main Plant	TRUE	1,000	1,378	20	26	J1416-07
J1416-07	Main Plant	TRUE	1,000	1,399	20	22	J1416-06
J1416-09	Main Plant	TRUE	1,000	2,510	20	27	J1416-08
J1416-11	Main Plant	TRUE	1,500	3,951	25	20	J1416-09
J1416-13	Main Plant	TRUE	1,000	4,242	50	20	J1416-06
J1416-16	Main Plant	TRUE	1,000	1,685	20	31	J1316-24
J1416-18	Main Plant	TRUE	1,000	1,523	20	26	J1416-17
J1416-21	Main Plant	TRUE	1,000	4,500	86	26	J1516-35
J1416-23	Main Plant	TRUE	1,000	4,500	42	21	J1516-35
J1416-24	Main Plant	TRUE	1,500	4,105	78	20	J1516-35
J1416-30	Main Plant	TRUE	1,500	4,500	66	24	J1316-24
J1416-36	Main Plant	TRUE	1,000	3,331	79	20	J1516-35
J1416-42	Main Plant	TRUE	1,000	1,969	20	30	J1316-24

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Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1416-43	Main Plant	TRUE	1,000	2,422	61	20	J1516-35
J1416-44	Main Plant	TRUE	1,000	2,600	85	20	J1516-35
J1416-48	Main Plant	TRUE	1,500	1,940	20	25	J1416-37
J1417-02	Main Plant	TRUE	1,500	4,500	92	32	J1316-24
J1417-04	Main Plant	TRUE	1,500	4,500	98	32	J1316-24
J1417-05	Main Plant	TRUE	1,500	4,500	57	32	J1316-24
J1417-09	Main Plant	TRUE	1,500	4,500	51	32	J1316-24
J1417-12	Main Plant	TRUE	1,000	3,677	31	20	J1417-11
J1417-22	Main Plant	TRUE	1,000	2,925	40	20	J1417-20
J1417-27	Main Plant	TRUE	1,000	3,293	20	32	J1316-24
J1417-29	Main Plant	TRUE	3,500	3,882	63	20	J1417-63
J1417-32	Main Plant	TRUE	1,000	4,500	51	26	J1417-73
J1417-41	Main Plant	TRUE	1,000	3,573	20	20	J1417-38
J1417-45	Main Plant	TRUE	1,000	4,333	31	20	J1417-73
J1417-47	Main Plant	TRUE	1,000	4,500	22	26	J1417-46
J1417-48	Main Plant	TRUE	1,000	3,998	45	20	J1316-35
J1417-51	Main Plant	TRUE	1,000	2,338	20	32	J1316-24
J1417-55	Main Plant	TRUE	1,000	4,500	71	32	J1316-24
J1417-58	Main Plant	TRUE	1,000	4,500	53	32	J1316-24
J1417-59	Main Plant	TRUE	1,000	2,565	20	32	J1316-24
J1417-60	Main Plant	TRUE	1,000	4,500	32	31	J1417-59
J1417-62	Main Plant	TRUE	1,000	2,962	20	32	J1316-24
J1417-63	Main Plant	TRUE	1,000	1,305	20	32	J1316-24
J1417-65	Main Plant	TRUE	1,000	4,500	38	32	J1316-24
J1417-67	Main Plant	TRUE	1,000	4,500	31	32	J1316-24
J1417-68	Main Plant	TRUE	1,000	4,500	43	32	J1316-24
J1417-71	Main Plant	TRUE	1,000	1,742	20	24	J1417-73
J1417-76	Main Plant	TRUE	1,000	2,455	20	25	J1417-77
J1417-81	Main Plant	TRUE	1,500	2,905	20	31	J1316-24
J1417-82	Main Plant	TRUE	1,500	2,942	46	20	J1417-63
J1418-01	Main Plant	TRUE	3,750	4,500	61	32	J1316-24
J1418-06	Main Plant	TRUE	1,000	1,829	20	32	J1316-24
J1418-07	Main Plant	TRUE	1,000	4,480	20	32	J1316-24
J1418-09	Main Plant	TRUE	2,500	4,500	80	32	J1316-24
J1418-10	Main Plant	TRUE	4,250	6,000	54	27	J1419-05
J1418-104	Main Plant	TRUE	1,500	4,461	20	32	J1316-24
J1418-12	Main Plant	TRUE	1,500	4,500	81	32	J1316-24
J1418-17	Main Plant	TRUE	1,500	4,500	87	32	J1316-24
J1418-19	Main Plant	TRUE	1,500	3,632	44	20	J1318-01
J1418-20	Main Plant	TRUE	1,500	4,500	68	32	J1316-24
J1418-21	Main Plant	TRUE	1,500	4,500	87	32	J1316-24
J1418-24	Main Plant	TRUE	1,000	3,278	20	32	J1316-24
J1418-29	Main Plant	TRUE	1,000	4,500	29	20	J1418-33
J1418-31	Main Plant	TRUE	1,000	2,567	20	32	J1418-32

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Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1418-32	Main Plant	TRUE	1,000	2,962	20	22	J1418-31
J1418-33	Main Plant	TRUE	2,250	2,861	20	32	J1418-32
J1418-36	Main Plant	TRUE	1,000	1,541	24	20	J1418-35
J1418-40	Main Plant	TRUE	1,000	2,559	20	32	J1316-24
J1418-43	Main Plant	TRUE	1,000	1,615	20	32	J1316-24
J1418-44	Main Plant	TRUE	1,000	1,870	20	23	J1418-45
J1418-46	Main Plant	TRUE	1,000	2,519	29	20	J1418-45
J1418-48	Main Plant	TRUE	1,000	1,904	20	32	J1316-24
J1418-51	Main Plant	TRUE	1,000	4,500	54	32	J1316-24
J1418-53	Main Plant	TRUE	1,000	3,163	28	20	J1518-13
J1418-56	Main Plant	TRUE	2,250	4,243	34	20	J1418-24
J1418-61	Main Plant	TRUE	1,000	2,119	20	22	J1418-41
J1419-01	No FF, Main Plant	FALSE [(b)]	1,000	0	19	-	-
J1419-02	Main Plant	TRUE	1,000	2,313	31	20	J1319-03
J1419-03	Main Plant	TRUE	1,000	2,305	31	20	J1319-03
J1419-04	Main Plant	TRUE	1,500	4,409	39	20	J1419-05
J1419-05	Main Plant	TRUE	1,500	1,753	20	32	J1316-24
J1419-07	Main Plant	TRUE	1,500	2,407	31	20	J1419-05
J1515-05	Main Plant	TRUE	1,000	4,500	78	31	J1316-24
J1515-06	Main Plant	TRUE	1,000	4,500	76	31	J1316-24
J1515-08	Main Plant	TRUE	1,000	4,500	60	31	J1316-24
J1515-09	Main Plant	TRUE	1,000	4,500	46	31	J1316-24
J1515-11	Main Plant	TRUE	1,500	4,500	55	30	J1316-24
J1516-01	Main Plant	TRUE	1,000	1,375	48	20	J1516-35
J1516-05	Main Plant	TRUE	1,000	2,228	35	20	J1516-35
J1516-06	Main Plant	TRUE	1,000	2,324	42	20	J1516-35
J1516-13	Main Plant	TRUE	1,000	1,880	32	20	J1516-35
J1516-15	Main Plant	TRUE	1,000	1,950	38	20	J1516-35
J1516-21	Main Plant	TRUE	1,000	2,252	61	20	J1516-35
J1516-22	Main Plant	TRUE	1,000	2,470	81	20	J1516-35
J1516-23	Main Plant	TRUE	1,000	2,510	79	20	J1516-35
J1516-24	Main Plant	TRUE	1,000	2,113	45	20	J1516-35
J1516-35	Main Plant	TRUE	1,000	1,105	20	32	J1316-24
J1516-36	Main Plant	TRUE	1,000	1,275	32	20	J1516-35
J1516-38	Main Plant	TRUE	1,000	1,610	21	20	J1516-37
J1516-40	Main Plant	TRUE	1,000	1,560	33	20	J1516-35
J1516-41	Main Plant	TRUE	1,000	1,823	27	20	J1516-35
J1517-02	Main Plant	TRUE	1,000	1,932	24	20	J1517-01
J1517-05	Main Plant	TRUE	1,000	2,803	20	32	J1316-24
J1517-06	Main Plant	TRUE	1,000	4,361	20	32	J1316-24
J1517-07	Main Plant	TRUE	1,000	4,500	39	32	J1316-24
J1517-18	Main Plant	TRUE	1,000	4,132	27	20	J1517-16
J1518-11	Main Plant	TRUE	1,000	2,386	21	20	J1518-10
J1518-15	Main Plant	TRUE	1,000	2,962	21	20	J1518-14

City of Placerville Water Model
2015 WaterCAD Automated Fire Flow Analysis Results
(Results sorted by Zone, then Node name)

Node	Zone	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J1220-100	Sierra Hydro	TRUE	1,000	1,729	20	20	J1220-100
J1119-03	Sierra Plant	TRUE	1,000	2,647	131	20	J1220-05
J1119-04	Sierra Plant	TRUE	1,000	1,944	20	34	J1220-05
J1219-01	Sierra Plant	TRUE	1,000	2,120	23	20	J1220-01
J1219-13	Sierra Plant	TRUE	1,000	2,392	121	20	J1220-05
J1219-20	Sierra Plant	TRUE	1,000	1,738	27	20	J1220-05
J1219-21	Sierra Plant	TRUE	1,000	1,596	20	24	J1220-05
J1219-22	Sierra Plant	TRUE	1,000	1,506	20	20	J1219-23
J1219-24	Sierra Plant	TRUE	1,000	1,577	23	20	J1219-23
J1219-30	Sierra Plant	TRUE	1,000	2,243	32	20	J1220-05
J1220-01	Sierra Plant	TRUE	1,000	1,467	20	37	J1320-01
J1220-04	Sierra Plant	TRUE	1,000	1,242	20	20	J1220-05
J1319-01	Sierra Plant	TRUE	1,000	1,627	31	20	J1220-05
J1319-100	Sierra Plant	TRUE	1,000	2,082	138	20	J1220-05
J1320-01	Sierra Plant	TRUE	1,000	1,336	20	31	J1220-05
J1419-09	Upper Schnell School	TRUE	1,500	2,232	20	27	J1519-03
J1518-06	Upper Schnell School	TRUE	1,000	2,390	20	21	J1518-07
J1518-07	Upper Schnell School	FALSE [(c)]	2,250	2,241	20	32	J1518-09
J1518-08	Upper Schnell School	TRUE	1,000	2,467	20	22	J1518-07
J1519-01	Upper Schnell School	FALSE [(d)]	2,250	1,946	33	20	J1519-03

(a) Pump added for J1517-26 in 2005.

(b) Pump added for J1419-01 (Lane Drive) in 2005.

(c) Split the flow between J1519-07 & -06 (since the entire flow cannot be supplied by one hydrant) and FF can be met.

(d) Split the flow between J1519-01 & 1518-03 or EID hydrant (since the entire flow cannot be supplied by one hydrant) and FF can be me

E-2: 2015 Manual Fire Flow Scenario Notes

Appendix E-2: 2015 Manual Fire Flow Scenario Notes

Appendix E-2 contains a summary of the 2015 manual fire flow (FF) analyses performed and related results and improvement recommendations for each zone is included in the sections below.

Main Zone

Based on WaterCAD's automated FF analysis all hydrants in the Main Plant Zone are capable of obtaining their required FF with the exception of J1418-01 located on Lane Drive. This hydrant will obtain FF with the pump recommended in 2005 (pump was not input into the model as the pump needs to be designed and a curve selected prior to input into the model).

1. FF J1418-01 –3,750 gpm FF. Per the automated FF the required FF can be obtained at J1418-01. When the FF is split between the three hydrants located at J1418-06 (750 gpm), J1418-01 (1,500 gpm), and J1419-04 (1,500 gpm) the required FF can still be met. PRV1418-101 flows at 1,500 gpm maintaining upstream pressure greater than 36 psi, velocities are less than 12 ft/sec, and the PSV upstream pressure is 58 psi. No improvements necessary.

2. FF J1418-33 - 2,250 gpm FF. Splitting the required FF between the two hydrants at J1418-33 (1,250 gpm) and J1418-32 (1,000 gpm), the required FF can be obtained with a residual pressures at the FF nodes of 37 psi, upstream pressure in EID PSV 19 of 59 psi, and a PRV1418-101 flow of 580.8 gpm. No improvements necessary.

3. FF J1317-36 – 3,750 gpm FF. The required FF at this node, causes the upstream pressure of the EID PSV19 to drop below 55 psi (52.3 psi). Therefore, the FF was rerun with the PSV active. When maintaining an upstream pressure of 55 psi at the PSV, flow through PRV1217-100 is limited to 2,440 gpm and the downstream pressure is reduced to 11.4 psi. The required FF at J1317-36 can be obtained with a residual pressure of 62 psi at the FF node and velocities less than 16 ft/sec (15.6 ft/sec through P1317-19). With the PSV active, 236 gpm flows through PRV1218-100, 419 gpm through PRV1218-103, and 611 gpm through PRV1418-101 to help achieve the required FF.

   Splitting the required FF between the hydrants at J1317-36 (1,500 gpm), J1317-35 (1,500 gpm) and J1317-42 (750 gpm) still causes the upstream pressure the PSV to drop below 55 psi (52 psi). With the PSV active, flow through PRV1217-100 is limited to 2,440 gpm. Residual pressures at the FF nodes remain above 47 psi and the velocity through P1317-19 drops below 12.5 ft/sec. No improvements necessary to meet this FF requirement in 2015.

4. FF J1418-10 – 4,250 gpm FF. As discussed in the previous FF scenarios, a hydrant does not exist at J1418-10; therefore, the FF would be split between three hydrants. Running the FF using the hydrants at J1418-12 (1,500 gpm), J1418-09 (1,500 gpm) and J1418-07 (1,250 gpm) the FF can be achieved with velocities less than 13 ft/sec and the required FF can be supplied with residual pressures greater than of 82 psi at the FF nodes. PRV1418-101 contributes its full 1,500 gpm during this FF event and the Sierra Plant and Escaton Zones maintain residual pressures greater than 36 psi. The EID PSV has an upstream pressure of 57.4 psi. No improvements are necessary.

5. FF J1418-09 – 2,500 gpm. Splitting the flow between J1418-09 (1,500 gpm) and J1418-12 (1,000 gpm) results in residual pressures of 100 psi at the FF nodes, velocities below 10 ft/sec, PSV upstream pressure of 58.2 psi, and PRV1418-101 flow of 1,500 gpm flow without pressure issue upstream. No improvements necessary.

6. FF J1316-07 – 1,750 gpm. The required FF at this node, causes the upstream pressure of the EID PSV19 to drop below 55 psi (52.3 psi). Therefore, the FF was rerun with the PSV active. When maintaining an upstream pressure of 55 psi at the PSV, flow through PRV1217-100 is limited to 2,440 gpm and the downstream pressure is reduced to 13.7 psi. The required FF at J1316-07 can be obtained with a residual pressure of 94 psi at the FF node and velocities less than 15 ft/sec. If the hydrant at J1316-07 cannot achieve the full 1,750 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1216-03 and vice versa. No improvements necessary.

7. FF J1216-03 – 1,750 gpm. The required FF at this node, causes the upstream pressure of the EID PSV19 to drop below 55 psi (52.1 psi). Therefore, the FF was rerun with the PSV active. When maintaining an upstream pressure of 55 psi at the PSV, flow through PRV1217-100 is limited to 2,440 gpm and the downstream pressure is reduced to 13 psi. The required FF at J1216-03 can be obtained with a residual pressure of 100 psi at the FF node and velocities less than 11 ft/sec. If the hydrant at J1216-03 cannot achieve the full 1,750 gpm flow due to hydrant limitations (max flow of 1,500 gpm) it can be supplemented with flow from the hydrant at J1316-07 and vice versa. No improvements necessary.

8. FF J1316-40 – 1,875 gpm. The required FF at this node, causes the upstream pressure of the EID PSV19 to drop below 55 psi (54.5 psi). Therefore, the FF was rerun with the PSV active. When maintaining an upstream pressure of 55 psi at the PSV, flow through PRV1217-100 is limited to 2,440 gpm and the downstream pressure is reduced to 14.1 psi. The required FF at J1316-40 can be obtained with a residual pressure of 142 psi at the FF node and velocities less than 8 ft/sec. PRV1418-101 flows at 248 gpm with no upstream pressure issues. If the hydrant at J1316-40 cannot achieve the full 1,850 gpm flow due to hydrant limitations it can be supplemented with flow from the hydrant at J1316-12. No improvements necessary.

9. FF J1418-56 – 2,250 gpm. Existing 8” pipes can supply required FF. Residual at node is 89 psi, velocities below 13 ft/sec and PSV upstream pressure is greater than 55 psi. A single hydrant cannot achieve the full 2,250 gpm flow due to hydrant limitations (max flow of 1,500 gpm); therefore J1418-56 will need to be supplemented with flow from the hydrant at J1417-55 and velocities would likely drop to below 7 ft/sec with both hydrants flowing.No improvements necessary.

10. FF J1317-53 (2,750 FF) and J1317-52 (2,500 gpm). The required FF at these nodes, causes the upstream pressure of the EID PSV19 to drop below 55 psi. Therefore, the FF was rerun with the PSV active. When maintaining an upstream pressure of 55 psi at the PSV, flow through PRV1217-100 is limited to 2,440 gpm. The required FFs can be obtained with a residual pressure of 116 psi at the FF node, and velocities less than 11 ft/sec. Since a single hydrant cannot supply the full 2,700 gpm FF due to hydrant limitations (max flow of 1,500 gpm), each of the hydrants can help supplement the full flow from the other. No improvements necessary.

11. FF J1417-29 – 3,500 gpm. The required FF at this hydrant, causes the upstream pressure of the EID PSV19 to drop below 55 psi. Therefore, the FF was rerun with the PSV active. Flow was split between J1417-29 (1,500 gpm), J1417-82 (1,000 gpm), and J1317-49

(1,000 gpm). When maintaining an upstream pressure of 55 psi at the PSV, flow through PRV1217-100 is limited to 2,440 gpm. The required FF can be obtained with residual pressures greater than 53 psi at the FF nodes, and velocities less than 16 ft/sec. No improvements necessary.

Based on the automated FF analysis and the manual FF analyses described above, no improvements are required to meet FF in the Main Plant Zone in 2015.

Combellack Zone

Based on WaterCAD's automated FF analysis all hydrants in the Combellack Zone are capable of obtaining their required FF. Since the Combellack Zone has a much higher HGL than the Main Plant Zone, there is no need to run manual FF to check EID PSV19 upstream pressure or the flow through PRV1418-101. In addition, all hydrants in this zone are on 6" or larger pipelines and all FFs are 1,000 gpm. Therefore no manual FF were run for this zone and no improvements are necessary to meet FF in this zone.

Upper Schnell School Zone

Based on WaterCAD's automated FF analysis two of the hydrants in the Upper Schnell School Zone cannot obtain the required FF (J1519-01 and J1518-07). Manual FF analyses were performed for these hydrants and are summarized below.

1. FF J1518-07 - 2,250 gpm FF. As discussed in the previous FF scenarios, this flow rate cannot be obtained with a single hydrant. The model shows that a flow of 2,241 gpm can be obtained without causing the upstream pressure to drop below 20 psi. However, splitting the fire flow between the hydrant at J1518-07 (1,250 gpm) and J1518-06 (1,000 gpm) would allow pressures to remain above 25 psi. Flows through the 8-inch pipelines feeding the zone from the EID would reach velocities of 15.1 ft/sec. PRV1418-101 flows at 115 gpm with no upstream pressure issues and the upstream pressure of EID PSV19 remains above 58 psi. Based on the assumption that the FF will be supplied by two hydrants, no additional improvements are recommended to meet this FF requirement.

2. FF J1519-01 - 2,250 gpm FF. As discussed in the 2005 FF scenario, this flow rate cannot be obtained with a single hydrant located at J1519-01. The model shows that a flow of 1,963 gpm can be obtained without causing the upstream pressure to drop below 20 psi. However, running the model with a FF of 1,250 gpm at J1519-01 (40 psi) and 1,000 gpm at J1518-08 (35 psi) the system stays above the required 20 psi (J1519-03 has lowest pressure of 21 psi). Again flows through the 8-inch pipelines feeding the zone from the EID could reach velocities of up to 15 ft/sec. PRV1418-101 flows at 128 gpm with no upstream pressure issues during this FF event, and the upstream pressure of EID PSV19 remains above 58 psi. Based on the assumption that the FF will be supplied by two hydrants, no additional improvements are recommended to meet this FF requirement.

All other hydrants in this zone require 1,000 to 1,500 gpm FF and are on 6" or larger pipelines; therefore, no other manual FF runs were ran and no improvements are necessary to meet FF in this zone.

Res 4 Zone

Based on WaterCAD's automated FF analysis all hydrants in the Res4 Zone are capable of obtaining their required FF with the exception of J1517-26 located at the top of Poverty Hill. This

hydrant will obtain FF with the pump recommended in 2005 (pump was not input into the model as the pump needs to be designed and a curve selected prior to input into the model). Since the Res4 Zone does not receive flow from the Main Plant Zone, there is no need to run manual FF to check EID PSV19 upstream pressure or the flow through PRV1418-101. In addition, all hydrants in this zone are on 6" or larger pipelines and all FFs are 1,000 gpm. Therefore no manual FFs were run for this zone and no improvements are necessary to meet FF in this zone.

Cedar Ravine, Sierra Plant, Eskaton, and Cedar Bluffs Zones

Based on WaterCAD's automated FF analysis all hydrants in the Cedar Ravine, Sierra Plant, Eskaton, and Cedar Bluffs Zones are capable of obtaining their required FF. Since the Main Plant Zone does not feed into these zones, there is no need to run manual FF to check EID PSV19 upstream pressure or the flow through PRV1418-101. All hydrants in this zone are on 6" or larger pipelines and require FFs of 1,000 gpm, with the exception of J1318-102 which requires a FF of 2,000 gpm. Therefore, J1318-102 was the only manual FF analyzed for these zones.

> FF J1318-102 – 2,000 gpm FF. The required FF at this node can be met with a residual pressure at the FF node of 69.5 psi, and the lowest pressures in the system (ignoring the No FF nodes) is 22.6 psi at J1220-05 . Velocities remain below 10 ft/sec with the exception of the 8" pipe feeding the FF which had a velocity of 12.8 ft/sec.

No improvements are necessary to meet FFs in the Cedar Ravine, Sierra Plant, Eskaton, and Cedar Bluffs Zones.

Sierra Hydro-pneumatic Zone

The only hydrant that exists in the Sierra Hydro-pneumatic Zone is the hydrant that was proposed in 2005 (J1220-100) to replace the hydrant at J1220-03 (hydrant just downstream of the Sierra Plant). The new hydrant J1220-100 can obtain the required 1,000 gpm FF with a residual pressure of 00.7 psi at the FF node. No improvements are necessary for this zone.

E-3: 2015 Junction Model Output

City of Placerville
Water Modeling Report
2015 Junction Model Output

Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
EID J1117-02	EID Res 6	2,300.00	0	40.6	2,393.83	0	34	2,378.50	0	31	2,371.72
EID J1117-03	EID Res 6	2,240.00	0	65.7	2,391.87	0	57.5	2,372.85	0	53.8	2,364.43
EID J1119-04	EID PRV#3S	2,237.00	0	149.6	2,582.86	0	148.3	2,579.70	0	143.8	2,569.41
EID J1219-02	EID PRV#3S	2,397.00	0	87.9	2,600.25	0	87.1	2,598.29	0	84.4	2,591.98
EID J1220-02	EID PRV#3S	2,537.59	0	33.8	2,615.70	0	33.6	2,615.29	0	32.7	2,613.25
EID J1220-06	EID PRV#3S	2,532.00	0	36.2	2,615.74	0	36.1	2,615.55	0	35.9	2,614.93
EID J1516-44	Combellack	2,140.00	0	55.5	2,268.26	0	51.2	2,258.24	0	34.4	2,219.58
EID J1519-04	Upper Schnell School	2,170.00	0	115.1	2,435.99	0	114.9	2,435.49	0	113.3	2,431.82
EID J1619-07	Upper Schnell School	2,280.00	0.00	67.4	2,435.80	0.00	67.4	2,435.80	0.00	67.4	2,435.79
EID North	Combellack	1,920.00	1368.36	149	2,264.31	2517.79	141.1	2,246.17	4154.35	113.6	2,182.48
EID South	EID Res 6	2,240.00	1,738.14	65.6	2,391.73	3,198.19	57.3	2,372.42	5,277.01	53.4	2,363.35
J1117-01	EID Res 6	2,210.00	0	78.1	2,390.45	0	68.8	2,369.07	0	66.7	2,364.23
J1117-02	EID Res 6	2,237.38	0	66.4	2,390.79	0	57.4	2,369.94	0	54.9	2,364.28
J1119-01	Cedar Ravine	2,207.00	0.29	107.9	2,456.36	0.64	107.7	2,455.96	1.05	107.6	2,455.71
J1119-02	Sierra Plant	2,226.32	0	143.5	2,558.07	0	143.4	2,557.85	0	142.7	2,556.17
J1119-03	Sierra Plant	2,148.00	11.09	177.3	2,557.71	24.39	176.4	2,555.76	40.24	170	2,540.88
J1119-04	Sierra Plant	2,355.00	0	87.8	2,558.04	0	87.8	2,557.97	0	87.6	2,557.56
J1216-01	Main Plant	1,945.00	2.02	102.1	2,181.10	3.72	101.8	2,180.22	6.14	95.8	2,166.52
J1216-02	Main Plant	1,903.00	1.84	120.2	2,180.89	3.39	119.7	2,179.71	5.59	114	2,166.48
J1216-03	Main Plant	1,910.00	0	117.2	2,180.87	0	116.7	2,179.62	0	111	2,166.45
J1216-04	Main Plant	1,891.00	44.87	125.4	2,180.78	82.56	124.8	2,179.42	136.22	119.2	2,166.46
J1216-05	Main Plant	1,965.00	2.46	93.4	2,180.79	4.52	92.8	2,179.44	7.46	87.2	2,166.45
J1216-06	Main Plant	1,898.00	1.84	122.3	2,180.79	3.39	121.8	2,179.44	5.59	116.1	2,166.45
J1216-07	Main Plant	1,998.00	0.3	79.2	2,181.02	0.56	78.7	2,179.96	0.92	72.9	2,166.46
J1216-08	Main Plant	2,003.00	5.04	77	2,180.96	9.26	76.5	2,179.81	15.29	70.7	2,166.44
J1216-09	Main Plant	2,040.00	5.59	60.9	2,180.83	10.29	60.3	2,179.47	16.98	54.7	2,166.40
J1216-10	Main Plant	1,964.00	0.92	93.8	2,180.77	1.69	93.1	2,179.29	2.79	87.5	2,166.31
J1216-11	Main Plant	1,994.00	1.23	80.8	2,180.78	2.27	80.2	2,179.32	3.75	74.6	2,166.38
J1216-12	Main Plant	2,005.00	0	76.1	2,180.78	0	75.4	2,179.32	0	69.8	2,166.38
J1217-01	Main Plant	1,944.00	3.59	101.7	2,179.08	6.61	100.3	2,175.77	10.91	96.8	2,167.74
J1217-02	EID Res 6	2,180.00	0	90.8	2,389.79	0	81.1	2,367.42	0	79.7	2,364.12
J1217-03	No FF	2,147.00	0	15	2,181.65	0	15	2,181.63	0	8.5	2,166.64
J1217-04	No FF	2,130.00	0.62	22.3	2,181.47	1.14	22.1	2,181.16	1.87	15.8	2,166.60
J1217-05	Main Plant	2,014.00	4.31	71.3	2,178.82	7.93	69.8	2,175.27	13.08	67.2	2,169.42
J1217-06	Main Plant	1,988.00	3.97	82.6	2,178.93	7.3	81.1	2,175.48	12.05	78	2,168.35
J1217-07	Main Plant	1,986.00	0	83.5	2,178.93	0	82	2,175.48	0	78.8	2,168.05
J1217-08	Main Plant	2,026.00	2.12	66.2	2,179.04	3.9	64.8	2,175.68	6.43	61.4	2,167.91
J1217-09	Main Plant	1,960.00	2.12	94.8	2,179.03	3.9	93.3	2,175.65	6.43	89.9	2,167.83
J1217-10	Main Plant	1,953.00	0	97.8	2,179.04	0	96.3	2,175.68	0	93	2,167.91
J1217-11	Main Plant	1,933.00	1.32	106.4	2,179.04	2.43	105	2,175.68	4.01	101.6	2,167.92
J1217-110	Main Plant	2,022.00	0	68.8	2,180.96	0	68.3	2,179.93	0	62.6	2,166.62
J1217-111	Main Plant	2,028.00	0.9	66.2	2,180.95	1.66	65.7	2,179.90	2.73	60	2,166.60
J1217-112	Main Plant	2,023.00	0	68.3	2,180.96	0	67.9	2,179.93	0	62.1	2,166.62
J1217-113	Main Plant	2,031.00	1.2	64.9	2,180.96	2.21	64.4	2,179.93	3.64	58.7	2,166.62
J1217-114	Main Plant	2,032.00	1.2	64.4	2,180.96	2.21	64	2,179.93	3.64	58.2	2,166.62
J1217-115	Main Plant	2,036.00	1.5	62.7	2,180.96	2.76	62.3	2,179.93	4.55	56.5	2,166.62
J1217-12	Main Plant	1,939.00	0	103.9	2,179.07	0	102.4	2,175.75	0	99	2,167.79
J1217-13	Main Plant	1,921.00	2.82	111.7	2,179.06	5.19	110.2	2,175.73	8.56	106.8	2,167.83
J1217-14	Main Plant	2,001.00	2.12	77.1	2,179.18	3.9	75.7	2,175.96	6.43	72.1	2,167.56
J1217-15	Main Plant	1,970.00	0	90.7	2,179.53	0	89.4	2,176.72	0	85.4	2,167.28
J1217-16	Main Plant	1,970.00	0	90.7	2,179.53	0	89.4	2,176.72	0	85.4	2,167.28
J1217-17	Main Plant	1,983.00	2.12	85	2,179.49	3.9	83.8	2,176.58	6.43	79.6	2,166.93
J1217-18	Main Plant	1,997.00	0	78.8	2,179.16	0	77.4	2,175.93	0	73.8	2,167.58
J1217-19	Main Plant	1,991.00	2.38	81.4	2,179.15	4.39	80	2,175.91	7.24	76.4	2,167.59
J1217-20	Main Plant	1,994.00	0.27	80.1	2,179.15	0.49	78.7	2,175.91	0.81	75.1	2,167.59
J1217-200	Main Plant	1,965.00	0	92.6	2,179.07	0	91.2	2,175.75	0	87.7	2,167.79
J1217-201	Main Plant	2,010.00	1.39	73.1	2,179.07	2.55	71.7	2,175.75	4.21	68.3	2,167.79
J1217-21	Main Plant	1,914.00	4.24	114.7	2,179.13	7.79	113.3	2,175.86	12.86	109.8	2,167.70
J1217-22	Main Plant	1,905.00	2.48	118.6	2,179.19	4.57	117.2	2,175.98	7.53	113.6	2,167.61
J1217-23	Main Plant	1,915.00	2.72	114.5	2,179.54	5.01	113.2	2,176.74	8.27	109.1	2,167.27
J1217-24	Main Plant	2,004.00	5.07	76.2	2,180.16	9.33	75.3	2,178.10	15.39	70.4	2,166.80
J1217-25	Main Plant	1,925.00	1.32	110.4	2,180.17	2.43	109.5	2,178.11	4.01	104.6	2,166.83

City of Placerville
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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1217-26	Main Plant	1,980.00	3.44	86.7	2,180.30	6.32	85.8	2,178.41	10.44	80.8	2,166.76
J1217-27	Main Plant	1,985.00	3.07	84.8	2,180.94	5.66	84.3	2,179.86	9.33	78.6	2,166.57
J1217-28	Main Plant	1,952.00	2.15	99	2,180.90	3.96	98.5	2,179.74	6.54	92.8	2,166.50
J1217-29	Main Plant	2,037.00	7.44	62.2	2,180.67	13.7	61.5	2,179.23	22.6	56.1	2,166.63
J1217-30	No FF	2,123.00	0	25.3	2,181.40	0	25.1	2,181.01	0	18.9	2,166.64
J1217-31	Main Plant	2,031.00	0	64.9	2,180.97	0	64.4	2,179.93	0	58.7	2,166.63
J1218-01	Cedar Bluffs	2,146.00	4.61	114.3	2,410.09	10.15	114.3	2,410.08	16.74	114.2	2,409.84
J1218-02	Cedar Ravine	2,223.00	2.4	100.9	2,456.30	5.28	100.7	2,455.69	8.71	100.5	2,455.33
J1218-03	Main Plant	2,151.00	2.32	64.5	2,300.04	4.26	64.5	2,300.04	7.03	64.2	2,299.48
J1218-04	Main Plant	2,036.00	0.28	61.8	2,178.80	0.51	60.2	2,175.21	0.85	60	2,174.69
J1218-05	Main Plant	2,048.00	0.28	56.6	2,178.80	0.51	55	2,175.21	0.85	54.9	2,174.81
J1218-06	Main Plant	2,044.00	0	58.3	2,178.80	0	56.8	2,175.21	0	56.5	2,174.69
J1218-07	Main Plant	2,017.00	0.85	70	2,178.80	1.56	68.4	2,175.21	2.57	67.8	2,173.64
J1218-08	Main Plant	2,006.00	3.75	74.8	2,178.80	6.9	73.2	2,175.21	11.39	72.5	2,173.64
J1218-09	Main Plant	1,993.00	0	80.4	2,178.80	0	78.8	2,175.21	0	77.8	2,172.93
J1218-10	Main Plant	2,022.00	2.32	67.8	2,178.80	4.26	66.3	2,175.22	7.03	65	2,172.18
J1218-100	Cedar Bluffs	2,239.00	1.8	74	2,410.07	3.96	74	2,410.05	6.53	73.7	2,409.26
J1218-101	Cedar Bluffs	2,312.00	1.2	42.4	2,410.07	2.64	42.4	2,410.04	4.36	42.1	2,409.24
J1218-102	Cedar Bluffs	2,285.00	4.2	54.1	2,410.07	9.24	54.1	2,410.04	15.25	53.7	2,409.23
J1218-103	Cedar Bluffs	2,223.00	1.5	80.9	2,410.07	3.3	80.9	2,410.04	5.45	80.6	2,409.25
J1218-104	Cedar Bluffs	2,220.00	3	82.2	2,410.07	6.6	82.2	2,410.05	10.89	81.9	2,409.26
J1218-105	Cedar Bluffs	2,112.00	1.8	129	2,410.08	3.96	129	2,410.06	6.53	128.6	2,409.30
J1218-106	Cedar Bluffs	2,257.00	2.4	66.2	2,410.07	5.28	66.2	2,410.03	8.71	65.2	2,407.67
J1218-107	Cedar Bluffs	2,280.00	1.5	56.3	2,410.07	3.3	56.3	2,410.04	5.45	55.7	2,408.77
J1218-11	Main Plant	2,005.00	23.98	75.2	2,178.80	44.12	73.6	2,175.22	72.79	71.6	2,170.52
J1218-110	Main Plant	2,070.00	0	99.5	2,300.04	0	99.5	2,300.04	0	99.3	2,299.48
J1219-01	Sierra Plant	2,410.00	3.85	64.1	2,558.04	8.47	64	2,557.97	13.97	63.8	2,557.55
J1219-02	Sierra Plant	2,397.00	3.17	69.7	2,558.04	6.98	69.6	2,557.97	11.51	69.5	2,557.56
J1219-03	Cedar Ravine	2,323.00	3.59	57.7	2,456.46	7.91	57.7	2,456.36	13.05	57.7	2,456.29
J1219-04	Cedar Ravine	2,310.00	1.2	63.4	2,456.46	2.64	63.3	2,456.37	4.36	63.3	2,456.29
J1219-05	Cedar Ravine	2,310.00	1.5	63.4	2,456.46	3.3	63.3	2,456.37	5.45	63.3	2,456.29
J1219-06	Cedar Ravine	2,260.00	1.5	85	2,456.40	3.3	84.9	2,456.12	5.45	84.8	2,455.94
J1219-07	Cedar Ravine	2,235.00	1.5	95.8	2,456.37	3.3	95.6	2,455.99	5.45	95.5	2,455.75
J1219-08	Cedar Ravine	2,226.00	1.72	99.7	2,456.36	3.78	99.5	2,455.96	6.24	99.4	2,455.71
J1219-09	Cedar Ravine	2,208.00	1.15	107.4	2,456.31	2.53	107.2	2,455.73	4.17	107	2,455.42
J1219-10	Cedar Ravine	2,234.00	3.97	96.2	2,456.31	8.73	95.9	2,455.71	14.41	95.8	2,455.37
J1219-11	Cedar Ravine	2,206.00	0.86	108.3	2,456.31	1.89	108	2,455.73	3.12	107.9	2,455.42
J1219-12	Cedar Ravine	2,187.00	0	116.5	2,456.31	0	116.3	2,455.72	0	116.1	2,455.42
J1219-13	Sierra Plant	2,180.00	2.7	163.3	2,557.54	5.94	162.1	2,554.76	9.8	152.7	2,533.01
J1219-14	Cedar Ravine	2,198.00	7.65	111.8	2,456.30	16.83	111.5	2,455.69	27.77	111.3	2,455.34
J1219-15	Cedar Ravine	2,240.00	2.52	93.6	2,456.30	5.54	93.3	2,455.70	9.14	93.2	2,455.34
J1219-16	Cedar Ravine	2,236.00	2.89	95.3	2,456.30	6.36	95.1	2,455.70	10.5	94.9	2,455.34
J1219-17	Cedar Ravine	2,225.00	0	100.1	2,456.30	0	99.8	2,455.70	0	99.7	2,455.34
J1219-18	Cedar Ravine	2,223.00	2.67	100.9	2,456.30	5.88	100.7	2,455.69	9.71	100.5	2,455.33
J1219-19	Sierra Plant	2,165.00	0	169.8	2,557.46	0	168.4	2,554.29	0	157.7	2,529.49
J1219-20	Sierra Plant	2,436.00	3.57	52.6	2,557.62	7.86	51.7	2,555.43	12.96	45.8	2,541.84
J1219-21	Sierra Plant	2,412.00	5.94	62.9	2,557.43	13.07	61.6	2,554.29	21.57	53.5	2,535.67
J1219-22	Sierra Plant	2,409.00	0.7	64.2	2,557.43	1.54	62.8	2,554.21	2.55	53.9	2,533.67
J1219-23	Sierra Plant	2,417.00	4.24	60.8	2,557.43	9.32	59.4	2,554.18	15.38	50.1	2,532.91
J1219-24	Sierra Plant	2,396.00	2.8	69.8	2,557.43	6.15	68.4	2,554.15	10.15	58.7	2,531.70
J1219-25	Cedar Ravine	2,270.00	0	80.6	2,456.31	0	80.3	2,455.71	0	80.2	2,455.37
J1219-26	Cedar Ravine	2,319.00	3.22	59.4	2,456.31	7.08	59.1	2,455.71	11.69	59	2,455.37
J1219-27	Cedar Ravine	2,315.00	0	61.1	2,456.31	0	60.9	2,455.71	0	60.7	2,455.37
J1219-30	Sierra Plant	2,391.00	2.09	72	2,557.43	4.61	70.6	2,554.11	7.6	59.5	2,528.47
J1219-31	Sierra Plant	2,392.50	0	71.4	2,557.43	0	69.9	2,554.11	0	58.8	2,528.47
J1220-01	Sierra Plant	2,417.00	2.44	61	2,558.04	5.38	61	2,557.96	8.87	60.8	2,557.54
J1220-03	No FF	2,528.60	0	12.7	2,557.95	0	12.6	2,557.64	0	11.6	2,555.50
J1220-04	Sierra Plant	2,464.00	2.77	40.5	2,557.59	6.1	39.5	2,555.27	10.06	33	2,540.30
J1220-05	Sierra Plant	2,465.00	0	40.1	2,557.59	0	39.1	2,555.26	0	32.5	2,540.20
J1220-100	Sierra Hydro	2,528.60	0	37.7	2,615.70	0	37.5	2,615.29	0	36.6	2,613.25
J1315-01	Main Plant	1,832.00	0.69	150.7	2,180.39	1.27	149.8	2,178.27	2.09	144.6	2,166.28
J1316-01	Main Plant	1,949.00	0.62	100.3	2,180.90	1.14	99.8	2,179.74	1.87	94.1	2,166.50

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1316-02	Main Plant	1,995.00	2.46	80.2	2,180.39	4.52	79.4	2,178.51	7.46	74.2	2,166.50
J1316-03	Main Plant	1,970.00	2.77	91	2,180.39	5.1	90.2	2,178.51	8.41	85	2,166.50
J1316-04	Main Plant	1,896.00	0	123	2,180.39	0	122.2	2,178.51	0	117	2,166.50
J1316-05	Main Plant	1,890.00	2.46	125.6	2,180.39	4.52	124.8	2,178.51	7.46	119.6	2,166.50
J1316-06	Main Plant	1,909.00	0.94	117.5	2,180.56	1.74	116.7	2,178.77	2.87	111.3	2,166.34
J1316-07	Main Plant	1,885.00	4.41	127.9	2,180.56	8.11	127.1	2,178.78	13.38	121.7	2,166.35
J1316-08	Main Plant	1,863.00	0	137.3	2,180.34	0	136.4	2,178.34	0	131.3	2,166.43
J1316-09	Main Plant	1,859.00	0.31	139	2,180.37	0.58	138.2	2,178.42	0.96	133	2,166.45
J1316-10	Main Plant	1,860.00	0	138.6	2,180.34	0	137.7	2,178.34	0	132.6	2,166.44
J1316-11	Main Plant	1,860.00	0.64	138.6	2,180.34	1.18	137.7	2,178.33	1.95	132.6	2,166.43
J1316-12	Main Plant	1,852.00	0	142	2,180.30	0	141.1	2,178.24	0	136	2,166.42
J1316-13	Main Plant	1,855.00	0	140.7	2,180.30	0	139.8	2,178.24	0	134.7	2,166.42
J1316-14	Main Plant	1,839.00	4.14	147.6	2,180.23	7.62	146.7	2,178.04	12.57	141.6	2,166.40
J1316-15	Main Plant	1,835.00	1.16	149.4	2,180.20	2.14	148.4	2,177.96	3.53	143.4	2,166.38
J1316-16	Main Plant	1,943.00	0	102.8	2,180.66	0	102.1	2,179.00	0	96.6	2,166.35
J1316-17	Main Plant	1,939.00	3.43	104.5	2,180.64	6.3	103.8	2,178.96	10.4	98.4	2,166.35
J1316-18	Main Plant	1,937.00	0	105.4	2,180.63	0	104.7	2,178.93	0	99.2	2,166.34
J1316-19	Main Plant	1,942.00	0	103.2	2,180.63	0	102.5	2,178.93	0	97.1	2,166.34
J1316-20	Main Plant	1,997.00	0	79.4	2,180.63	0	78.7	2,178.93	0	73.3	2,166.34
J1316-21	Main Plant	1,987.00	0	83.8	2,180.63	0	83	2,178.93	0	77.6	2,166.34
J1316-22	Main Plant	1,991.00	0.82	82	2,180.63	1.51	81.3	2,178.93	2.49	75.9	2,166.34
J1316-23	Main Plant	2,085.00	0.3	41.4	2,180.78	0.56	40.8	2,179.31	0.92	35.2	2,166.35
J1316-24	Main Plant	2,104.00	1.83	33.2	2,180.66	3.36	32.4	2,179.00	5.55	27	2,166.35
J1316-25	Main Plant	1,936.00	2.4	105.8	2,180.63	4.42	105.1	2,178.92	7.29	99.7	2,166.34
J1316-26	Main Plant	1,953.00	2.7	98.3	2,180.29	4.97	97.5	2,178.26	8.19	92.4	2,166.49
J1316-27	Main Plant	1,846.00	8.77	144.6	2,180.23	16.15	143.7	2,178.05	26.64	138.6	2,166.42
J1316-28	Main Plant	1,845.00	0.5	145.1	2,180.29	0.91	144.2	2,178.20	1.51	139.1	2,166.42
J1316-29	Main Plant	1,842.00	3.82	146.3	2,180.23	7.04	145.4	2,178.05	11.61	140.4	2,166.40
J1316-30	Main Plant	1,841.00	3.97	146.8	2,180.20	7.3	145.8	2,177.97	12.05	140.8	2,166.40
J1316-31	Main Plant	1,842.00	4.21	146.3	2,180.04	7.75	145.2	2,177.58	12.79	140.4	2,166.39
J1316-32	Main Plant	1,842.00	3.84	146.2	2,180.00	7.06	145.2	2,177.50	11.65	140.4	2,166.39
J1316-33	Main Plant	1,845.00	7.92	144.9	2,179.90	14.56	143.8	2,177.28	24.03	139.1	2,166.42
J1316-34	Main Plant	1,842.00	2.82	146.2	2,179.93	5.19	145.1	2,177.33	8.56	140.3	2,166.39
J1316-35	Main Plant	1,923.00	0	110.9	2,179.25	0	109.5	2,176.00	0	105.8	2,167.60
J1316-36	Main Plant	1,920.00	4.83	112.4	2,179.90	8.89	111.3	2,177.24	14.66	106.5	2,166.21
J1316-37	Main Plant	1,882.00	1.39	128.9	2,179.91	2.56	127.7	2,177.26	4.23	123	2,166.27
J1316-38	Main Plant	1,880.00	0	129.8	2,179.91	0	128.6	2,177.27	0	123.9	2,166.28
J1316-39	Main Plant	1,865.00	0.3	136.3	2,179.93	0.56	135.1	2,177.31	0.92	130.4	2,166.37
J1316-40	Main Plant	1,837.00	0.84	148.5	2,180.20	1.55	147.5	2,177.96	2.56	142.5	2,166.38
J1316-41	Main Plant	1,837.00	1.54	148.5	2,180.19	2.83	147.5	2,177.93	4.67	142.5	2,166.38
J1316-42	Main Plant	1,830.00	0	151.6	2,180.49	0	150.8	2,178.53	0	145.5	2,166.31
J1316-43	Main Plant	1,822.00	2.37	155.1	2,180.49	4.36	154.3	2,178.53	7.2	149	2,166.31
J1316-44	Main Plant	1,822.00	0	155.1	2,180.48	0	154.2	2,178.52	0	149	2,166.31
J1316-45	Main Plant	1,911.00	0.94	116.3	2,179.91	1.74	115.2	2,177.25	2.87	110.5	2,166.34
J1316-46	Main Plant	1,893.00	0	124.1	2,179.91	0	123	2,177.25	0	118.3	2,166.34
J1316-47	Main Plant	1,868.00	3.98	134.9	2,179.91	7.33	133.8	2,177.25	12.09	129.1	2,166.34
J1316-48	Main Plant	1,895.00	4.78	123.2	2,179.81	8.8	122	2,176.88	14.51	117.3	2,166.23
J1316-49	Main Plant	1,893.00	2.53	124.1	2,179.85	4.65	122.8	2,176.94	7.68	118.2	2,166.16
J1316-50	Main Plant	1,855.00	5.65	140.6	2,179.89	10.4	139.3	2,177.07	17.16	134.7	2,166.25
J1316-51	Main Plant	1,862.00	1.26	137.5	2,179.85	2.32	136.3	2,176.95	3.82	131.6	2,166.23
J1316-52	Main Plant	1,885.00	0	127.6	2,179.85	0	126.3	2,176.95	0	121.7	2,166.21
J1316-53	Main Plant	1,900.00	0.29	121.1	2,179.85	0.53	119.8	2,176.94	0.88	115.2	2,166.16
J1316-54	Main Plant	1,843.00	1.45	145.7	2,179.85	2.67	144.5	2,176.94	4.41	139.8	2,166.16
J1316-55	Main Plant	1,825.00	0	153.5	2,179.85	0	152.3	2,176.94	0	147.6	2,166.13
J1316-56	Main Plant	1,825.00	2.6	153.5	2,179.85	4.79	152.3	2,176.94	7.9	147.6	2,166.13
J1316-57	Main Plant	1,827.00	5.22	152.7	2,179.85	9.6	151.4	2,176.94	15.84	146.7	2,166.13
J1316-58	Main Plant	1,855.00	0	140.6	2,179.92	0	139.3	2,177.08	0	134.6	2,166.13
J1316-59	Main Plant	1,819.00	2.31	156.4	2,180.47	4.25	155.5	2,178.49	7.02	150.2	2,166.23
J1316-60	Main Plant	1,820.00	1.36	155.9	2,180.39	2.49	155	2,178.28	4.12	149.8	2,166.29
J1316-61	Main Plant	1,819.00	3.63	156.4	2,180.39	6.68	155.4	2,178.27	11.02	150.3	2,166.28
J1316-62	Main Plant	1,881.00	2.02	129.5	2,180.21	3.72	128.4	2,177.77	6.14	123.4	2,166.24
J1316-70	Main Plant	1,856.00	0	140.3	2,180.22	0	139.3	2,178.04	0	134.3	2,166.42

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1316-71	Main Plant	1,847.00	0	144	2,179.78	0	142.8	2,177.04	0	138.3	2,166.58
J1317-01	Main Plant	1,994.00	5.3	79.9	2,178.76	9.75	78.4	2,175.20	16.09	75.9	2,169.42
J1317-02	Main Plant	1,995.00	0	79.5	2,178.72	0	78	2,175.17	0	75.6	2,169.73
J1317-03	Main Plant	1,995.00	0.69	79.5	2,178.72	1.27	78	2,175.17	2.09	75.6	2,169.73
J1317-04	Main Plant	1,987.00	0.46	82.9	2,178.70	0.85	81.4	2,175.15	1.4	79.1	2,169.89
J1317-05	Main Plant	1,980.00	0.68	86	2,178.76	1.25	84.4	2,175.18	2.06	81.8	2,169.05
J1317-06	Main Plant	1,986.00	2.74	83.4	2,178.76	5.03	81.9	2,175.20	8.3	79.2	2,169.09
J1317-07	Main Plant	1,994.00	3.62	79.9	2,178.69	6.66	78.4	2,175.14	10.99	76	2,169.73
J1317-08	Main Plant	1,980.00	0.93	86	2,178.70	1.71	84.4	2,175.15	2.83	82.1	2,169.77
J1317-09	Main Plant	1,984.00	0	84.3	2,178.84	0	82.8	2,175.30	0	79.6	2,167.92
J1317-10	Main Plant	1,965.00	56.92	92.5	2,178.80	104.74	90.9	2,175.21	172.82	87.8	2,167.87
J1317-100	Main Plant	1,982.00	0	85.1	2,178.76	0	83.6	2,175.20	0	80.9	2,169.07
J1317-11	Main Plant	1,972.00	2.32	89.5	2,178.89	4.28	88	2,175.37	7.06	84.6	2,167.59
J1317-12	Main Plant	1,940.00	10.3	103.4	2,178.89	18.95	101.8	2,175.37	31.27	98.5	2,167.59
J1317-13	Main Plant	1,946.00	2.24	100.8	2,178.89	4.12	99.2	2,175.37	6.8	95.9	2,167.59
J1317-14	Main Plant	1,967.00	1.32	92.3	2,180.30	2.43	91.5	2,178.40	4.01	86.4	2,166.76
J1317-15	Main Plant	1,890.00	6.27	125.1	2,179.20	11.54	123.7	2,176.00	19.03	120	2,167.44
J1317-16	Main Plant	1,886.00	1.96	126.9	2,179.25	3.61	125.5	2,176.09	5.95	121.8	2,167.40
J1317-17	Main Plant	1,978.00	0	87.8	2,180.91	0	87.3	2,179.75	0	81.6	2,166.51
J1317-18	Main Plant	1,970.00	0	91.2	2,180.91	0	90.8	2,179.75	0	85	2,166.51
J1317-19	Main Plant	2,011.00	2.12	73.3	2,180.40	3.9	72.5	2,178.54	6.43	67.3	2,166.56
J1317-20	Main Plant	2,011.00	1.23	73.3	2,180.40	2.27	72.5	2,178.53	3.75	67.3	2,166.56
J1317-21	Main Plant	1,994.00	2.15	80.6	2,180.39	3.96	79.8	2,178.52	6.54	74.6	2,166.51
J1317-22	Main Plant	1,961.00	1.84	94.8	2,180.21	3.39	93.9	2,177.98	5.59	88.5	2,165.53
J1317-23	Main Plant	1,990.00	1.23	82.3	2,180.24	2.27	81.4	2,178.08	3.75	76	2,165.78
J1317-24	Main Plant	1,980.00	0.8	86.7	2,180.34	1.47	85.8	2,178.39	2.43	80.7	2,166.56
J1317-25	Main Plant	1,964.00	0	93.6	2,180.27	0	92.7	2,178.21	0	87.6	2,166.56
J1317-26	Main Plant	1,965.00	4.02	93.1	2,180.27	7.39	92.2	2,178.21	12.2	87.2	2,166.56
J1317-27	Main Plant	1,964.00	0	93.6	2,180.27	0	92.7	2,178.22	0	87.6	2,166.55
J1317-28	Main Plant	1,929.00	8.01	108.7	2,180.30	14.74	107.8	2,178.27	24.33	102.8	2,166.52
J1317-29	Main Plant	1,951.00	1.62	98.5	2,178.63	2.98	97	2,175.12	4.92	95	2,170.47
J1317-30	Main Plant	1,938.00	1.16	104.1	2,178.61	2.14	102.6	2,175.11	3.53	100.7	2,170.72
J1317-31	Main Plant	1,910.00	1.16	116.2	2,178.57	2.14	114.7	2,175.09	3.53	113.1	2,171.46
J1317-32	Main Plant	1,912.00	2.08	115.3	2,178.58	3.83	113.8	2,175.09	6.32	112.2	2,171.32
J1317-33	Main Plant	1,925.00	0	109.7	2,178.64	0	108.2	2,175.18	0	106.4	2,170.98
J1317-34	Main Plant	1,883.00	2.9	127.9	2,178.64	5.34	126.4	2,175.18	8.82	124.6	2,170.98
J1317-35	Main Plant	1,993.00	6.1	80.6	2,179.29	11.22	79.2	2,176.16	18.52	75.4	2,167.38
J1317-36	Main Plant	1,949.00	0	99.6	2,179.29	0	98.3	2,176.16	0	94.5	2,167.38
J1317-37	Main Plant	1,939.00	0.57	104	2,179.29	1.05	102.6	2,176.16	1.73	98.8	2,167.38
J1317-38	Main Plant	1,882.00	0	128.6	2,179.29	0	127.3	2,176.16	0	123.5	2,167.38
J1317-39	Main Plant	1,882.00	0	128.6	2,179.29	0	127.3	2,176.16	0	123.5	2,167.38
J1317-40	Main Plant	1,883.84	2.92	127.8	2,179.29	5.37	126.5	2,176.16	8.86	122.7	2,167.38
J1317-41	Main Plant	1,874.00	2.6	132.1	2,179.39	4.79	130.8	2,176.36	7.9	126.9	2,167.37
J1317-42	Main Plant	1,874.00	5.33	131.8	2,178.72	9.8	130.4	2,175.28	16.17	128.3	2,170.58
J1317-43	Main Plant	1,871.00	4.68	133.4	2,179.33	8.62	132.1	2,176.23	14.22	128.3	2,167.52
J1317-44	Main Plant	1,979.00	1.85	87.1	2,180.27	3.41	86.2	2,178.21	5.62	81.1	2,166.53
J1317-45	Main Plant	1,978.00	0	87.5	2,180.27	0	86.6	2,178.22	0	81.6	2,166.55
J1317-46	Main Plant	1,983.00	1.59	85.4	2,180.27	2.92	84.5	2,178.22	4.81	79.4	2,166.55
J1317-47	Main Plant	1,977.00	1.05	87.9	2,180.27	1.94	87.1	2,178.22	3.2	82	2,166.55
J1317-48	Main Plant	1,982.00	1.32	85.8	2,180.27	2.43	84.9	2,178.22	4.01	79.8	2,166.55
J1317-49	Main Plant	1,873.00	0	132.4	2,179.13	0	131	2,175.82	0	127.9	2,168.54
J1317-50	Main Plant	1,872.00	0.77	132.9	2,179.14	1.43	131.5	2,175.84	2.35	128.3	2,168.49
J1317-51	Main Plant	1,867.00	8.4	135.1	2,179.32	15.46	133.8	2,176.20	25.5	130	2,167.52
J1317-52	Main Plant	1,861.00	6.66	137.7	2,179.33	12.25	136.4	2,176.21	20.21	132.6	2,167.40
J1317-53	Main Plant	1,861.00	0.34	137.7	2,179.33	0.63	136.4	2,176.21	1.04	132.6	2,167.39
J1317-54	Main Plant	1,860.00	5.6	138.2	2,179.35	10.31	136.8	2,176.24	17.01	133	2,167.31
J1317-55	Main Plant	1,856.00	8.76	140	2,179.50	16.12	138.7	2,176.51	26.6	134.5	2,166.94
J1317-56	Main Plant	1,870.00	3.93	133.9	2,179.60	7.24	132.7	2,176.71	11.94	128.4	2,166.75
J1318-01	Main Plant	1,958.00	1.39	95.4	2,178.43	2.56	93.9	2,175.03	4.23	93	2,172.88
J1318-05	Main Plant	1,975.00	0	88	2,178.43	0	86.5	2,175.04	0	85.7	2,173.03
J1318-06	Main Plant	1,937.00	3.7	104.5	2,178.43	6.81	103	2,175.03	11.24	102.1	2,172.88
J1318-07	Main Plant	1,903.00	1.39	119.2	2,178.43	2.56	117.7	2,175.04	4.23	116.8	2,172.90

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1318-08	Main Plant	1,918.00	1.85	112.8	2,178.62	3.41	111.2	2,175.11	5.62	109.3	2,170.58
J1318-09	Main Plant	1,987.00	5.1	82.9	2,178.62	9.38	81.4	2,175.11	15.47	79.4	2,170.58
J1318-10	Main Plant	1,987.00	0	82.9	2,178.62	0	81.4	2,175.11	0	79.4	2,170.59
J1318-101	Eskaton	2,030.00	0	137.4	2,347.57	0	137.3	2,347.23	0	135.1	2,342.23
J1318-102	Eskaton	2,176.00	2.86	74.2	2,347.57	6.29	74.2	2,347.55	10.38	74.1	2,347.35
J1318-103	Eskaton	2,223.00	1.04	53.9	2,347.57	2.29	53.8	2,347.45	3.78	53.3	2,346.16
J1318-104	Eskaton	2,176.00	1.04	74.2	2,347.57	2.29	74.2	2,347.46	3.78	73.7	2,346.26
J1318-105	Eskaton	2,177.50	1.04	73.6	2,347.57	2.29	73.5	2,347.46	3.78	73.1	2,346.38
J1318-106	Eskaton	2,147.00	4.7	86.8	2,347.57	10.34	86.7	2,347.49	17.06	86.4	2,346.79
J1318-107	Eskaton	2,185.00	0	70.3	2,347.57	0	70.3	2,347.49	0	70	2,346.79
J1318-108	Eskaton	2,175.00	2.6	74.7	2,347.57	5.72	74.6	2,347.49	9.44	74.3	2,346.79
J1318-109	Eskaton	2,138.00	3.12	90.7	2,347.57	6.86	90.6	2,347.49	11.33	90.3	2,346.80
J1318-11	Main Plant	1,987.00	0	82.9	2,178.63	0	81.4	2,175.12	0	79.4	2,170.50
J1318-110	Eskaton	2,162.00	3.38	80.3	2,347.57	7.44	80.2	2,347.45	12.27	79.7	2,346.16
J1318-111	Eskaton	2,155.00	2.6	83.3	2,347.57	5.72	83.3	2,347.43	9.44	82.6	2,345.85
J1318-112	Eskaton	2,143.00	2.6	88.5	2,347.57	5.72	88.5	2,347.44	9.44	87.8	2,346.01
J1318-113	Eskaton	2,255.00	2.6	40	2,347.57	5.72	40	2,347.45	9.44	39.4	2,346.16
J1318-114	Eskaton	2,188.00	0	69	2,347.57	0	69	2,347.46	0	68.5	2,346.26
J1318-115	Eskaton	2,176.00	0	74.2	2,347.57	0	74.2	2,347.46	0	73.7	2,346.38
J1318-116	Eskaton	2,145.00	2.86	87.6	2,347.57	6.29	87.6	2,347.49	10.38	87.3	2,346.80
J1318-117	Eskaton	2,180.00	2.08	72.5	2,347.57	4.58	72.5	2,347.55	7.55	72.4	2,347.35
J1318-118	Eskaton	2,224.00	0	53.5	2,347.57	0	53.4	2,347.52	0	53.2	2,346.93
J1318-119	Sierra Plant	2,284.00	0	118.3	2,557.40	0	116.7	2,553.81	0	105.3	2,527.39
J1318-120	Eskaton	2,195.00	0	66	2,347.57	0	66	2,347.49	0	65.7	2,346.79
J1319-01	Sierra Plant	2,425.00	0	57.4	2,557.57	0	56.3	2,555.12	0	49.2	2,538.75
J1319-02	Sierra Plant	2,423.00	5.59	58.2	2,557.56	12.3	57.1	2,555.09	20.3	49.9	2,538.37
J1319-03	Main Plant	1,985.00	1.21	83.6	2,178.31	2.23	82.1	2,174.86	3.67	81.7	2,173.89
J1319-100	Sierra Plant	2,145.00	105	178.4	2,557.37	231	176.9	2,553.76	381.15	165.6	2,527.71
J1320-01	Sierra Plant	2,470.00	0	38	2,557.72	0	37.3	2,556.12	0	32.6	2,545.30
J1320-02	EID PRV#3S	2,485.00	3.03	56.5	2,615.69	6.66	56.4	2,615.25	10.98	55.4	2,613.14
J1415-01	Main Plant	1,885.00	2.21	127.5	2,179.78	4.08	126.2	2,176.59	6.72	121.7	2,166.36
J1415-02	Main Plant	1,930.00	1.16	108.2	2,180.11	2.14	107.1	2,177.52	3.53	102.2	2,166.20
J1415-03	Main Plant	1,930.00	0	108.2	2,180.12	0	107.1	2,177.53	0	102.2	2,166.25
J1415-04	Main Plant	1,930.00	7.31	108.2	2,180.12	13.45	107.1	2,177.53	22.19	102.2	2,166.25
J1415-05	Main Plant	1,921.00	0	112.1	2,180.07	0	110.9	2,177.41	0	106.1	2,166.24
J1415-06	Main Plant	1,923.00	17.19	111.2	2,180.04	31.62	110	2,177.32	52.18	105.2	2,166.24
J1415-07	Main Plant	1,944.00	0	102.1	2,180.04	0	100.9	2,177.32	0	96.2	2,166.24
J1415-08	Main Plant	1,930.00	0	108.1	2,179.93	0	106.9	2,177.01	0	102.2	2,166.23
J1415-09	Main Plant	1,931.00	1.2	107.7	2,179.93	2.2	106.4	2,177.03	3.64	101.8	2,166.23
J1415-10	Main Plant	1,929.00	0	108.6	2,179.98	0	107.4	2,177.15	0	102.6	2,166.24
J1415-100	Main Plant	2,017.00	0	70.5	2,179.89	0	69.2	2,176.89	0	64.5	2,166.16
J1415-101	Main Plant	1,942.00	0	102.9	2,179.93	0	101.7	2,177.02	0	97	2,166.27
J1415-102	Main Plant	1,941.00	0	103.4	2,179.93	0	102.1	2,177.02	0	97.5	2,166.27
J1415-103	Main Plant	1,898.00	0	122.1	2,180.21	0	121	2,177.78	0	116.1	2,166.26
J1415-104	Main Plant	1,897.00	0	122.5	2,180.21	0	121.5	2,177.78	0	116.5	2,166.26
J1415-11	Main Plant	1,963.00	0	93.8	2,179.85	0	92.5	2,176.77	0	88	2,166.32
J1415-12	Main Plant	1,895.00	4.13	123.2	2,179.78	7.59	121.8	2,176.59	12.53	117.4	2,166.36
J1415-13	Main Plant	1,929.00	0	108.5	2,179.79	0	107.1	2,176.60	0	102.7	2,166.36
J1415-14	Main Plant	1,945.00	3.94	101.6	2,179.79	7.24	100.2	2,176.61	11.95	95.8	2,166.39
J1415-15	Main Plant	1,952.00	0	98.6	2,179.80	0	97.2	2,176.63	0	92.8	2,166.45
J1415-16	Main Plant	1,948.00	0	100.3	2,179.79	0	98.9	2,176.62	0	94.5	2,166.51
J1415-17	Main Plant	2,007.00	1.16	74.6	2,179.53	2.14	73.1	2,175.96	3.53	72.1	2,173.70
J1415-18	Main Plant	2,005.00	0	75.7	2,179.89	0	74.4	2,176.89	0	69.7	2,166.16
J1415-19	Main Plant	2,010.00	2.44	73.5	2,179.89	4.48	72.2	2,176.89	7.4	67.6	2,166.15
J1415-20	Main Plant	2,011.00	1.58	73.1	2,179.89	2.9	71.8	2,176.89	4.79	67.1	2,166.15
J1415-21	Main Plant	2,005.00	0.63	75.7	2,179.89	1.16	74.4	2,176.89	1.92	69.7	2,166.16
J1415-22	Main Plant	2,010.00	0	73.5	2,179.89	0	72.2	2,176.89	0	67.6	2,166.16
J1415-23	Main Plant	1,978.00	6.57	87.3	2,179.89	12.09	86.1	2,176.89	19.95	81.4	2,166.16
J1415-24	Main Plant	1,990.00	2.82	82.2	2,179.89	5.19	80.9	2,176.89	8.57	76.2	2,166.15
J1415-25	Main Plant	1,971.00	0	90.4	2,179.89	0	89.1	2,176.89	0	84.4	2,166.17
J1415-26	Main Plant	1,986.00	0	83.9	2,179.85	0	82.5	2,176.77	0	78	2,166.17
J1415-27	Main Plant	1,984.00	22.36	84.7	2,179.85	41.14	83.4	2,176.77	67.88	78.8	2,166.17

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1415-28	Main Plant	1,923.00	14.64	108.8	2,174.41	26.95	102.5	2,159.96	44.46	87.1	2,124.32
J1415-29	Main Plant	1,917.00	1.45	113.7	2,179.74	2.68	112.3	2,176.48	4.41	108.2	2,167.15
J1415-30	Main Plant	1,938.00	6.95	104.5	2,179.59	12.79	103	2,176.11	21.1	100.8	2,171.07
J1415-31	Main Plant	1,942.00	0	102.8	2,179.63	0	101.3	2,176.20	0	98.6	2,170.00
J1415-32	Main Plant	1,909.00	2.31	117.1	2,179.72	4.26	115.7	2,176.43	7.02	111.8	2,167.42
J1415-33	Main Plant	1,905.00	0	118.9	2,179.72	0	117.4	2,176.43	0	113.5	2,167.41
J1415-34	Main Plant	1,901.00	1.75	120.6	2,179.72	3.21	119.2	2,176.43	5.3	115.3	2,167.41
J1415-35	Main Plant	1,880.00	0	129.7	2,179.72	0	128.3	2,176.43	0	124.3	2,167.41
J1415-36	Main Plant	1,882.00	0	128.8	2,179.72	0	127.4	2,176.43	0	123.5	2,167.41
J1415-37	Main Plant	1,934.00	2.02	106.3	2,179.72	3.72	104.9	2,176.43	6.13	101	2,167.41
J1415-38	Main Plant	1,850.00	3.73	142.7	2,179.72	6.86	141.2	2,176.42	11.32	137.3	2,167.39
J1415-39	Main Plant	1,854.00	1.45	140.9	2,179.72	2.68	139.5	2,176.43	4.41	135.6	2,167.40
J1415-39a	Combellack	1,859.00	0	175.4	2,264.32	0	167.5	2,246.20	0	140	2,182.56
J1415-40	Main Plant	2,006.00	0	75.2	2,179.89	0	73.9	2,176.89	0	69.3	2,166.16
J1416-01	Main Plant	1,924.00	0	110.6	2,179.53	0	109.1	2,176.06	0	104.8	2,166.21
J1416-02	Main Plant	1,930.00	2.4	108	2,179.53	4.41	106.5	2,176.06	7.28	102.2	2,166.20
J1416-03	Main Plant	1,898.00	2.08	121.7	2,179.25	3.83	120.3	2,176.00	6.32	116.6	2,167.60
J1416-04	Main Plant	1,872.00	1.04	132.9	2,179.25	1.92	131.5	2,176.00	3.16	127.9	2,167.60
J1416-05	Main Plant	1,960.00	0.69	95	2,179.51	1.27	93.5	2,176.10	2.09	89.2	2,166.11
J1416-06	Main Plant	1,980.00	2.08	86.3	2,179.51	3.83	84.9	2,176.12	6.32	80.5	2,166.16
J1416-07	Main Plant	1,974.00	3.99	88.9	2,179.51	7.35	87.4	2,176.11	12.13	83.1	2,166.16
J1416-08	Main Plant	1,944.00	1.59	101.9	2,179.50	2.92	100.4	2,176.10	4.81	96.2	2,166.26
J1416-09	Main Plant	1,960.00	1.59	95	2,179.50	2.92	93.5	2,176.11	4.81	89.2	2,166.29
J1416-10	Main Plant	1,957.00	3.74	96.3	2,179.50	6.88	94.8	2,176.11	11.35	90.6	2,166.31
J1416-11	Main Plant	1,937.00	1.66	104.9	2,179.53	3.05	103.5	2,176.15	5.03	99.2	2,166.27
J1416-12	Main Plant	1,916.00	5.01	114	2,179.56	9.22	112.6	2,176.19	15.21	108.3	2,166.23
J1416-13	Main Plant	1,905.00	2.65	118.8	2,179.58	4.88	117.4	2,176.27	8.05	113	2,166.23
J1416-14	Main Plant	1,952.00	2.54	98.4	2,179.50	4.68	96.9	2,176.06	7.72	92.6	2,165.96
J1416-15	Main Plant	1,942.00	0.69	102.7	2,179.40	1.27	101.1	2,175.76	2.09	96.6	2,165.20
J1416-16	Main Plant	1,945.00	2.12	101.5	2,179.53	3.9	100	2,176.06	6.43	95.7	2,166.20
J1416-17	Main Plant	1,982.00	3.62	85.5	2,179.53	6.66	84	2,176.06	10.99	79.7	2,166.18
J1416-18	Main Plant	1,952.00	1.85	98.4	2,179.53	3.41	96.9	2,176.05	5.62	92.7	2,166.18
J1416-19	Main Plant	1,896.00	1.44	122.8	2,179.72	2.65	121.4	2,176.57	4.37	116.8	2,166.01
J1416-20	Main Plant	1,873.00	0	132.7	2,179.75	0	131.4	2,176.66	0	126.9	2,166.23
J1416-21	Main Plant	1,872.00	1.26	133.2	2,179.76	2.32	131.8	2,176.69	3.82	127.3	2,166.23
J1416-22	Main Plant	1,873.00	1.25	132.7	2,179.75	2.29	131.4	2,176.67	3.78	126.9	2,166.23
J1416-23	Main Plant	1,888.00	4.33	126.2	2,179.74	7.97	124.9	2,176.62	13.16	120.4	2,166.23
J1416-24	Main Plant	1,886.00	21.88	127.1	2,179.73	40.26	125.7	2,176.55	66.44	121.2	2,166.24
J1416-25	Main Plant	1,886.00	0	127.1	2,179.73	0	125.7	2,176.55	0	121.3	2,166.25
J1416-26	Main Plant	1,899.00	1.74	121.6	2,179.94	3.21	120.3	2,177.07	5.29	115.4	2,165.81
J1416-27	Main Plant	1,899.00	4.35	121.6	2,179.98	8	120.4	2,177.20	13.19	115.6	2,166.13
J1416-28	Main Plant	1,913.00	0	115.4	2,179.80	0	114.1	2,176.72	0	109.6	2,166.24
J1416-29	Main Plant	1,908.00	5.56	117.6	2,179.85	10.22	116.3	2,176.83	16.87	111.7	2,166.23
J1416-30	Main Plant	1,910.00	0	116.8	2,179.87	0	115.5	2,176.87	0	110.9	2,166.23
J1416-31	Main Plant	1,925.00	0	110.1	2,179.53	0	108.6	2,176.06	0	104.4	2,166.21
J1416-32	Main Plant	1,956.00	0	96.7	2,179.53	0	95.2	2,176.04	0	90.9	2,166.21
J1416-33	Main Plant	1,930.00	0	108	2,179.53	0	106.4	2,176.04	0	102.2	2,166.21
J1416-34	Main Plant	1,956.00	0	96.7	2,179.53	0	95.2	2,176.03	0	90.9	2,166.21
J1416-35	Main Plant	1,930.00	1.85	108	2,179.53	3.41	106.4	2,176.03	5.62	102.2	2,166.21
J1416-36	Main Plant	1,898.00	0	121.9	2,179.67	0	120.4	2,176.37	0	116.1	2,166.41
J1416-37	Main Plant	1,984.00	2.12	84.6	2,179.52	3.9	83.1	2,175.98	6.43	78.8	2,166.22
J1416-38	Main Plant	2,000.00	4.53	77.6	2,179.28	8.33	75.8	2,175.22	13.74	71.1	2,164.34
J1416-39	Main Plant	1,963.00	0	93.7	2,179.52	0	92.1	2,175.98	0	87.9	2,166.24
J1416-40	Main Plant	1,946.00	2.13	101	2,179.52	3.92	99.5	2,175.98	6.47	95.3	2,166.25
J1416-41	Main Plant	1,941.00	7.12	103.2	2,179.52	13.09	101.7	2,175.98	21.61	97.4	2,166.22
J1416-42	Main Plant	1,966.00	3.79	92.5	2,179.85	6.97	91.2	2,176.82	11.5	86.6	2,166.22
J1416-43	Main Plant	1,931.00	1.59	107.5	2,179.55	2.92	106	2,176.03	4.81	102	2,166.66
J1416-44	Main Plant	1,911.00	0	116.2	2,179.56	0	114.7	2,176.06	0	110.6	2,166.71
J1416-45	Main Plant	1,910.00	8.86	116.6	2,179.57	16.3	115.1	2,176.09	26.9	111	2,166.65
J1416-46	Main Plant	1,910.00	0	116.6	2,179.57	0	115.1	2,176.09	0	111	2,166.65
J1416-47	Main Plant	1,922.00	0.63	111.4	2,179.57	1.16	109.9	2,176.09	1.91	105.9	2,166.65
J1416-48	Main Plant	1,996.00	0	79.4	2,179.52	0	77.9	2,175.98	0	73.6	2,166.22

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1417-01	Main Plant	1,895.00	0.87	122.7	2,178.53	1.6	121.2	2,175.07	2.65	120.1	2,172.57
J1417-02	Main Plant	1,896.00	7.58	122.2	2,178.49	13.94	120.7	2,175.06	23	119.6	2,172.38
J1417-03	Main Plant	1,895.00	0	122.7	2,178.53	0	121.2	2,175.07	0	119.9	2,172.06
J1417-04	Main Plant	1,895.00	3.98	122.7	2,178.53	7.33	121.2	2,175.07	12.09	119.8	2,171.97
J1417-05	Main Plant	1,887.00	4.66	126.2	2,178.59	8.57	124.7	2,175.13	14.15	123	2,171.29
J1417-06	Main Plant	1,885.00	0	127	2,178.62	0	125.5	2,175.16	0	123.8	2,171.14
J1417-07	Main Plant	1,885.00	0	127	2,178.63	0	125.5	2,175.16	0	123.8	2,171.13
J1417-08	Main Plant	1,892.00	0.41	124	2,178.63	0.76	122.5	2,175.17	1.25	120.8	2,171.11
J1417-09	Main Plant	1,903.00	1.16	119.2	2,178.57	2.14	117.7	2,175.08	3.53	117	2,173.43
J1417-10	Main Plant	1,898.00	0	121.4	2,178.57	0	119.9	2,175.08	0	118.9	2,172.85
J1417-11	Main Plant	1,937.00	1.39	104.5	2,178.58	2.56	103	2,175.04	4.23	102	2,172.72
J1417-12	Main Plant	1,912.00	0	115.3	2,178.60	0	113.8	2,175.09	0	112.9	2,172.84
J1417-13	Main Plant	1,908.00	1.3	117.1	2,178.59	2.38	115.6	2,175.09	3.93	114.5	2,172.69
J1417-14	Main Plant	1,908.00	0	117.1	2,178.59	0	115.6	2,175.09	0	114.5	2,172.68
J1417-15	Main Plant	1,920.00	0	111.9	2,178.60	0	110.4	2,175.09	0	109.2	2,172.36
J1417-16	Main Plant	1,919.00	1.56	112.3	2,178.60	2.87	110.8	2,175.09	4.74	109.6	2,172.37
J1417-17	Main Plant	1,895.00	0.21	122.7	2,178.65	0.38	121.2	2,175.19	0.62	119.4	2,171.07
J1417-18	Main Plant	1,887.00	1.71	126.2	2,178.66	3.14	124.7	2,175.19	5.18	122.9	2,171.06
J1417-19	Main Plant	1,965.00	2.31	92.4	2,178.51	4.25	90.8	2,174.81	7.02	89.4	2,171.66
J1417-20	Main Plant	1,988.00	1.56	82.5	2,178.57	2.87	80.9	2,174.99	4.74	79.4	2,171.61
J1417-21	Main Plant	1,945.00	0	101.1	2,178.61	0	99.6	2,175.11	0	98.2	2,171.90
J1417-22	Main Plant	1,942.00	2.6	102.4	2,178.61	4.79	100.9	2,175.11	7.9	99.5	2,171.90
J1417-23	Main Plant	1,949.00	1.04	99.3	2,178.59	1.92	97.8	2,175.05	3.16	96.3	2,171.48
J1417-24	Main Plant	1,927.00	0	108.9	2,178.62	0	107.4	2,175.13	0	105.9	2,171.68
J1417-25	Main Plant	1,926.00	1.04	109.3	2,178.62	1.92	107.8	2,175.13	3.16	106.3	2,171.68
J1417-26	Main Plant	1,906.00	1.04	118.2	2,179.14	1.92	116.7	2,175.84	3.16	113.6	2,168.48
J1417-27	Main Plant	1,921.00	0	111.7	2,179.10	0	110.2	2,175.77	0	107.2	2,168.70
J1417-28	Main Plant	1,887.00	1.48	126.4	2,179.05	2.72	124.9	2,175.67	4.48	122	2,169.01
J1417-29	Main Plant	1,888.00	0	125.9	2,179.05	0	124.5	2,175.67	0	121.6	2,169.04
J1417-30	Main Plant	1,921.00	1.04	111.6	2,179.03	1.92	110.2	2,175.61	3.16	107.3	2,169.08
J1417-31	Main Plant	1,895.00	2.08	122.9	2,179.04	3.83	121.4	2,175.64	6.32	118.6	2,169.16
J1417-32	Main Plant	1,923.00	3.12	110.7	2,178.95	5.75	109.3	2,175.52	9.48	107	2,170.40
J1417-33	Main Plant	1,876.00	0.52	131.1	2,179.11	0.96	129.7	2,175.78	1.58	126.6	2,168.68
J1417-34	Main Plant	1,944.00	1.3	101.7	2,179.05	2.38	100.2	2,175.66	3.93	97.4	2,169.06
J1417-35	Main Plant	1,959.00	0	95.2	2,179.05	0	93.7	2,175.66	0	90.9	2,169.05
J1417-36	Main Plant	1,951.00	2.08	98.7	2,179.05	3.83	97.2	2,175.66	6.32	94.3	2,169.05
J1417-37	Main Plant	1,946.00	0	100.8	2,179.05	0	99.4	2,175.66	0	96.5	2,169.05
J1417-38	Main Plant	1,932.00	0.52	106.9	2,179.05	0.96	105.4	2,175.66	1.58	102.6	2,169.05
J1417-39	Main Plant	1,956.00	0.77	96.5	2,179.05	1.43	95	2,175.66	2.35	92.2	2,169.05
J1417-40	Main Plant	1,935.00	0	105.6	2,179.05	0	104.1	2,175.66	0	101.3	2,169.05
J1417-41	Main Plant	1,924.00	1.3	110.3	2,179.05	2.38	108.9	2,175.66	3.93	106	2,169.05
J1417-42	Main Plant	1,915.00	0	114.2	2,179.05	0	112.8	2,175.66	0	109.9	2,169.05
J1417-43	Main Plant	1,948.00	0.77	99.9	2,179.00	1.43	98.5	2,175.58	2.35	95.9	2,169.69
J1417-44	Main Plant	1,940.00	0	103.4	2,179.02	0	101.9	2,175.62	0	99.2	2,169.36
J1417-45	Main Plant	1,934.00	1.3	106	2,179.05	2.38	104.6	2,175.66	3.93	101.7	2,169.06
J1417-46	Main Plant	1,890.00	0	125.1	2,179.16	0	123.7	2,175.82	0	120.4	2,168.18
J1417-47	Main Plant	1,887.00	3.38	126.4	2,179.17	6.21	125	2,175.83	10.25	121.6	2,168.10
J1417-48	Main Plant	1,865.00	2.12	136	2,179.25	3.9	134.6	2,176.01	6.43	130.9	2,167.61
J1417-49	Main Plant	1,907.00	1.04	117.8	2,179.24	1.92	116.4	2,175.97	3.16	112.7	2,167.49
J1417-50	Main Plant	1,864.00	0.54	136.4	2,179.25	1	135	2,176.01	1.65	131.3	2,167.59
J1417-51	Main Plant	1,987.00	1.39	82.9	2,178.60	2.56	81.4	2,175.09	4.23	80.9	2,173.99
J1417-52	Main Plant	1,975.00	2.55	88.1	2,178.60	4.7	86.6	2,175.09	7.75	86.1	2,173.99
J1417-53	Main Plant	1,913.00	0	114.9	2,178.59	0	113.4	2,175.09	0	112.9	2,173.94
J1417-54	Main Plant	1,916.00	0	113.6	2,178.59	0	112.1	2,175.09	0	111.6	2,173.94
J1417-55	Main Plant	1,917.00	0	113.2	2,178.59	0	111.7	2,175.09	0	111.2	2,173.95
J1417-56	Main Plant	1,945.00	1.16	101.1	2,178.60	2.14	99.6	2,175.09	3.53	99.1	2,173.98
J1417-57	Main Plant	1,938.00	0	104.1	2,178.60	0	102.6	2,175.09	0	102.1	2,173.98
J1417-58	Main Plant	1,944.00	1.86	101.5	2,178.60	3.43	100	2,175.09	5.66	99.5	2,173.98
J1417-59	Main Plant	2,001.00	1.16	76.8	2,178.62	2.14	75.3	2,175.11	3.53	74.9	2,174.08
J1417-60	Main Plant	2,000.00	1.86	77.3	2,178.62	3.43	75.8	2,175.11	5.66	75.3	2,174.09
J1417-61	Main Plant	2,009.30	1.63	73.3	2,178.64	3.01	71.7	2,175.12	4.96	71.3	2,174.15
J1417-62	Main Plant	1,973.00	5.94	89	2,178.61	10.93	87.4	2,175.09	18.04	86.7	2,173.30

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1417-63	Main Plant	2,004.00	4.68	75.7	2,179.03	8.62	74.3	2,175.63	14.22	71.4	2,169.12
J1417-64	Main Plant	2,032.00	0	63.4	2,178.63	0	61.9	2,175.12	0	61.4	2,174.00
J1417-65	Main Plant	2,023.00	2.4	67.4	2,178.74	4.41	65.9	2,175.24	7.28	65.4	2,174.11
J1417-66	Main Plant	2,006.00	3.35	74.7	2,178.76	6.17	73.2	2,175.26	10.18	72.6	2,173.71
J1417-67	Main Plant	1,980.00	2.4	86	2,178.76	4.41	84.5	2,175.25	7.28	83.8	2,173.78
J1417-68	Main Plant	2,007.00	2.4	74.3	2,178.76	4.41	72.8	2,175.25	7.28	72.2	2,173.78
J1417-69	Main Plant	2,005.00	0	75.2	2,178.77	0	73.7	2,175.26	0	73	2,173.65
J1417-70	Main Plant	1,996.00	0	79.1	2,178.81	0	77.6	2,175.31	0	76.6	2,172.98
J1417-71	Main Plant	2,001.00	0	77	2,179.00	0	75.5	2,175.58	0	73	2,169.68
J1417-72	Main Plant	1,997.00	0	78.7	2,179.00	0	77.3	2,175.58	0	74.7	2,169.68
J1417-73	Main Plant	2,001.00	1.56	77	2,179.00	2.87	75.5	2,175.58	4.74	73	2,169.67
J1417-74	Main Plant	1,999.00	0	77.9	2,179.00	0	76.4	2,175.58	0	73.8	2,169.67
J1417-75	Main Plant	1,988.00	1.04	82.6	2,178.99	1.92	81.1	2,175.56	3.16	78.6	2,169.64
J1417-76	Main Plant	1,922.00	1.86	111.3	2,179.28	3.43	109.8	2,175.85	5.66	106.1	2,167.34
J1417-77	Main Plant	1,925.00	1.3	110	2,179.14	2.38	108.3	2,175.40	3.93	104.3	2,166.14
J1417-78	Main Plant	1,920.00	0	112.2	2,179.28	0	110.7	2,175.86	0	107	2,167.29
J1417-79	Main Plant	1,908.00	2.82	117.4	2,179.29	5.19	115.9	2,175.87	8.56	112.1	2,167.19
J1417-80	Main Plant	1,920.00	2.86	112.2	2,179.30	5.26	110.7	2,175.88	8.67	106.9	2,167.18
J1417-81	Main Plant	1,925.00	0	110.1	2,179.37	0	108.6	2,175.96	0	104.6	2,166.86
J1417-82	Main Plant	1,945.00	0	101.3	2,179.04	0	99.8	2,175.64	0	97	2,169.14
J1418-01	Main Plant	1,953.00	0	97.5	2,178.36	0	96.1	2,175.02	0	95.8	2,174.38
J1418-02	Main Plant	1,950.00	0	98.8	2,178.34	0	97.3	2,174.94	0	96.9	2,174.02
J1418-03	Main Plant	1,949.00	4.4	99.2	2,178.34	8.1	97.8	2,174.94	13.37	97.4	2,174.02
J1418-04	Main Plant	1,941.00	0	102.7	2,178.36	0	101.2	2,175.02	0	100.9	2,174.31
J1418-05	Main Plant	1,945.00	3.45	101	2,178.35	6.35	99.5	2,174.98	10.47	99.2	2,174.19
J1418-06	Main Plant	1,945.00	2.08	101	2,178.34	3.83	99.5	2,174.93	6.32	99.1	2,174.02
J1418-07	Main Plant	1,930.00	2.69	107.5	2,178.37	4.94	106	2,175.03	8.16	105.7	2,174.27
J1418-08	Main Plant	1,930.00	0	107.5	2,178.38	0	106	2,175.03	0	105.7	2,174.29
J1418-09	Main Plant	1,934.00	0	105.7	2,178.39	0	104.3	2,175.04	0	103.9	2,174.21
J1418-10	Main Plant	1,925.00	0	109.6	2,178.38	0	108.2	2,175.04	0	107.9	2,174.29
J1418-103	Main Plant	1,946.00	0	100.5	2,178.36	0	99.1	2,175.02	0	98.8	2,174.36
J1418-104	Main Plant	1,944.50	1.81	101.2	2,178.36	5.43	99.7	2,175.02	8.96	99.4	2,174.35
J1418-11	Main Plant	1,919.00	0	112.2	2,178.43	0	110.8	2,175.04	0	109.9	2,173.03
J1418-12	Main Plant	1,934.00	6.15	105.7	2,178.39	11.31	104.3	2,175.04	18.67	103.9	2,174.20
J1418-13	Main Plant	1,922.00	4.58	110.9	2,178.39	8.42	109.5	2,175.05	13.89	109.2	2,174.32
J1418-14	Main Plant	1,927.00	0	108.8	2,178.39	0	107.3	2,175.04	0	107	2,174.20
J1418-15	Main Plant	1,931.00	6.74	106.9	2,178.17	12.4	105.2	2,174.25	20.47	103.9	2,171.12
J1418-16	Main Plant	1,923.00	9.57	110.5	2,178.40	17.62	109	2,174.97	29.07	108.1	2,172.95
J1418-17	Main Plant	1,920.00	0	111.8	2,178.40	0	110.3	2,175.04	0	109.8	2,173.81
J1418-18	Main Plant	1,957.00	2.28	95.8	2,178.44	4.19	94.3	2,175.00	6.91	93.7	2,173.67
J1418-19	Main Plant	1,902.00	1.61	119.6	2,178.43	2.96	118.1	2,175.04	4.89	117.2	2,172.91
J1418-20	Main Plant	1,913.00	0	114.8	2,178.43	0	113.4	2,175.04	0	112.5	2,173.03
J1418-21	Main Plant	1,912.00	16.13	115.3	2,178.43	29.69	113.8	2,175.04	48.98	112.9	2,173.05
J1418-22	Main Plant	1,912.00	0	115.3	2,178.45	0	113.8	2,175.00	0	112.9	2,172.94
J1418-23	Main Plant	1,937.00	0.7	104.5	2,178.44	1.29	103	2,175.00	2.13	102.3	2,173.50
J1418-24	Main Plant	1,996.00	1.21	79	2,178.52	2.23	77.5	2,175.05	3.67	77	2,173.90
J1418-25	Main Plant	1,954.00	1.16	97.1	2,178.50	2.14	95.6	2,174.99	3.53	95.1	2,173.74
J1418-26	Main Plant	1,906.00	0	117.9	2,178.57	0	116.4	2,175.08	0	115.9	2,173.86
J1418-27	Main Plant	1,992.00	0	80.6	2,178.36	0	79.2	2,175.02	0	78.9	2,174.45
J1418-28	Main Plant	2,002.00	0	76.3	2,178.36	0	74.9	2,175.03	0	74.7	2,174.60
J1418-29	Main Plant	2,006.00	0	74.6	2,178.36	0	73.1	2,175.03	0	73	2,174.63
J1418-30	Main Plant	2,035.00	0	62	2,178.35	0	60.6	2,175.04	0	60.5	2,174.85
J1418-31	Main Plant	2,035.00	0.57	62	2,178.35	1.05	60.6	2,175.03	1.73	60.5	2,174.85
J1418-32	Main Plant	2,039.00	2.63	60.3	2,178.35	4.83	58.9	2,175.03	7.97	58.8	2,174.85
J1418-33	Main Plant	2,048.00	5.88	56.4	2,178.35	10.82	55	2,175.03	17.86	54.9	2,174.85
J1418-34	Main Plant	2,020.00	1.05	68.5	2,178.41	1.94	67.1	2,175.03	3.2	67	2,174.89
J1418-35	Main Plant	2,036.00	0.79	61.6	2,178.41	1.45	60.2	2,175.03	2.39	60.1	2,174.89
J1418-36	Main Plant	2,026.00	0	65.9	2,178.41	0	64.5	2,175.03	0	64.4	2,174.89
J1418-37	Main Plant	2,039.00	2.36	60.3	2,178.41	4.34	58.9	2,175.03	7.17	58.8	2,174.89
J1418-38	Main Plant	2,026.00	0	65.9	2,178.41	0	64.5	2,175.03	0	64.4	2,174.89
J1418-39	Main Plant	2,021.00	0	68.1	2,178.41	0	66.6	2,175.03	0	66.6	2,174.89
J1418-40	Main Plant	1,980.00	0	85.8	2,178.42	0	84.4	2,175.01	0	84.1	2,174.35

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1418-41	Main Plant	1,944.00	1.57	101.4	2,178.44	2.9	99.9	2,175.00	4.78	99.4	2,173.65
J1418-42	Main Plant	1,960.00	0	94.5	2,178.44	0	93	2,175.00	0	92.5	2,173.69
J1418-43	Main Plant	1,975.00	3.4	88	2,178.42	6.26	86.5	2,174.99	10.33	86.1	2,174.02
J1418-44	Main Plant	1,981.00	2.36	85.4	2,178.42	4.34	83.9	2,174.99	7.17	83.5	2,174.03
J1418-45	Main Plant	1,985.00	2.09	83.7	2,178.42	3.85	82.2	2,174.99	6.36	81.8	2,174.03
J1418-46	Main Plant	1,965.00	0	92.3	2,178.43	0	90.9	2,175.00	0	90.4	2,174.04
J1418-47	Main Plant	1,963.00	2.61	93.2	2,178.43	4.81	91.7	2,175.00	7.94	91.3	2,174.04
J1418-48	Main Plant	1,982.00	3.33	85	2,178.45	6.12	83.5	2,175.00	10.11	82.9	2,173.66
J1418-49	Main Plant	1,953.00	0	97.6	2,178.60	0	96.1	2,175.09	0	95.6	2,173.99
J1418-50	Main Plant	1,947.00	0.7	100.2	2,178.60	1.29	98.7	2,175.09	2.13	98.2	2,173.98
J1418-51	Main Plant	1,922.00	0.21	111	2,178.59	0.38	109.5	2,175.09	0.62	109	2,173.95
J1418-52	Main Plant	1,922.00	1.86	111	2,178.59	3.43	109.5	2,175.09	5.66	109	2,173.95
J1418-53	Main Plant	1,931.00	1.16	107.1	2,178.49	2.14	105.6	2,175.04	3.53	105.2	2,174.05
J1418-54	Main Plant	1,927.00	1.77	108.8	2,178.50	3.25	107.3	2,175.05	5.36	106.9	2,174.05
J1418-55	Main Plant	1,927.00	2.52	108.8	2,178.51	4.63	107.3	2,175.05	7.64	106.9	2,174.00
J1418-56	Main Plant	1,923.00	0	110.5	2,178.51	0	109	2,175.05	0	108.6	2,173.96
J1418-57	Main Plant	1,917.00	0	113.1	2,178.52	0	111.6	2,175.05	0	111.2	2,173.91
J1418-58	Main Plant	1,908.00	0	117.1	2,178.56	0	115.6	2,175.08	0	115	2,173.87
J1418-61	Main Plant	1,948.00	0	99.7	2,178.44	0	98.2	2,175.00	0	97.6	2,173.65
J1418-62	Main Plant	1,949.00	0	99.2	2,178.36	0	97.8	2,175.02	0	97.5	2,174.36
J1419-01	No FF	2,130.00	6.31	20.9	2,178.30	11.6	19.4	2,174.84	19.14	19	2,173.83
J1419-02	Main Plant	1,960.00	23.54	94.5	2,178.31	43.32	93	2,174.86	71.47	92.5	2,173.90
J1419-03	Main Plant	1,960.00	0	94.5	2,178.31	0	93	2,174.86	0	92.5	2,173.90
J1419-04	Main Plant	1,970.00	0.75	90.1	2,178.36	1.38	88.7	2,175.02	2.28	88.4	2,174.37
J1419-05	Main Plant	2,014.00	3.18	71.1	2,178.35	5.86	69.7	2,175.01	9.66	69.4	2,174.35
J1419-06	Main Plant	1,994.00	1.88	79.8	2,178.35	3.45	78.3	2,175.01	5.7	78	2,174.35
J1419-07	Main Plant	1,988.00	0	82.4	2,178.36	0	80.9	2,175.01	0	80.6	2,174.35
J1419-08	Main Plant	1,987.00	3.32	82.8	2,178.36	6.1	81.3	2,175.01	10.07	81.1	2,174.35
J1419-09	Upper Schnell School	2,057.00	5.18	164	2,435.95	9.53	163.5	2,434.81	15.73	159.8	2,426.38
J1515-01	Main Plant	1,977.00	0	87.6	2,179.53	0	86.1	2,175.96	0	85.1	2,173.70
J1515-02	Main Plant	1,974.00	1.57	88.9	2,179.53	2.9	87.4	2,175.96	4.78	86.5	2,173.98
J1515-03	Main Plant	1,955.00	1.9	97.1	2,179.53	3.5	95.6	2,175.96	5.77	94.7	2,173.99
J1515-04	Main Plant	1,938.31	0	104.4	2,179.53	0	102.8	2,175.96	0	102.4	2,175.08
J1515-05	Main Plant	1,954.00	0	97.6	2,179.53	0	96	2,175.96	0	95.4	2,174.56
J1515-06	Main Plant	1,952.00	0	98.4	2,179.53	0	96.9	2,175.96	0	96.1	2,174.13
J1515-07	Main Plant	1,980.00	0	86.3	2,179.53	0	84.8	2,175.96	0	83.9	2,173.96
J1515-08	Main Plant	1,975.00	1.9	88.5	2,179.53	3.5	86.9	2,175.96	5.77	86.1	2,173.98
J1515-09	Main Plant	1,987.00	28.26	83.3	2,179.53	52	81.8	2,175.95	85.8	80.9	2,174.02
J1515-10	Combellack	1,988.00	3.61	119.6	2,264.32	6.64	111.7	2,246.19	10.95	84.2	2,182.55
J1515-11	Main Plant	1,967.00	1.16	92	2,179.54	2.14	90.4	2,175.97	3.53	89.5	2,173.78
J1515-12	Combellack	1,991.00	0.93	118.3	2,264.32	1.71	110.4	2,246.19	2.83	82.9	2,182.55
J1515-13	Combellack	1,967.00	1.25	128.6	2,264.32	2.29	120.8	2,246.20	3.78	93.3	2,182.56
J1515-14	Combellack	1,943.00	9.91	139	2,264.32	18.24	131.2	2,246.20	30.09	103.6	2,182.56
J1515-15	Combellack	1,937.00	0	141.6	2,264.32	0	133.8	2,246.20	0	106.2	2,182.56
J1515-16	Combellack	1,905.00	3.74	155.5	2,264.32	6.88	147.6	2,246.20	11.35	120.1	2,182.56
J1515-17	Combellack	1,896.00	7.95	159.4	2,264.31	14.63	151.5	2,246.19	24.14	124	2,182.53
J1515-18	Combellack	1,883.00	0	165	2,264.32	0	157.1	2,246.20	0	129.6	2,182.56
J1515-19	Combellack	1,879.00	8.4	166.7	2,264.32	0	158.9	2,246.20	0	131.3	2,182.56
J1515-20	Combellack	1,825.00	0	190.1	2,264.32	0	182.2	2,246.20	0	154.7	2,182.56
J1515-21	Combellack	1,831.00	0	187.5	2,264.32	0	179.6	2,246.20	0	152.1	2,182.56
J1515-22	Combellack	1,965.00	2.99	129.5	2,264.32	5.5	121.7	2,246.20	9.08	94.1	2,182.56
J1515-23	Combellack	1,948.00	2.49	136.9	2,264.33	4.59	129	2,246.21	7.57	101.5	2,182.59
J1515-24	Combellack	1,949.00	1.56	136.4	2,264.33	2.87	128.6	2,246.21	4.74	101.1	2,182.59
J1515-25	Combellack	1,950.00	1.88	136	2,264.33	3.45	128.2	2,246.21	5.7	100.6	2,182.59
J1515-26	Combellack	1,945.78	0	137.8	2,264.34	0	130	2,246.24	0	102.5	2,182.67
J1515-27	Combellack	1,944.00	0	138.6	2,264.33	0	130.8	2,246.23	0	103.2	2,182.63
J1515-28	Combellack	1,933.00	1.88	143.3	2,264.33	3.45	135.5	2,246.21	5.7	108	2,182.60
J1515-29	Combellack	1,931.00	3.23	144.2	2,264.32	5.95	136.4	2,246.20	9.81	108.8	2,182.57
J1515-30	Combellack	1,914.00	0.31	151.6	2,264.32	0.58	143.7	2,246.21	0.96	116.2	2,182.58
J1515-31	Combellack	1,902.00	1.25	156.8	2,264.32	2.29	148.9	2,246.20	3.78	121.4	2,182.58
J1515-32	Combellack	1,942.00	3.07	139.5	2,264.32	5.66	131.6	2,246.20	9.33	104.1	2,182.55
J1515-33	Combellack	1,957.00	2.81	133	2,264.32	5.17	125.1	2,246.20	8.53	97.6	2,182.56

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1515-34	Combellack	1,958.00	0	132.5	2,264.32	0	124.7	2,246.20	0	97.2	2,182.56
J1515-35	Combellack	1,964.00	5.68	129.9	2,264.32	10.44	122.1	2,246.20	17.23	94.6	2,182.56
J1515-36	Combellack	1,900.00	0	157.6	2,264.32	0	149.8	2,246.20	0	122.3	2,182.58
J1515-37	Combellack	1,925.00	1.92	146.8	2,264.32	3.54	139	2,246.20	5.84	111.4	2,182.57
J1515-38	Combellack	1,975.10	0	125.7	2,265.65	0	119.1	2,250.26	0	94.2	2,192.84
J1515-39	Combellack	1,920.00	0	149	2,264.34	0	141.2	2,246.26	0	113.7	2,182.71
J1516-01	Main Plant	2,001.00	3.18	77.2	2,179.52	5.86	75.7	2,175.95	9.66	71.7	2,166.70
J1516-02	Main Plant	1,971.00	0	90.2	2,179.52	0	88.7	2,175.96	0	84.7	2,166.71
J1516-03	Main Plant	1,970.00	0	90.6	2,179.52	0	89.1	2,175.96	0	85.1	2,166.70
J1516-04	Main Plant	1,959.00	3.18	95.4	2,179.52	5.86	93.9	2,175.98	9.66	89.8	2,166.59
J1516-05	Main Plant	1,997.00	1.85	79	2,179.53	3.41	77.4	2,175.99	5.62	73.4	2,166.61
J1516-06	Main Plant	1,972.00	0	89.8	2,179.54	0	88.3	2,176.01	0	84.2	2,166.63
J1516-07	Main Plant	1,934.00	1.08	106.2	2,179.55	1.98	104.7	2,176.03	3.27	100.7	2,166.66
J1516-08	Main Plant	1,986.00	0.8	83.7	2,179.54	1.47	82.2	2,176.01	2.43	78.2	2,166.63
J1516-09	Main Plant	2,000.00	0.8	77.7	2,179.52	1.47	76.1	2,175.94	2.43	72.1	2,166.69
J1516-10	Main Plant	2,005.00	0	75.5	2,179.52	0	74	2,175.96	0	70	2,166.73
J1516-11	Main Plant	2,005.00	0.8	75.5	2,179.52	1.47	74	2,175.96	2.43	70	2,166.73
J1516-12	Main Plant	1,996.00	0.8	79.4	2,179.52	1.47	77.9	2,175.96	2.43	73.9	2,166.75
J1516-13	Main Plant	2,007.00	0	74.6	2,179.52	0	73.1	2,175.96	0	69.1	2,166.75
J1516-14	Main Plant	2,013.00	1.32	72	2,179.52	2.43	70.5	2,175.96	4.01	66.5	2,166.75
J1516-15	Main Plant	2,001.00	2.12	77.2	2,179.52	3.9	75.7	2,175.96	6.43	71.7	2,166.77
J1516-16	Main Plant	1,985.00	1.32	84.2	2,179.52	2.43	82.6	2,175.96	4.01	78.7	2,166.81
J1516-17	Main Plant	2,002.00	0	76.8	2,179.52	0	75.3	2,175.96	0	71.3	2,166.81
J1516-18	Main Plant	1,999.00	1.59	78.1	2,179.53	2.92	76.6	2,175.97	4.81	72.6	2,166.85
J1516-19	Main Plant	1,986.00	0.53	83.7	2,179.53	0.98	82.2	2,175.97	1.62	78.2	2,166.85
J1516-20	Main Plant	1,959.00	0.8	95.4	2,179.53	1.47	93.9	2,175.98	2.43	90	2,166.94
J1516-21	Main Plant	1,943.00	1.08	102.3	2,179.53	1.98	100.8	2,175.98	3.27	96.9	2,166.94
J1516-22	Main Plant	1,924.00	0.61	110.6	2,179.54	1.11	109	2,176.00	1.84	105.2	2,167.05
J1516-23	Main Plant	1,926.00	6.25	109.7	2,179.53	11.49	108.2	2,175.98	18.96	104.6	2,167.86
J1516-24	Main Plant	1,963.00	0	93.7	2,179.53	0	92.1	2,175.96	0	88.5	2,167.54
J1516-25	EID Res 4	2,052.00	0	94.8	2,271.19	0	93.2	2,267.46	0	86.3	2,251.45
J1516-26	EID Res 4	2,015.00	0.41	110.8	2,271.19	0.76	109.2	2,267.45	1.25	102.3	2,251.44
J1516-27	EID Res 4	2,037.00	0	101.3	2,271.19	0	99.7	2,267.45	0	92.8	2,251.44
J1516-28	EID Res 4	2,018.00	0	109.5	2,271.19	0	107.9	2,267.45	0	101	2,251.44
J1516-29	EID Res 4	1,980.00	0	126	2,271.19	0	124.4	2,267.45	0	117.4	2,251.44
J1516-30	EID Res 4	2,017.00	0	110	2,271.19	0	108.4	2,267.45	0	101.4	2,251.44
J1516-31	EID Res 4	2,068.00	0	87.9	2,271.19	0	86.3	2,267.44	0	79.4	2,251.42
J1516-32	EID Res 4	2,122.00	0	64.5	2,271.19	0	62.9	2,267.44	0	56	2,251.41
J1516-33	EID Res 4	2,138.00	0	57.6	2,271.19	0	56	2,267.44	0	49.1	2,251.40
J1516-34	EID Res 4	2,172.00	4.35	42.9	2,271.19	8	41.3	2,267.43	13.19	34.3	2,251.39
J1516-35	Main Plant	2,075.00	1.73	45.2	2,179.52	3.18	43.7	2,175.94	5.25	39.7	2,166.72
J1516-36	Main Plant	2,034.00	3	63	2,179.52	5.52	61.4	2,175.94	9.11	57.4	2,166.74
J1516-37	Main Plant	1,999.00	1.07	78.1	2,179.49	1.96	76.5	2,175.87	3.23	72.5	2,166.54
J1516-38	Main Plant	1,996.00	0	79.4	2,179.52	0	77.9	2,175.94	0	73.9	2,166.74
J1516-39	Main Plant	1,997.00	3.18	79	2,179.52	5.86	77.4	2,175.95	9.66	73.4	2,166.74
J1516-40	Main Plant	2,028.00	3.7	65.6	2,179.52	6.81	64	2,175.94	11.24	60	2,166.79
J1516-41	Main Plant	2,009.00	4.67	73.8	2,179.52	8.6	72.2	2,175.95	14.18	68.4	2,167.13
J1516-42	EID Res 4	2,142.29	0	55	2,269.39	0	51.8	2,261.95	0	39.2	2,232.96
J1516-43	EID Res 4	2,142.29	2.77	55.8	2,271.19	5.1	54.1	2,267.44	8.41	47.2	2,251.40
J1516-45	Combellack	2,000.00	0	115.3	2,266.47	0	109.4	2,252.77	0	87.1	2,201.23
J1516-46	EID Res 4	2,072.00	3	86.2	2,271.19	5.52	84.6	2,267.44	9.11	77.6	2,251.41
J1516-47	EID Res 4	2,122.00	3	64.5	2,271.19	5.52	62.9	2,267.44	9.11	56	2,251.40
J1517-01	Main Plant	1,965.00	0	92.4	2,178.61	0	90.9	2,175.10	0	90.4	2,174.02
J1517-02	Main Plant	1,957.00	0.46	95.9	2,178.61	0.85	94.4	2,175.10	1.4	93.9	2,174.02
J1517-03	Main Plant	1,960.00	0.46	94.6	2,178.61	0.85	93.1	2,175.10	1.4	92.6	2,174.03
J1517-04	Main Plant	1,972.00	1.39	89.4	2,178.61	2.56	87.9	2,175.10	4.23	87.4	2,174.04
J1517-05	Main Plant	2,026.50	2.4	65.9	2,178.74	4.41	64.4	2,175.24	7.28	63.9	2,174.10
J1517-06	Main Plant	2,029.00	1.86	64.8	2,178.67	3.43	63.2	2,175.16	5.66	62.9	2,174.48
J1517-07	Main Plant	2,022.60	1.16	67.5	2,178.67	2.14	66	2,175.16	3.53	65.7	2,174.48
J1517-08	Main Plant	2,037.00	0	61.3	2,178.72	0	59.8	2,175.21	0	59.6	2,174.84
J1517-09	Main Plant	2,036.00	2.4	61.7	2,178.72	4.41	60.2	2,175.21	7.28	60.1	2,174.80
J1517-10	EID Res 4	2,040.50	0	100.1	2,271.92	0	99.2	2,269.67	0	89.6	2,247.57

City of Placerville
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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1517-101	EID Res 4	2,050.00	4.8	96	2,271.92	8.83	95	2,269.68	14.57	87.2	2,251.46
J1517-102	EID Res 4	2,025.00	4.8	106.8	2,271.91	8.83	105.8	2,269.65	14.57	98	2,251.40
J1517-103	EID Res 4	2,078.00	7.5	83.9	2,271.91	13.8	82.9	2,269.64	22.77	75	2,251.37
J1517-104	EID Res 4	2,034.00	7.5	102.9	2,271.91	13.8	101.9	2,269.64	22.77	94	2,251.36
J1517-11	EID Res 4	2,064.50	7.2	89.7	2,271.92	13.25	88.8	2,269.66	21.86	79.7	2,248.61
J1517-12	EID Res 4	2,062.00	4.72	90.8	2,271.92	8.69	89.8	2,269.67	14.33	80.7	2,248.62
J1517-13	EID Res 4	2,067.00	12.37	88.7	2,271.92	22.76	87.7	2,269.67	37.55	79.1	2,249.85
J1517-14	EID Res 4	2,068.50	0	88	2,271.92	0	87	2,269.67	0	78.6	2,250.12
J1517-15	EID Res 4	2,068.00	0	88.2	2,271.92	0	87.3	2,269.68	0	79.4	2,251.46
J1517-16	Main Plant	1,983.00	1.04	84.7	2,178.81	1.92	83.2	2,175.32	3.16	82.2	2,172.88
J1517-17	Main Plant	1,968.00	0	91.2	2,178.81	0	89.7	2,175.32	0	88.6	2,172.89
J1517-18	Main Plant	1,968.00	1.04	91.2	2,178.81	1.92	89.7	2,175.32	3.16	88.6	2,172.88
J1517-19	EID Res 4	2,019.00	1.07	109.1	2,271.19	1.97	107.5	2,267.46	3.26	100.6	2,251.45
J1517-20	EID Res 4	2,142.49	0	56	2,271.95	0	55.1	2,269.78	0	50.3	2,258.72
J1517-21	EID Res 4	2,150.00	0	52.8	2,271.94	0	51.8	2,269.75	0	46.1	2,256.63
J1517-22	EID Res 4	2,150.00	0	52.8	2,271.94	0	51.8	2,269.74	0	45.8	2,255.84
J1517-23	EID Res 4	2,050.00	0.41	95.7	2,271.19	0.76	94.1	2,267.46	1.25	87.2	2,251.45
J1517-24	EID Res 4	2,047.00	0	97	2,271.19	0	95.4	2,267.46	0	88.5	2,251.45
J1517-25	EID Res 4	2,043.00	3.07	98.7	2,271.19	5.65	97.1	2,267.46	9.33	90.2	2,251.45
J1517-26	No FF	2,214.00	1.07	24.7	2,271.20	1.97	23.1	2,267.47	3.26	16.2	2,251.49
J1517-27	EID Res 4	2,166.00	1.07	45.5	2,271.20	1.97	43.9	2,267.47	3.26	37	2,251.49
J1517-28	EID Res 4	2,120.00	0.41	65.4	2,271.20	0.76	63.8	2,267.47	1.25	56.9	2,251.49
J1517-29	EID Res 4	2,131.00	0	60.7	2,271.20	0	59	2,267.47	0	52.1	2,251.49
J1517-30	EID Res 4	2,130.00	0	61.4	2,271.95	0	60.5	2,269.78	0	55.9	2,259.21
J1517-31	EID Res 4	2,121.00	0	65	2,271.20	0	63.4	2,267.47	0	56.5	2,251.49
J1517-32	EID Res 4	2,117.56	0	66.5	2,271.20	0	64.9	2,267.47	0	57.9	2,251.49
J1518-01	Main Plant	2,024.00	0	66.8	2,178.36	0	65.3	2,175.04	0	65.3	2,174.85
J1518-02	Main Plant	2,032.27	0	63.2	2,178.36	0	61.8	2,175.05	0	61.7	2,174.98
J1518-03	Main Plant	2,053.00	0	54.2	2,178.36	0	52.8	2,175.05	0	52.8	2,175.03
J1518-04	Upper Schnell School	2,050.00	0	167	2,435.95	0	166.5	2,434.81	0	162.8	2,426.39
J1518-05	Upper Schnell School	2,082.00	0	153.1	2,435.95	0	152.7	2,434.85	0	149.2	2,426.78
J1518-06	Upper Schnell School	2,098.00	8.56	146.2	2,435.95	15.75	145.7	2,434.85	25.98	142.2	2,426.77
J1518-07	Upper Schnell School	2,105.00	7.89	143.2	2,435.95	14.52	142.7	2,434.85	23.96	139.2	2,426.76
J1518-08	Upper Schnell School	2,108.96	0	141.5	2,435.95	0	141	2,434.91	0	137.7	2,427.26
J1518-09	Upper Schnell School	2,084.00	0	152.3	2,435.95	0	151.8	2,434.85	0	148.3	2,426.76
J1518-10	Main Plant	2,046.00	1.57	57.3	2,178.41	2.9	55.8	2,175.03	4.78	55.8	2,174.90
J1518-11	Main Plant	2,042.00	0	59	2,178.41	0	57.6	2,175.03	0	57.5	2,174.90
J1518-12	Main Plant	2,008.00	2.36	73.7	2,178.41	4.34	72.3	2,175.02	7.17	72.1	2,174.68
J1518-13	Main Plant	1,942.00	1.86	101.2	2,175.88	3.43	97.3	2,166.95	5.66	91.6	2,153.61
J1518-14	Main Plant	1,949.00	3.26	99.3	2,178.50	5.99	97.8	2,175.05	9.88	97.5	2,174.47
J1518-15	Main Plant	1,946.00	3.49	100.6	2,178.50	6.41	99.1	2,175.05	10.58	98.8	2,174.47
J1518-16	EID Res 4	1,975.00	0	128.8	2,272.59	0	128.2	2,271.41	0	124.6	2,262.94
J1518-17	EID Res 4	1,980.00	0	126.6	2,272.59	0	126.1	2,271.41	0	122.4	2,262.94
J1518-18	EID Res 4	1,987.00	0	123.6	2,272.59	0	123.1	2,271.41	0	119.4	2,262.99
J1518-19	EID Res 4	1,989.00	2.77	122.7	2,272.59	5.1	122.2	2,271.42	8.41	118.6	2,263.03
J1518-20	Upper Schnell School	2,111.58	0	140.3	2,435.96	0	139.9	2,435.03	0	137	2,428.14
J1518-21	EID Res 4	2,011.00	1.03	113.2	2,272.55	1.89	112.6	2,271.36	3.12	109.3	2,263.74
J1518-22	EID Res 4	1,988.00	0	123.1	2,272.59	0	122.6	2,271.48	0	119.4	2,264.04
J1518-23	EID Res 4	1,979.00	0	127	2,272.59	0	126.5	2,271.43	0	123	2,263.31
J1518-24	EID Res 4	2,010.00	0.52	113.6	2,272.59	0.96	113.1	2,271.50	1.58	110	2,264.30
J1518-25	EID Res 4	1,998.00	1.8	118.8	2,272.59	3.32	118.3	2,271.50	5.48	115.2	2,264.30
J1518-26	EID Res 4	2,033.00	2.57	103.7	2,272.59	4.72	103.2	2,271.49	7.79	100.1	2,264.27
J1518-27	EID Res 4	2,031.00	2.31	104.5	2,272.59	4.25	104	2,271.42	7.02	100.5	2,263.19
J1518-28	EID Res 4	2,015.00	0.77	111.4	2,272.59	1.43	110.9	2,271.42	2.35	107.4	2,263.19
J1518-29	Upper Schnell School	2,062.00	0	161.8	2,435.96	0	161.4	2,435.06	0	158.5	2,428.45
J1519-01	Upper Schnell School	2,043.00	0	170	2,435.95	0	169.5	2,434.81	0	165.9	2,426.37
J1519-02	Upper Schnell School	2,052.00	1.14	166.1	2,435.95	2.09	165.6	2,434.81	3.45	162	2,426.37
J1519-03	Upper Schnell School	2,095.00	5.91	147.5	2,435.92	10.87	147	2,434.74	17.93	143.3	2,426.20
J1618-01	EID Res 4	2,110.00	0	70.4	2,272.61	0	70	2,271.69	0	67.7	2,266.39
J1618-02	EID Res 4	2,165.00	1.54	46.6	2,272.62	2.83	46.2	2,271.76	4.67	44.2	2,267.18
J1618-03	EID Res 4	2,147.07	0	54.3	2,272.63	0	54	2,271.85	0	52.3	2,268.00
J1618-04	EID Res 4	2,149.00	3.09	53.5	2,272.62	5.68	53.1	2,271.76	9.37	51.1	2,267.19

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Junction	Pressure Zone	Elevation (ft)	Average Day			Maximum Day			Peak Hour		
			Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)	Demand (gpm)	Pressure (psi)	HGL (ft)
J1618-05	EID Res 4	2,094.80	0	76.9	2,272.63	0	76.6	2,271.85	0	74.9	2,268.00
J1619-06	Upper Schnell School	2,274.00	0	70.1	2,436.02	0	70.1	2,436.02	0	70.1	2,436.01

E-4: 2015 Pipeline Model Output

City of Placerville
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2015 Pipeline Model Output

				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
EID P1117-03	16	69	Galvanized iron	2.77	1738.14	0.14	2.01	5.1	3198.19	0.43	6.23	8.42	5277.01	1.09	15.76
EID P1117-04	16	101	Galvanized iron	1.68	1054.08	0.08	0.8	2.78	1742.89	0.20	2.03	0.62	389.28	0.01	0.13
EID P1118-01a	18	2989	Galvanized iron	3.52	2792.22	8.17	2.73	6.23	4941.08	23.50	7.86	7.14	5666.29	30.28	10.13
EID P1118-01b	18	719	Galvanized iron	3.52	2792.22	1.96	2.73	6.23	4941.08	5.65	7.86	7.14	5666.29	7.28	10.13
EID P1119-02	18	2350	Galvanized iron	6.31	5001	18.89	8.04	6.31	5001	18.89	8.04	6.31	5001	18.89	8.04
EID P1119-03	18	438	Galvanized iron	6.31	5001	3.52	8.04	6.31	5001	3.52	8.04	6.31	5001	3.52	8.04
EID P1219-02	18	2072	Galvanized iron	6.45	5119.44	17.39	8.4	6.69	5305.15	18.58	8.97	7.43	5892.34	22.57	10.89
EID P1220-03	18	1792	Galvanized iron	6.56	5200.63	15.49	8.64	6.95	5514.73	17.27	9.63	8.11	6431.45	22.95	12.81
EID P1220-05	18	179	Galvanized iron	6.63	5255.47	1.58	8.81	7.14	5662.04	1.81	10.12	8.62	6838.97	2.57	14.35
EID P1220-06	18	146	Galvanized iron	6.63	5255.48	1.29	8.81	7.14	5664.55	1.48	10.13	8.63	6842.8	2.10	14.37
EID P1220-07	8	411	Galvanized iron	0.35	54.85	0.04	0.1	0.96	149.82	0.26	0.63	2.63	411.35	1.68	4.09
EID P1515-35	18	27	Galvanized iron	0	0	0	0	0	0	0	0	0.9	712.87	0.01	0.22
EID P1515-40	18	109	Galvanized iron	0	0	0	0	0	0	0	0	0.9	712.87	0.02	0.22
EID P1515-41	18	1648	Galvanized iron	1.81	1433.23	1.31	0.79	3.31	2621.68	4.01	2.43	5.45	4325.78	10.13	6.15
EID P1515-42	18	40	Galvanized iron	1.73	1368.36	0.03	0.73	3.17	2517.79	0.09	2.26	5.24	4154.35	0.23	5.7
EID P1516-47	16	1281	Galvanized iron	2.29	1433.23	1.81	1.41	4.18	2621.69	5.53	4.31	8.04	5038.64	18.53	14.47
EID P1516-48	16	25	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
EID P1516-49	16	177	Galvanized iron	2.29	1433.23	0.25	1.41	4.18	2621.69	0.76	4.31	8.04	5038.64	2.56	14.47
EID P1516-50	16	38	Galvanized iron	2.29	1433.23	0.05	1.41	4.18	2621.69	0.16	4.31	8.04	5038.64	0.55	14.47
EID P1516-51	16	1268	Galvanized iron	2.29	1433.23	1.79	1.41	4.18	2621.69	5.47	4.31	8.04	5038.64	18.34	14.47
EID P1516-52	18	1030	Galvanized iron	1.81	1433.23	0.82	0.79	3.31	2621.69	2.50	2.43	6.35	5038.64	8.40	8.15
EID P1517-02	21	28	Galvanized iron	0.02	20.64	0	0	0.04	37.98	0	0	0.06	62.67	0	0
EID P1517-33	21	1960	Galvanized iron	1.35	1453.87	0.75	0.38	2.46	2659.67	2.31	1.18	4.73	5101.31	7.71	3.94
EID P1519-01	10	137	Galvanized iron	0.26	64.87	0.01	0.04	0.42	103.9	0.01	0.11	0.7	171.42	0.04	0.27
EID P1519-03	8	921	Galvanized iron	0.18	28.68	0.03	0.03	0.81	126.89	0.43	0.46	2.47	387.58	3.37	3.66
EID P1617-01	21	1646	Galvanized iron	1.39	1502.77	0.67	0.41	2.55	2749.63	2.06	1.25	5.57	6013.89	8.79	5.34
EID P1618-02	21	90	Galvanized iron	0.02	16.4	0	0	0.05	50.2	0	0	0.15	166.79	0	0.01
EID P1618-05	27	594	Galvanized iron	1.61	2874	0.24	0.4	1.61	2874	0.24	0.4	1.61	2874	0.24	0.4
EID P1618-06	27	2169	Galvanized iron	1.61	2874	0.87	0.4	1.61	2874	0.87	0.4	1.61	2874	0.87	0.4
EID P1618-07	21	891	Galvanized iron	1.41	1519.17	0.37	0.42	2.59	2799.83	1.15	1.3	5.73	6180.68	5.00	5.62
EID P1619-01	24	223	Galvanized iron	2.06	2902.68	0.16	0.72	2.13	3000.88	0.17	0.77	2.31	3261.58	0.20	0.9
EID P1619-02	24	49	Galvanized iron	2.06	2902.68	0.04	0.72	2.13	3000.89	0.04	0.77	2.31	3261.58	0.04	0.9
EID P1619-03	8	1146	Galvanized iron	0.18	28.68	0.03	0.03	0.81	126.89	0.53	0.46	2.47	387.58	4.2	3.66
EID P1619-04	24	311	Galvanized iron	2.04	2874	0.22	0.71	2.04	2874	0.22	0.71	2.04	2874	0.22	0.71
P1117-01	14	110	Galvanized iron	2.2	1054.08	0.17	1.53	3.63	1742.89	0.43	3.88	0.81	389.28	0.03	0.24
P1117-02	16	430	Galvanized iron	1.68	1054.08	0.34	0.8	2.78	1742.89	0.87	2.03	0.62	389.28	0.05	0.13
P1119-01	8	893	Unknown Material	0.76	118.44	0.36	0.41	1.94	304.16	2.09	2.34	5.69	891.28	15.29	17.12
P1119-02	8	102	Unknown Material	0.76	118.44	0.04	0.41	1.94	304.15	0.24	2.34	5.69	891.34	1.75	17.12
P1119-03	8	114	Unknown Material	0.76	118.44	0.05	0.41	1.94	304.16	0.27	2.34	5.69	891.28	1.95	17.12
P1119-04	6	506	C-900	0	0.29	0	0	0.01	0.64	0	0	0.01	1.05	0	0
P1216-01	8	98	PVC	0	0.3	0	0	0	0.56	0	0	0.01	0.92	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1216-02	2	222	Unknown Material	0.09	0.92	0.01	0.04	0.17	1.69	0.03	0.13	0.29	2.79	0.07	0.34
P1216-03	12	182	Unknown Material	0.84	295.41	0.06	0.31	1.43	503.75	0.15	0.82	0.44	153.73	0.02	0.09
P1216-04	12	392	Unknown Material	0.85	301	0.12	0.32	1.46	514.04	0.34	0.86	0.48	170.7	0.04	0.11
P1216-05	12	163	Asbestos Cement	0.97	343.07	0.06	0.35	1.64	579.51	0.15	0.92	0.51	178.94	0.02	0.1
P1216-06	6	447	Galvanized iron	0.42	37.03	0.09	0.19	0.64	56.21	0.19	0.42	0.08	7.05	0	0.01
P1216-07	6	434	Galvanized iron	0.42	37.03	0.08	0.19	0.64	56.21	0.18	0.42	0.08	7.05	0	0.01
P1216-08	6	423	Unknown Material	0.03	2.46	0	0	0.05	4.52	0	0	0.08	7.46	0	0.01
P1216-09	6	73	Unknown Material	0.37	32.74	0.01	0.15	0.55	48.3	0.02	0.31	0.23	20.1	0	0.06
P1216-10	12	194	Unknown Material	1.18	416.81	0.11	0.58	1.96	690.13	0.29	1.48	0.54	190.1	0.03	0.14
P1216-11	12	402	Ductile Iron	1.11	390.11	0.21	0.51	1.82	640.82	0.52	1.29	0.45	159.9	0.04	0.1
P1216-12	8	490	C-900	0.18	28.54	0.01	0.02	0.34	52.69	0.03	0.07	0.23	35.78	0.02	0.03
P1216-13	12	715	Galvanized iron	1.11	392.14	0.37	0.52	1.83	644.54	0.93	1.3	0.47	166.04	0.08	0.11
P1216-14	12	1295	Asbestos Cement	0.97	343.37	0.45	0.35	1.65	580.06	1.2	0.92	0.51	179.86	0.14	0.11
P1217-01	10	510	Galvanized iron	1.3	317.97	0.44	0.86	2.11	517.15	1.07	2.11	0.17	41.51	0.01	0.02
P1217-02	10	439	Galvanized iron	1.14	278.78	0.29	0.67	1.82	444.88	0.7	1.59	0.11	26.59	0	0.01
P1217-03	8	541	Asbestos Cement	1.08	169.72	0.37	0.68	1.67	262.25	0.83	1.53	0.62	97.75	0.13	0.25
P1217-04	8	172	C-900	0.2	31.31	0	0.03	0.37	57.79	0.01	0.08	0.28	44.19	0.01	0.05
P1217-05	6	805	Unknown Material	0.06	5.07	0	0	0.11	9.33	0.01	0.01	0.17	15.39	0.03	0.04
P1217-06	8	178	Unknown Material	1.05	164.97	0.13	0.75	1.62	253.5	0.3	1.67	0.72	112.19	0.07	0.37
P1217-07	6	221	Unknown Material	1.8	158.58	0.63	2.84	2.74	241.74	1.37	6.2	1.49	131.59	0.44	2.01
P1217-08	6	37	Unknown Material	0	0.27	0	0	0.01	0.49	0	0	0.01	0.81	0	0
P1217-09	6	76	Unknown Material	0.36	31.89	0.01	0.14	0.54	47.6	0.02	0.31	0.41	36.36	0.01	0.19
P1217-10	6	111	Cast iron	0.36	31.89	0.02	0.15	0.54	47.6	0.03	0.31	0.41	36.36	0.02	0.18
P1217-11	4	297	Cast iron	0.87	34	0.35	1.18	1.31	51.5	0.76	2.55	0.76	29.93	0.28	0.93
P1217-110	8	46	PVC	0.25	39.18	0	0.04	0.46	72.28	0.01	0.12	0.43	68.1	0	0.11
P1217-111	8	299	PVC	0.23	35.28	0.01	0.03	0.42	65.1	0.03	0.1	0.36	56.26	0.02	0.08
P1217-112	8	364	PVC	0.22	34.38	0.01	0.03	0.4	63.45	0.04	0.1	0.34	53.53	0.03	0.07
P1217-113	8	61	PVC	0.02	3.9	0	0	0.05	7.18	0	0	0.08	11.84	0	0.01
P1217-114	6	103	PVC	0.01	1.2	0	0	0.03	2.21	0	0	0.04	3.64	0	0
P1217-115	8	470	PVC	0.02	2.7	0	0	0.03	4.97	0	0	0.05	8.2	0	0
P1217-116	6	112	PVC	0.02	1.5	0	0	0.03	2.76	0	0	0.05	4.55	0	0
P1217-12	2	292	PVC	0.22	2.12	0.04	0.15	0.4	3.9	0.14	0.47	0.66	6.43	0.35	1.19
P1217-13	8	95	PVC	0.01	2.12	0	0	0.02	3.9	0	0	0.04	6.43	0	0
P1217-14	8	244	PVC	0.23	36.12	0.01	0.03	0.35	55.4	0.02	0.07	0.15	23.5	0	0.01
P1217-15	6	209	Unknown Material	1.36	119.73	0.35	1.69	2.06	181.33	0.76	3.64	1.32	116.36	0.33	1.6
P1217-16	8	119	Unknown Material	0.83	129.86	0.06	0.48	1.21	189.85	0.12	0.98	1.06	166.22	0.09	0.76
P1217-17	6	589	Galvanized iron	0.56	49.65	0.19	0.33	0.81	70.98	0.38	0.64	0.77	67.6	0.34	0.59
P1217-18	8	359	Unknown Material	0.48	75.97	0.06	0.18	0.71	111.07	0.13	0.36	0.71	111.48	0.13	0.36
P1217-19	6	745	C-900	0.33	29.24	0.07	0.09	0.48	42.72	0.14	0.19	0.5	44.41	0.15	0.2
P1217-20	6	456	Asbestos Cement	0.01	1.32	0	0	0.03	2.43	0	0	0.05	4.01	0	0
P1217-200	8	426	PVC	0.01	1.39	0	0	0.02	2.55	0	0	0.03	4.21	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1217-201	6	485	PVC	0.02	1.39	0	0	0.03	2.55	0	0	0.05	4.21	0	0
P1217-21	8	96	Unknown Material	0.62	97.41	0.03	0.28	0.89	139.44	0.05	0.55	1.15	179.58	0.08	0.88
P1217-22	8	417	Cast iron	0.59	91.85	0.11	0.25	0.82	129.22	0.2	0.48	1.25	196.44	0.43	1.04
P1217-23	8	409	Unknown Material	0.62	97.09	0.12	0.28	0.86	134.25	0.21	0.51	2.06	322.88	1.07	2.61
P1217-24	8	516	C-900	0.15	24.26	0.01	0.02	0.21	33.56	0.02	0.03	0.38	59.53	0.04	0.09
P1217-25	6	113	Asbestos Cement	0.05	4.24	0	0	0.09	7.79	0	0.01	0.15	12.86	0	0.02
P1217-26	6	409	Asbestos Cement	0.02	2.12	0	0	0.04	3.9	0	0	0.07	6.43	0	0.01
P1217-27	2	50	Galvanized iron	0.22	2.12	0.01	0.2	0.4	3.9	0.03	0.63	0.66	6.43	0.08	1.58
P1217-28	8	420	Unknown Material	0.2	31.45	0.01	0.04	0.37	57.87	0.05	0.11	2.06	323.27	1.1	2.62
P1217-29	6	413	Galvanized iron	0.46	40.45	0.09	0.23	0.67	58.64	0.19	0.45	0.53	46.79	0.12	0.3
P1217-30	8	513	Asbestos Cement	0.39	61.33	0.05	0.1	0.44	68.46	0.07	0.13	0.08	12.7	0	0.01
P1217-31	10	294	Galvanized iron	1.3	317.97	0.25	0.86	2.11	517.15	0.62	2.11	0.17	41.51	0.01	0.02
P1217-32	16	188	Galvanized iron	1.68	1054.08	0.15	0.8	2.78	1742.89	0.38	2.03	0.62	389.28	0.02	0.13
P1217-33	16	21	Galvanized iron	1.68	1054.09	0.02	0.8	2.78	1742.9	0.04	2.02	0.62	389.28	0	0.13
P1217-34	12	110	Ductile Iron	2.09	736.12	0.18	1.67	3.48	1225.74	0.47	4.29	0.99	347.77	0.05	0.42
P1217-35	16	816	Unknown Material	1.68	1054.08	0.65	0.8	2.78	1742.89	1.65	2.03	0.62	389.28	0.1	0.13
P1217-36	6	152	C-900	0.29	25.64	0.01	0.07	0.41	36.11	0.02	0.14	0.63	55.32	0.05	0.3
P1218-01	8	436	Unknown Material	0.05	7.47	0	0	0.09	13.75	0	0.01	2.53	396.06	1.66	3.81
P1218-02	6	350	Unknown Material	0.06	5.16	0	0	0.11	9.49	0.01	0.02	1.55	136.63	0.75	2.16
P1218-03	6	385	Unknown Material	0	0	0	0	0	0	0	0	3.02	266.47	2.86	7.43
P1218-03a	6	48	Unknown Material	0	0	0	0	0	0	0	0	3.02	266.47	0.36	7.43
P1218-03b	6	528	Unknown Material	0.03	2.32	0	0	0.05	4.26	0	0	0.08	7.03	0	0.01
P1218-04	6	329	Unknown Material	0.06	5.16	0	0.01	0.11	9.49	0.01	0.02	1.55	136.63	0.71	2.16
P1218-05	6	228	Unknown Material	0.01	0.85	0	0	0.02	1.56	0	0	0.03	2.57	0	0
P1218-06	6	408	Unknown Material	0.01	0.56	0	0	0.01	1.02	0	0	1.71	150.59	1.05	2.58
P1218-07	6	43	Unknown Material	0	0.28	0	0	0.01	0.51	0	0	1.72	151.43	0.11	2.61
P1218-08	2	166	Unknown Material	0.03	0.28	0	0	0.05	0.51	0	0.01	0.09	0.85	0.01	0.04
P1218-09	8	180	Galvanized iron	0.16	24.33	0	0.02	0.28	43.68	0.01	0.06	1.45	227.55	0.25	1.37
P1218-10	8	245	Galvanized iron	0.67	104.65	0.08	0.32	1.75	273.83	0.47	1.92	5.17	810.77	3.52	14.37
P1218-100	8	715	PVC	0.03	4.72	0	0	0.06	9.55	0	0	1.8	282.22	1.09	1.53
P1218-101	8	127	PVC	0.08	13.12	0	0.01	0.12	19.01	0	0.01	0.22	34.58	0	0.03
P1218-102	8	636	PVC	0.11	17.92	0.01	0.01	0.19	29.57	0.01	0.02	0.33	52	0.04	0.07
P1218-103	8	611	PVC	0.13	19.72	0.01	0.01	0.21	33.53	0.02	0.03	1.35	210.81	0.54	0.89
P1218-104	8	542	PVC	0	0	0	0	0.06	9.01	0	0	1.78	278.13	0.81	1.49
P1218-105	8	294	PVC	0.04	6.22	0	0	0.08	12.85	0	0	1.84	287.66	0.47	1.58
P1218-106	8	174	PVC	0.07	10.42	0	0	0.08	13.07	0	0.01	0.16	24.77	0	0.02
P1218-107	8	813	PVC	0.07	11.62	0	0	0.1	15.71	0.01	0.01	0.19	29.13	0.02	0.02
P1218-108	6	375	PVC	0.02	1.8	0	0	0.04	3.96	0	0	0.07	6.53	0	0.01
P1218-109	12	1255	PVC	0.23	80.32	0.03	0.02	0.65	230.15	0.18	0.15	1.65	583.22	1.02	0.81
P1218-11	8	70	Galvanized iron	0	0	0	0	0	0	0	0	0.19	30.47	0	0.03
P1218-110	8	469	PVC	0	0	0	0	0	0	0	0	0.97	152.28	0.23	0.49

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Pipeline	Dia. (in)	Length (ft)	Material	Average Day				Maximum Day				Peak Hour			
				Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1218-111	8	895	PVC	0	0	0	0	0	0	0	0	0.97	152.28	0.44	0.49
P1218-12	8	147	Galvanized iron	0	0	0	0	0	0	0	0	0.19	30.47	0	0.03
P1218-122	8	388	PVC	0.01	2.32	0	0	0.03	4.27	0	0	1.75	273.5	0.56	1.44
P1218-123	8	341	PVC	0.01	2.32	0	0	0.03	4.27	0	0	1.75	273.5	0.49	1.44
P1219-01	6	113	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-04	8	98	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1219-05	8	401	Unknown Material	0.02	3.22	0	0	0.05	7.08	0	0	0.07	11.69	0	0.01
P1219-06	6	1018	Unknown Material	0.03	2.81	0	0	0.19	16.9	0.05	0.04	1.91	168.32	3.23	3.17
P1219-07	8	407	Unknown Material	0.02	3.22	0	0	0.05	7.08	0	0	0.07	11.69	0	0.01
P1219-08	6	344	Unknown Material	0	0.02	0	0	0.26	23.06	0.03	0.08	2.03	178.47	1.22	3.54
P1219-09	6	183	Unknown Material	0.05	4.22	0	0	0.37	32.37	0.03	0.15	2.2	193.85	0.75	4.12
P1219-10	6	474	Unknown Material	0.06	4.92	0	0	0.38	33.92	0.08	0.16	2.23	196.4	2	4.22
P1219-100	6	264	PVC	0.44	38.64	0.04	0.16	0.96	85	0.18	0.67	1.25	109.79	0.29	1.08
P1219-101	6	178	PVC	0.44	38.64	0.03	0.16	0.96	85	0.12	0.67	1.25	109.79	0.19	1.08
P1219-103	6	24	PVC	0.92	81.19	0.01	0.62	2.38	209.58	0.09	3.58	6.12	539.11	0.49	20.59
P1219-104	6	24	PVC	0.92	81.19	0.01	0.62	2.38	209.58	0.09	3.58	6.12	539.33	0.49	20.61
P1219-105	8	459	PVC	0	0	0	0	0.06	9.01	0	0	1.78	278.13	0.68	1.49
P1219-11	6	566	Unknown Material	0.56	49.5	0.19	0.33	1.5	132	1.14	2.02	3.72	327.76	6.17	10.9
P1219-12	6	587	Asbestos Cement	0.21	18.65	0.03	0.05	0.55	48.9	0.16	0.28	1.86	164.26	1.53	2.61
P1219-13	8	501	Unknown Material	0.69	107.35	0.17	0.34	1.79	279.77	1	2	5.43	851.04	7.87	15.71
P1219-14	6	347	Unknown Material	0.04	3.5	0	0	0.09	7.71	0	0.01	0.11	9.93	0.01	0.02
P1219-15	6	287	Unknown Material	0.04	3.5	0	0	0.09	7.71	0	0.01	0.11	9.93	0	0.02
P1219-16	6	292	Unknown Material	0.03	2.52	0	0	0.06	5.54	0	0.01	0.1	9.14	0	0.01
P1219-17	6	478	Unknown Material	0.02	1.57	0	0	0.04	3.45	0	0	0.1	8.5	0.01	0.01
P1219-18	6	431	Unknown Material	0.1	9.22	0.01	0.01	0.23	20.28	0.03	0.06	0.41	36.26	0.08	0.18
P1219-19	8	399	Unknown Material	0.06	9.22	0	0	0.13	20.28	0.01	0.02	0.04	5.8	0	0
P1219-20	6	222	Unknown Material	0.1	8.91	0	0.01	0.22	19.61	0.01	0.06	0.34	29.57	0.03	0.13
P1219-21	8	351	Unknown Material	0.06	10.08	0	0	0.14	22.17	0.01	0.02	0.06	8.92	0	0
P1219-22	8	484	Unknown Material	0.1	16.1	0	0.01	0.23	35.43	0.02	0.04	0.36	55.66	0.05	0.1
P1219-23	6	472	Unknown Material	0.31	27.33	0.05	0.11	0.68	60.13	0.22	0.47	0.78	68.75	0.29	0.6
P1219-24	6	61	Unknown Material	0.33	29.34	0.01	0.12	0.73	64.55	0.03	0.54	0.86	76.05	0.04	0.73
P1219-25	6	225	Unknown Material	0.35	30.84	0.03	0.14	0.77	67.85	0.13	0.59	0.92	81.49	0.19	0.83
P1219-26	6	382	Unknown Material	0.37	32.34	0.06	0.15	0.81	71.15	0.25	0.64	0.99	86.94	0.36	0.93
P1219-27	6	360	Galvanized iron	0.03	2.4	0	0	0.06	5.28	0	0.01	0.1	8.71	0	0.01
P1219-28	6	648	Unknown Material	0.81	71.72	0.42	0.65	2.14	188.76	2.54	3.92	5.73	504.97	15.73	24.27
P1219-30	6	468	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1219-31	6	198	Unknown Material	0.07	6.29	0	0.01	0.16	13.85	0.01	0.03	0.26	22.85	0.02	0.08
P1219-32	6	357	Asbestos Cement	0.03	2.44	0	0	0.06	5.38	0	0	0.1	8.87	0	0.01
P1219-33	6	441	Unknown Material	0.02	1.5	0	0	0.04	3.3	0	0	0.06	5.45	0	0.01
P1219-34	6	226	Unknown Material	0.04	3.59	0	0	0.09	7.91	0	0.01	0.15	13.05	0.01	0.03
P1219-35	8	96	Galvanized iron	0.16	24.33	0	0.02	0.28	43.68	0.01	0.07	1.45	227.55	0.13	1.37

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P1220-01	6	84	Galvanized iron	0.59	51.83	0.03	0.36	1.62	143.16	0.2	2.35	4.54	400.37	1.33	15.79
P1220-03	6	46	Asbestos Cement	0.18	15.88	0	0.04	0.49	42.81	0.01	0.22	1.75	154.2	0.11	2.32
P1220-04	6	211	PVC	0.59	51.83	0.06	0.27	1.62	143.16	0.37	1.77	4.55	400.55	2.51	11.88
P1315-01	8	526	PVC	0	0.69	0	0	0.01	1.27	0	0	0.01	2.09	0	0
P1316-01	8	489	PVC	0.03	4.32	0	0	0.05	7.95	0	0	0.08	13.12	0	0
P1316-02	4	587	Cast iron	0.25	9.97	0.07	0.12	0.36	14.11	0.14	0.23	0.01	0.32	0	0
P1316-03	4	88	Unknown Material	0.07	2.6	0	0.01	0.12	4.79	0	0.03	0.2	7.9	0.01	0.08
P1316-04	6	338	Unknown Material	0.02	2.15	0	0	0	0.27	0	0	0.27	24.06	0.03	0.09
P1316-05	4	12	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-06	6	334	Asbestos Cement	0	0.25	0	0	0.05	4.79	0	0	0.39	34.3	0.05	0.14
P1316-07	6	195	Asbestos Cement	0.01	0.95	0	0	0.02	1.85	0	0	0.07	5.83	0	0.01
P1316-08	12	465	Asbestos Cement	0.71	248.6	0.09	0.19	1.21	427.55	0.24	0.53	0.3	105.87	0.02	0.04
P1316-09	3	302	Unknown Material	0.1	2.31	0.01	0.03	0.19	4.25	0.03	0.1	0.32	7.02	0.08	0.26
P1316-10	6	169	Asbestos Cement	0	0.25	0	0	0.05	4.79	0	0	0.39	34.3	0.02	0.14
P1316-101	8	156	PVC	0	0.66	0	0	0.01	1.31	0	0	0.03	4.95	0	0
P1316-11	8	136	Unknown Material	0.65	102.37	0.04	0.31	1.16	181.7	0.12	0.9	0.33	51.7	0.01	0.09
P1316-12	2	264	Unknown Material	0.19	1.87	0.04	0.16	0.34	3.34	0.12	0.47	0.28	2.73	0.09	0.32
P1316-13	8	840	Cast iron	0.7	109.89	0.3	0.35	1.25	195.44	0.87	1.03	0.46	71.59	0.13	0.16
P1316-14	8	31	Unknown Material	0.62	97.23	0.01	0.28	1.08	169.18	0.02	0.79	0.36	57.05	0	0.1
P1316-15	12	10	Unknown Material	0.71	250.91	0	0.22	1.22	431.81	0.01	0.61	0.32	112.89	0	0.05
P1316-16	8	275	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-17	4	319	Cast iron	0.43	16.69	0.1	0.32	0.86	33.55	0.37	1.15	0.43	16.89	0.1	0.32
P1316-18	8	296	PVC	0.01	0.94	0	0	0.01	1.74	0	0	0.02	2.87	0	0
P1316-19	4	109	Galvanized iron	0.02	0.94	0	0	0.04	1.74	0	0.01	0.07	2.87	0	0.01
P1316-20	4	32	Unknown Material	0.55	21.62	0.02	0.51	1.09	42.62	0.06	1.79	0.81	31.84	0.03	1.05
P1316-21	6	304	Cast iron	0.16	14.2	0.01	0.03	0.33	29.09	0.04	0.12	0.22	19.2	0.02	0.06
P1316-22	12	732	Asbestos Cement	0.72	253.28	0.15	0.2	1.24	436.17	0.4	0.55	0.34	120.09	0.04	0.05
P1316-23	8	102	Unknown Material	0.63	99.23	0.03	0.29	1.1	172.87	0.08	0.82	0.4	63.14	0.01	0.13
P1316-24	8	302	Cast iron	0.64	100.86	0.09	0.3	1.11	174.59	0.25	0.84	0.09	13.58	0	0.01
P1316-25	4	222	Cast iron	0.18	7.05	0.01	0.06	0.33	12.92	0.04	0.2	0.5	19.6	0.09	0.43
P1316-26	4	15	Unknown Material	0.16	6.22	0	0.05	0.29	11.45	0	0.15	0.48	18.89	0.01	0.41
P1316-27	4	230	Cast iron	0.12	4.83	0.01	0.03	0.23	8.89	0.02	0.1	0.37	14.66	0.06	0.25
P1316-28	8	302	PVC	0.18	28.97	0.01	0.02	0.36	56.09	0.02	0.08	0.33	52.36	0.02	0.07
P1316-29	8	476	Asbestos Cement	0.29	45.17	0.03	0.06	0.4	62.45	0.05	0.11	0.29	45.67	0.03	0.06
P1316-30	6	434	Cast iron	0.46	40.26	0.1	0.22	0.71	62.22	0.22	0.5	0.22	19.4	0.03	0.06
P1316-31	6	93	Unknown Material	0.87	76.97	0.07	0.75	1.4	123.73	0.17	1.8	0.17	15.25	0	0.04
P1316-32	6	20	Unknown Material	1.37	121.06	0.03	1.72	2.19	193.01	0.08	4.08	0.09	7.49	0	0.01
P1316-33	6	147	Unknown Material	1.09	95.9	0.16	1.12	1.73	152.84	0.39	2.65	0.13	11.03	0	0.02
P1316-34	8	82	Unknown Material	0.73	114.07	0.03	0.38	1.21	189.23	0.08	0.97	0.27	42.29	0	0.06
P1316-35	8	109	Unknown Material	0.85	133.26	0.06	0.51	1.45	227.45	0.15	1.36	0.51	79.43	0.02	0.19
P1316-36	6	143	Asbestos Cement	0.7	62.06	0.06	0.43	1.14	100.22	0.15	1.05	0.22	18.98	0.01	0.05

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1316-37	4	210	Cast iron	0.75	29.37	0.19	0.9	1.22	47.92	0.47	2.23	0.24	9.25	0.02	0.11
P1316-38	12	387	Ductile Iron	0.56	195.82	0.06	0.14	0.93	328.58	0.14	0.37	0.28	99.92	0.02	0.04
P1316-39	6	169	Cast iron	0.88	77.51	0.13	0.75	1.25	110.11	0.24	1.45	1.01	89.11	0.17	0.98
P1316-40	6	365	Cast iron	0.88	77.51	0.28	0.75	1.25	110.11	0.53	1.45	1.01	89.11	0.36	0.98
P1316-41	4	439	C-900	0.07	2.7	0	0.01	0.13	4.97	0.01	0.03	0.21	8.19	0.03	0.06
P1316-42	6	551	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1316-43	2	700	Galvanized iron	0.03	0.3	0	0.01	0.06	0.56	0.01	0.02	0.09	0.92	0.03	0.04
P1316-44	6	505	C-900	0.03	2.4	0	0	0.05	4.42	0	0	0.08	7.29	0	0.01
P1316-45	8	922	Asbestos Cement	0.01	1.83	0	0	0.02	3.36	0	0	0.04	5.55	0	0
P1316-46	12	464	Asbestos Cement	0.83	292.95	0.12	0.26	1.42	499.23	0.32	0.7	0.41	146.27	0.03	0.07
P1316-47	4	271	Cast iron	0.03	1.16	0	0	0.05	2.14	0	0.01	0.09	3.53	0	0.02
P1316-48	8	295	Asbestos Cement	0.1	15.36	0	0.01	0.2	31.18	0.01	0.03	0.16	25.52	0.01	0.02
P1316-49	6	133	C-900	0.01	0.82	0	0	0.02	1.51	0	0	0.03	2.49	0	0
P1316-50	8	41	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1316-51	8	233	Unknown Material	0.01	0.82	0	0	0.01	1.51	0	0	0.02	2.49	0	0
P1316-52	8	25	Unknown Material	0.02	3.22	0	0	0.04	5.93	0	0.01	0.06	9.78	0	0
P1316-53	12	47	Unknown Material	0.73	256.51	0.01	0.24	1.25	442.1	0.03	0.64	0.37	129.87	0	0.07
P1316-54	12	52	Unknown Material	0.83	291.12	0.02	0.3	1.41	495.86	0.04	0.8	0.4	140.72	0	0.08
P1316-55	8	308	Unknown Material	0.56	88.01	0.07	0.24	0.95	149.31	0.19	0.63	0.32	50.18	0.03	0.08
P1316-56	6	90	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1316-57	6	686	Asbestos Cement	0.35	31.19	0.08	0.12	0.54	47.46	0.18	0.26	0.01	0.45	0	0
P1316-58	12	742	Cast iron	1.15	404.68	0.41	0.55	1.86	655.87	1	1.35	0.1	33.78	0	0.01
P1316-59	6	363	C-900	0.01	0.62	0	0	0.01	1.14	0	0	0.02	1.87	0	0
P1316-60	8	156	Unknown Material	0.56	88.02	0.04	0.23	0.95	149.31	0.1	0.63	0.32	50.18	0.01	0.08
P1316-61	8	32	Unknown Material	0.4	62.82	0	0.12	0.72	112.87	0.01	0.37	0.43	67.93	0	0.14
P1316-62	12	117	Unknown Material	0.73	258.63	0.03	0.24	1.25	441.45	0.08	0.65	0.48	167.84	0.01	0.11
P1316-63	6	49	Cast iron	0.29	25.84	0	0.1	0.43	37.62	0.01	0.19	0.18	15.79	0	0.04
P1316-64	4	213	Cast iron	0.02	0.94	0	0	0.04	1.74	0	0	0.07	2.87	0	0.01
P1316-65	6	268	Asbestos Cement	0.03	2.77	0	0	0.06	5.1	0	0	0.1	8.41	0	0.01
P1316-66	6	90	Galvanized iron	0.03	2.46	0	0	0.05	4.52	0	0.01	0.08	7.46	0	0.01
P1316-67	6	598	Galvanized iron	0.03	2.46	0	0	0.05	4.52	0	0	0.08	7.46	0.01	0.01
P1316-68	12	876	Ductile Iron	0.41	145.74	0.07	0.08	0.61	213.84	0.15	0.17	0.38	135.01	0.06	0.07
P1316-69	6	303	Asbestos Cement	0.06	5.23	0	0	0.11	9.62	0	0.01	0.18	15.87	0.01	0.03
P1316-70	8	202	PVC	0.15	23.92	0	0.02	0.23	36.16	0.01	0.03	0.11	16.91	0	0.01
P1316-71	4	720	Steel	0.61	23.92	0.62	0.86	0.92	36.16	1.34	1.86	0.43	16.91	0.33	0.45
P1317-01	4	160	Steel	0.51	19.98	0.1	0.62	0.74	28.92	0.2	1.23	0.74	28.85	0.2	1.22
P1317-02	6	154	Cast iron	1.01	88.73	0.15	0.97	1.39	122.9	0.27	1.77	1.64	144.56	0.37	2.39
P1317-03	8	371	Cast iron	0.24	38.1	0.02	0.05	0.27	42.66	0.02	0.06	0.52	82	0.08	0.21
P1317-04	8	47	Cast iron	0.24	37.75	0	0.05	0.27	42.03	0	0.06	0.53	83.05	0.01	0.21
P1317-05	8	382	Cast iron	0.2	31.1	0.01	0.03	0.19	29.78	0.01	0.03	0.66	103.26	0.12	0.32
P1317-06	6	449	Cast iron	0.63	55.09	0.18	0.4	0.91	80.22	0.36	0.8	1.55	136.72	0.97	2.16

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				Average Day				Maximum Day				Peak Hour			
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P1317-07	6	25	Unknown Material	0.6	53.27	0.01	0.38	0.87	76.88	0.02	0.74	1.61	142.23	0.06	2.32
P1317-08	8	275	PVC	0.01	1.32	0	0	0.02	2.43	0	0	0.03	4.01	0	0
P1317-09	8	212	PVC	0.02	2.37	0	0	0.03	4.36	0	0	0.05	7.2	0	0
P1317-10	8	184	PVC	0.01	1.85	0	0	0.02	3.41	0	0	0.04	5.62	0	0
P1317-100	6	93	PVC	0	0.34	0	0	0.01	0.62	0	0	0.01	1.02	0	0
P1317-101	8	313	PVC	0.14	21.45	0	0.01	0.13	21.07	0	0.01	0.34	54.03	0.02	0.07
P1317-11	4	356	Steel	0.05	1.85	0	0.01	0.09	3.41	0.01	0.02	0.14	5.62	0.02	0.06
P1317-12	8	206	Unknown Material	0.21	32.39	0.01	0.04	0.42	65.89	0.03	0.14	0.05	7.96	0	0
P1317-13	8	142	PVC	0.04	5.81	0	0	0.07	10.69	0	0.01	0.11	17.64	0	0.01
P1317-14	6	356	Cast iron	0.51	45.03	0.1	0.28	0.79	69.93	0.22	0.62	0.9	79.57	0.28	0.79
P1317-15	6	57	Unknown Material	0.6	53.27	0.02	0.37	0.87	76.88	0.04	0.75	1.61	142.23	0.13	2.32
P1317-16	4	273	Cast iron	0.03	1.04	0	0	0.05	1.92	0	0.01	0.08	3.16	0	0.01
P1317-17	6	818	Cast iron	0.87	77.04	0.61	0.75	1.11	97.53	0.94	1.15	2.09	184.21	3.07	3.75
P1317-18	8	168	Unknown Material	0.73	114.11	0.06	0.38	1.1	172.04	0.14	0.81	1.14	177.94	0.15	0.87
P1317-19	8	380	Unknown Material	0.59	93.03	0.1	0.26	0.87	136.74	0.2	0.53	0.2	30.59	0.01	0.03
P1317-20	6	400	Unknown Material	0.01	0.9	0	0	0.02	1.66	0	0	0.03	2.75	0	0
P1317-21	12	57	PVC	0.02	5.76	0	0	0.03	10.61	0	0	0.05	17.5	0	0
P1317-22	4	23	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-23	12	461	PVC	0.02	5.76	0	0	0.03	10.61	0	0	0.05	17.5	0	0
P1317-24	8	296	PVC	0.04	6.1	0	0	0.07	11.22	0	0	0.12	18.52	0	0.01
P1317-25	6	501	Unknown Material	0.36	32.14	0.07	0.15	0.43	38.12	0.1	0.2	0.9	79.6	0.4	0.79
P1317-26	8	248	C-900	0.53	83.45	0.04	0.16	0.76	119.1	0.08	0.31	0.38	59.69	0.02	0.09
P1317-27	2	255	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-28	6	401	C-900	0.16	14.46	0.01	0.03	0.13	11.02	0.01	0.02	0.67	59.01	0.14	0.34
P1317-29	4	325	Cast iron	0.24	9.32	0.03	0.11	0.13	5.08	0.01	0.03	1.1	43.2	0.6	1.84
P1317-30	4	158	Cast iron	0.27	10.48	0.02	0.13	0.18	7.22	0.01	0.07	1.01	39.67	0.25	1.57
P1317-31	4	467	PVC	0.31	12.24	0.06	0.13	0.23	9.17	0.04	0.08	1.16	45.27	0.71	1.51
P1317-32	8	512	Cast iron	0.38	59.13	0.06	0.11	0.23	36.39	0.02	0.05	1.64	256.31	0.87	1.7
P1317-33	4	223	PVC	0	0.14	0	0	0.03	1.04	0	0	0.27	10.53	0.02	0.1
P1317-34	6	166	Cast iron	0.33	29.23	0.02	0.13	0.37	32.77	0.03	0.15	1	88.42	0.16	0.96
P1317-35	8	885	Cast iron	0.65	101.62	0.27	0.31	1.08	168.93	0.7	0.79	0.31	48.56	0.07	0.08
P1317-36	6	332	C-900	0.36	31.31	0.03	0.11	0.66	57.79	0.11	0.33	0.5	44.19	0.07	0.2
P1317-37	8	748	Unknown Material	1.34	209.75	0.88	1.17	2	313.57	1.85	2.47	1.28	200.63	0.81	1.08
P1317-38	12	65	Unknown Material	0.37	129.21	0	0.07	0.52	183.44	0.01	0.13	0.53	185.17	0.01	0.13
P1317-39	8	29	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-40	8	331	Cast iron	0.54	84.55	0.07	0.22	0.88	137.53	0.18	0.54	0.02	3.26	0	0
P1317-41	2	249	Unknown Material	0.31	3.07	0.1	0.4	0.58	5.66	0.31	1.25	0.95	9.33	0.79	3.16
P1317-42	2	200	Unknown Material	0.19	1.84	0.03	0.16	0.35	3.39	0.1	0.48	0.57	5.59	0.24	1.22
P1317-43	8	247	Unknown Material	0.56	88.43	0.06	0.24	0.92	144.65	0.15	0.59	0.05	8.5	0	0
P1317-44	6	42	Galvanized iron	0.13	11.07	0	0.02	0.23	20.38	0	0.06	0.38	33.62	0.01	0.16
P1317-45	6	350	Galvanized iron	0.11	9.84	0.01	0.02	0.21	18.11	0.02	0.05	0.34	29.87	0.05	0.13

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P1317-46	8	88	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1317-47	6	704	Galvanized iron	0.14	12.61	0.02	0.03	0.15	13.08	0.02	0.03	0.48	42.34	0.17	0.25
P1317-48	8	305	C-900	0.52	81.49	0.05	0.15	0.74	115.5	0.09	0.29	0.42	65.64	0.03	0.1
P1317-49	6	719	Asbestos Cement	0.71	62.6	0.32	0.44	1.03	90.88	0.63	0.87	0.48	42.34	0.15	0.21
P1317-50	8	280	Asbestos Cement	0.01	2.24	0	0	0.03	4.12	0	0	0.04	6.8	0	0
P1317-51	10	326	PVC	0.02	4.56	0	0	0.03	8.4	0	0	0.06	13.85	0	0
P1317-52	6	296	Unknown Material	0.54	47.74	0.09	0.31	0.72	63.53	0.15	0.52	0.99	87.46	0.28	0.94
P1317-53	6	185	Unknown Material	0.46	40.45	0.04	0.23	0.67	58.64	0.08	0.45	0.53	46.79	0.05	0.3
P1317-54	6	282	Asbestos Cement	0.35	31.27	0.03	0.12	0.2	17.44	0.01	0.04	2.42	213.49	1.2	4.25
P1317-55	4	173	Steel	0.09	3.62	0	0.03	0.17	6.66	0.01	0.08	0.28	10.99	0.04	0.2
P1317-56	4	176	Unknown Material	0.46	18.04	0.06	0.36	0.38	14.79	0.04	0.25	1.64	64.39	0.68	3.86
P1317-57	2	182	Unknown Material	0.07	0.68	0	0.02	0.13	1.25	0.01	0.08	0.21	2.06	0.03	0.19
P1317-58	4	149	PVC	0.03	1.25	0	0	0.07	2.75	0	0.01	0.84	32.94	0.12	0.84
P1317-59	8	161	Unknown Material	0.42	65.15	0.02	0.13	0.34	53.81	0.02	0.09	1.21	190.35	0.16	0.98
P1317-60	4	14	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1317-61	8	327	Unknown Material	0.42	65.84	0.04	0.14	0.35	55.08	0.03	0.1	1.2	188.25	0.31	0.96
P1317-62	8	452	Cast iron	0.42	65.94	0.06	0.14	0.32	50.21	0.04	0.08	1.43	224.68	0.6	1.33
P1317-63	12	354	Galvanized iron	0.38	135.02	0.03	0.07	0.55	194.13	0.05	0.14	0.48	167.53	0.04	0.11
P1317-64	6	143	Asbestos Cement	0.11	9.82	0	0.02	0.04	3.63	0	0	1.81	159.46	0.35	2.48
P1318-01	8	62	Unknown Material	0.42	66.08	0.01	0.14	0.31	49.17	0	0.08	1.5	235.21	0.09	1.45
P1318-02	6	52	Unknown Material	0.08	6.95	0	0	0.15	12.78	0	0.03	0.24	21.09	0	0.07
P1318-03	6	607	Asbestos Cement	0.02	1.85	0	0	0.04	3.41	0	0	0.06	5.62	0	0
P1318-04	6	804	C-900	0.06	5.1	0	0	0.11	9.38	0.01	0.01	0.18	15.47	0.02	0.03
P1318-06	6	451	C-900	0.02	1.39	0	0	0.03	2.56	0	0	0.05	4.23	0	0
P1318-07	2	280	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1318-10	4	304	Cast iron	0.66	25.84	0.22	0.71	0.96	37.62	0.43	1.43	0.4	15.79	0.09	0.29
P1318-100	8	181	PVC	0.08	13.12	0	0.01	0.58	91.25	0.03	0.19	2.26	354	0.42	2.33
P1318-101	8	460	PVC	0.09	14.46	0	0.01	0.47	73.99	0.06	0.13	1.58	247.18	0.55	1.2
P1318-102	8	525	PVC	0.01	1.18	0	0	0.29	44.77	0.03	0.05	1.27	198.97	0.42	0.8
P1318-103	8	156	PVC	0	0.14	0	0	0.27	42.48	0.01	0.05	1.25	195.2	0.12	0.77
P1318-104	8	145	PVC	0.01	0.9	0	0	0.26	40.2	0.01	0.04	1.22	191.42	0.11	0.74
P1318-105	8	171	PVC	0	0.13	0	0	0.29	45.45	0.01	0.05	1.3	203.19	0.14	0.83
P1318-106	8	216	PVC	0.02	2.73	0	0	0.25	39.73	0.01	0.04	1.24	193.76	0.16	0.76
P1318-107	8	165	PVC	0.03	5.33	0	0	0.45	70.54	0.02	0.12	2.02	316.75	0.31	1.89
P1318-108	8	332	PVC	0.08	13.12	0	0.01	0.58	91.25	0.06	0.19	2.26	354	0.77	2.33
P1318-109	8	323	PVC	0.03	4.41	0	0	0.08	13.27	0	0.01	0.16	24.98	0.01	0.02
P1318-110	8	245	PVC	0.07	10.42	0	0	0.15	22.93	0	0.01	0.24	37.82	0.01	0.04
P1318-111	8	261	PVC	0.02	3.24	0	0	0.05	7.12	0	0	0.07	11.75	0	0
P1318-112	8	99	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1318-113	8	179	PVC	0.03	4.06	0	0	0.06	8.94	0	0	0.09	14.75	0	0.01
P1318-114	8	243	PVC	0	0.64	0	0	0.01	1.4	0	0	0.01	2.31	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1318-115	8	91	PVC	0.01	1.04	0	0	0.01	2.29	0	0	0.02	3.78	0	0
P1318-116	8	120	PVC	0.01	1.04	0	0	0.01	2.29	0	0	0.02	3.78	0	0
P1318-117	8	129	PVC	0.01	1.04	0	0	0.01	2.29	0	0	0.02	3.78	0	0
P1318-118	8	149	PVC	0.02	2.86	0	0	0.04	6.29	0	0	0.07	10.38	0	0
P1318-119	10	98	PVC	0.13	32.52	0	0.01	0.72	176.11	0.02	0.21	2.53	619.11	0.22	2.21
P1318-120	10	822	PVC	0.31	75.41	0.04	0.04	0.95	233.43	0.3	0.36	1.9	465.81	1.07	1.3
P1318-121	8	141	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1318-122	8	817	PVC	0	0	0	0	0.67	104.56	0.2	0.24	3.2	501.06	3.62	4.43
P1318-123	10	1163	PVC	0.13	32.52	0.01	0.01	0.72	176.1	0.25	0.22	2.53	619.11	2.57	2.21
P1319-01	6	622	Asbestos Cement	0.18	15.88	0.02	0.03	0.49	42.81	0.13	0.22	1.75	154.2	1.45	2.33
P1319-02	6	161	Asbestos Cement	0.18	15.88	0.01	0.03	0.49	42.81	0.03	0.22	1.75	154.2	0.37	2.33
P1319-03	6	583	PVC	0.59	51.83	0.16	0.27	1.62	143.16	1.03	1.77	4.55	400.55	6.92	11.88
P1319-100	8	640	PVC	0.27	42.89	0.03	0.05	0.37	57.33	0.05	0.08	0.98	153.3	0.32	0.49
P1319-101	8	2137	PVC	0.4	62.11	0.20	0.09	1.11	173.67	1.33	0.62	3.41	534.45	10.66	4.99
P1320-01	8	267	PVC	0.02	3.03	0	0	0.04	6.66	0	0	0.07	10.98	0	0
P1320-02	4	723	Galvanized iron	0.08	3.03	0.01	0.01	0.17	6.66	0.04	0.06	0.28	10.98	0.11	0.15
P1320-03	6	859	PVC	0.59	51.83	0.23	0.27	1.62	143.16	1.52	1.77	4.55	400.55	10.2	11.88
P1415-01	6	71	Unknown Material	0	0	0.00	0	0	0	0	0	0	0	0	0
P1415-01a	6	130	Unknown Material	0	0	0.00	0	0	0	0	0	0	0	0	0
P1415-02	6	453	C-900	0.04	3.73	0	0	0.08	6.86	0	0.01	0.13	11.32	0.01	0.02
P1415-03	6	293	C-900	0.06	5.18	0	0	0.11	9.54	0	0.01	0.18	15.74	0.01	0.03
P1415-04	6	576	Asbestos Cement	0.02	2.02	0	0	0.04	3.72	0	0	0.07	6.13	0	0.01
P1415-05	2	30	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1415-06	8	220	Galvanized iron	0.03	5.18	0	0	0.06	9.54	0	0	0.1	15.74	0	0.01
P1415-07	8	84	Galvanized iron	0.04	6.93	0	0	0.08	12.75	0	0.01	0.13	21.04	0	0.02
P1415-08	8	147	Unknown Material	0.06	8.95	0	0	0.11	16.47	0	0.01	0.17	27.18	0	0.03
P1415-09	6	472	Asbestos Cement	0.45	39.86	0.09	0.19	0.75	65.95	0.23	0.48	2.77	244.5	2.58	5.46
P1415-10	6	169	Galvanized iron	0.45	39.86	0.04	0.22	0.75	65.95	0.09	0.56	2.77	244.5	1.07	6.33
P1415-100	6	219	PVC	0.02	1.36	0	0	0.03	2.51	0	0	0.05	4.16	0	0
P1415-101	8	16	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1415-102	6	24	PVC	0.02	1.82	0	0	0.04	3.34	0	0.01	0.03	2.65	0	0
P1415-103	8	22	PVC	0.08	11.81	0	0	0.13	20.51	0	0.01	0.06	9.48	0	0
P1415-11	8	224	Galvanized iron	0.33	51.13	0.02	0.09	0.55	86.67	0.05	0.23	1.34	210.31	0.26	1.18
P1415-12	2	740	Galvanized iron	1.5	14.64	5.38	7.27	2.75	26.95	16.64	22.49	4.54	44.46	42.07	56.85
P1415-13	8	563	Galvanized iron	0.34	52.58	0.05	0.09	0.57	89.35	0.14	0.24	1.31	205.89	0.64	1.13
P1415-14	6	368	Galvanized iron	0.37	32.91	0.06	0.15	0.6	53.16	0.14	0.38	3.01	265.6	2.72	7.38
P1415-15	6	132	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-16	6	663	Cast iron	0.23	20.3	0.04	0.06	0.41	36.36	0.12	0.19	0.02	1.32	0	0
P1415-17	6	338	Unknown Material	0.03	2.82	0	0	0.06	5.19	0	0.01	0.1	8.57	0	0.01
P1415-18	6	77	Unknown Material	0.1	8.94	0	0.01	0.19	16.46	0	0.04	0.4	35.33	0.01	0.18
P1415-20	4	97	Unknown Material	0.04	1.58	0	0.01	0.07	2.9	0	0.01	0.12	4.79	0	0.03

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1415-21	4	369	Cast iron	0.03	1.07	0	0	0.05	1.98	0	0.01	0.08	3.24	0.01	0.02
P1415-22	4	181	Cast iron	0.03	1.36	0	0	0.06	2.51	0	0.01	0.11	4.16	0	0.02
P1415-23	6	437	Asbestos Cement	0.33	29.24	0.05	0.11	0.6	52.81	0.14	0.32	0.39	34.01	0.06	0.14
P1415-24	4	811	Steel	0.13	5.1	0.04	0.05	0.24	9.38	0.12	0.15	0.19	7.3	0.08	0.1
P1415-25	6	202	Asbestos Cement	0.01	1.16	0	0	0.02	2.14	0	0	0.04	3.53	0	0
P1415-26	8	54	Galvanized iron	0.34	52.58	0	0.09	0.57	89.35	0.01	0.24	1.31	205.89	0.06	1.13
P1415-27	6	94	Unknown Material	0.28	24.92	0.01	0.09	0.52	45.86	0.03	0.29	0.86	75.67	0.07	0.72
P1415-28	6	481	Asbestos Cement	0.07	6.34	0	0.01	0.13	11.67	0.01	0.02	0.22	19.25	0.02	0.05
P1415-29	6	262	Asbestos Cement	0.05	4.13	0	0	0.09	7.59	0	0.01	0.14	12.53	0.01	0.02
P1415-30	8	268	Unknown Material	0.49	77.5	0.05	0.19	0.86	135.21	0.14	0.52	0.83	130.22	0.13	0.49
P1415-31	6	576	Asbestos Cement	0.03	2.21	0	0	0.05	4.08	0	0	0.08	6.72	0	0.01
P1415-32	4	561	Steel	0.25	9.79	0.09	0.17	0.43	16.79	0.25	0.45	0.09	3.34	0.01	0.02
P1415-33	4	249	Steel	0.05	2.02	0	0.01	0.09	3.72	0.01	0.03	0.16	6.14	0.02	0.07
P1415-34	6	284	Asbestos Cement	0.02	2.06	0	0	0.05	4.78	0	0	0.79	69.21	0.15	0.53
P1415-35	8	270	Asbestos Cement	0.51	79.56	0.05	0.17	0.89	139.99	0.13	0.48	0.39	61.02	0.03	0.1
P1415-36	8	59	Unknown Material	1.27	199.18	0.06	1.07	2.18	340.86	0.17	2.88	0.09	13.57	0	0.01
P1415-37	4	356	Ductile Iron	0	0	0	0	0	0	0	0	0	0	0	0
P1415-38	8	26	Unknown Material	1.38	216.37	0.03	1.24	2.38	372.48	0.09	3.41	0.25	38.61	0	0.05
P1415-39	12	270	Asbestos Cement	0.66	232.43	0.05	0.17	1.13	397.8	0.12	0.46	0.16	56.78	0	0.01
P1415-40	12	8	Unknown Material	0.65	229.95	0	0.21	1.12	394.46	0	0.52	0.21	75.63	0	0.03
P1415-41	2	89	Galvanized iron	0.12	1.16	0.01	0.07	0.22	2.14	0.02	0.21	0.36	3.53	0.05	0.52
P1415-42	8	104	Unknown Material	0.76	119.62	0.04	0.42	1.28	200.86	0.11	1.08	0.3	47.45	0.01	0.08
P1415-43	8	32	Unknown Material	0.57	89.18	0.01	0.24	0.93	145.85	0.02	0.6	0.06	9.81	0	0.01
P1415-44	8	324	Asbestos Cement	0.54	84.08	0.06	0.19	0.87	136.47	0.15	0.46	0.02	2.51	0	0
P1415-45	4	215	Steel	0.41	16.06	0.09	0.41	0.65	25.32	0.21	0.96	0.46	18.16	0.11	0.52
p1415-46	6	295	Unknown Material	0.01	0.45	0	0	0.01	0.83	0	0	0.08	6.81	0	0.01
P1415-47	6	143	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1415-48	6	214	Unknown Material	0.02	1.36	0	0	0.03	2.51	0	0	0.05	4.16	0	0
P1415-49	8	512	Asbestos Cement	0.51	79.56	0.09	0.17	0.89	139.99	0.25	0.48	0.39	61.02	0.05	0.1
P1415-50	12	542	Asbestos Cement	0.66	231.12	0.09	0.17	1.13	396.6	0.25	0.46	0.22	79.16	0.01	0.02
P1415-51	12	985	Asbestos Cement	0.69	242.92	0.18	0.18	1.18	417.11	0.49	0.5	0.25	88.64	0.03	0.03
P1416-01	6	261	Asbestos Cement	0.01	0.63	0	0	0.01	1.16	0	0	0.02	1.91	0	0
P1416-02	6	30	Unknown Material	0.01	0.63	0	0	0.01	1.16	0	0	0.02	1.91	0	0
P1416-03	8	146	C-900	0.35	54.7	0.01	0.07	0.61	94.97	0.03	0.2	0.85	133.87	0.06	0.38
P1416-04	6	350	C-900	0.22	19.2	0.02	0.04	0.34	30.16	0.03	0.1	0.43	38.04	0.05	0.15
P1416-05	8	753	Galvanized iron	0.41	64.19	0.1	0.13	0.72	112.43	0.28	0.37	0.67	105.06	0.25	0.33
P1416-06	6	72	Unknown Material	0.01	1.08	0	0	0.02	1.98	0	0	0.04	3.27	0	0
P1416-07	6	265	C-900	0.19	16.54	0.01	0.03	0.29	25.26	0.02	0.07	0.34	29.96	0.03	0.1
P1416-08	2	294	Unknown Material	0.46	4.53	0.24	0.83	0.85	8.33	0.75	2.56	1.4	13.74	1.9	6.46
P1416-09	6	257	Asbestos Cement	0.05	4.53	0	0	0.09	8.33	0	0.01	0.16	13.74	0.01	0.03
P1416-10	6	116	Unknown Material	0.02	2.04	0	0	0.19	16.82	0.01	0.05	0.47	41.22	0.03	0.23

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P1416-101	6	254	PVC	0.09	7.96	0	0.01	0.11	9.72	0	0.01	0.05	4.3	0	0
P1416-12	6	352	Asbestos Cement	0.13	11.27	0.01	0.02	0.38	33.81	0.05	0.14	0.15	13.18	0.01	0.02
P1416-13	8	483	Galvanized iron	0.41	64.19	0.06	0.13	0.72	112.43	0.18	0.37	0.67	105.06	0.16	0.33
P1416-14	6	74	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1416-15	6	18	Unknown Material	0.15	13.12	0	0.03	0.42	37.22	0	0.2	0.09	7.56	0	0
P1416-16	4	82	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1416-17	6	117	Unknown Material	0.15	13.13	0	0.03	0.42	37.22	0.02	0.19	0.09	7.56	0	0.01
P1416-18	6	30	Unknown Material	0.15	13.13	0	0.03	0.42	37.22	0.01	0.2	0.09	7.56	0	0.01
P1416-19	4	510	Cast iron	0.25	9.97	0.06	0.12	0.36	14.11	0.12	0.23	0.01	0.32	0	0
P1416-20	6	521	Asbestos Cement	0.04	3.79	0	0	0.08	6.97	0	0.01	0.13	11.5	0.01	0.02
P1416-21	4	404	Unknown Material	0.31	12.14	0.07	0.18	0.26	10.07	0.05	0.12	0.59	23.26	0.24	0.59
P1416-22	8	88	Asbestos Cement	0.54	84.08	0.02	0.19	0.87	136.47	0.04	0.45	0.02	2.51	0	0
P1416-23	8	306	Asbestos Cement	0.48	74.73	0.05	0.15	0.76	119.27	0.11	0.36	0.17	25.86	0.01	0.02
P1416-24	2	304	Unknown Material	0.12	1.16	0.02	0.07	0.22	2.14	0.06	0.21	0.36	3.53	0.16	0.52
P1416-25	2	289	Galvanized iron	0.18	1.74	0.04	0.14	0.33	3.21	0.13	0.44	0.54	5.29	0.32	1.1
P1416-26	8	477	Asbestos Cement	0.48	74.73	0.07	0.15	0.76	119.27	0.17	0.36	0.17	25.86	0.01	0.02
P1416-27	4	290	Cast iron	0.3	11.91	0.05	0.17	0.63	24.76	0.19	0.66	0.06	2.37	0	0.01
P1416-28	1	400	Galvanized iron	0.34	0.83	0.42	1.04	0.6	1.47	1.2	3	0.29	0.71	0.31	0.78
P1416-29	6	10	Unknown Material	0.12	10.54	0	0.02	0.08	6.84	0	0	0.9	79.2	0.01	0.78
P1416-30	6	443	Unknown Material	0.13	11.34	0.01	0.02	0.38	33.42	0.07	0.16	0.14	12.76	0.01	0.03
P1416-31	6	228	Unknown Material	0.18	15.67	0.01	0.04	0.47	41.4	0.05	0.24	0	0.39	0	0
P1416-32	8	21	Unknown Material	0.71	111.52	0.01	0.36	1.26	197.03	0.02	1.05	0.08	12.13	0	0
P1416-33	8	21	Unknown Material	0.6	94.6	0.01	0.27	0.98	153.34	0.01	0.65	0.05	7.96	0	0.01
P1416-34	2	287	Galvanized iron	0.15	1.44	0.03	0.1	0.27	2.65	0.09	0.31	0.45	4.37	0.22	0.77
P1416-35	6	264	Asbestos Cement	0.02	1.85	0	0	0.04	3.41	0	0	0.06	5.62	0	0
P1416-36	1	132	Galvanized iron	0.28	0.69	0.1	0.74	0.52	1.27	0.3	2.3	0.86	2.09	0.77	5.8
P1416-37	6	460	Asbestos Cement	0.06	5.47	0	0	0.11	10.07	0.01	0.01	0.19	16.61	0.02	0.04
P1416-38	6	664	C-900	0.02	2.12	0	0	0.04	3.9	0	0	0.07	6.43	0	0.01
P1416-39	8	617	Unknown Material	0.59	93.16	0.16	0.26	0.96	150.69	0.39	0.64	0.02	3.58	0	0
P1416-40	3	330	Steel	0.11	2.4	0.02	0.05	0.2	4.48	0.05	0.16	0.41	9.1	0.19	0.59
P1416-41	8	158	Unknown Material	0.49	77.38	0.03	0.18	0.81	126.51	0.07	0.46	0.11	17.68	0	0.01
P1416-42	8	338	Galvanized iron	0.31	49.25	0.03	0.08	0.39	61.69	0.04	0.12	0.36	55.65	0.03	0.1
P1416-43	8	373	Galvanized iron	0.3	47.6	0.03	0.08	0.37	58.64	0.04	0.11	0.39	60.69	0.04	0.12
P1416-44	6	294	Asbestos Cement	0.01	0.79	0	0	0.04	3.46	0	0	0.3	26.05	0.03	0.09
P1416-45	3	158	Steel	0.07	1.59	0	0.02	0.13	2.92	0.01	0.07	0.22	4.81	0.03	0.18
P1416-46	4	483	Asbestos Cement	0.1	3.96	0.01	0.02	0.06	2.37	0	0.01	0.42	16.42	0.13	0.26
P1416-47	4	257	Steel	0.34	13.13	0.07	0.28	0.49	19.3	0.15	0.58	0.34	13.22	0.07	0.29
P1416-48	2	242	Unknown Material	0.07	0.69	0.01	0.03	0.13	1.27	0.02	0.08	0.21	2.09	0.05	0.2
P1416-49	4	101	C-900	0.05	2.08	0	0	0.1	3.83	0	0.01	0.16	6.32	0	0.04
P1416-50	6	363	Asbestos Cement	0.26	23.11	0.03	0.07	0.63	55.59	0.13	0.35	0.26	22.76	0.02	0.07
P1416-51	6	49	Unknown Material	0.11	9.99	0	0.02	0.21	18.37	0	0.05	0.34	30.32	0.01	0.13

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P1416-52	6	469	Galvanized iron	0.51	44.65	0.13	0.27	0.55	48.3	0.15	0.31	1.11	98.09	0.55	1.17
P1416-53	6	504	Asbestos Cement	0.04	3.12	0	0	0.07	5.75	0	0.01	0.11	9.48	0.01	0.01
P1416-54	6	139	Asbestos Cement	0.02	2.12	0	0	0.04	3.9	0	0	0.07	6.43	0	0.01
P1416-55	6	374	Asbestos Cement	0.02	2.12	0	0	0.04	3.9	0	0	0.07	6.43	0	0.01
P1417-01	6	274	Galvanized iron	0.51	44.65	0.07	0.27	0.55	48.3	0.09	0.31	1.11	98.09	0.32	1.17
P1417-02	6	183	C-900	0.3	26.59	0.01	0.08	0.35	30.93	0.02	0.1	0.9	79.55	0.11	0.6
P1417-03	1	82	PVC	0.53	1.3	0.15	1.79	0.97	2.38	0.45	5.54	1.61	3.93	1.15	14
P1417-04	6	58	Unknown Material	0.29	25.3	0.01	0.09	0.32	28.54	0.01	0.12	0.95	83.48	0.05	0.87
P1417-05	6	135	C-900	0.17	15.2	0	0.03	0.14	12.12	0	0.02	0.31	27.21	0.01	0.08
P1417-06	6	37	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1417-07	4	125	C-900	0.07	2.6	0	0.01	0.12	4.79	0	0.02	0.2	7.9	0.01	0.06
P1417-08	4	98	C-900	0.04	1.56	0	0	0.07	2.87	0	0.01	0.12	4.74	0	0.02
P1417-09	2	112	C-900	0.11	1.04	0	0.04	0.2	1.92	0.01	0.13	0.32	3.16	0.04	0.32
P1417-10	4	787	Cast iron	0.6	23.44	0.47	0.59	0.64	25.11	0.53	0.67	2.28	89.14	5.54	7.05
P1417-100	8	440	PVC	0.04	6.93	0	0	0.05	7.88	0	0	0.3	46.31	0.02	0.05
P1417-11	8	136	Unknown Material	0.63	98.26	0.04	0.29	0.72	112.88	0.05	0.37	2.91	455.56	0.67	4.94
P1417-12	10	36	Ductile Iron	0.4	98.26	0	0.1	0.46	112.88	0	0.12	1.86	455.56	0.06	1.67
P1417-13	8	154	Unknown Material	0.02	2.4	0	0	0.03	4.41	0	0	0.05	7.28	0	0
P1417-14	10	43	Unknown Material	0.39	94.91	0	0.09	0.44	106.71	0	0.11	1.9	465.74	0.07	1.73
P1417-15	10	234	C-900	0.37	90.12	0.01	0.06	0.4	97.89	0.02	0.07	1.96	480.29	0.32	1.38
P1417-16	6	164	C-900	0.19	16.56	0.01	0.03	0.19	16.83	0.01	0.03	1.16	102.41	0.16	0.95
P1417-17	10	359	Unknown Material	0.35	85.32	0.03	0.07	0.36	89.08	0.03	0.08	2.02	494.84	0.7	1.94
P1417-18	4	700	Cast iron	0.32	12.38	0.13	0.18	0.18	6.93	0.04	0.06	0.91	35.78	0.91	1.3
P1417-19	6	551	Galvanized iron	0.19	16.56	0.02	0.04	0.19	16.83	0.02	0.04	1.16	102.41	0.7	1.26
P1417-20	8	262	Unknown Material	0.25	39.01	0.01	0.05	0.24	36.9	0.01	0.05	0.58	91.43	0.07	0.25
P1417-21	6	192	Unknown Material	0.01	1.16	0	0	0.02	2.14	0	0	0.04	3.53	0	0
P1417-22	8	648	C-900	0.23	35.98	0.02	0.03	0.2	31.33	0.02	0.03	0.52	82.25	0.1	0.16
P1417-23	6	57	Unknown Material	0.01	1.16	0	0	0.02	2.14	0	0	0.04	3.53	0	0
P1417-24	4	85	Unknown Material	0.03	1.16	0	0	0.05	2.14	0	0.01	0.09	3.53	0	0.02
P1417-25	8	221	Unknown Material	0.21	32.95	0.01	0.04	0.16	25.77	0.01	0.02	0.47	73.06	0.04	0.17
P1417-26	8	29	Unknown Material	0.3	46.62	0	0.08	0.2	31.51	0	0.03	0.64	99.68	0.01	0.3
P1417-27	6	92	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1417-28	6	173	Unknown Material	0.02	1.39	0	0	0.03	2.56	0	0	0.05	4.23	0	0
P1417-29	6	521	Galvanized iron	0.12	10.62	0.01	0.02	0.07	5.9	0	0.01	0.96	84.37	0.46	0.88
P1417-30	6	512	C-900	0.14	12.42	0.01	0.02	0.09	7.56	0	0.01	0.29	25.99	0.04	0.08
P1417-31	8	287	C-900	0.09	13.67	0	0.01	0.04	5.74	0	0	0.17	26.62	0.01	0.02
P1417-32	8	254	Unknown Material	0.3	46.62	0.02	0.07	0.2	31.51	0.01	0.04	0.64	99.68	0.08	0.3
P1417-33	6	400	C-900	0.26	22.7	0.02	0.06	0.25	22.36	0.02	0.06	0.61	54.04	0.12	0.29
P1417-34	6	470	C-900	0.03	2.6	0	0	0.05	4.79	0	0	0.09	7.9	0	0.01
P1417-35	2	241	Galvanized iron	0.11	1.04	0.01	0.05	0.2	1.92	0.04	0.17	0.32	3.16	0.1	0.42
P1417-36	6	17	Unknown Material	0.49	43.45	0	0.26	0.76	67.01	0.01	0.57	0.96	84.38	0.02	0.89

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-37	6	404	Cast iron	0.43	38.21	0.08	0.2	0.65	57.37	0.17	0.43	1.14	100.3	0.49	1.22
P1417-38	6	33	Unknown Material	0.54	47.21	0.01	0.3	0.66	58.08	0.01	0.44	1.66	146.32	0.08	2.45
P1417-39	6	361	Galvanized iron	0.54	47.21	0.11	0.3	0.66	58.08	0.16	0.44	1.66	146.32	0.88	2.45
P1417-40	6	86	Galvanized iron	0.51	45.1	0.02	0.28	0.64	56.13	0.04	0.41	1.99	175.49	0.29	3.43
P1417-41	6	96	Unknown Material	0.51	45.1	0.03	0.28	0.64	56.13	0.04	0.41	1.99	175.49	0.33	3.43
P1417-42	6	82	Ductile Iron	0	0.24	0	0	0	0.37	0	0	0.08	7.14	0	0.01
P1417-43	6	84	Ductile Iron	0	0	0	0	0	0	0	0	0	0	0	0
P1417-44	6	214	Ductile Iron	0	0.24	0	0	0	0.37	0	0	0.08	7.14	0	0.01
P1417-45	6	94	Galvanized iron	0.01	0.49	0	0	0.01	1.27	0	0	0.02	1.48	0	0
P1417-46	6	89	Galvanized iron	0.01	0.47	0	0	0.01	0.49	0	0	0.05	4.38	0	0
P1417-47	6	117	PVC	0.02	1.58	0	0	0.04	3.71	0	0	0.02	1.63	0	0
P1417-48	6	83	PVC	0.01	0.81	0	0	0	0.43	0	0	0.29	25.23	0.01	0.07
P1417-49	6	59	PVC	0.02	1.58	0	0	0.04	3.71	0	0	0.02	1.63	0	0
P1417-50	6	181	PVC	0.02	1.5	0	0	0.04	3.87	0	0	0.13	11.81	0	0.02
P1417-51	6	153	PVC	0.01	0.49	0	0	0.03	2.82	0	0	0.24	21.3	0.01	0.05
P1417-52	6	251	C-900	0.47	41.72	0.05	0.18	0.57	49.92	0.06	0.25	2.11	185.74	0.72	2.86
P1417-53	6	372	Ductile Iron	0.06	5.16	0	0.01	0.13	11.41	0.01	0.02	0.08	7.11	0	0.01
P1417-54	6	226	Unknown Material	0.47	41.14	0.05	0.23	0.67	59.42	0.1	0.46	1.27	111.72	0.34	1.48
P1417-55	6	192	Unknown Material	0.13	11.62	0	0.02	0.19	16.5	0.01	0.04	0.36	32.09	0.03	0.15
P1417-56	6	369	C-900	0.45	39.57	0.06	0.16	0.56	49.61	0.09	0.25	1.37	120.77	0.48	1.29
P1417-57	8	1071	C-900	0.49	76.91	0.15	0.14	0.58	91.6	0.2	0.19	2.3	360.1	2.57	2.4
P1417-58	4	409	Unknown Material	0.3	11.62	0.07	0.16	0.42	16.5	0.13	0.31	0.82	32.09	0.43	1.06
P1417-59	6	25	PVC	0.45	39.66	0	0.16	0.64	56.7	0.01	0.31	1.32	116.2	0.03	1.2
P1417-60	6	113	PVC	0.39	34.5	0.01	0.13	0.51	45.29	0.02	0.21	1.24	109.09	0.12	1.07
P1417-61	2	185	Galvanized iron	0.11	1.04	0.01	0.05	0.2	1.92	0.03	0.17	0.32	3.16	0.08	0.42
P1417-62	6	541	C-900	0.43	38.31	0.08	0.15	0.54	47.43	0.12	0.23	1.87	164.88	1.24	2.3
P1417-63	4	20	Unknown Material	0.03	1.04	0	0	0.05	1.92	0	0	0.08	3.16	0	0.01
P1417-64	2	336	Steel	0.11	1.04	0.03	0.08	0.2	1.92	0.08	0.24	0.32	3.16	0.2	0.6
P1417-65	6	156	Unknown Material	0.23	20.52	0.01	0.06	0.3	26.87	0.02	0.11	1.24	109.57	0.22	1.43
P1417-66	4	47	Unknown Material	0.04	1.56	0	0.01	0.07	2.87	0	0.01	0.12	4.74	0	0.03
P1417-67	2	326	Unknown Material	0.16	1.56	0.04	0.11	0.29	2.87	0.12	0.36	0.48	4.74	0.29	0.9
P1417-68	6	204	PVC	0.17	15.26	0.01	0.03	0.18	15.78	0.01	0.03	0.26	22.71	0.01	0.06
P1417-69	2	379	Unknown Material	0.24	2.31	0.09	0.24	0.43	4.25	0.28	0.74	0.72	7.02	0.71	1.86
P1417-70	6	263	Unknown Material	0.19	16.36	0.01	0.04	0.22	19.2	0.01	0.06	1.39	122.21	0.46	1.75
P1417-71	6	497	Asbestos Cement	0.17	15.05	0.02	0.03	0.17	15.4	0.02	0.03	0.26	23.33	0.04	0.07
P1417-72	4	264	Cast iron	0.18	7.23	0.02	0.07	0.25	9.76	0.03	0.12	0.24	9.49	0.03	0.11
P1417-73	8	200	Cast iron	0.46	72.43	0.03	0.16	0.29	45.27	0.01	0.07	2.04	318.84	0.51	2.55
P1417-74	4	39	Unknown Material	0.06	2.31	0	0.01	0.11	4.25	0	0.03	0.18	7.02	0	0.06
P1417-75	6	150	Unknown Material	0.14	12.49	0	0.02	0.14	12.08	0	0.02	1.52	133.97	0.31	2.08
P1417-76	6	21	Unknown Material	0.09	7.93	0	0.01	0.01	0.95	0	0	0.86	76.21	0.02	0.73
P1417-77	6	182	Unknown Material	0.1	9.23	0	0.01	0.04	3.34	0	0	0.91	80.14	0.15	0.8

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1417-78	2	222	PVC	0.14	1.39	0.02	0.07	0.26	2.56	0.05	0.22	0.43	4.23	0.12	0.55
P1417-79	6	519	C-900	0.23	20.42	0.02	0.05	0.15	13.03	0.01	0.02	0.66	57.75	0.17	0.33
P1417-80	6	274	Galvanized iron	0.05	4.78	0	0	0	0.25	0	0	1.54	135.95	0.59	2.14
P1417-81	6	258	Unknown Material	0.17	14.64	0.01	0.03	0.17	14.64	0.01	0.03	0.28	24.58	0.02	0.09
P1417-82	6	123	Cast iron	0.17	14.64	0	0.04	0.17	14.64	0	0.03	0.28	24.58	0.01	0.09
P1417-83	6	99	Unknown Material	0.5	43.88	0.03	0.26	0.54	47.41	0.03	0.3	1.28	113	0.15	1.52
P1417-84	6	414	Cast iron	0.36	31.99	0.06	0.15	0.33	29.07	0.05	0.12	1.34	117.66	0.68	1.63
P1417-85	6	28	Unknown Material	0.16	14.42	0	0.03	0.2	17.38	0	0.04	1.98	174.32	0.09	3.38
P1417-86	8	216	Cast iron	0.55	86.02	0.05	0.22	0.32	49.63	0.02	0.08	1.75	274.26	0.42	1.93
P1417-87	6	266	Cast iron	0.01	0.61	0	0	0.11	9.44	0	0.02	1.45	127.39	0.5	1.89
P1417-88	6	369	Unknown Material	0.29	25.19	0.03	0.09	0.14	12.78	0.01	0.03	0.89	78.19	0.28	0.77
P1417-89	6	1050	Cast iron	0.27	23.71	0.09	0.08	0.23	20.62	0.07	0.06	0.59	51.84	0.38	0.36
P1417-90	10	1030	Asbestos Cement	0.32	78.45	0.06	0.06	0.15	35.69	0.01	0.01	1.21	297.27	0.67	0.65
P1417-91	4	394	Cast iron	0.38	15.03	0.1	0.26	0.2	7.93	0.03	0.08	1.2	46.94	0.85	2.15
P1417-92	6	192	Galvanized iron	0.07	5.94	0	0.01	0.02	1.88	0	0	1.58	139.48	0.43	2.24
P1417-94	6	485	Galvanized iron	0.26	22.6	0.04	0.08	0.35	30.7	0.07	0.14	1.17	103.25	0.62	1.28
P1417-95	6	89	PVC	0.01	0.55	0	0	0.01	0.57	0	0	0.06	5.11	0	0
P1417-96	6	94	PVC	0.01	0.57	0	0	0.02	1.48	0	0	0.02	1.73	0	0
P1417-97	6	679	Unknown Material	0.05	4.68	0	0	0.1	8.62	0.01	0.01	0.16	14.22	0.02	0.03
P1418-01	4	17	Unknown Material	0.04	1.46	0	0.01	0.04	1.44	0	0	0.03	1.26	0	0.01
P1418-02	4	430	Cast iron	0.08	3.32	0.01	0.02	0.05	1.99	0	0.01	0.18	6.92	0.03	0.06
P1418-03	4	77	Unknown Material	0.1	4.02	0	0.02	0.08	3.28	0	0.02	0.23	9.05	0.01	0.1
P1418-04	6	189	Unknown Material	0.46	40.68	0.04	0.23	0.34	29.63	0.02	0.13	0.45	39.79	0.04	0.22
P1418-05	8	292	Galvanized iron	0.17	26.17	0.01	0.02	0.1	15.19	0	0.01	0.45	70.25	0.05	0.15
P1418-06	8	262	Galvanized iron	0.17	26.17	0.01	0.03	0.1	15.19	0	0.01	0.45	70.25	0.04	0.15
P1418-07	8	283	Unknown Material	0.15	23.65	0.01	0.02	0.07	10.56	0	0.01	0.5	77.9	0.05	0.19
P1418-08	6	172	Unknown Material	0.17	15.14	0.01	0.04	0.17	14.93	0.01	0.04	0.15	13.28	0	0.03
P1418-09	4	457	Asbestos Cement	0.31	12.12	0.07	0.15	0.24	9.36	0.04	0.09	0.1	4.09	0.01	0.02
P1418-10	4	242	Unknown Material	0.15	5.85	0.01	0.05	0.07	2.79	0	0.01	0.22	8.54	0.02	0.09
P1418-100	8	89	PVC	0	0	0	0	0.67	104.56	0.02	0.24	3.2	501.06	0.39	4.43
P1418-101	8	603	PVC	0	0	0	0	0.67	104.56	0.15	0.24	3.2	501.06	2.67	4.43
P1418-102	6	175	PVC	0.03	2.91	0	0	0	0.28	0	0	0.33	29.11	0.02	0.09
P1418-103	10	64	PVC	0.09	22.33	0	0	0.04	9.33	0	0	0.54	132.52	0.01	0.13
P1418-104	8	493	PVC	0.09	14.51	0	0.01	0.09	14.43	0	0.01	0.19	30.46	0.01	0.02
P1418-105	10	248	PVC	0.01	1.81	0	0	0.02	5.43	0	0	0.04	8.96	0	0
P1418-106	6	85	PVC	0.02	1.81	0	0	0.06	5.43	0	0.01	0.1	8.96	0	0.01
P1418-107	10	251	PVC	0.12	29.9	0	0.01	0.18	43.69	0	0.02	0.17	41.65	0	0.01
P1418-108	8	85	PVC	0	0	0	0	0.67	104.56	0.02	0.24	3.2	501.06	0.38	4.43
P1418-11	6	428	Asbestos Cement	0.08	6.74	0	0.01	0.09	7.62	0	0.01	1.1	96.54	0.42	0.98
P1418-12	1	559	Galvanized iron	0.76	1.86	2.61	4.68	1.4	3.43	8.08	14.46	2.31	5.66	20.44	36.56
P1418-13	4	180	Unknown Material	0.17	6.48	0.01	0.05	0.04	1.68	0	0	1.14	44.56	0.35	1.95

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P1418-14	6	23	Unknown Material	0.18	15.99	0	0.04	0.03	2.87	0	0	0.55	48.41	0.01	0.32
P1418-15	6	261	C-900	0.09	7.86	0	0.01	0.16	14.45	0.01	0.03	0.27	23.85	0.02	0.06
P1418-16	6	56	C-900	0.05	4.74	0	0	0.1	8.72	0	0.01	0.16	14.38	0	0.03
P1418-17	6	495	C-900	0.03	2.38	0	0	0.05	4.37	0	0	0.08	7.22	0	0.01
P1418-18	4	460	C-900	0.03	1.02	0	0	0.05	1.88	0	0	0.08	3.11	0	0.01
P1418-19	6	469	Galvanized iron	0.09	8.13	0.01	0.01	0.13	11.58	0.01	0.02	0.82	72.26	0.31	0.66
P1418-20	6	498	Galvanized iron	0.09	8.13	0.01	0.01	0.13	11.58	0.01	0.02	0.82	72.26	0.33	0.66
P1418-21	6	134	Ductile Iron	0.03	2.36	0	0	0.05	4.34	0	0	0.08	7.17	0	0.01
P1418-22	6	153	Asbestos Cement	0.01	1.05	0	0	0.02	1.94	0	0	0.04	3.2	0	0
P1418-23	6	261	Asbestos Cement	0.02	1.68	0	0	0.04	3.09	0	0	0.06	5.12	0	0
P1418-24	6	161	Asbestos Cement	0.02	1.84	0	0	0.04	3.39	0	0	0.06	5.59	0	0.01
P1418-25	2	33	Unknown Material	0.02	0.16	0	0	0.03	0.29	0	0.01	0.05	0.47	0	0.01
P1418-26	6	565	Unknown Material	0.01	0.76	0	0	0.02	1.39	0	0	0.03	2.3	0	0
P1418-27	6	65	Unknown Material	0.01	0.57	0	0	0.01	1.05	0	0	0.02	1.73	0	0
P1418-28	8	221	Unknown Material	0.03	3.95	0	0	0.05	7.27	0	0	0.08	12	0	0.01
P1418-29	6	50	Unknown Material	0.06	5.13	0	0	0.11	9.43	0	0.01	0.18	15.56	0	0.04
P1418-30	8	205	Asbestos Cement	0.06	9.08	0	0	0.2	30.88	0.01	0.03	1.12	176.02	0.15	0.73
P1418-31	8	35	Unknown Material	0.06	9.08	0	0	0.2	30.88	0	0.03	1.12	176.02	0.03	0.84
P1418-32	6	238	Asbestos Cement	0.05	4.04	0	0	0.08	7.44	0	0.01	0.14	12.28	0.01	0.02
P1418-33	2	442	Unknown Material	0.02	0.16	0	0	0.03	0.29	0	0	0.05	0.47	0.01	0.01
P1418-34	8	261	Unknown Material	0.06	9.08	0	0	0.11	16.7	0	0.01	0.18	27.56	0.01	0.03
P1418-35	8	303	Asbestos Cement	0.06	9.08	0	0	0.2	30.88	0.01	0.03	1.12	176.02	0.22	0.73
P1418-36	6	76	C-900	0.07	6.49	0	0.01	0.14	11.94	0	0.02	0.22	19.7	0	0.04
P1418-37	6	28	Unknown Material	0.46	40.68	0.01	0.24	0.34	29.63	0	0.12	0.45	39.79	0.01	0.23
P1418-38	4	318	Cast iron	0.08	2.97	0	0.01	0.03	1.15	0	0	0.55	21.69	0.16	0.51
P1418-40	8	752	Unknown Material	0.04	6.93	0	0	0.04	6.96	0	0	0.46	71.52	0.12	0.16
P1418-41	8	165	Unknown Material	0.04	6.93	0	0	0.04	6.97	0	0	0.46	71.52	0.03	0.16
P1418-42	4	294	Cast iron	0.06	2.22	0	0.01	0.07	2.75	0	0.01	1.12	43.9	0.56	1.9
P1418-43	6	640	Cast iron	0.24	21.49	0.04	0.07	0.2	17.86	0.03	0.05	0.09	7.95	0.01	0.01
P1418-44	10	534	Galvanized iron	0.28	69.24	0.03	0.05	0	0.96	0	0	1.71	417.77	0.76	1.42
P1418-45	6	109	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-46	6	95	Unknown Material	0.01	0.64	0	0	0.05	4.47	0	0.01	0.41	36.02	0.02	0.18
P1418-47	2	135	Galvanized iron	0.69	6.74	0.23	1.73	1.27	12.4	0.72	5.34	2.09	20.47	1.82	13.51
P1418-48	4	401	Galvanized iron	0.13	5.17	0.01	0.04	0.31	12.16	0.07	0.18	1.47	57.48	1.25	3.13
P1418-49	10	272	Galvanized iron	0.28	69.24	0.01	0.05	0	0.96	0	0	1.71	417.77	0.39	1.42
P1418-50	10	119	Asbestos Cement	0.16	39.34	0	0.02	0.18	44.65	0	0.02	1.54	376.12	0.12	1.01
P1418-51	10	278	Asbestos Cement	0.14	34.77	0	0.01	0.21	51.49	0.01	0.03	0.45	111.05	0.03	0.11
P1418-52	4	733	Galvanized iron	0.17	6.6	0.04	0.06	0.28	10.89	0.1	0.14	0.38	14.73	0.18	0.25
P1418-53	12	666	Galvanized iron	0.03	9.08	0	0	0.09	30.88	0	0	0.5	176.02	0.08	0.12
P1418-54	8	182	Asbestos Cement	0.14	22.33	0	0.02	0.06	9.33	0	0	0.85	132.52	0.08	0.43
P1418-55	10	164	Unknown Material	0.23	57.09	0.01	0.04	0.25	60.82	0.01	0.04	0.09	21.47	0	0.01

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1418-56	10	378	Asbestos Cement	0.2	47.86	0.01	0.02	0.18	44.27	0.01	0.02	0.2	49.33	0.01	0.02
P1418-57	10	195	Galvanized iron	0.2	47.86	0.01	0.03	0.18	44.27	0	0.02	0.2	49.33	0.01	0.03
P1418-59	4	397	Cast iron	0.06	2.19	0	0.01	0.07	2.79	0	0.01	0.03	1.36	0	0
P1418-61	6	155	Asbestos Cement	0.1	9.23	0	0.01	0.19	16.55	0.01	0.04	0.32	27.86	0.02	0.1
P1418-63	4	599	Ductile Iron	0.17	6.55	0.03	0.06	0.3	11.61	0.1	0.16	0.5	19.71	0.26	0.43
P1418-64	6	134	Asbestos Cement	0.32	27.85	0.01	0.1	0.6	52.93	0.04	0.32	1.02	90.02	0.11	0.86
P1418-66	4	93	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1418-67	10	415	Asbestos Cement	0.04	9.13	0	0	0.07	16.79	0	0	0.11	27.71	0	0.01
P1418-68	4	483	Cast iron	0.17	6.66	0.03	0.06	0.27	10.56	0.07	0.14	0.38	14.75	0.12	0.25
P1418-69	6	436	Asbestos Cement	0.28	24.4	0.03	0.08	0.53	46.58	0.11	0.25	0.9	79.54	0.3	0.68
P1418-71	4	239	Cast iron	0.11	4.49	0.01	0.03	0.07	2.61	0	0.01	0.62	24.34	0.15	0.64
P1418-72	4	34	Cast iron	0.04	1.57	0	0	0.07	2.9	0	0.01	0.12	4.78	0	0.04
P1418-74	10	108	Asbestos Cement	0.07	18.2	0	0	0.06	14.08	0	0	0.61	148.31	0.02	0.18
P1418-75	10	297	Asbestos Cement	0.08	20.01	0	0	0.04	8.65	0	0	0.57	139.35	0.05	0.16
P1419-01	8	52	Unknown Material	0.03	5.06	0	0	0.06	9.31	0	0	0.1	15.36	0	0.01
P1419-02	8	466	Asbestos Cement	0.03	5.06	0	0	0.06	9.31	0	0	0.1	15.36	0	0.01
P1419-03	8	579	C-900	0.02	3.18	0	0	0.04	5.86	0	0	0.06	9.66	0	0
P1419-04	6	641	Asbestos Cement	0.01	1.21	0	0	0.03	2.23	0	0	0.04	3.67	0	0
P1419-05	8	819	Asbestos Cement	0.05	8.38	0	0	0.1	15.41	0.01	0.01	0.16	25.43	0.02	0.02
P1419-06	6	1322	Asbestos Cement	0.07	6.31	0.01	0.01	0.13	11.6	0.03	0.02	0.22	19.14	0.06	0.05
P1419-100	8	25	PVC	0.03	5.45	0	0	0.05	8.34	0	0.01	0.07	11.07	0	0
P1515-01	6	140	C-900	0.02	1.92	0	0	0.04	3.54	0	0	0.07	5.84	0	0
P1515-02	10	103	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-03	6	847	C-900	0.03	2.87	0.00	0	0.07	6.12	0	0.01	0.11	10.11	0.01	0.01
P1515-04	6	206	C-900	0.03	2.81	0	0	0.05	4.32	0	0	0.08	7.13	0	0.01
P1515-05	6	41	C-900	0.03	2.81	0	0	0.05	4.32	0	0.01	0.08	7.13	0	0.01
P1515-06	6	385	C-900	0.03	3.07	0	0	0.06	5.66	0	0	0.11	9.33	0	0.01
P1515-07	6	616	C-900	0.1	8.69	0.01	0.01	0.17	15.14	0.02	0.03	0.28	24.99	0.04	0.07
P1515-08	10	259	C-900	0.16	39.6	0	0.01	0.24	58.24	0.01	0.03	0.39	96.1	0.02	0.07
P1515-09	6	209	C-900	0.09	8.03	0	0.01	0.18	15.61	0.01	0.03	0.29	25.76	0.02	0.07
P1515-10	10	169	C-900	0.13	31.26	0	0.01	0.17	42.05	0	0.02	0.28	69.38	0.01	0.04
P1515-100	10	371	PVC	0.13	31.75	0.00	0.01	0.21	51.02	0.01	0.02	1.1	269.13	0.18	0.47
P1515-11	10	231	C-900	0.2	50.16	0	0.02	0.31	76.84	0.01	0.05	0.52	126.78	0.03	0.12
P1515-12	10	218	C-900	0.26	64.87	0.01	0.03	0.42	103.9	0.02	0.08	0.7	171.42	0.04	0.2
P1515-13	6	175	C-900	0.17	14.71	0	0.03	0.31	27.06	0.01	0.08	0.51	44.65	0.04	0.21
P1515-14	6	112	C-900	0.02	1.56	0	0	0.03	2.87	0	0	0.05	4.74	0	0
P1515-15	6	376	C-900	0.03	2.49	0.00	0	0.05	4.59	0	0	0.09	7.57	0	0.01
P1515-16	6	395	C-900	0.1	8.77	0	0.01	0.18	16.15	0.01	0.03	0.3	26.64	0.03	0.08
P1515-17	10	374	C-900	0.12	30.01	0	0.01	0.16	39.76	0.01	0.01	0.27	65.59	0.01	0.03
P1515-18	6	419	C-900	0.05	4.54	0.00	0	0.09	8.35	0	0.01	0.16	13.78	0.01	0.02
P1515-19	8	562	C-900	0	0	0	0	0	0	0	0	0	0	0	0

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1515-19a	8	75	C-900	0	0	0.00	0	0	0	0	0	0	0	0	0
P1515-20	6	53	C-900	0	0	0.00	0	0	0	0	0	0	0	0	0
P1515-21	10	361	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1515-22	6	57	PVC	0	0	0	0	0	0	0	0	0	0	0	0
P1515-23	6	352	C-900	0.09	7.95	0	0.01	0.17	14.63	0.01	0.03	0.27	24.14	0.02	0.07
P1515-24	10	190	C-900	0.03	8.4	0	0	0	0	0	0	0	0	0	0
P1515-25	6	133	C-900	0.01	1.25	0	0	0.03	2.29	0	0	0.04	3.78	0	0
P1515-26	10	240	Galvanized iron	0.08	20.09	0	0.01	0.09	21.52	0	0.01	0.15	35.5	0	0.01
P1515-27	10	110	Galvanized iron	0.08	20.09	0	0	0.09	21.52	0	0	0.15	35.5	0	0.02
P1515-28	6	423	C-900	0.01	0.93	0	0	0.02	1.71	0	0	0.03	2.83	0	0
P1515-29	8	716	Unknown Material	0.05	8.34	0	0	0.1	16.07	0.01	0.01	1.05	164.42	0.54	0.75
P1515-30	8	192	Unknown Material	0.13	19.93	0	0.02	0.23	35.93	0.01	0.04	0.5	78.62	0.04	0.19
P1515-31	10	42	Unknown Material	0.13	31.75	0	0.01	0.21	51.02	0	0.03	1.1	269.13	0.03	0.63
P1515-32	10	400	Unknown Material	0.04	9.92	0	0	0.05	11.6	0	0	0.8	196.28	0.14	0.35
P1515-33	10	184	Unknown Material	0.03	8.33	0	0	0.07	16.07	0	0	2.24	548.45	0.43	2.35
P1515-34	10	137	Unknown Material	0	0	0	0	0	0	0	0	2.91	712.87	0.52	3.82
P1515-36	8	43	Unknown Material	0.01	1.59	0	0	0.03	4.47	0	0	2.25	352.17	0.13	3.07
P1515-37	4	390	Unknown Material	0.04	1.57	0	0	0.07	2.9	0	0.01	0.12	4.78	0.01	0.03
P1515-38	8	102	Unknown Material	0.01	1.88	0	0	0.07	10.87	0	0	2.18	341.62	0.3	2.9
P1515-39	6	586	Asbestos Cement	0.03	3.04	0	0	0.15	13	0.01	0.02	3.84	338.09	5.83	9.95
P1516-01	6	677	Asbestos Cement	0.06	5.08	0	0	0.06	5.54	0	0	0.76	67.26	0.34	0.5
P1516-02	6	454	Asbestos Cement	0.01	0.67	0	0	0.04	3.56	0	0	0.35	30.67	0.05	0.12
P1516-03	6	539	Galvanized iron	0.02	2.04	0	0	0.03	2.29	0	0	0.29	25.35	0.05	0.1
P1516-04	6	241	Unknown Material	0.01	1.07	0	0	0.02	1.96	0	0	0.04	3.23	0	0
P1516-05	6	506	Unknown Material	0.06	4.92	0	0	0.13	11.38	0.01	0.02	0.2	17.77	0.02	0.05
P1516-06	2	107	Unknown Material	0.19	1.07	0.02	0.23	0.36	1.96	0.08	0.71	0.59	3.23	0.19	1.8
P1516-07	6	513	Galvanized iron	0.01	0.96	0	0	0.04	3.23	0	0	0.18	16.24	0.02	0.04
P1516-08	6	17	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-09	6	735	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1516-10	6	367	Asbestos Cement	0.05	4.35	0	0	0.09	8	0	0.01	0.15	13.19	0.01	0.02
P1516-11	8	328	C-900	0.05	7.12	0	0	0.08	13.1	0	0.01	0.14	21.61	0	0.01
P1516-13	8	459	C-900	0.06	10.12	0	0	0.12	18.62	0	0.01	0.2	30.72	0.01	0.02
P1516-14	8	560	C-900	0.08	13.12	0	0.01	0.15	24.14	0.01	0.02	0.25	39.82	0.02	0.04
P1516-15	6	479	C-900	0	0	0	0	0	0	0	0	0	0	0	0
P1516-16	8	93	C-900	0.08	13.12	0	0.01	0.15	24.14	0	0.02	0.25	39.83	0	0.04
P1516-17	6	270	C-900	0	0.41	0	0	0.01	0.76	0	0	0.01	1.25	0	0
P1516-18	6	167	Unknown Material	0	0.41	0	0	0.01	0.76	0	0	0.01	1.25	0	0
P1516-19	8	212	C-900	0.09	13.53	0	0.01	0.16	24.89	0	0.02	0.26	41.07	0.01	0.04
P1516-20	8	461	C-900	0.12	18.09	0	0.01	0.21	33.28	0.01	0.03	0.35	54.91	0.03	0.07
P1516-21	8	405	C-900	0.03	4.56	0	0	0.05	8.38	0	0	0.09	13.83	0	0.01
P1516-22	8	561	C-900	0.23	35.5	0.02	0.03	0.41	64.81	0.06	0.1	1.1	171.91	0.34	0.61

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P1516-23	6	135	Unknown Material	0.22	19.04	0.01	0.06	0.44	38.63	0.03	0.21	2.7	237.69	0.81	6.01
P1516-24	6	213	Unknown Material	0.18	15.85	0.01	0.04	0.28	25.07	0.02	0.09	0.73	63.94	0.11	0.53
P1516-25	6	223	Unknown Material	0.01	0.8	0	0	0.02	1.47	0	0	0.03	2.43	0	0
P1516-26	6	202	Unknown Material	0.16	13.98	0.01	0.03	0.25	21.62	0.01	0.07	0.66	58.24	0.09	0.44
P1516-27	6	264	Asbestos Cement	0.02	1.59	0	0	0.03	2.92	0	0	0.05	4.81	0	0
P1516-28	6	117	Unknown Material	0.13	11.86	0	0.02	0.2	17.72	0.01	0.05	0.59	51.81	0.04	0.36
P1516-29	6	266	Unknown Material	0.01	1.32	0	0	0.03	2.43	0	0	0.05	4.01	0	0
P1516-30	6	111	Unknown Material	0.12	10.54	0	0.02	0.17	15.29	0	0.04	0.54	47.81	0.03	0.31
P1516-31	6	111	Unknown Material	0.1	8.42	0	0.01	0.13	11.39	0	0.02	0.47	41.38	0.03	0.24
P1516-32	6	52	Galvanized iron	0.01	0.8	0	0	0.02	1.47	0	0	0.03	2.43	0	0
P1516-33	6	109	Galvanized iron	0.01	0.8	0	0	0.02	1.47	0	0	0.03	2.43	0	0
P1516-34	6	131	Unknown Material	0.07	6.3	0	0.01	0.09	7.5	0	0.01	0.4	34.95	0.02	0.17
P1516-35	4	15	Unknown Material	0.02	0.8	0	0	0.04	1.47	0	0	0.06	2.43	0	0
P1516-36	2	123	Galvanized iron	0.08	0.8	0	0.03	0.15	1.47	0.01	0.1	0.25	2.43	0.03	0.26
P1516-37	6	182	Unknown Material	0.01	0.8	0	0	0.02	1.47	0	0	0.03	2.43	0	0
P1516-38	6	152	C-900	0.05	4.71	0	0	0.05	4.56	0	0	0.34	30.1	0.01	0.1
P1516-39	6	820	Asbestos Cement	0.05	4.62	0	0	0.05	4.57	0	0	0.7	61.43	0.35	0.42
P1516-40	6	20	Unknown Material	0	0.21	0	0	0.08	6.82	0	0	0.54	47.87	0.01	0.31
P1516-41	6	400	Asbestos Cement	0.07	6.08	0	0.01	0.22	19.1	0.02	0.05	0.56	49.18	0.11	0.28
P1516-42	6	229	Unknown Material	0.16	13.89	0.01	0.03	0.23	20.38	0.01	0.06	0.25	21.91	0.02	0.07
P1516-43	6	200	Unknown Material	0.18	15.74	0.01	0.04	0.27	23.79	0.02	0.08	0.31	27.53	0.02	0.11
P1516-44	6	298	Galvanized iron	0.07	5.87	0	0.01	0.14	12.27	0.01	0.02	0.01	1.32	0	0
P1516-45	6	561	Galvanized iron	0.03	2.69	0	0	0.07	6.42	0	0.01	0.12	10.98	0.01	0.02
P1516-53	6	455	PVC	0.03	3	0	0	0.06	5.52	0	0	0.1	9.11	0	0.01
P1516-54	6	336	PVC	0.03	3	0	0	0.06	5.52	0	0	0.1	9.11	0	0.01
P1517-01	8	48	Ductile Iron	0.13	20.64	0	0.02	0.24	37.98	0	0.05	0.4	62.67	0.01	0.13
P1517-03	6	115	Unknown Material	0.02	2.14	0	0	0.04	3.95	0	0	0.07	6.51	0	0.01
P1517-04	6	867	C-900	0.01	1.07	0	0	0.02	1.97	0	0	0.04	3.26	0	0
P1517-05	6	535	C-900	0.01	1.07	0	0	0.02	1.97	0	0	0.04	3.26	0	0
P1517-06	6	205	C-900	0	0.41	0	0	0.01	0.76	0	0	0.01	1.25	0	0
P1517-07	6	346	C-900	0	0.41	0	0	0.01	0.76	0	0	0.01	1.25	0	0
P1517-08	10	132	Galvanized iron	0.2	48.89	0	0.03	0.37	89.96	0.01	0.08	3.73	912.58	0.8	6.03
P1517-09	10	460	C-900	0.2	48.89	0.01	0.02	0.37	89.96	0.03	0.06	3.73	912.58	2.09	4.53
P1517-10	8	319	Unknown Material	0.14	21.35	0.01	0.02	0.14	21.28	0.01	0.02	0.61	95.46	0.09	0.27
P1517-100	8	40	PVC	0.14	21.35	0	0.01	0.14	21.28	0	0.01	0.61	95.46	0.01	0.21
P1517-101	8	726	PVC	0.13	19.8	0.01	0.01	0.23	36.43	0.03	0.03	0.38	60.11	0.06	0.09
P1517-102	8	712	PVC	0.03	4.8	0	0	0.06	8.83	0	0	0.09	14.57	0	0.01
P1517-104	8	501	PVC	0.1	15	0	0.01	0.18	27.6	0.01	0.02	0.29	45.54	0.03	0.05
P1517-105	8	411	PVC	0.05	7.5	0	0	0.09	13.8	0	0.01	0.15	22.77	0.01	0.01
P1517-11	8	303	C-900	0.01	1.07	0	0	0.01	1.97	0	0	0.02	3.26	0.00	0
P1517-12	4	247	Cast iron	0.03	1.04	0	0	0.05	1.92	0	0.01	0.08	3.16	0.00	0.01

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1517-13	6	146	Unknown Material	0.03	2.4	0	0	0.05	4.41	0	0	0.08	7.28	0	0.01
P1517-14	8	195	Unknown Material	0.51	79.9	0.04	0.2	0.5	79.1	0.04	0.19	1.61	252.84	0.32	1.66
P1517-15	10	726	Galvanized iron	0.2	48.89	0.02	0.03	0.37	89.96	0.06	0.08	3.73	912.58	4.38	6.03
P1517-16	10	261	Unknown Material	0.1	24.29	0	0.01	0.18	44.7	0.01	0.02	3.42	837.9	1.34	5.15
P1517-17	10	51	Galvanized iron	0.1	24.29	0	0	0.18	44.7	0	0.02	3.42	837.9	0.26	5.15
P1517-18	10	260	Galvanized iron	0.05	11.92	0	0	0.09	21.94	0	0.01	3.27	800.34	1.23	4.73
P1517-19	6	141	Unknown Material	0.08	7.2	0	0.01	0.15	13.25	0	0.03	0.25	21.86	0.01	0.07
P1517-20	10	243	Unknown Material	0	0	0	0	0	0	0	0	3.12	764.15	1.05	4.34
P1517-21	10	58	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-22	10	17	Unknown Material	0.34	82.93	0	0.07	0.35	84.67	0	0.07	2.05	502.12	0.03	2
P1517-23	10	30	Unknown Material	0	0	0	0	0	0	0	0	3.12	764.15	0.13	4.35
P1517-24	10	49	Unknown Material	0	0	0	0	0	0	0	0	3.12	764.15	0.21	4.34
P1517-25	8	204	Unknown Material	0.53	82.93	0.04	0.21	0.54	84.67	0.04	0.22	1.67	262.03	0.36	1.77
P1517-26	8	127	Unknown Material	0.01	1.86	0	0	0.02	3.43	0	0	0.04	5.66	0.00	0
P1517-27	6	289	C-900	0.19	16.37	0.01	0.03	0.17	14.82	0.01	0.03	0.43	37.97	0.04	0.15
P1517-28	4	318	Cast iron	0.1	4.02	0.01	0.02	0.08	3.28	0	0.02	0.23	9.05	0.03	0.1
P1517-29	6	185	Asbestos Cement	0.06	4.94	0	0	0.06	4.98	0	0	0.13	11.85	0	0.02
P1517-30	4	86	Unknown Material	0.11	4.48	0	0.03	0.11	4.13	0	0.03	0.27	10.45	0.01	0.13
P1517-31	4	91	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1517-32	10	81	Galvanized iron	0.2	48.89	0	0.03	0.37	89.96	0.01	0.08	3.73	912.58	0.49	6.03
P1518-01	4	348	Asbestos Cement	0.07	2.57	0	0.01	0.12	4.72	0.01	0.03	0.2	7.79	0.02	0.07
P1518-02	4	101	Unknown Material	0.01	0.52	0	0	0.02	0.96	0	0	0.04	1.58	0	0
P1518-03	6	209	PVC	0.03	2.31	0	0	0.05	4.25	0	0	0.08	7.02	0	0.01
P1518-04	6	119	Unknown Material	0.08	6.89	0	0.01	0.37	32.69	0.02	0.15	1.56	137.91	0.26	2.19
P1518-05	8	314	PVC	0.04	5.86	0	0	0.2	30.8	0.01	0.03	0.86	134.79	0.12	0.39
P1518-06	8	471	PVC	0.02	2.77	0	0	0.16	25.12	0.01	0.02	0.8	125.42	0.16	0.34
P1518-07	6	345	Unknown Material	0.07	5.86	0	0.01	0.35	30.8	0.05	0.14	1.53	134.79	0.73	2.1
P1518-08	2	174	Galvanized iron	0.19	1.03	0.04	0.22	0.34	1.89	0.12	0.67	0.57	3.12	0.29	1.69
P1518-09	6	665	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-10	8	83	Galvanized iron	0.18	28.68	0	0.03	0.81	126.89	0.04	0.46	2.47	387.58	0.3	3.66
P1518-11	8	44	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1518-12	6	34	Unknown Material	0	0	0	0	0.23	20.02	0	0.06	1.33	117	0.05	1.62
P1518-13	6	433	Asbestos Cement	0	0	0	0	0.23	20.02	0.02	0.05	1.33	117	0.6	1.39
P1518-14	8	174	PVC	0	0	0	0	0.13	20.02	0	0.01	0.75	117	0.05	0.3
P1518-15	8	98	Unknown Material	0	0	0	0	0.13	20.02	0	0.01	0.75	117	0.04	0.4
P1518-16	8	553	Asbestos Cement	0.02	3.26	0	0	0.04	5.99	0	0	0.06	9.88	0	0
P1518-17	8	18	Asbestos Cement	0	0	0	0	0	0	0	0	0	0	0	0
P1518-18	4	507	Unknown Material	0.04	1.41	0	0	0.1	3.9	0.01	0.02	0.5	19.46	0.21	0.42
P1518-19	6	528	Asbestos Cement	0.05	4.36	0	0	0.14	12.02	0.01	0.02	0.68	59.96	0.21	0.4
P1518-20	8	567	Unknown Material	0.03	5.18	0	0	0.06	9.53	0	0	0.1	15.73	0.01	0.01
P1518-21	8	280	Asbestos Cement	0.18	28.68	0.01	0.03	0.81	126.89	0.11	0.4	2.47	387.58	0.88	3.16

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				Average Day				Maximum Day				Peak Hour			
Pipeline	Dia. (in)	Length (ft)	Material	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)	Flow (gpm)	Headloss (ft)	Headloss Gradient (ft/1000ft)
P1518-22	6	147	Asbestos Cement	0	0	0	0	0.3	26.55	0.01	0.09	1.1	96.95	0.14	0.98
P1518-23	6	393	Asbestos Cement	0	0	0	0	0.3	26.55	0.04	0.09	1.1	96.95	0.39	0.98
P1518-24	6	407	Asbestos Cement	0.09	7.89	0	0.01	0.41	35.92	0.06	0.16	1.23	108.58	0.49	1.21
P1518-25	8	274	Unknown Material	0.05	7.89	0	0	0.06	9.37	0	0	0.07	11.63	0	0.01
P1518-26	8	813	Unknown Material	0	0	0	0	0.03	5.15	0	0	0.08	12.33	0.01	0.01
P1518-27	8	214	Unknown Material	0.05	8.56	0	0	0.13	20.89	0	0.02	0.24	38.31	0.01	0.05
P1518-28	8	241	Unknown Material	0.13	20.79	0	0.02	0.58	90.97	0.06	0.25	1.78	279	0.48	1.99
P1518-29	8	256	Unknown Material	0.08	12.23	0	0.01	0.45	70.07	0.04	0.15	1.54	240.69	0.39	1.52
P1518-30	8	80	Asbestos Cement	0	0	0	0	0.3	47.58	0.01	0.06	1.3	203.58	0.08	0.96
P1518-31	8	21	Asbestos Cement	0	0	0	0	0.3	47.58	0	0.07	1.3	203.58	0.02	0.95
P1518-32	8	50	Asbestos Cement	0	0	0	0	0.3	47.58	0	0.06	1.3	203.58	0.05	0.96
P1518-33	8	134	Asbestos Cement	0	0	0	0	0.3	47.58	0.01	0.06	1.3	203.58	0.13	0.96
P1518-34	6	224	Unknown Material	0.08	7.04	0	0.01	0.15	12.96	0.01	0.03	0.24	21.39	0.02	0.07
P1519-01	4	490	Unknown Material	0.15	5.91	0.02	0.05	0.28	10.87	0.07	0.14	0.46	17.93	0.18	0.36
P1519-02	6	78	Unknown Material	0	0	0	0	0	0	0	0	0	0	0	0
P1519-100	8	33	PVC	0.01	1.26	0	0	0.03	4.19	0	0	0.13	19.92	0	0.01
P1528-01	6	196	Galvanized iron	0.1	9.2	0	0.01	0.14	12.34	0	0.02	1.3	114.39	0.3	1.55
P1602-01	6	178	Galvanized iron	0	0	0	0	0	0	0	0	0	0	0	0
P1618-01	6	788	Galvanized iron	0.13	11.78	0.02	0.02	0.47	41.69	0.19	0.24	1.73	152.76	2.09	2.65
P1618-03	6	299	Asbestos Cement	0.19	16.4	0.01	0.04	0.57	50.2	0.09	0.29	1.89	166.79	0.8	2.69
P1618-04	4	310	Asbestos Cement	0.04	1.54	0	0	0.07	2.83	0	0.01	0.12	4.67	0.01	0.03
P1618-05	6	304	Galvanized iron	0.13	11.78	0.01	0.02	0.47	41.69	0.07	0.24	1.73	152.76	0.81	2.65
P1628-01	6	504	Galvanized iron	0.11	9.75	0.01	0.02	0.16	14.14	0.02	0.03	0.92	81.45	0.42	0.83
P1630-01	6	387	Galvanized iron	0.11	9.75	0.01	0.02	0.16	14.14	0.01	0.03	0.92	81.45	0.32	0.83