

**FINAL UTILITY REPORT  
FOR  
SADDLEHORN RANCH**

Prepared for:

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April 29, 2019

Job Number 25142.00

ENGINEER'S STATEMENT:

The attached utility plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said utility report has been prepared according to the criteria established by Colorado Springs Utilities Criteria and said report is in conformity with the master plans for water distribution and wastewater collection for the affected area. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

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Mike Bramlett, Colorado P.E. # 32314  
For and On Behalf of JR Engineering, LLC

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Date

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## **GENERAL LOCATION AND DESCRIPTION**

This report presents the utility system analysis for the water distribution for the proposed Saddlehorn Ranch development. The Saddlehorn Ranch development has not been referenced in any previous reports. Proposed lot counts and known densities are used in calculations presented in this report for planning areas that were previously based on approved planning densities. This report has been prepared to demonstrate compliance with all necessary criteria.

### ***Project Location and Description***

This report presents the utility system analysis for the water system for Saddlehorn Ranch. Saddlehorn Ranch is comprised of approximately 834 developed acres and is located in portions of Section 3 and Section 10 of Township 13 South, Range 65 West of the 6<sup>th</sup> P.M., El Paso County, Colorado. This report accounts for a total of 224 SFE, 52 SFEs for Filing 1, and 172 SFE for future Filings. The site is bounded on the west by Curtis Road, on the east by undeveloped land, on the south by undeveloped land and low density houses, and on the north by Judge Orr Road. See Appendix A for the Site Vicinity Map.

Easements or tracts necessary for utilities will be provided at time of final platting in accordance with the El Paso County standards regarding location and size of easements and tracts.

The purpose of this study is to analyze the water demands of the proposed development. The water system was analyzed for 3 scenarios; Average Day, Max Day, and Max Day Plus Fire, at 2 different pressures for a total of 6 scenarios. The results of this study have been compared to Colorado Springs Utilities (CSU) Hydraulic Analysis Report Modeling Criteria to demonstrate design compliance. See Appendix B for relevant exhibits.

All proposed on-site lots will use septic systems in lieu of a sanitary sewer, therefore no analysis of a sanitary network was done for this development.

## **WATER SYSTEM ANALYSIS**

### ***Existing Water System***

There is currently a single 12" PVC waterline running parallel approximately 50 feet to the south of the northern property line. The line will not be used by any onsite lots, but will remain in place. A map of the site and the existing water mains can be seen in Appendix B.

### ***Proposed Water System***

A total of 224 SFE's are estimated for the proposed water system collection for the Saddlehorn development. There are 52 SFE's from Filing 1 and 172 SFE's from future filings. The proposed water distribution system for the Saddlehorn Ranch development will be fed by an onsite water treatment plant to be designed by others. The proposed water system will include a series of 12 and 8-inch PVC water mains and will be looped to allow for all areas to be serviced with a critical pipe out of service. The total required storage volume at full build out is 205,800 gallons. The site's elevation ranges approximately 115 feet from 6,660 to 6,775 feet. The WaterCAD model map as well as junction demands and storage volumes have been provided within Appendix B. The proposed water system is being designed as its own metro district which future filings and potentially adjacent developments will be a part of.

### ***Hydraulic Design***

Design criteria used to analyze the hydraulics of the site was established using the "Colorado Springs Utilities Waterline Extension and Service Standards." The following is a summary of the criteria.

<u>Hydraulic Condition</u>	<u>Pressure (psi)</u>
Minimum dynamic pressures (based on 20% tank stage):	
Max Daily Demand + fire flow	20
Peak Hour Demand	60
<u>Maximum Velocities and Head losses</u>	<u>Unit</u>

Maximum velocity with Max Day Demands	5 fps
Maximum velocity with Max Day + Fire Flow Demands	20 fps
Maximum head loss through 8", 12", 16" (transmission):	3.0ft/1000ft
Hazen Williams 'C' factor: 120 ( 8" PVC), 123 (12" PVC)	
Required Fire Flow = 1,500 gpm	

### ***Domestic Demand Design***

Water System demands were established using the "Colorado Springs Utilities Waterline Extension and Service Standards." Design criteria for the analysis are summarized in Table 1 below.

Table 1: Water System Design Criteria

<b>Type of Use</b>	<b>Average Daily Flow (gpd/DU)</b>	<b>Peaking Factor (Max Day/Avg. Day)</b>
Residential: Single Family	375	2.45

### ***Design Scenarios***

The water distribution system utilized Bentley's WaterCAD V.8 to model and analyze the system. Three scenarios were completed; one for Average Daily Flow, one for Max Day flow, and one for Max Day flow plus fire flow. The scenarios were analyzed at two different pressures, 85psi and 105psi, which are the proposed upper and lower bounds of operating pressure for the proposed water treatment plant to be designed by others. The WaterCAD model map showing the analyses area is included within Appendix B. Since the development is outside of any existing pressure zone, none was used to determine required pressure in the tank, while the peaking factor was assumed to be 2.45. Specific site demands for scenarios of average day, max day, and fire flows are found in Appendix B and a summary of the results are found in the tables below.

**Table 1: Filing 15 Total Demand Summary Table**

<b>Overall Water Demand</b>				
<b>Dwelling Units</b>	<b>Unit Demand (gpd/DU)</b>	<b>Avg. Day Demand (gpd)</b>	<b>Peaking Factor</b>	<b>Max Day Demand (gpd)</b>
224	375	84,000	2.45	205,800

### 85 PSI

#### *Average Day*

Average demands were assigned to the system consistent with those presented in Appendix B. The minimum pressure within the system for the max day scenario was calculated to be at junction J-225 at 81.8 psi. This exceeds the minimum of 60 psi. The maximum pressure within the system occurred at junction J-65 at 130.1 psi, and is below the maximum pressure of 180 psi. The maximum velocity in this scenario of 0.17 fps occurred in pipe P-264. The maximum allowable velocity within a pipe as designated by the CSU standards is 5 fps. A maximum absolute headloss of 0.01 ft. was calculated at pipe P-247. The maximum pipe loss as designated by CSU standards is 3ft/ 1000ft.

#### *Max Day*

Max day demands were assigned to the system consistent with those presented in Appendix B. The minimum pressure within the system for the max day scenario was calculated to be at junction J-225 at 81.7 psi. This exceeds the minimum of 60 psi. The maximum pressure within the system occurred at junction J-65 at 130.0 psi, and is below the maximum pressure of 180 psi. The maximum velocity in this scenario of 0.41 fps occurred in pipe P-264. The maximum allowable velocity within a pipe as designated by the CSU standards is 5 fps. A maximum absolute headloss of 0.04 ft. was calculated at pipe P-55. The maximum pipe loss as designated by CSU standards is 3ft/ 1000ft.

#### *Max Day + Fire Flow*

The fire flow used was governed by the IFC s Table B105.1 “minimum required fire-flow and flow

duration for buildings”. The required storage for fire flow represents 1,500 gpm for a two-hour period of time or 180,000 gallons. Max day demands were assigned to the system consistent with those presented in Appendix B. Additionally, a fire flow of 1,500 gpm was iteratively applied to individual proposed hydrant locations in order to determine the worst case condition. Under all scenarios, all points in the system exceeded the required 20 psi residual pressure. The max day plus the fire flow scenario that produced the lowest residual pressure in the system occurred when the fire flow of 1,500 gpm was applied to J-225 resulting in a residual pressure of 44.5 psi at J-225. The maximum velocity in this scenario of 9.60 fps occurred in pipe P-148. The maximum allowable velocity within a pipe as designated by the CSU standards is 20 fps. Flow test results demonstrate that the proposed system is capable of providing the required flows under modeled conditions. Refer to Appendix B for both the flow test and pressure test results.

### 105 PSI

#### *Average Day*

Average demands were assigned to the system consistent with those presented in Appendix B. The minimum pressure within the system for the max day scenario was calculated to be at junction J-225 at 101.7 psi. This exceeds the minimum of 60 psi. The maximum pressure within the system occurred at junction J-65 at 150.0 psi, and is below the maximum pressure of 180 psi. The maximum velocity in this scenario of 0.17 fps occurred in pipe P-264. The maximum allowable velocity within a pipe as designated by the CSU standards is 5 fps. A maximum absolute headloss of 0.01 ft. was calculated at pipe P-248. The maximum pipe loss as designated by CSU standards is 3ft/ 1000ft.

#### *Max Day*

Max day demands were assigned to the system consistent with those presented in Appendix B. The minimum pressure within the system for the max day scenario was calculated to be at junction J-225 at 101.6 psi. This exceeds the minimum of 60 psi. The maximum pressure within the system occurred at junction J-65 at 149.9 psi, and is below the maximum pressure of 180 psi. The maximum velocity in this scenario of 0.41 fps occurred in pipe P-264. The maximum allowable velocity within a pipe as



designated by the CSU standards is 5 fps. A maximum absolute headloss of 0.04 ft. was calculated at pipe P-55. The maximum pipe loss as designated by CSU standards is 3ft/ 1000ft.

#### *Max Day + Fire Flow*

The fire flow used was governed by the IFC s Table B105.1 “minimum required fire-flow and flow duration for buildings”. The required storage for fire flow represents 1,500 gpm for a two-hour period of time or 180,000 gallons. Max day demands were assigned to the system consistent with those presented in Appendix B. Additionally, a fire flow of 1,500 gpm was iteratively applied to individual proposed hydrant locations in order to determine the worst case condition. Under all scenarios, all points in the system exceeded the required 20 psi residual pressure. The max day plus the fire flow scenario that produced the lowest residual pressure in the system occurred when the fire flow of 1,500 gpm was applied to J-225 resulting in a residual pressure of 64.4 psi at J-225. The maximum velocity in this scenario of 9.60 fps occurred in pipe P-148. The maximum allowable velocity within a pipe as designated by the CSU standards is 20 fps. Flow test results demonstrate that the proposed system is capable of providing the required flows under modeled conditions. Refer to Appendix B for both the flow test and pressure test results.

#### *Potential SIA Items and Permitting*

There are no off-site improvements necessary to complete this project.

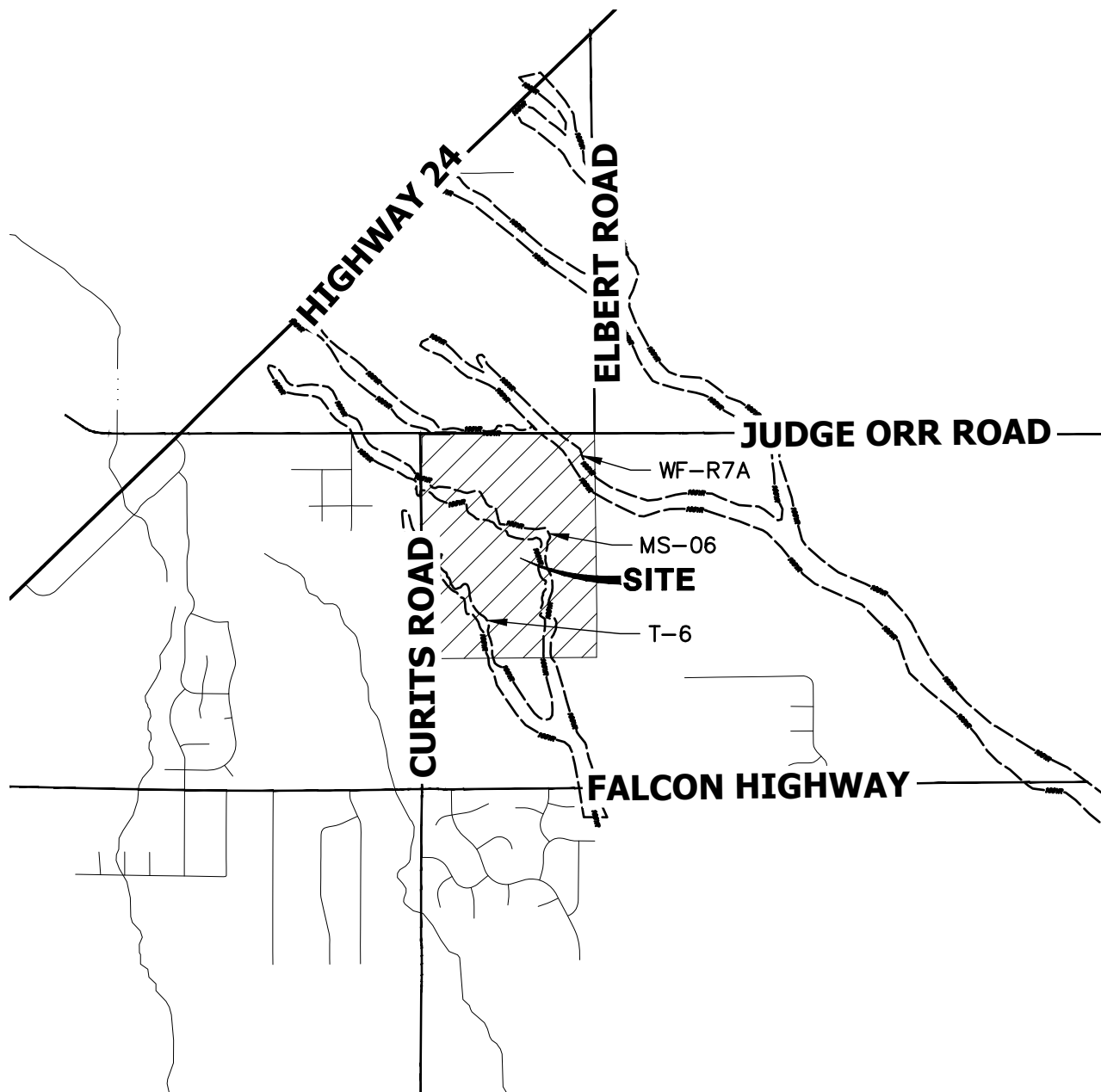
### **CONCLUSION**

The proposed water system that will service Saddlehorn Ranch site has been demonstrated to be in compliance with the standards set forth by Colorado Springs Utilities. The Utilities Department and the Saddlehorn Metro District is not responsible or liable for assumptions made by the Developer regarding utility information associated with the proposed development.

## REFERENCES

1. Water Line Extension and Service Standards. Colorado Springs Utilities. 2018.
2. Hydraulic Analysis Report Modeling Criteria. Colorado Springs Utilities. 2012.

**APPENDIX A**  
**VICINITY MAP**



5000 2500 0 5000 10000



ORIGINAL SCALE: 1" = 5000'



VICINITY MAP  
SADDLEHORN RANCH  
25142.00  
01/17/19  
SHEET 1 OF 1



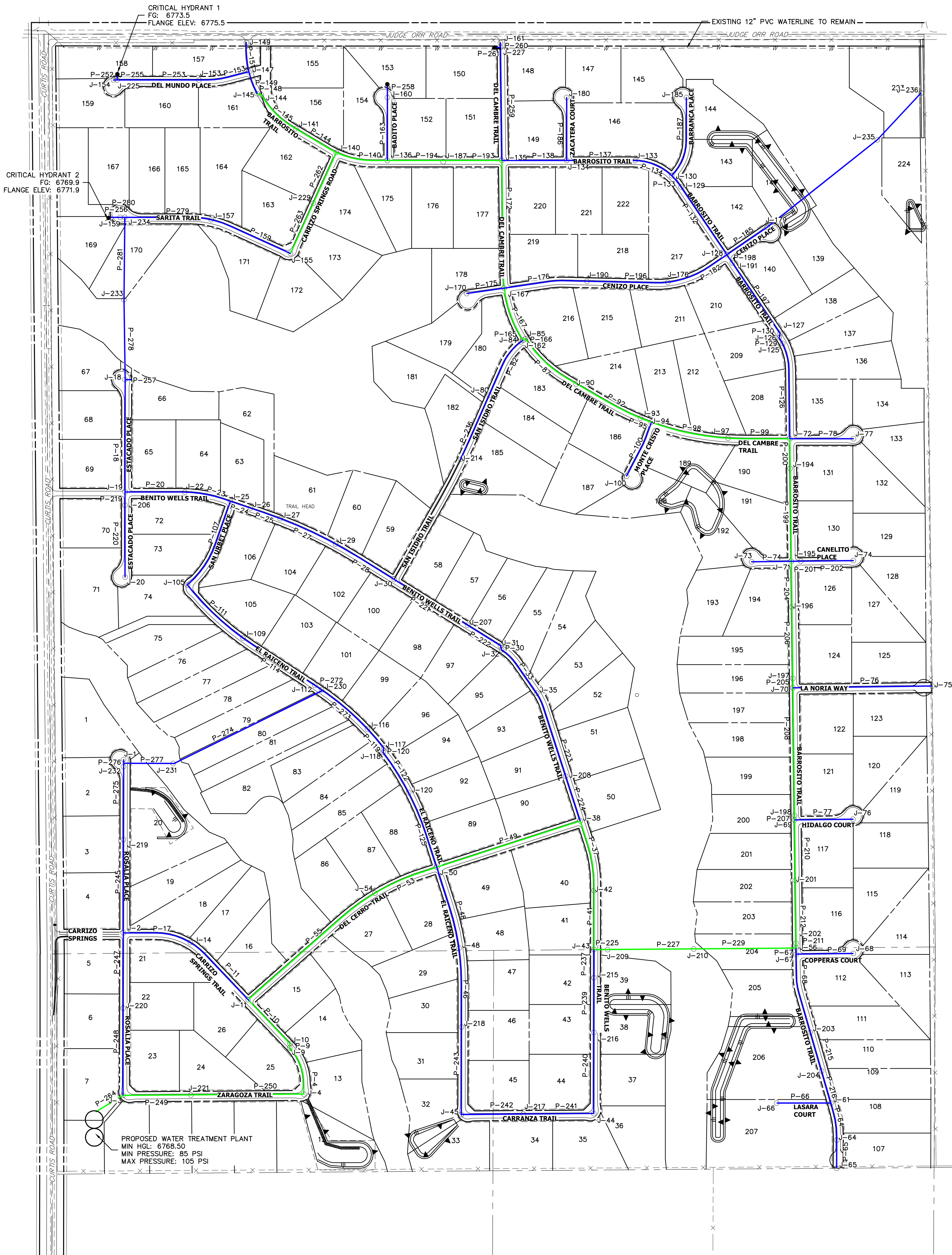
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**APPENDIX B**  
**WATER SYSTEM DATA**









# SADDLEHORN RANCH WATER SYSTEM MAP



<b>Max Day (85 PSI)</b>	<b>Ultimate Buildout</b>
Minimum System Pressure (PSI)	81.7
Maximum System Pressure (PSI)	130.0
Maximum System Velocity (FT/S)	0.41
Maximum System Headloss (FT)	0.040
<b>Max Day + Fire Flow (85 PSI)</b>	
Minimum System Pressure (PSI)	44.5
Number of Junctions Less than 20 psi	0
Maximum System Pressure (PSI)	120.4
Maximum System Velocity (FT/S)	9.6
Maximum System Headloss (FT)	22.08

## LEGEND

- |                                                                                      |                      |
|--------------------------------------------------------------------------------------|----------------------|
|  | 12-IN. PVC WATERLINE |
|  | 8-IN. PVC WATERLINE  |
|   | WATERCAD JUNCTION    |
|   | WATERCAD HYDRANT     |
|  | PROPERTY LINE        |
|  | RIGHT-OF-WAY LINE    |



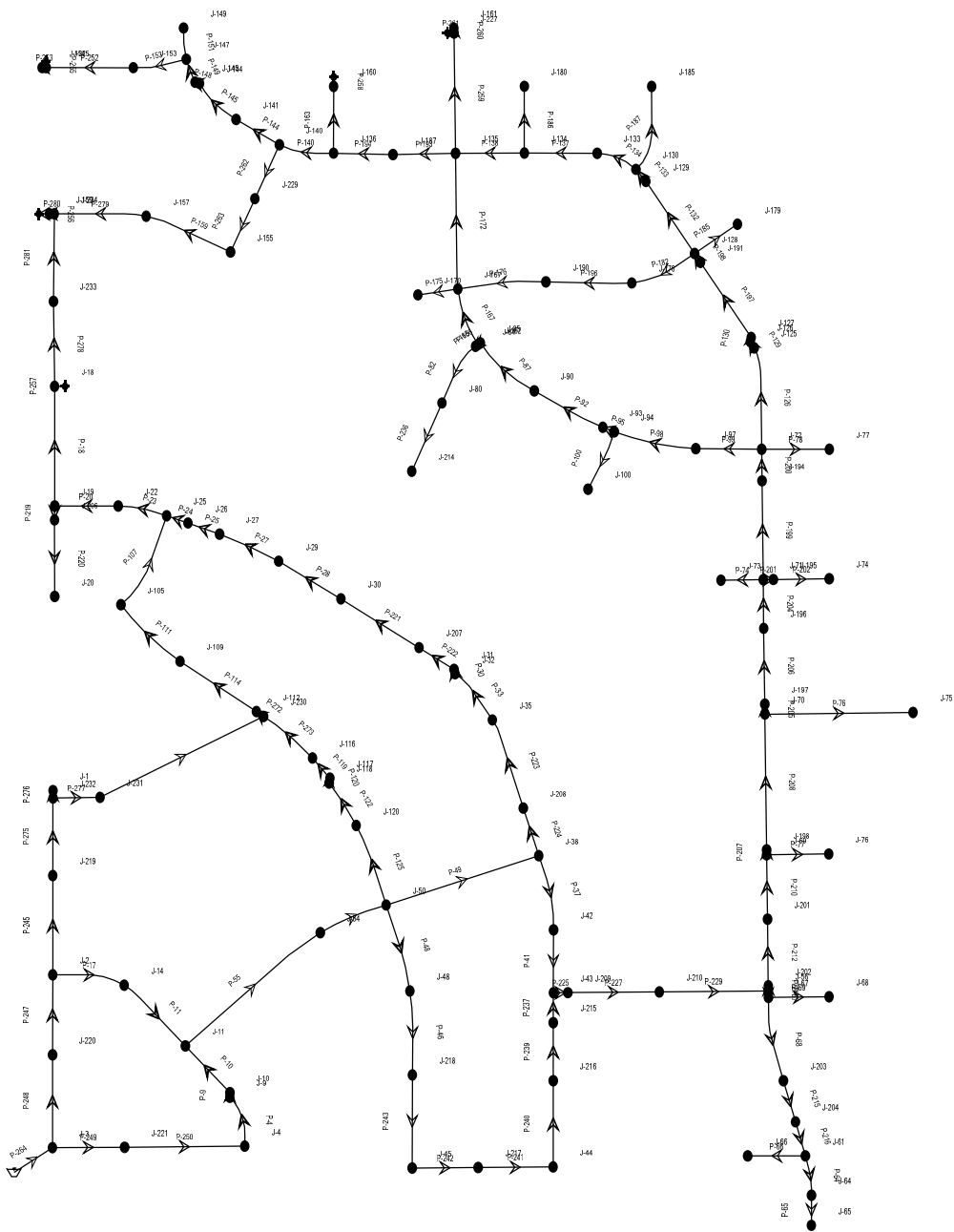
300 150 0 300  
ORIGINAL SCALE: 1" = 300'

WATER SYSTEM MAP  
SADDLEHORN RANCH  
JOB NO. 25142.00  
04/29/2019  
SHEET 1 OF 1



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# AVERAGE DAY

85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	6,964.0	130.1
J-64	6,665.9	0.52	6,964.0	129.0
J-61	6,670.4	0.00	6,964.0	127.0
J-66	6,671.2	0.52	6,964.0	126.7
J-204	6,673.1	0.52	6,964.0	125.8
J-203	6,677.4	0.78	6,964.0	124.0
J-210	6,684.8	0.00	6,964.0	120.8
J-209	6,685.2	0.00	6,964.0	120.6
J-215	6,687.2	0.52	6,964.0	119.7
J-56	6,688.6	0.00	6,964.0	119.1
J-202	6,688.6	0.52	6,964.0	119.1
J-67	6,690.0	0.00	6,964.0	118.5
J-216	6,692.4	0.52	6,964.0	117.5
J-45	6,694.6	0.78	6,964.0	116.5
J-43	6,695.9	0.00	6,964.0	116.0
J-44	6,696.3	1.04	6,964.0	115.8
J-42	6,697.7	0.52	6,964.0	115.2
J-217	6,698.9	0.26	6,964.0	114.7
J-218	6,700.9	1.04	6,964.0	113.8
J-201	6,701.3	0.78	6,964.0	113.6
J-38	6,702.3	0.00	6,964.0	113.2
J-68	6,702.3	0.78	6,964.0	113.2
J-208	6,706.0	1.04	6,964.0	111.6
J-48	6,706.3	0.52	6,964.0	111.5
J-235	6,709.8	0.26	6,964.0	109.9
J-69	6,710.4	0.00	6,964.0	109.7
J-50	6,710.8	1.04	6,964.0	109.5
J-198	6,711.6	0.78	6,964.0	109.2
J-35	6,713.0	1.56	6,964.0	108.6
J-4	6,713.7	0.52	6,964.0	108.3
J-54	6,715.4	0.78	6,964.0	107.5
J-31	6,717.3	0.00	6,964.0	106.7
J-32	6,717.3	0.00	6,964.0	106.7
J-100	6,717.5	0.52	6,964.0	106.6
J-238	6,717.8	0.78	6,964.0	106.5



# AVERAGE DAY

85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-179	6,717.9	0.52	6,964.0	106.5
J-236	6,719.1	0.26	6,964.0	106.0
J-120	6,719.2	0.78	6,964.0	105.9
J-207	6,719.3	1.04	6,964.0	105.9
J-73	6,719.6	0.78	6,964.0	105.7
J-191	6,719.9	0.52	6,964.0	105.6
J-9	6,721.6	0.00	6,964.0	104.9
J-10	6,721.6	0.78	6,964.0	104.9
J-128	6,721.8	0.00	6,964.0	104.8
J-97	6,722.5	0.52	6,964.0	104.5
J-70	6,722.7	0.00	6,964.0	104.4
J-94	6,723.0	0.00	6,964.0	104.3
J-197	6,723.1	0.78	6,964.0	104.2
J-129	6,723.2	0.52	6,964.0	104.2
J-77	6,723.7	0.78	6,964.0	103.9
J-93	6,723.7	0.52	6,964.0	103.9
J-185	6,724.0	0.52	6,964.0	103.8
J-176	6,724.4	0.26	6,964.0	103.6
J-126	6,726.0	0.00	6,964.0	103.0
J-127	6,726.0	0.00	6,964.0	103.0
J-30	6,726.1	0.78	6,964.0	102.9
J-72	6,726.3	0.52	6,964.0	102.8
J-196	6,726.3	0.52	6,964.0	102.8
J-116	6,726.8	1.56	6,964.0	102.6
J-190	6,726.9	0.52	6,964.0	102.6
J-117	6,727.0	0.00	6,964.0	102.5
J-118	6,727.0	0.00	6,964.0	102.5
J-11	6,727.2	0.52	6,964.0	102.4
J-76	6,727.2	0.78	6,964.0	102.4
J-125	6,727.2	1.04	6,964.0	102.4
J-130	6,727.6	0.26	6,964.0	102.3
J-90	6,727.7	0.52	6,964.0	102.2
J-195	6,728.5	0.52	6,964.0	101.9
J-214	6,729.7	0.26	6,964.0	101.4
J-71	6,730.2	0.00	6,964.0	101.1

# AVERAGE DAY

## 85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	6,730.4	0.26	6,964.0	101.1
J-29	6,731.1	0.52	6,964.0	100.8
J-167	6,731.9	0.78	6,964.0	100.4
J-84	6,732.2	0.00	6,964.0	100.3
J-85	6,732.2	0.00	6,964.0	100.3
J-162	6,732.2	0.00	6,964.0	100.3
J-112	6,732.3	1.30	6,964.0	100.2
J-134	6,733.2	0.52	6,964.0	99.8
J-230	6,733.4	0.00	6,964.0	99.8
J-80	6,733.7	0.78	6,964.0	99.6
J-27	6,734.7	0.52	6,964.0	99.2
J-194	6,735.7	0.52	6,964.0	98.8
J-180	6,736.4	0.26	6,964.0	98.5
J-221	6,736.5	0.78	6,964.0	98.4
J-14	6,737.8	0.78	6,964.0	97.9
J-231	6,738.5	0.00	6,964.0	97.6
J-25	6,739.2	0.00	6,964.0	97.2
J-26	6,739.4	0.78	6,964.0	97.2
J-75	6,740.5	0.52	6,964.0	96.7
J-74	6,740.5	0.78	6,964.0	96.7
J-170	6,740.9	0.52	6,964.0	96.5
J-109	6,743.4	1.04	6,964.0	95.4
J-135	6,743.4	1.04	6,964.0	95.4
J-161	6,744.4	0.52	6,964.0	95.0
J-227	6,744.4	0.00	6,964.0	95.0
J-22	6,744.9	0.52	6,964.0	94.8
J-187	6,746.2	0.26	6,964.0	94.2
J-136	6,748.4	0.78	6,964.0	93.3
J-19	6,749.4	0.00	6,964.0	92.8
J-105	6,749.6	0.52	6,964.0	92.7
J-239	6,750.1	0.78	6,964.0	92.5
J-1	6,750.4	0.52	6,964.0	92.4
J-232	6,750.5	0.00	6,964.0	92.4
J-160	6,750.7	0.26	6,964.0	92.3
J-206	6,751.1	0.26	6,964.0	92.1

# AVERAGE DAY

85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-219	6,751.8	0.52	6,964.0	91.8
J-20	6,752.0	0.52	6,964.0	91.7
J-140	6,752.4	0.00	6,964.0	91.5
J-2	6,755.7	0.78	6,964.0	90.1
J-229	6,756.0	0.52	6,964.0	90.0
J-233	6,756.3	0.00	6,964.0	89.9
J-141	6,756.3	0.52	6,964.0	89.8
J-155	6,756.6	0.78	6,964.0	89.7
J-18	6,757.8	0.52	6,964.0	89.2
J-220	6,761.4	0.52	6,964.0	87.7
J-144	6,762.2	0.00	6,964.0	87.3
J-145	6,762.2	0.00	6,964.0	87.3
J-3	6,762.4	1.04	6,964.0	87.2
J-147	6,763.6	0.52	6,964.0	86.7
J-157	6,764.7	0.52	6,964.0	86.2
J-149	6,767.3	0.00	6,964.0	85.1
J-234	6,768.9	0.00	6,964.0	84.4
J-153	6,769.5	0.52	6,964.0	84.1
J-159	6,770.1	1.30	6,964.0	83.9
J-154	6,774.9	0.52	6,964.0	81.8
J-225	6,774.9	0.00	6,964.0	81.8

# AVERAGE DAY

## 85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-4	298	12.0	38.52	123.0	0.11	0.00
P-9	27	12.0	38.52	123.0	0.11	0.00
P-10	364	12.0	37.74	123.0	0.11	0.00
P-11	486	8.0	3.82	120.0	0.02	0.00
P-17	413	8.0	4.60	120.0	0.03	0.00
P-20	358	8.0	8.90	120.0	0.06	0.00
P-23	280	8.0	9.42	120.0	0.06	0.00
P-24	127	8.0	0.91	120.0	0.01	0.00
P-25	188	8.0	1.69	120.0	0.01	0.00
P-27	366	8.0	2.21	120.0	0.01	0.00
P-28	409	8.0	2.73	120.0	0.02	0.00
P-30	25	8.0	4.55	120.0	0.03	0.00
P-33	337	8.0	4.55	120.0	0.03	0.00
P-37	428	12.0	21.22	123.0	0.06	0.00
P-41	354	12.0	20.70	123.0	0.06	0.00
P-46	473	8.0	7.34	120.0	0.05	0.00
P-48	504	8.0	7.86	120.0	0.05	0.00
P-49	903	12.0	28.37	123.0	0.08	0.00
P-53	403	12.0	40.26	123.0	0.11	0.00
P-55	993	12.0	41.04	123.0	0.12	0.01
P-64	225	8.0	0.52	120.0	0.00	0.00
P-65	169	8.0	0.00	120.0	0.00	0.00
P-66	324	8.0	0.52	120.0	0.00	0.00
P-67	37	12.0	3.12	123.0	0.01	0.00
P-68	479	12.0	2.34	123.0	0.01	0.00
P-69	342	8.0	0.78	120.0	0.00	0.00
P-74	238	8.0	0.78	120.0	0.00	0.00
P-76	834	8.0	0.52	120.0	0.00	0.00
P-77	350	8.0	0.78	120.0	0.00	0.00
P-78	381	8.0	0.78	120.0	0.00	0.00
P-82	376	8.0	1.04	120.0	0.01	0.00
P-87	410	12.0	5.75	123.0	0.02	0.00
P-92	437	12.0	6.27	123.0	0.02	0.00
P-95	69	12.0	6.79	123.0	0.02	0.00
P-98	471	12.0	7.31	123.0	0.02	0.00

# AVERAGE DAY

85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-99	371	12.0	7.83	123.0	0.02	0.00
P-100	356	8.0	0.52	120.0	0.00	0.00
P-107	572	8.0	8.50	120.0	0.05	0.00
P-111	463	8.0	9.02	120.0	0.06	0.00
P-114	514	8.0	10.06	120.0	0.06	0.00
P-119	150	8.0	2.21	120.0	0.01	0.00
P-120	27	8.0	2.21	120.0	0.01	0.00
P-122	284	8.0	2.21	120.0	0.01	0.00
P-125	479	8.0	2.99	120.0	0.02	0.00
P-126	577	8.0	3.57	120.0	0.02	0.00
P-129	41	8.0	2.53	120.0	0.02	0.00
P-130	25	8.0	2.53	120.0	0.02	0.00
P-132	490	8.0	1.13	120.0	0.01	0.00
P-133	88	8.0	0.61	120.0	0.00	0.00
P-134	242	8.0	0.17	120.0	0.00	0.00
P-137	410	8.0	0.43	120.0	0.00	0.00
P-138	388	8.0	1.21	120.0	0.01	0.00
P-140	313	12.0	1.60	123.0	0.00	0.00
P-144	282	12.0	2.09	123.0	0.01	0.00
P-145	293	12.0	1.57	123.0	0.00	0.00
P-148	26	8.0	1.57	120.0	0.01	0.00
P-149	140	8.0	1.57	120.0	0.01	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-153	304	8.0	1.04	120.0	0.01	0.00
P-159	517	8.0	4.99	120.0	0.03	0.00
P-163	376	8.0	0.27	120.0	0.00	0.00
P-165	17	12.0	1.04	123.0	0.00	0.00
P-166	17	12.0	5.75	123.0	0.02	0.00
P-167	335	12.0	4.71	123.0	0.01	0.00
P-172	765	12.0	2.47	123.0	0.01	0.00
P-175	228	8.0	0.52	120.0	0.00	0.00
P-176	499	8.0	0.93	120.0	0.01	0.00
P-182	395	8.0	0.15	120.0	0.00	0.00
P-185	292	8.0	1.04	120.0	0.01	0.00
P-186	376	8.0	0.26	120.0	0.00	0.00

# AVERAGE DAY

## 85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-187	492	8.0	0.52	120.0	0.00	0.00
P-193	352	12.0	0.30	123.0	0.00	0.00
P-194	335	12.0	0.56	123.0	0.00	0.00
P-196	484	8.0	0.41	120.0	0.00	0.00
P-197	510	8.0	2.53	120.0	0.02	0.00
P-198	59	8.0	2.01	120.0	0.01	0.00
P-199	557	12.0	13.22	123.0	0.04	0.00
P-200	177	12.0	12.70	123.0	0.04	0.00
P-201	57	8.0	1.30	120.0	0.01	0.00
P-202	315	8.0	0.78	120.0	0.00	0.00
P-204	274	12.0	15.30	123.0	0.04	0.00
P-205	56	12.0	16.60	123.0	0.05	0.00
P-206	427	12.0	15.82	123.0	0.04	0.00
P-207	27	12.0	18.68	123.0	0.05	0.00
P-210	362	12.0	19.46	123.0	0.06	0.00
P-211	29	12.0	20.76	123.0	0.06	0.00
P-212	376	12.0	20.24	123.0	0.06	0.00
P-215	241	8.0	1.56	120.0	0.01	0.00
P-216	200	8.0	1.04	120.0	0.01	0.00
P-219	79	8.0	0.78	120.0	0.00	0.00
P-220	431	8.0	0.52	120.0	0.00	0.00
P-221	519	8.0	3.51	120.0	0.02	0.00
P-222	233	8.0	4.55	120.0	0.03	0.00
P-223	528	8.0	6.11	120.0	0.04	0.00
P-224	282	8.0	7.15	120.0	0.05	0.00
P-225	81	12.0	23.88	123.0	0.07	0.00
P-227	515	12.0	23.88	123.0	0.07	0.00
P-229	614	12.0	23.88	123.0	0.07	0.00
P-236	420	8.0	0.26	120.0	0.00	0.00
P-237	168	8.0	3.18	120.0	0.02	0.00
P-239	327	8.0	3.70	120.0	0.02	0.00
P-240	485	8.0	4.22	120.0	0.03	0.00
P-241	423	8.0	5.26	120.0	0.03	0.00
P-242	371	8.0	5.52	120.0	0.04	0.00
P-243	524	8.0	6.30	120.0	0.04	0.00

# AVERAGE DAY

## 85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-245	559	8.0	11.76	120.0	0.08	0.00
P-247	451	8.0	17.14	120.0	0.11	0.00
P-248	522	8.0	17.66	120.0	0.11	0.01
P-249	407	12.0	39.82	123.0	0.11	0.00
P-250	676	12.0	39.04	123.0	0.11	0.00
P-252	491	8.0	0.52	120.0	0.00	0.00
P-253	22	8.0	0.52	120.0	0.00	0.00
P-255	33	6.0	0.00	130.0	0.00	0.00
P-256	60	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.01	130.0	0.00	0.00
P-259	677	8.0	0.52	120.0	0.00	0.00
P-260	28	8.0	0.52	120.0	0.00	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-262	333	12.0	3.69	120.0	0.01	0.00
P-263	330	12.0	4.21	120.0	0.01	0.00
P-264	257	12.0	58.52	123.0	0.17	0.00
P-272	49	8.0	11.36	120.0	0.07	0.00
P-273	363	8.0	0.65	120.0	0.00	0.00
P-274	1,028	8.0	10.72	120.0	0.07	0.00
P-275	437	8.0	11.24	120.0	0.07	0.00
P-276	42	8.0	0.52	120.0	0.00	0.00
P-277	265	8.0	10.72	120.0	0.07	0.00
P-278	479	8.0	6.82	120.0	0.04	0.00
P-279	519	8.0	5.51	120.0	0.04	0.00
P-280	28	8.0	1.31	120.0	0.01	0.00
P-281	493	8.0	6.82	120.0	0.04	0.00
P-282	849	8.0	0.52	120.0	0.00	0.00
P-283	509	8.0	0.26	120.0	0.00	0.00
P-284	555	12.0	17.90	123.0	0.05	0.00
P-285	210	12.0	17.12	123.0	0.05	0.00
P-286	379	8.0	7.34	120.0	0.05	0.00
P-287	293	8.0	8.12	120.0	0.05	0.00

# MAX DAY

85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	6,963.8	130.0
J-64	6,665.9	1.27	6,963.8	128.9
J-61	6,670.4	0.00	6,963.8	126.9
J-66	6,671.2	1.27	6,963.8	126.6
J-204	6,673.1	1.27	6,963.8	125.8
J-203	6,677.4	1.91	6,963.8	123.9
J-210	6,684.8	0.00	6,963.8	120.7
J-209	6,685.2	0.00	6,963.8	120.5
J-215	6,687.2	1.27	6,963.8	119.7
J-56	6,688.6	0.00	6,963.8	119.1
J-202	6,688.6	1.27	6,963.8	119.1
J-67	6,690.0	0.00	6,963.8	118.5
J-216	6,692.4	1.27	6,963.8	117.4
J-45	6,694.6	1.91	6,963.8	116.5
J-43	6,695.9	0.00	6,963.8	115.9
J-44	6,696.3	2.55	6,963.8	115.8
J-42	6,697.7	1.27	6,963.8	115.1
J-217	6,698.9	0.64	6,963.8	114.6
J-218	6,700.9	2.55	6,963.8	113.8
J-201	6,701.3	1.91	6,963.8	113.6
J-38	6,702.3	0.00	6,963.8	113.2
J-68	6,702.3	1.91	6,963.8	113.1
J-208	6,706.0	2.55	6,963.8	111.6
J-48	6,706.3	1.27	6,963.9	111.4
J-235	6,709.8	0.64	6,963.8	109.9
J-69	6,710.4	0.00	6,963.8	109.6
J-50	6,710.8	2.55	6,963.9	109.5
J-198	6,711.6	1.91	6,963.8	109.1
J-35	6,713.0	3.82	6,963.8	108.5
J-4	6,713.7	1.27	6,963.9	108.3
J-54	6,715.4	1.91	6,963.9	107.5
J-31	6,717.3	0.00	6,963.8	106.7
J-32	6,717.3	0.00	6,963.8	106.7
J-100	6,717.5	1.27	6,963.8	106.6
J-238	6,717.8	1.91	6,963.8	106.4



# MAX DAY

85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-179	6,717.9	1.27	6,963.8	106.4
J-236	6,719.1	0.64	6,963.8	105.9
J-120	6,719.2	1.91	6,963.9	105.9
J-207	6,719.3	2.55	6,963.8	105.8
J-73	6,719.6	1.91	6,963.8	105.7
J-191	6,719.9	1.27	6,963.8	105.5
J-9	6,721.6	0.00	6,963.9	104.8
J-10	6,721.6	1.91	6,963.9	104.8
J-128	6,721.8	0.00	6,963.8	104.7
J-97	6,722.5	1.27	6,963.8	104.4
J-70	6,722.7	0.00	6,963.8	104.3
J-94	6,723.0	0.00	6,963.8	104.2
J-197	6,723.1	1.91	6,963.8	104.1
J-129	6,723.2	1.27	6,963.8	104.1
J-77	6,723.7	1.91	6,963.8	103.9
J-93	6,723.7	1.27	6,963.8	103.9
J-185	6,724.0	1.27	6,963.8	103.7
J-176	6,724.4	0.64	6,963.8	103.6
J-126	6,726.0	0.00	6,963.8	102.9
J-127	6,726.0	0.00	6,963.8	102.9
J-30	6,726.1	1.91	6,963.8	102.9
J-72	6,726.3	1.27	6,963.8	102.8
J-196	6,726.3	1.27	6,963.8	102.8
J-116	6,726.8	3.82	6,963.9	102.6
J-190	6,726.9	1.27	6,963.8	102.5
J-117	6,727.0	0.00	6,963.9	102.5
J-118	6,727.0	0.00	6,963.9	102.5
J-11	6,727.2	1.27	6,963.9	102.4
J-76	6,727.2	1.91	6,963.8	102.4
J-125	6,727.2	2.55	6,963.8	102.4
J-130	6,727.6	0.64	6,963.8	102.2
J-90	6,727.7	1.27	6,963.8	102.1
J-195	6,728.5	1.27	6,963.8	101.8
J-214	6,729.7	0.64	6,963.8	101.3
J-71	6,730.2	0.00	6,963.8	101.1

# MAX DAY

85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	6,730.4	0.64	6,963.8	101.0
J-29	6,731.1	1.27	6,963.8	100.7
J-167	6,731.9	1.91	6,963.8	100.3
J-84	6,732.2	0.00	6,963.8	100.2
J-85	6,732.2	0.00	6,963.8	100.2
J-162	6,732.2	0.00	6,963.8	100.2
J-112	6,732.3	3.18	6,963.9	100.2
J-134	6,733.2	1.27	6,963.8	99.8
J-230	6,733.4	0.00	6,963.9	99.7
J-80	6,733.7	1.91	6,963.8	99.5
J-27	6,734.7	1.27	6,963.8	99.1
J-194	6,735.7	1.27	6,963.8	98.7
J-221	6,736.5	1.91	6,964.0	98.4
J-180	6,736.4	0.64	6,963.8	98.4
J-14	6,737.8	1.91	6,963.9	97.8
J-231	6,738.5	0.00	6,963.9	97.5
J-25	6,739.2	0.00	6,963.8	97.2
J-26	6,739.4	1.91	6,963.8	97.1
J-75	6,740.5	1.27	6,963.8	96.6
J-74	6,740.5	1.91	6,963.8	96.6
J-170	6,740.9	1.27	6,963.8	96.4
J-109	6,743.4	2.55	6,963.8	95.4
J-135	6,743.4	2.55	6,963.8	95.4
J-161	6,744.4	1.27	6,963.8	94.9
J-227	6,744.4	0.00	6,963.8	94.9
J-22	6,744.9	1.27	6,963.8	94.7
J-187	6,746.2	0.64	6,963.8	94.1
J-136	6,748.4	1.91	6,963.8	93.2
J-19	6,749.4	0.00	6,963.8	92.8
J-105	6,749.6	1.27	6,963.8	92.7
J-239	6,750.1	1.91	6,963.8	92.5
J-1	6,750.4	1.27	6,963.9	92.4
J-232	6,750.5	0.00	6,963.9	92.3
J-160	6,750.7	0.64	6,963.8	92.2
J-206	6,751.1	0.64	6,963.8	92.0

# MAX DAY

85 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-219	6,751.8	1.27	6,963.9	91.8
J-20	6,752.0	1.27	6,963.8	91.6
J-140	6,752.4	0.00	6,963.8	91.5
J-2	6,755.7	1.91	6,963.9	90.1
J-229	6,756.0	1.27	6,963.8	89.9
J-233	6,756.3	0.00	6,963.8	89.8
J-141	6,756.3	1.27	6,963.8	89.8
J-155	6,756.6	1.91	6,963.8	89.6
J-18	6,757.8	1.27	6,963.8	89.1
J-220	6,761.4	1.27	6,963.9	87.6
J-3	6,762.4	2.55	6,964.0	87.2
J-144	6,762.2	0.00	6,963.8	87.2
J-145	6,762.2	0.00	6,963.8	87.2
J-147	6,763.6	1.27	6,963.8	86.6
J-157	6,764.7	1.27	6,963.8	86.1
J-149	6,767.3	0.00	6,963.8	85.0
J-234	6,768.9	0.00	6,963.8	84.3
J-153	6,769.5	1.27	6,963.8	84.1
J-159	6,770.1	3.18	6,963.8	83.8
J-154	6,774.9	1.27	6,963.8	81.7
J-225	6,774.9	0.00	6,963.8	81.7

# MAX DAY

## 85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-55	993	12.0	100.54	123.0	0.29	0.04
P-248	522	8.0	43.26	120.0	0.28	0.03
P-247	451	8.0	41.99	120.0	0.27	0.03
P-274	1,028	8.0	26.25	120.0	0.17	0.03
P-250	676	12.0	95.63	123.0	0.27	0.02
P-264	257	12.0	143.35	123.0	0.41	0.02
P-49	903	12.0	69.50	123.0	0.20	0.02
P-245	559	8.0	28.80	120.0	0.18	0.02
P-249	407	12.0	97.54	123.0	0.28	0.02
P-53	403	12.0	98.63	123.0	0.28	0.02
P-10	364	12.0	92.45	123.0	0.26	0.01
P-275	437	8.0	27.53	120.0	0.18	0.01
P-114	514	8.0	24.66	120.0	0.16	0.01
P-4	298	12.0	94.36	123.0	0.27	0.01
P-107	572	8.0	20.83	120.0	0.13	0.01
P-229	614	12.0	58.50	123.0	0.17	0.01
P-111	463	8.0	22.11	120.0	0.14	0.01
P-227	515	12.0	58.50	123.0	0.17	0.01
P-48	504	8.0	19.26	120.0	0.12	0.01
P-277	265	8.0	26.25	120.0	0.17	0.01
P-20	358	8.0	21.79	120.0	0.14	0.01
P-46	473	8.0	17.99	120.0	0.11	0.01
P-23	280	8.0	23.06	120.0	0.15	0.01
P-37	428	12.0	51.98	123.0	0.15	0.01
P-278	479	8.0	16.69	120.0	0.11	0.01
P-281	493	8.0	16.69	120.0	0.11	0.01
P-284	555	12.0	43.84	123.0	0.12	0.00
P-223	528	8.0	14.97	120.0	0.10	0.00
P-243	524	8.0	15.44	120.0	0.10	0.00
P-287	293	8.0	19.88	120.0	0.13	0.00
P-286	379	8.0	17.97	120.0	0.11	0.00
P-212	376	12.0	49.58	123.0	0.14	0.00
P-41	354	12.0	50.71	123.0	0.14	0.00
P-210	362	12.0	47.67	123.0	0.14	0.00
P-159	517	8.0	12.23	120.0	0.08	0.00

# MAX DAY

## 85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-224	282	8.0	17.52	120.0	0.11	0.00
P-279	519	8.0	13.50	120.0	0.09	0.00
P-241	423	8.0	12.89	120.0	0.08	0.00
P-199	557	12.0	32.38	123.0	0.09	0.00
P-206	427	12.0	38.75	123.0	0.11	0.00
P-242	371	8.0	13.53	120.0	0.09	0.00
P-240	485	8.0	10.34	120.0	0.07	0.00
P-126	577	8.0	8.75	120.0	0.06	0.00
P-17	413	8.0	11.28	120.0	0.07	0.00
P-11	486	8.0	9.37	120.0	0.06	0.00
P-239	327	8.0	9.07	120.0	0.06	0.00
P-285	210	12.0	41.93	123.0	0.12	0.00
P-272	49	8.0	27.84	120.0	0.18	0.00
P-221	519	8.0	8.60	120.0	0.05	0.00
P-204	274	12.0	37.47	123.0	0.11	0.00
P-33	337	8.0	11.15	120.0	0.07	0.00
P-222	233	8.0	11.15	120.0	0.07	0.00
P-200	177	12.0	31.10	123.0	0.09	0.00
P-9	27	12.0	94.36	123.0	0.27	0.00
P-98	471	12.0	17.90	123.0	0.05	0.00
P-28	409	8.0	6.69	120.0	0.04	0.00
P-197	510	8.0	6.20	120.0	0.04	0.00
P-225	81	12.0	58.50	123.0	0.17	0.00
P-125	479	8.0	7.32	120.0	0.05	0.00
P-211	29	12.0	50.85	123.0	0.14	0.00
P-172	765	12.0	6.05	123.0	0.02	0.00
P-176	499	8.0	2.29	120.0	0.01	0.00
P-122	284	8.0	5.41	120.0	0.03	0.00
P-215	241	8.0	3.83	120.0	0.02	0.00
P-99	371	12.0	19.17	123.0	0.05	0.00
P-92	437	12.0	15.35	123.0	0.04	0.00
P-74	238	8.0	1.91	120.0	0.01	0.00
P-205	56	12.0	40.66	123.0	0.12	0.00
P-27	366	8.0	5.42	120.0	0.03	0.00
P-201	57	8.0	3.18	120.0	0.02	0.00

# MAX DAY

## 85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-77	350	8.0	1.91	120.0	0.01	0.00
P-119	150	8.0	5.41	120.0	0.03	0.00
P-207	27	12.0	45.76	123.0	0.13	0.00
P-262	333	12.0	9.04	120.0	0.03	0.00
P-87	410	12.0	14.08	123.0	0.04	0.00
P-237	168	8.0	7.80	120.0	0.05	0.00
P-24	127	8.0	2.23	120.0	0.01	0.00
P-25	188	8.0	4.14	120.0	0.03	0.00
P-30	25	8.0	11.15	120.0	0.07	0.00
P-64	225	8.0	1.28	120.0	0.01	0.00
P-65	169	8.0	0.00	120.0	0.00	0.00
P-66	324	8.0	1.27	120.0	0.01	0.00
P-67	37	12.0	7.65	123.0	0.02	0.00
P-68	479	12.0	5.74	123.0	0.02	0.00
P-69	342	8.0	1.91	120.0	0.01	0.00
P-76	834	8.0	1.27	120.0	0.01	0.00
P-78	381	8.0	1.91	120.0	0.01	0.00
P-82	376	8.0	2.55	120.0	0.02	0.00
P-95	69	12.0	16.62	123.0	0.05	0.00
P-100	356	8.0	1.27	120.0	0.01	0.00
P-120	27	8.0	5.41	120.0	0.03	0.00
P-129	41	8.0	6.20	120.0	0.04	0.00
P-130	25	8.0	6.20	120.0	0.04	0.00
P-132	490	8.0	2.76	120.0	0.02	0.00
P-133	88	8.0	1.48	120.0	0.01	0.00
P-134	242	8.0	0.43	120.0	0.00	0.00
P-137	410	8.0	1.06	120.0	0.01	0.00
P-138	388	8.0	2.97	120.0	0.02	0.00
P-140	313	12.0	3.94	123.0	0.01	0.00
P-144	282	12.0	5.11	123.0	0.01	0.00
P-145	293	12.0	3.83	123.0	0.01	0.00
P-148	26	8.0	3.83	120.0	0.02	0.00
P-149	140	8.0	3.83	120.0	0.02	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-153	304	8.0	2.55	120.0	0.02	0.00

# MAX DAY

## 85 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-163	376	8.0	0.64	120.0	0.00	0.00
P-165	17	12.0	2.55	123.0	0.01	0.00
P-166	17	12.0	14.08	123.0	0.04	0.00
P-167	335	12.0	11.53	123.0	0.03	0.00
P-175	228	8.0	1.27	120.0	0.01	0.00
P-182	395	8.0	0.38	120.0	0.00	0.00
P-185	292	8.0	2.55	120.0	0.02	0.00
P-186	376	8.0	0.64	120.0	0.00	0.00
P-187	492	8.0	1.27	120.0	0.01	0.00
P-193	352	12.0	0.75	123.0	0.00	0.00
P-194	335	12.0	1.39	123.0	0.00	0.00
P-196	484	8.0	1.02	120.0	0.01	0.00
P-198	59	8.0	4.93	120.0	0.03	0.00
P-202	315	8.0	1.91	120.0	0.01	0.00
P-216	200	8.0	2.55	120.0	0.02	0.00
P-219	79	8.0	1.91	120.0	0.01	0.00
P-220	431	8.0	1.27	120.0	0.01	0.00
P-236	420	8.0	0.64	120.0	0.00	0.00
P-252	491	8.0	1.28	120.0	0.01	0.00
P-253	22	8.0	1.27	120.0	0.01	0.00
P-255	33	6.0	0.00	130.0	0.00	0.00
P-256	60	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.00	130.0	0.00	0.00
P-259	677	8.0	1.28	120.0	0.01	0.00
P-260	28	8.0	1.27	120.0	0.01	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-263	330	12.0	10.32	120.0	0.03	0.00
P-273	363	8.0	1.59	120.0	0.01	0.00
P-276	42	8.0	1.27	120.0	0.01	0.00
P-280	28	8.0	3.19	120.0	0.02	0.00
P-282	849	8.0	1.27	120.0	0.01	0.00
P-283	509	8.0	0.64	120.0	0.00	0.00

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	6,941.5	120.4
J-64	6,665.9	1.27	6,941.5	119.2
J-61	6,670.4	0.00	6,941.5	117.3
J-66	6,671.2	1.27	6,941.5	116.9
J-204	6,673.1	1.27	6,941.5	116.1
J-203	6,677.4	1.91	6,941.5	114.3
J-209	6,685.2	0.00	6,945.1	112.4
J-210	6,684.8	0.00	6,943.5	111.9
J-215	6,687.2	1.27	6,945.6	111.8
J-216	6,692.4	1.27	6,946.0	109.7
J-45	6,694.6	1.91	6,947.6	109.5
J-56	6,688.6	0.00	6,941.5	109.4
J-202	6,688.6	1.27	6,941.4	109.4
J-67	6,690.0	0.00	6,941.5	108.8
J-44	6,696.3	2.55	6,946.6	108.3
J-43	6,695.9	0.00	6,945.4	107.9
J-42	6,697.7	1.27	6,946.1	107.5
J-217	6,698.9	0.64	6,947.2	107.4
J-218	6,700.9	2.55	6,948.3	107.1
J-38	6,702.3	0.00	6,947.0	105.9
J-4	6,713.7	1.27	6,958.3	105.8
J-48	6,706.3	1.27	6,949.0	105.0
J-208	6,706.0	2.55	6,946.8	104.2
J-68	6,702.3	1.91	6,941.5	103.5
J-201	6,701.3	1.91	6,940.2	103.4
J-50	6,710.8	2.55	6,949.7	103.4
J-54	6,715.4	1.91	6,951.5	102.1
J-9	6,721.6	0.00	6,957.3	102.0
J-10	6,721.6	1.91	6,957.2	101.9
J-35	6,713.0	3.82	6,946.4	101.0
J-120	6,719.2	1.91	6,949.7	99.7
J-32	6,717.3	0.00	6,946.1	99.0
J-31	6,717.3	0.00	6,946.1	99.0
J-69	6,710.4	0.00	6,939.1	98.9
J-11	6,727.2	1.27	6,955.9	98.9
J-198	6,711.6	1.91	6,939.0	98.4



Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-207	6,719.3	2.55	6,945.9	98.0
J-221	6,736.5	1.91	6,960.7	97.0
J-116	6,726.8	3.82	6,949.7	96.4
J-118	6,727.0	0.00	6,949.7	96.3
J-117	6,727.0	0.00	6,949.7	96.3
J-238	6,717.8	1.91	6,937.3	95.0
J-30	6,726.1	1.91	6,945.5	94.9
J-235	6,709.8	0.64	6,929.1	94.9
J-14	6,737.8	1.91	6,956.2	94.5
J-112	6,732.3	3.18	6,949.5	94.0
J-230	6,733.4	0.00	6,949.7	93.6
J-73	6,719.6	1.91	6,934.3	92.9
J-231	6,738.5	0.00	6,952.7	92.7
J-29	6,731.1	1.27	6,945.2	92.6
J-70	6,722.7	0.00	6,936.6	92.6
J-197	6,723.1	1.91	6,936.5	92.3
J-100	6,717.5	1.27	6,930.7	92.3
J-76	6,727.2	1.91	6,939.1	91.7
J-179	6,717.9	1.27	6,929.1	91.4
J-27	6,734.7	1.27	6,944.9	91.0
J-236	6,719.1	0.64	6,929.1	90.9
J-191	6,719.9	1.27	6,929.3	90.6
J-97	6,722.5	1.27	6,931.5	90.4
J-196	6,726.3	1.27	6,935.1	90.4
J-77	6,723.7	1.91	6,932.1	90.1
J-94	6,723.0	0.00	6,930.7	89.9
J-128	6,721.8	0.00	6,929.1	89.7
J-93	6,723.7	1.27	6,930.6	89.5
J-195	6,728.5	1.27	6,934.3	89.0
J-72	6,726.3	1.27	6,932.1	89.0
J-25	6,739.2	0.00	6,944.7	88.9
J-26	6,739.4	1.91	6,944.8	88.9
J-129	6,723.2	1.27	6,928.6	88.9
J-176	6,724.4	0.64	6,929.0	88.5
J-126	6,726.0	0.00	6,930.6	88.5
J-109	6,743.4	2.55	6,947.9	88.5

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-127	6,726.0	0.00	6,930.5	88.5
J-185	6,724.0	1.27	6,928.5	88.5
J-71	6,730.2	0.00	6,934.3	88.3
J-125	6,727.2	2.55	6,930.7	88.0
J-1	6,750.4	1.27	6,953.5	87.9
J-232	6,750.5	0.00	6,953.5	87.8
J-219	6,751.8	1.27	6,954.8	87.8
J-90	6,727.7	1.27	6,930.0	87.5
J-190	6,726.9	1.27	6,928.9	87.4
J-130	6,727.6	0.64	6,928.5	86.9
J-2	6,755.7	1.91	6,956.5	86.9
J-3	6,762.4	2.55	6,962.2	86.5
J-214	6,729.7	0.64	6,929.3	86.4
J-22	6,744.9	1.27	6,943.0	85.7
J-133	6,730.4	0.64	6,928.2	85.6
J-220	6,761.4	1.27	6,959.1	85.5
J-85	6,732.2	0.00	6,929.3	85.3
J-84	6,732.2	0.00	6,929.3	85.3
J-162	6,732.2	0.00	6,929.3	85.3
J-194	6,735.7	1.27	6,932.6	85.2
J-105	6,749.6	1.27	6,946.5	85.2
J-167	6,731.9	1.91	6,928.8	85.2
J-75	6,740.5	1.27	6,936.6	84.9
J-80	6,733.7	1.91	6,929.3	84.6
J-134	6,733.2	1.27	6,927.7	84.2
J-74	6,740.5	1.91	6,934.3	83.8
J-19	6,749.4	0.00	6,940.9	82.8
J-180	6,736.4	0.64	6,927.7	82.8
J-206	6,751.1	0.64	6,940.9	82.1
J-239	6,750.1	1.91	6,939.1	81.8
J-20	6,752.0	1.27	6,940.9	81.7
J-170	6,740.9	1.27	6,928.8	81.3
J-135	6,743.4	2.55	6,927.3	79.6
J-161	6,744.4	1.27	6,927.3	79.1
J-227	6,744.4	0.00	6,927.3	79.1
J-187	6,746.2	0.64	6,926.3	77.9

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-18	6,757.8	1.27	6,936.8	77.5
J-233	6,756.3	0.00	6,934.0	76.9
J-136	6,748.4	1.91	6,925.3	76.6
J-160	6,750.7	0.64	6,925.3	75.6
J-140	6,752.4	0.00	6,924.4	74.4
J-229	6,756.0	1.27	6,924.7	73.0
J-155	6,756.6	1.91	6,925.0	72.8
J-141	6,756.3	1.27	6,922.8	72.0
J-157	6,764.7	1.27	6,928.0	70.7
J-234	6,768.9	0.00	6,931.0	70.2
J-159	6,770.1	3.18	6,931.0	69.6
J-144	6,762.2	0.00	6,921.0	68.7
J-145	6,762.2	0.00	6,919.8	68.2
J-147	6,763.6	1.27	6,913.5	64.9
J-149	6,767.3	0.00	6,913.5	63.3
J-153	6,769.5	1.27	6,899.9	56.4
J-154	6,774.9	1.27	6,877.8	44.5
J-225	6,774.9	0.00	6,877.8	44.5

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-255	33	6.0	1,500.00	130.0	17.02	23.70
P-252	491	8.0	1,501.27	120.0	9.58	22.08
P-153	304	8.0	1,502.55	120.0	9.59	13.67
P-149	140	8.0	1,503.82	120.0	9.60	6.31
P-55	993	12.0	1,281.75	123.0	3.64	4.42
P-248	522	8.0	501.85	120.0	3.20	3.08
P-279	519	8.0	500.36	120.0	3.19	3.05
P-274	1,028	8.0	345.02	120.0	2.20	3.03
P-159	517	8.0	499.09	120.0	3.19	3.02
P-281	493	8.0	503.55	120.0	3.21	2.93
P-278	479	8.0	503.55	120.0	3.21	2.85
P-49	903	12.0	1,029.03	123.0	2.92	2.68
P-247	451	8.0	500.57	120.0	3.20	2.65
P-250	676	12.0	1,137.03	123.0	3.23	2.41
P-286	379	8.0	504.82	120.0	3.22	2.27
P-20	358	8.0	508.65	120.0	3.25	2.17
P-229	614	12.0	1,071.62	123.0	3.04	1.96
P-264	257	12.0	1,643.33	123.0	4.66	1.81
P-53	403	12.0	1,279.84	123.0	3.63	1.79
P-287	293	8.0	506.74	120.0	3.23	1.77
P-107	572	8.0	352.05	120.0	2.25	1.75
P-145	293	12.0	1,503.82	123.0	4.27	1.75
P-284	555	12.0	1,056.97	123.0	3.00	1.73
P-23	280	8.0	509.92	120.0	3.25	1.70
P-199	557	12.0	1,045.50	123.0	2.97	1.70
P-144	282	12.0	1,505.10	123.0	4.27	1.69
P-245	559	8.0	347.57	120.0	2.22	1.67
P-227	515	12.0	1,071.62	123.0	3.04	1.65
P-114	514	8.0	355.87	120.0	2.27	1.61
P-172	765	12.0	813.27	123.0	2.31	1.46
P-249	407	12.0	1,138.94	123.0	3.23	1.45
P-111	463	8.0	353.33	120.0	2.26	1.43
P-126	577	8.0	310.37	120.0	1.98	1.40
P-206	427	12.0	1,051.87	123.0	2.98	1.32
P-275	437	8.0	346.30	120.0	2.21	1.30
P-10	364	12.0	1,133.84	123.0	3.22	1.29

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-197	510	8.0	307.82	120.0	1.96	1.22
P-212	376	12.0	1,062.70	123.0	3.01	1.18
P-148	26	8.0	1,503.82	120.0	9.60	1.17
P-210	362	12.0	1,060.79	123.0	3.01	1.14
P-4	298	12.0	1,135.75	123.0	3.22	1.06
P-193	352	12.0	1,012.38	123.0	2.87	1.01
P-194	335	12.0	1,011.74	123.0	2.87	0.96
P-37	428	12.0	855.88	123.0	2.43	0.90
P-140	313	12.0	1,009.20	123.0	2.86	0.89
P-204	274	12.0	1,050.60	123.0	2.98	0.84
P-277	265	8.0	345.02	120.0	2.20	0.78
P-41	354	12.0	854.60	123.0	2.42	0.74
P-98	471	12.0	729.40	123.0	2.07	0.74
P-243	524	8.0	224.66	120.0	1.43	0.70
P-48	504	8.0	228.48	120.0	1.46	0.69
P-92	437	12.0	726.86	123.0	2.06	0.68
P-285	210	12.0	1,055.06	123.0	2.99	0.65
P-46	473	8.0	227.21	120.0	1.45	0.64
P-87	410	12.0	725.58	123.0	2.06	0.64
P-240	485	8.0	219.57	120.0	1.40	0.62
P-99	371	12.0	730.68	123.0	2.07	0.58
P-132	490	8.0	208.66	120.0	1.33	0.57
P-241	423	8.0	222.11	120.0	1.42	0.55
P-200	177	12.0	1,044.23	123.0	2.96	0.54
P-167	335	12.0	723.03	123.0	2.05	0.52
P-242	371	8.0	222.75	120.0	1.42	0.49
P-137	410	8.0	204.84	120.0	1.31	0.46
P-138	388	8.0	202.93	120.0	1.30	0.43
P-223	528	8.0	170.61	120.0	1.09	0.42
P-239	327	8.0	218.29	120.0	1.39	0.41
P-221	519	8.0	164.24	120.0	1.05	0.39
P-11	486	8.0	149.18	120.0	0.95	0.30
P-28	409	8.0	162.33	120.0	1.04	0.30
P-134	242	8.0	205.48	120.0	1.31	0.27
P-262	333	12.0	495.90	120.0	1.41	0.27
P-263	330	12.0	497.17	120.0	1.41	0.27

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-17	413	8.0	151.09	120.0	0.96	0.26
P-27	366	8.0	161.05	120.0	1.03	0.26
P-225	81	12.0	1,071.62	123.0	3.04	0.26
P-33	337	8.0	166.79	120.0	1.06	0.26
P-224	282	8.0	173.16	120.0	1.11	0.23
P-237	168	8.0	217.02	120.0	1.39	0.21
P-222	233	8.0	166.79	120.0	1.06	0.18
P-205	56	12.0	1,053.79	123.0	2.99	0.17
P-272	49	8.0	359.06	120.0	2.29	0.16
P-198	59	8.0	306.55	120.0	1.96	0.14
P-25	188	8.0	159.78	120.0	1.02	0.13
P-176	499	8.0	93.42	120.0	0.60	0.13
P-196	484	8.0	94.70	120.0	0.60	0.13
P-182	395	8.0	95.34	120.0	0.61	0.11
P-95	69	12.0	728.13	123.0	2.07	0.11
P-133	88	8.0	207.39	120.0	1.32	0.10
P-129	41	8.0	307.82	120.0	1.96	0.10
P-9	27	12.0	1,135.75	123.0	3.22	0.10
P-211	29	12.0	1,063.98	123.0	3.02	0.09
P-24	127	8.0	157.87	120.0	1.01	0.09
P-207	27	12.0	1,058.88	123.0	3.00	0.08
P-130	25	8.0	307.82	120.0	1.96	0.06
P-166	17	12.0	725.58	123.0	2.06	0.03
P-30	25	8.0	166.79	120.0	1.06	0.02
P-125	479	8.0	19.77	120.0	0.13	0.01
P-122	284	8.0	17.86	120.0	0.11	0.00
P-273	363	8.0	14.04	120.0	0.09	0.00
P-119	150	8.0	17.86	120.0	0.11	0.00
P-185	292	8.0	2.55	120.0	0.02	0.00
P-215	241	8.0	3.82	120.0	0.02	0.00
P-120	27	8.0	17.86	120.0	0.11	0.00
P-219	79	8.0	1.91	120.0	0.01	0.00
P-175	228	8.0	1.27	120.0	0.01	0.00
P-64	225	8.0	1.27	120.0	0.01	0.00
P-65	169	8.0	0.00	120.0	0.00	0.00
P-66	324	8.0	1.27	120.0	0.01	0.00

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-67	37	12.0	7.64	123.0	0.02	0.00
P-68	479	12.0	5.73	123.0	0.02	0.00
P-69	342	8.0	1.91	120.0	0.01	0.00
P-74	238	8.0	1.91	120.0	0.01	0.00
P-76	834	8.0	1.27	120.0	0.01	0.00
P-77	350	8.0	1.91	120.0	0.01	0.00
P-78	381	8.0	1.91	120.0	0.01	0.00
P-82	376	8.0	2.55	120.0	0.02	0.00
P-100	356	8.0	1.27	120.0	0.01	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-163	376	8.0	0.64	120.0	0.00	0.00
P-165	17	12.0	2.55	123.0	0.01	0.00
P-186	376	8.0	0.64	120.0	0.00	0.00
P-187	492	8.0	1.27	120.0	0.01	0.00
P-201	57	8.0	3.18	120.0	0.02	0.00
P-202	315	8.0	1.91	120.0	0.01	0.00
P-216	200	8.0	2.55	120.0	0.02	0.00
P-220	431	8.0	1.27	120.0	0.01	0.00
P-236	420	8.0	0.64	120.0	0.00	0.00
P-253	22	8.0	1.27	120.0	0.01	0.00
P-256	60	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.00	130.0	0.00	0.00
P-259	677	8.0	1.27	120.0	0.01	0.00
P-260	28	8.0	1.27	120.0	0.01	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-276	42	8.0	1.27	120.0	0.01	0.00
P-280	28	8.0	3.19	120.0	0.02	0.00
P-282	849	8.0	1.27	120.0	0.01	0.00
P-283	509	8.0	0.64	120.0	0.00	0.00

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	6,943.7	121.3
J-64	6,665.9	1.27	6,943.7	120.2
J-61	6,670.4	0.00	6,943.7	118.2
J-66	6,671.2	1.27	6,943.7	117.9
J-204	6,673.1	1.27	6,943.7	117.1
J-203	6,677.4	1.91	6,943.7	115.2
J-209	6,685.2	0.00	6,946.2	112.9
J-210	6,684.8	0.00	6,945.0	112.6
J-215	6,687.2	1.27	6,946.5	112.2
J-56	6,688.6	0.00	6,943.7	110.4
J-202	6,688.6	1.27	6,943.6	110.3
J-216	6,692.4	1.27	6,946.8	110.1
J-67	6,690.0	0.00	6,943.7	109.8
J-45	6,694.6	1.91	6,948.1	109.7
J-44	6,696.3	2.55	6,947.3	108.6
J-43	6,695.9	0.00	6,946.3	108.3
J-42	6,697.7	1.27	6,946.8	107.8
J-217	6,698.9	0.64	6,947.8	107.7
J-218	6,700.9	2.55	6,948.7	107.2
J-38	6,702.3	0.00	6,947.4	106.0
J-4	6,713.7	1.27	6,958.3	105.8
J-48	6,706.3	1.27	6,949.2	105.1
J-201	6,701.3	1.91	6,942.8	104.5
J-68	6,702.3	1.91	6,943.7	104.4
J-208	6,706.0	2.55	6,946.9	104.2
J-50	6,710.8	2.55	6,949.8	103.4
J-54	6,715.4	1.91	6,951.5	102.2
J-9	6,721.6	0.00	6,957.3	102.0
J-10	6,721.6	1.91	6,957.2	101.9
J-35	6,713.0	3.82	6,945.8	100.7
J-69	6,710.4	0.00	6,942.1	100.2
J-120	6,719.2	1.91	6,949.6	99.7
J-198	6,711.6	1.91	6,942.0	99.7
J-11	6,727.2	1.27	6,955.9	98.9
J-32	6,717.3	0.00	6,945.2	98.6
J-31	6,717.3	0.00	6,945.1	98.6



Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-235	6,709.8	0.64	6,935.3	97.6
J-207	6,719.3	2.55	6,944.7	97.5
J-221	6,736.5	1.91	6,960.7	97.0
J-238	6,717.8	1.91	6,940.8	96.5
J-116	6,726.8	3.82	6,949.5	96.3
J-118	6,727.0	0.00	6,949.5	96.3
J-117	6,727.0	0.00	6,949.5	96.3
J-73	6,719.6	1.91	6,938.8	94.8
J-100	6,717.5	1.27	6,936.4	94.7
J-14	6,737.8	1.91	6,956.2	94.5
J-70	6,722.7	0.00	6,940.4	94.2
J-30	6,726.1	1.91	6,943.7	94.1
J-179	6,717.9	1.27	6,935.3	94.1
J-197	6,723.1	1.91	6,940.3	94.0
J-112	6,732.3	3.18	6,949.1	93.8
J-236	6,719.1	0.64	6,935.3	93.6
J-230	6,733.4	0.00	6,949.4	93.4
J-191	6,719.9	1.27	6,935.4	93.2
J-76	6,727.2	1.91	6,942.1	93.0
J-97	6,722.5	1.27	6,936.9	92.8
J-231	6,738.5	0.00	6,952.5	92.6
J-77	6,723.7	1.91	6,937.3	92.4
J-128	6,721.8	0.00	6,935.3	92.4
J-94	6,723.0	0.00	6,936.4	92.3
J-196	6,726.3	1.27	6,939.4	92.2
J-93	6,723.7	1.27	6,936.3	92.0
J-29	6,731.1	1.27	6,943.0	91.7
J-129	6,723.2	1.27	6,935.0	91.6
J-72	6,726.3	1.27	6,937.3	91.3
J-185	6,724.0	1.27	6,934.9	91.2
J-176	6,724.4	0.64	6,935.3	91.2
J-195	6,728.5	1.27	6,938.8	91.0
J-126	6,726.0	0.00	6,936.3	91.0
J-127	6,726.0	0.00	6,936.2	91.0
J-125	6,727.2	2.55	6,936.4	90.5
J-71	6,730.2	0.00	6,938.8	90.3

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-190	6,726.9	1.27	6,935.2	90.1
J-90	6,727.7	1.27	6,935.9	90.1
J-27	6,734.7	1.27	6,942.3	89.8
J-130	6,727.6	0.64	6,934.9	89.7
J-214	6,729.7	0.64	6,935.4	89.0
J-133	6,730.4	0.64	6,934.7	88.4
J-85	6,732.2	0.00	6,935.5	87.9
J-84	6,732.2	0.00	6,935.4	87.9
J-162	6,732.2	0.00	6,935.4	87.9
J-109	6,743.4	2.55	6,946.6	87.9
J-167	6,731.9	1.91	6,935.1	87.9
J-1	6,750.4	1.27	6,953.3	87.8
J-219	6,751.8	1.27	6,954.7	87.8
J-232	6,750.5	0.00	6,953.3	87.8
J-26	6,739.4	1.91	6,941.9	87.6
J-25	6,739.2	0.00	6,941.7	87.6
J-194	6,735.7	1.27	6,937.7	87.4
J-80	6,733.7	1.91	6,935.4	87.3
J-134	6,733.2	1.27	6,934.4	87.0
J-2	6,755.7	1.91	6,956.4	86.8
J-75	6,740.5	1.27	6,940.4	86.5
J-3	6,762.4	2.55	6,962.2	86.5
J-74	6,740.5	1.91	6,938.8	85.8
J-180	6,736.4	0.64	6,934.4	85.7
J-220	6,761.4	1.27	6,959.1	85.5
J-105	6,749.6	1.27	6,944.4	84.3
J-170	6,740.9	1.27	6,935.1	84.0
J-22	6,744.9	1.27	6,938.6	83.8
J-135	6,743.4	2.55	6,934.1	82.5
J-161	6,744.4	1.27	6,934.1	82.1
J-227	6,744.4	0.00	6,934.1	82.1
J-187	6,746.2	0.64	6,933.4	81.0
J-19	6,749.4	0.00	6,934.6	80.1
J-136	6,748.4	1.91	6,932.8	79.8
J-206	6,751.1	0.64	6,934.6	79.4
J-20	6,752.0	1.27	6,934.6	79.0

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-160	6,750.7	0.64	6,932.8	78.8
J-239	6,750.1	1.91	6,931.3	78.4
J-140	6,752.4	0.00	6,932.2	77.8
J-141	6,756.3	1.27	6,932.2	76.1
J-229	6,756.0	1.27	6,931.5	76.0
J-155	6,756.6	1.91	6,930.9	75.4
J-144	6,762.2	0.00	6,932.2	73.6
J-145	6,762.2	0.00	6,932.2	73.6
J-18	6,757.8	1.27	6,927.1	73.2
J-147	6,763.6	1.27	6,932.2	72.9
J-233	6,756.3	0.00	6,921.8	71.6
J-149	6,767.3	0.00	6,932.2	71.3
J-153	6,769.5	1.27	6,932.2	70.4
J-157	6,764.7	1.27	6,923.6	68.8
J-154	6,774.9	1.27	6,932.2	68.1
J-225	6,774.9	0.00	6,932.2	68.1
J-234	6,768.9	0.00	6,916.4	63.8
J-159	6,770.1	3.18	6,915.1	62.7

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-256	60	6.0	1,500.00	130.0	17.02	9.44
P-159	517	8.0	801.13	120.0	5.11	7.27
P-279	519	8.0	799.86	120.0	5.11	7.27
P-281	493	8.0	703.33	120.0	4.49	5.44
P-278	479	8.0	703.33	120.0	4.49	5.29
P-55	993	12.0	1,273.96	123.0	3.61	4.37
P-286	379	8.0	704.60	120.0	4.50	4.20
P-20	358	8.0	708.43	120.0	4.52	4.00
P-287	293	8.0	706.51	120.0	4.51	3.27
P-274	1,028	8.0	352.81	120.0	2.25	3.16
P-23	280	8.0	709.70	120.0	4.53	3.14
P-248	522	8.0	503.24	120.0	3.21	3.10
P-107	572	8.0	446.00	120.0	2.85	2.72
P-247	451	8.0	501.97	120.0	3.20	2.66
P-114	514	8.0	449.82	120.0	2.87	2.48
P-250	676	12.0	1,135.63	123.0	3.22	2.40
P-49	903	12.0	961.03	123.0	2.73	2.36
P-111	463	8.0	447.27	120.0	2.85	2.21
P-264	257	12.0	1,643.32	123.0	4.66	1.81
P-53	403	12.0	1,272.05	123.0	3.61	1.77
P-245	559	8.0	355.35	120.0	2.27	1.74
P-249	407	12.0	1,137.54	123.0	3.23	1.45
P-275	437	8.0	354.08	120.0	2.26	1.35
P-229	614	12.0	871.84	123.0	2.47	1.34
P-10	364	12.0	1,132.44	123.0	3.21	1.29
P-280	28	8.0	1,503.18	120.0	9.59	1.24
P-284	555	12.0	857.19	123.0	2.43	1.17
P-199	557	12.0	845.72	123.0	2.40	1.15
P-227	515	12.0	871.84	123.0	2.47	1.12
P-4	298	12.0	1,134.35	123.0	3.22	1.06
P-223	528	8.0	276.44	120.0	1.76	1.03
P-172	765	12.0	653.97	123.0	1.86	0.98
P-221	519	8.0	270.07	120.0	1.72	0.97
P-126	577	8.0	250.99	120.0	1.60	0.95
P-206	427	12.0	852.09	123.0	2.42	0.89
P-197	510	8.0	248.44	120.0	1.59	0.82

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-277	265	8.0	352.81	120.0	2.25	0.81
P-212	376	12.0	862.92	123.0	2.45	0.80
P-210	362	12.0	861.01	123.0	2.44	0.77
P-28	409	8.0	268.16	120.0	1.71	0.76
P-193	352	12.0	812.60	123.0	2.31	0.67
P-27	366	8.0	266.89	120.0	1.70	0.67
P-262	333	12.0	804.31	120.0	2.28	0.65
P-263	330	12.0	803.04	120.0	2.28	0.65
P-33	337	8.0	272.62	120.0	1.74	0.64
P-194	335	12.0	811.96	123.0	2.30	0.64
P-140	313	12.0	809.41	123.0	2.30	0.59
P-37	428	12.0	682.04	123.0	1.93	0.59
P-204	274	12.0	850.82	123.0	2.41	0.57
P-224	282	8.0	278.99	120.0	1.78	0.56
P-243	524	8.0	198.72	120.0	1.27	0.56
P-48	504	8.0	202.54	120.0	1.29	0.55
P-46	473	8.0	201.27	120.0	1.28	0.51
P-98	471	12.0	589.00	123.0	1.67	0.50
P-240	485	8.0	193.62	120.0	1.24	0.49
P-41	354	12.0	680.76	123.0	1.93	0.49
P-92	437	12.0	586.45	123.0	1.66	0.46
P-222	233	8.0	272.62	120.0	1.74	0.44
P-285	210	12.0	855.27	123.0	2.43	0.44
P-241	423	8.0	196.17	120.0	1.25	0.44
P-87	410	12.0	585.17	123.0	1.66	0.43
P-99	371	12.0	590.27	123.0	1.67	0.39
P-242	371	8.0	196.81	120.0	1.26	0.39
P-132	490	8.0	168.18	120.0	1.07	0.38
P-200	177	12.0	844.45	123.0	2.40	0.36
P-167	335	12.0	582.63	123.0	1.65	0.35
P-25	188	8.0	265.61	120.0	1.70	0.34
P-239	327	8.0	192.35	120.0	1.23	0.33
P-137	410	8.0	164.36	120.0	1.05	0.31
P-138	388	8.0	162.44	120.0	1.04	0.28
P-11	486	8.0	142.79	120.0	0.91	0.28
P-17	413	8.0	144.70	120.0	0.92	0.24

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-272	49	8.0	453.01	120.0	2.89	0.24
P-24	127	8.0	263.70	120.0	1.68	0.23
P-134	242	8.0	164.99	120.0	1.05	0.18
P-225	81	12.0	871.84	123.0	2.47	0.18
P-237	168	8.0	191.07	120.0	1.22	0.17
P-125	479	8.0	105.93	120.0	0.68	0.16
P-205	56	12.0	854.00	123.0	2.42	0.12
P-273	363	8.0	100.20	120.0	0.64	0.11
P-9	27	12.0	1,134.35	123.0	3.22	0.09
P-198	59	8.0	247.17	120.0	1.58	0.09
P-122	284	8.0	104.02	120.0	0.66	0.09
P-196	484	8.0	75.81	120.0	0.48	0.09
P-176	499	8.0	74.53	120.0	0.48	0.09
P-95	69	12.0	587.72	123.0	1.67	0.07
P-182	395	8.0	76.44	120.0	0.49	0.07
P-133	88	8.0	166.90	120.0	1.07	0.07
P-129	41	8.0	248.44	120.0	1.59	0.07
P-211	29	12.0	864.19	123.0	2.45	0.06
P-207	27	12.0	859.10	123.0	2.44	0.06
P-119	150	8.0	104.02	120.0	0.66	0.05
P-30	25	8.0	272.62	120.0	1.74	0.05
P-130	25	8.0	248.44	120.0	1.59	0.04
P-166	17	12.0	585.17	123.0	1.66	0.02
P-120	27	8.0	104.02	120.0	0.66	0.01
P-185	292	8.0	2.55	120.0	0.02	0.00
P-220	431	8.0	1.27	120.0	0.01	0.00
P-215	241	8.0	3.82	120.0	0.02	0.00
P-252	491	8.0	1.27	120.0	0.01	0.00
P-64	225	8.0	1.27	120.0	0.01	0.00
P-65	169	8.0	0.00	120.0	0.00	0.00
P-66	324	8.0	1.27	120.0	0.01	0.00
P-67	37	12.0	7.64	123.0	0.02	0.00
P-68	479	12.0	5.73	123.0	0.02	0.00
P-69	342	8.0	1.91	120.0	0.01	0.00
P-74	238	8.0	1.91	120.0	0.01	0.00
P-76	834	8.0	1.27	120.0	0.01	0.00

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-77	350	8.0	1.91	120.0	0.01	0.00
P-78	381	8.0	1.91	120.0	0.01	0.00
P-82	376	8.0	2.55	120.0	0.02	0.00
P-100	356	8.0	1.27	120.0	0.01	0.00
P-144	282	12.0	5.10	123.0	0.01	0.00
P-145	293	12.0	3.82	123.0	0.01	0.00
P-148	26	8.0	3.82	120.0	0.02	0.00
P-149	140	8.0	3.82	120.0	0.02	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-153	304	8.0	2.55	120.0	0.02	0.00
P-163	376	8.0	0.64	120.0	0.00	0.00
P-165	17	12.0	2.55	123.0	0.01	0.00
P-175	228	8.0	1.27	120.0	0.01	0.00
P-186	376	8.0	0.64	120.0	0.00	0.00
P-187	492	8.0	1.27	120.0	0.01	0.00
P-201	57	8.0	3.18	120.0	0.02	0.00
P-202	315	8.0	1.91	120.0	0.01	0.00
P-216	200	8.0	2.55	120.0	0.02	0.00
P-219	79	8.0	1.91	120.0	0.01	0.00
P-236	420	8.0	0.64	120.0	0.00	0.00
P-253	22	8.0	1.27	120.0	0.01	0.00
P-255	33	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.00	130.0	0.00	0.00
P-259	677	8.0	1.27	120.0	0.01	0.00
P-260	28	8.0	1.27	120.0	0.01	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-276	42	8.0	1.27	120.0	0.01	0.00
P-282	849	8.0	1.27	120.0	0.01	0.00
P-283	509	8.0	0.64	120.0	0.00	0.00

# AVERAGE DAY

## 105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	7,010.0	150.0
J-64	6,665.9	0.52	7,010.0	148.9
J-61	6,670.4	0.00	7,010.0	146.9
J-66	6,671.2	0.52	7,010.0	146.6
J-204	6,673.1	0.52	7,010.0	145.7
J-203	6,677.4	0.78	7,010.0	143.9
J-210	6,684.8	0.00	7,010.0	140.7
J-209	6,685.2	0.00	7,010.0	140.5
J-215	6,687.2	0.52	7,010.0	139.6
J-56	6,688.6	0.00	7,010.0	139.0
J-202	6,688.6	0.52	7,010.0	139.0
J-67	6,690.0	0.00	7,010.0	138.4
J-216	6,692.4	0.52	7,010.0	137.4
J-45	6,694.6	0.78	7,010.0	136.4
J-43	6,695.9	0.00	7,010.0	135.9
J-44	6,696.3	1.04	7,010.0	135.7
J-42	6,697.7	0.52	7,010.0	135.1
J-217	6,698.9	0.26	7,010.0	134.6
J-218	6,700.9	1.04	7,010.0	133.7
J-201	6,701.3	0.78	7,010.0	133.5
J-38	6,702.3	0.00	7,010.0	133.1
J-68	6,702.3	0.78	7,010.0	133.1
J-208	6,706.0	1.04	7,010.0	131.5
J-48	6,706.3	0.52	7,010.0	131.4
J-235	6,709.8	0.26	7,010.0	129.9
J-69	6,710.4	0.00	7,010.0	129.6
J-50	6,710.8	1.04	7,010.0	129.4
J-198	6,711.6	0.78	7,010.0	129.1
J-35	6,713.0	1.56	7,010.0	128.5
J-4	6,713.7	0.52	7,010.0	128.2
J-54	6,715.4	0.78	7,010.0	127.4
J-31	6,717.3	0.00	7,010.0	126.6
J-32	6,717.3	0.00	7,010.0	126.6
J-100	6,717.5	0.52	7,010.0	126.5
J-238	6,717.8	0.78	7,010.0	126.4



# AVERAGE DAY

## 105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-179	6,717.9	0.52	7,010.0	126.4
J-236	6,719.1	0.26	7,010.0	125.9
J-120	6,719.2	0.78	7,010.0	125.8
J-207	6,719.3	1.04	7,010.0	125.8
J-73	6,719.6	0.78	7,010.0	125.6
J-191	6,719.9	0.52	7,010.0	125.5
J-9	6,721.6	0.00	7,010.0	124.8
J-10	6,721.6	0.78	7,010.0	124.8
J-128	6,721.8	0.00	7,010.0	124.7
J-97	6,722.5	0.52	7,010.0	124.4
J-70	6,722.7	0.00	7,010.0	124.3
J-94	6,723.0	0.00	7,010.0	124.2
J-197	6,723.1	0.78	7,010.0	124.1
J-129	6,723.2	0.52	7,010.0	124.1
J-77	6,723.7	0.78	7,010.0	123.9
J-93	6,723.7	0.52	7,010.0	123.9
J-185	6,724.0	0.52	7,010.0	123.7
J-176	6,724.4	0.26	7,010.0	123.5
J-126	6,726.0	0.00	7,010.0	122.9
J-127	6,726.0	0.00	7,010.0	122.9
J-30	6,726.1	0.78	7,010.0	122.8
J-72	6,726.3	0.52	7,010.0	122.7
J-196	6,726.3	0.52	7,010.0	122.7
J-116	6,726.8	1.56	7,010.0	122.5
J-190	6,726.9	0.52	7,010.0	122.5
J-117	6,727.0	0.00	7,010.0	122.4
J-118	6,727.0	0.00	7,010.0	122.4
J-11	6,727.2	0.52	7,010.0	122.3
J-76	6,727.2	0.78	7,010.0	122.3
J-125	6,727.2	1.04	7,010.0	122.3
J-130	6,727.6	0.26	7,010.0	122.2
J-90	6,727.7	0.52	7,010.0	122.1
J-195	6,728.5	0.52	7,010.0	121.8
J-214	6,729.7	0.26	7,010.0	121.3
J-71	6,730.2	0.00	7,010.0	121.0

# AVERAGE DAY

## 105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	6,730.4	0.26	7,010.0	121.0
J-29	6,731.1	0.52	7,010.0	120.7
J-167	6,731.9	0.78	7,010.0	120.3
J-84	6,732.2	0.00	7,010.0	120.2
J-85	6,732.2	0.00	7,010.0	120.2
J-162	6,732.2	0.00	7,010.0	120.2
J-112	6,732.3	1.30	7,010.0	120.1
J-134	6,733.2	0.52	7,010.0	119.7
J-230	6,733.4	0.00	7,010.0	119.7
J-80	6,733.7	0.78	7,010.0	119.5
J-27	6,734.7	0.52	7,010.0	119.1
J-194	6,735.7	0.52	7,010.0	118.7
J-180	6,736.4	0.26	7,010.0	118.4
J-221	6,736.5	0.78	7,010.0	118.3
J-14	6,737.8	0.78	7,010.0	117.8
J-231	6,738.5	0.00	7,010.0	117.5
J-25	6,739.2	0.00	7,010.0	117.1
J-26	6,739.4	0.78	7,010.0	117.1
J-75	6,740.5	0.52	7,010.0	116.6
J-74	6,740.5	0.78	7,010.0	116.6
J-170	6,740.9	0.52	7,010.0	116.4
J-109	6,743.4	1.04	7,010.0	115.3
J-135	6,743.4	1.04	7,010.0	115.3
J-161	6,744.4	0.52	7,010.0	114.9
J-227	6,744.4	0.00	7,010.0	114.9
J-22	6,744.9	0.52	7,010.0	114.7
J-187	6,746.2	0.26	7,010.0	114.1
J-136	6,748.4	0.78	7,010.0	113.2
J-19	6,749.4	0.00	7,010.0	112.7
J-105	6,749.6	0.52	7,010.0	112.6
J-239	6,750.1	0.78	7,010.0	112.4
J-1	6,750.4	0.52	7,010.0	112.3
J-232	6,750.5	0.00	7,010.0	112.3
J-160	6,750.7	0.26	7,010.0	112.2
J-206	6,751.1	0.26	7,010.0	112.0

# AVERAGE DAY

105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-219	6,751.8	0.52	7,010.0	111.7
J-20	6,752.0	0.52	7,010.0	111.6
J-140	6,752.4	0.00	7,010.0	111.4
J-2	6,755.7	0.78	7,010.0	110.0
J-229	6,756.0	0.52	7,010.0	109.9
J-233	6,756.3	0.00	7,010.0	109.8
J-141	6,756.3	0.52	7,010.0	109.7
J-155	6,756.6	0.78	7,010.0	109.6
J-18	6,757.8	0.52	7,010.0	109.1
J-220	6,761.4	0.52	7,010.0	107.6
J-144	6,762.2	0.00	7,010.0	107.2
J-145	6,762.2	0.00	7,010.0	107.2
J-3	6,762.4	1.04	7,010.0	107.1
J-147	6,763.6	0.52	7,010.0	106.6
J-157	6,764.7	0.52	7,010.0	106.1
J-149	6,767.3	0.00	7,010.0	105.0
J-234	6,768.9	0.00	7,010.0	104.3
J-153	6,769.5	0.52	7,010.0	104.0
J-159	6,770.1	1.30	7,010.0	103.8
J-154	6,774.9	0.52	7,010.0	101.7
J-225	6,774.9	0.00	7,010.0	101.7

# AVERAGE DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-4	298	12.0	38.51	123.0	0.11	0.00
P-9	27	12.0	38.51	123.0	0.11	0.00
P-10	364	12.0	37.73	123.0	0.11	0.00
P-11	486	8.0	3.82	120.0	0.02	0.00
P-17	413	8.0	4.60	120.0	0.03	0.00
P-20	358	8.0	8.89	120.0	0.06	0.00
P-23	280	8.0	9.41	120.0	0.06	0.00
P-24	127	8.0	0.91	120.0	0.01	0.00
P-25	188	8.0	1.69	120.0	0.01	0.00
P-27	366	8.0	2.21	120.0	0.01	0.00
P-28	409	8.0	2.73	120.0	0.02	0.00
P-30	25	8.0	4.55	120.0	0.03	0.00
P-33	337	8.0	4.55	120.0	0.03	0.00
P-37	428	12.0	21.22	123.0	0.06	0.00
P-41	354	12.0	20.70	123.0	0.06	0.00
P-46	473	8.0	7.34	120.0	0.05	0.00
P-48	504	8.0	7.86	120.0	0.05	0.00
P-49	903	12.0	28.37	123.0	0.08	0.00
P-53	403	12.0	40.26	123.0	0.11	0.00
P-55	993	12.0	41.04	123.0	0.12	0.01
P-64	225	8.0	0.52	120.0	0.00	0.00
P-65	169	8.0	0.00	120.0	0.00	0.00
P-66	324	8.0	0.52	120.0	0.00	0.00
P-67	37	12.0	3.12	123.0	0.01	0.00
P-68	479	12.0	2.34	123.0	0.01	0.00
P-69	342	8.0	0.78	120.0	0.00	0.00
P-74	238	8.0	0.78	120.0	0.00	0.00
P-76	834	8.0	0.52	120.0	0.00	0.00
P-77	350	8.0	0.78	120.0	0.00	0.00
P-78	381	8.0	0.78	120.0	0.00	0.00
P-82	376	8.0	1.04	120.0	0.01	0.00
P-87	410	12.0	5.75	123.0	0.02	0.00
P-92	437	12.0	6.27	123.0	0.02	0.00
P-95	69	12.0	6.79	123.0	0.02	0.00
P-98	471	12.0	7.31	123.0	0.02	0.00

# AVERAGE DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-99	371	12.0	7.83	123.0	0.02	0.00
P-100	356	8.0	0.52	120.0	0.00	0.00
P-107	572	8.0	8.50	120.0	0.05	0.00
P-111	463	8.0	9.02	120.0	0.06	0.00
P-114	514	8.0	10.06	120.0	0.06	0.00
P-119	150	8.0	2.21	120.0	0.01	0.00
P-120	27	8.0	2.21	120.0	0.01	0.00
P-122	284	8.0	2.21	120.0	0.01	0.00
P-125	479	8.0	2.99	120.0	0.02	0.00
P-126	577	8.0	3.57	120.0	0.02	0.00
P-129	41	8.0	2.53	120.0	0.02	0.00
P-130	25	8.0	2.53	120.0	0.02	0.00
P-132	490	8.0	1.13	120.0	0.01	0.00
P-133	88	8.0	0.61	120.0	0.00	0.00
P-134	242	8.0	0.17	120.0	0.00	0.00
P-137	410	8.0	0.43	120.0	0.00	0.00
P-138	388	8.0	1.21	120.0	0.01	0.00
P-140	313	12.0	1.60	123.0	0.00	0.00
P-144	282	12.0	2.09	123.0	0.01	0.00
P-145	293	12.0	1.57	123.0	0.00	0.00
P-148	26	8.0	1.57	120.0	0.01	0.00
P-149	140	8.0	1.57	120.0	0.01	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-153	304	8.0	1.05	120.0	0.01	0.00
P-159	517	8.0	4.99	120.0	0.03	0.00
P-163	376	8.0	0.26	120.0	0.00	0.00
P-165	17	12.0	1.04	123.0	0.00	0.00
P-166	17	12.0	5.75	123.0	0.02	0.00
P-167	335	12.0	4.71	123.0	0.01	0.00
P-172	765	12.0	2.47	123.0	0.01	0.00
P-175	228	8.0	0.52	120.0	0.00	0.00
P-176	499	8.0	0.93	120.0	0.01	0.00
P-182	395	8.0	0.15	120.0	0.00	0.00
P-185	292	8.0	1.04	120.0	0.01	0.00
P-186	376	8.0	0.26	120.0	0.00	0.00

# AVERAGE DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-187	492	8.0	0.52	120.0	0.00	0.00
P-193	352	12.0	0.30	123.0	0.00	0.00
P-194	335	12.0	0.56	123.0	0.00	0.00
P-196	484	8.0	0.41	120.0	0.00	0.00
P-197	510	8.0	2.53	120.0	0.02	0.00
P-198	59	8.0	2.01	120.0	0.01	0.00
P-199	557	12.0	13.22	123.0	0.04	0.00
P-200	177	12.0	12.70	123.0	0.04	0.00
P-201	57	8.0	1.30	120.0	0.01	0.00
P-202	315	8.0	0.78	120.0	0.00	0.00
P-204	274	12.0	15.30	123.0	0.04	0.00
P-205	56	12.0	16.60	123.0	0.05	0.00
P-206	427	12.0	15.82	123.0	0.04	0.00
P-207	27	12.0	18.68	123.0	0.05	0.00
P-210	362	12.0	19.46	123.0	0.06	0.00
P-211	29	12.0	20.76	123.0	0.06	0.00
P-212	376	12.0	20.24	123.0	0.06	0.00
P-215	241	8.0	1.56	120.0	0.01	0.00
P-216	200	8.0	1.04	120.0	0.01	0.00
P-219	79	8.0	0.78	120.0	0.00	0.00
P-220	431	8.0	0.52	120.0	0.00	0.00
P-221	519	8.0	3.51	120.0	0.02	0.00
P-222	233	8.0	4.55	120.0	0.03	0.00
P-223	528	8.0	6.11	120.0	0.04	0.00
P-224	282	8.0	7.15	120.0	0.05	0.00
P-225	81	12.0	23.88	123.0	0.07	0.00
P-227	515	12.0	23.88	123.0	0.07	0.00
P-229	614	12.0	23.88	123.0	0.07	0.00
P-236	420	8.0	0.26	120.0	0.00	0.00
P-237	168	8.0	3.18	120.0	0.02	0.00
P-239	327	8.0	3.70	120.0	0.02	0.00
P-240	485	8.0	4.22	120.0	0.03	0.00
P-241	423	8.0	5.26	120.0	0.03	0.00
P-242	371	8.0	5.52	120.0	0.04	0.00
P-243	524	8.0	6.30	120.0	0.04	0.00

# AVERAGE DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-245	559	8.0	11.75	120.0	0.08	0.00
P-247	451	8.0	17.14	120.0	0.11	0.00
P-248	522	8.0	17.66	120.0	0.11	0.01
P-249	407	12.0	39.81	123.0	0.11	0.00
P-250	676	12.0	39.03	123.0	0.11	0.00
P-252	491	8.0	0.53	120.0	0.00	0.00
P-253	22	8.0	0.52	120.0	0.00	0.00
P-255	33	6.0	0.00	130.0	0.00	0.00
P-256	60	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.00	130.0	0.00	0.00
P-259	677	8.0	0.52	120.0	0.00	0.00
P-260	28	8.0	0.52	120.0	0.00	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-262	333	12.0	3.69	120.0	0.01	0.00
P-263	330	12.0	4.21	120.0	0.01	0.00
P-264	257	12.0	58.51	123.0	0.17	0.00
P-272	49	8.0	11.36	120.0	0.07	0.00
P-273	363	8.0	0.65	120.0	0.00	0.00
P-274	1,028	8.0	10.71	120.0	0.07	0.00
P-275	437	8.0	11.23	120.0	0.07	0.00
P-276	42	8.0	0.52	120.0	0.00	0.00
P-277	265	8.0	10.71	120.0	0.07	0.00
P-278	479	8.0	6.81	120.0	0.04	0.00
P-279	519	8.0	5.51	120.0	0.04	0.00
P-280	28	8.0	1.30	120.0	0.01	0.00
P-281	493	8.0	6.81	120.0	0.04	0.00
P-282	849	8.0	0.52	120.0	0.00	0.00
P-283	509	8.0	0.26	120.0	0.00	0.00
P-284	555	12.0	17.90	123.0	0.05	0.00
P-285	210	12.0	17.12	123.0	0.05	0.00
P-286	379	8.0	7.33	120.0	0.05	0.00
P-287	293	8.0	8.11	120.0	0.05	0.00

# MAX DAY

105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	7,009.8	149.9
J-64	6,665.9	1.27	7,009.8	148.8
J-61	6,670.4	0.00	7,009.8	146.8
J-66	6,671.2	1.27	7,009.8	146.5
J-204	6,673.1	1.27	7,009.8	145.7
J-203	6,677.4	1.91	7,009.8	143.8
J-210	6,684.8	0.00	7,009.8	140.6
J-209	6,685.2	0.00	7,009.8	140.4
J-215	6,687.2	1.27	7,009.8	139.6
J-56	6,688.6	0.00	7,009.8	139.0
J-202	6,688.6	1.27	7,009.8	139.0
J-67	6,690.0	0.00	7,009.8	138.4
J-216	6,692.4	1.27	7,009.8	137.3
J-45	6,694.6	1.91	7,009.8	136.4
J-43	6,695.9	0.00	7,009.8	135.8
J-44	6,696.3	2.55	7,009.8	135.7
J-42	6,697.7	1.27	7,009.8	135.0
J-217	6,698.9	0.64	7,009.8	134.5
J-218	6,700.9	2.55	7,009.8	133.7
J-201	6,701.3	1.91	7,009.8	133.5
J-38	6,702.3	0.00	7,009.8	133.1
J-68	6,702.3	1.91	7,009.8	133.0
J-208	6,706.0	2.55	7,009.8	131.5
J-48	6,706.3	1.27	7,009.9	131.3
J-235	6,709.8	0.64	7,009.8	129.8
J-69	6,710.4	0.00	7,009.8	129.5
J-50	6,710.8	2.55	7,009.9	129.4
J-198	6,711.6	1.91	7,009.8	129.0
J-35	6,713.0	3.82	7,009.8	128.4
J-4	6,713.7	1.27	7,009.9	128.2
J-54	6,715.4	1.91	7,009.9	127.4
J-32	6,717.3	0.00	7,009.8	126.6
J-31	6,717.3	0.00	7,009.8	126.6
J-100	6,717.5	1.27	7,009.8	126.5
J-238	6,717.8	1.91	7,009.8	126.3



# MAX DAY

105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-179	6,717.9	1.27	7,009.8	126.3
J-236	6,719.1	0.64	7,009.8	125.8
J-120	6,719.2	1.91	7,009.9	125.8
J-207	6,719.3	2.55	7,009.8	125.7
J-73	6,719.6	1.91	7,009.8	125.6
J-191	6,719.9	1.27	7,009.8	125.4
J-9	6,721.6	0.00	7,009.9	124.7
J-10	6,721.6	1.91	7,009.9	124.7
J-128	6,721.8	0.00	7,009.8	124.6
J-97	6,722.5	1.27	7,009.8	124.3
J-70	6,722.7	0.00	7,009.8	124.2
J-94	6,723.0	0.00	7,009.8	124.1
J-197	6,723.1	1.91	7,009.8	124.0
J-129	6,723.2	1.27	7,009.8	124.0
J-77	6,723.7	1.91	7,009.8	123.8
J-93	6,723.7	1.27	7,009.8	123.8
J-185	6,724.0	1.27	7,009.8	123.6
J-176	6,724.4	0.64	7,009.8	123.5
J-126	6,726.0	0.00	7,009.8	122.8
J-127	6,726.0	0.00	7,009.8	122.8
J-30	6,726.1	1.91	7,009.8	122.8
J-72	6,726.3	1.27	7,009.8	122.7
J-196	6,726.3	1.27	7,009.8	122.7
J-116	6,726.8	3.82	7,009.9	122.5
J-190	6,726.9	1.27	7,009.8	122.4
J-117	6,727.0	0.00	7,009.9	122.4
J-118	6,727.0	0.00	7,009.9	122.4
J-11	6,727.2	1.27	7,009.9	122.3
J-76	6,727.2	1.91	7,009.8	122.3
J-125	6,727.2	2.55	7,009.8	122.3
J-130	6,727.6	0.64	7,009.8	122.1
J-90	6,727.7	1.27	7,009.8	122.0
J-195	6,728.5	1.27	7,009.8	121.7
J-214	6,729.7	0.64	7,009.8	121.2
J-71	6,730.2	0.00	7,009.8	121.0

# MAX DAY

## 105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	6,730.4	0.64	7,009.8	120.9
J-29	6,731.1	1.27	7,009.8	120.6
J-167	6,731.9	1.91	7,009.8	120.2
J-84	6,732.2	0.00	7,009.8	120.1
J-85	6,732.2	0.00	7,009.8	120.1
J-162	6,732.2	0.00	7,009.8	120.1
J-112	6,732.3	3.18	7,009.9	120.1
J-134	6,733.2	1.27	7,009.8	119.7
J-230	6,733.4	0.00	7,009.9	119.6
J-80	6,733.7	1.91	7,009.8	119.5
J-27	6,734.7	1.27	7,009.8	119.0
J-194	6,735.7	1.27	7,009.8	118.6
J-221	6,736.5	1.91	7,010.0	118.3
J-180	6,736.4	0.64	7,009.8	118.3
J-14	6,737.8	1.91	7,009.9	117.7
J-231	6,738.5	0.00	7,009.9	117.4
J-25	6,739.2	0.00	7,009.8	117.1
J-26	6,739.4	1.91	7,009.8	117.0
J-75	6,740.5	1.27	7,009.8	116.5
J-74	6,740.5	1.91	7,009.8	116.5
J-170	6,740.9	1.27	7,009.8	116.3
J-109	6,743.4	2.55	7,009.8	115.3
J-135	6,743.4	2.55	7,009.8	115.3
J-161	6,744.4	1.27	7,009.8	114.8
J-227	6,744.4	0.00	7,009.8	114.8
J-22	6,744.9	1.27	7,009.8	114.6
J-187	6,746.2	0.64	7,009.8	114.0
J-136	6,748.4	1.91	7,009.8	113.1
J-19	6,749.4	0.00	7,009.8	112.7
J-105	6,749.6	1.27	7,009.8	112.6
J-239	6,750.1	1.91	7,009.8	112.4
J-1	6,750.4	1.27	7,009.9	112.3
J-232	6,750.5	0.00	7,009.9	112.2
J-160	6,750.7	0.64	7,009.8	112.1
J-206	6,751.1	0.64	7,009.8	111.9

# MAX DAY

## 105 PSI

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-219	6,751.8	1.27	7,009.9	111.7
J-20	6,752.0	1.27	7,009.8	111.5
J-140	6,752.4	0.00	7,009.8	111.4
J-2	6,755.7	1.91	7,009.9	110.0
J-229	6,756.0	1.27	7,009.8	109.8
J-233	6,756.3	0.00	7,009.8	109.7
J-141	6,756.3	1.27	7,009.8	109.7
J-155	6,756.6	1.91	7,009.8	109.5
J-18	6,757.8	1.27	7,009.8	109.0
J-220	6,761.4	1.27	7,009.9	107.5
J-3	6,762.4	2.55	7,010.0	107.1
J-144	6,762.2	0.00	7,009.8	107.1
J-145	6,762.2	0.00	7,009.8	107.1
J-147	6,763.6	1.27	7,009.8	106.5
J-157	6,764.7	1.27	7,009.8	106.0
J-149	6,767.3	0.00	7,009.8	104.9
J-234	6,768.9	0.00	7,009.8	104.2
J-153	6,769.5	1.27	7,009.8	104.0
J-159	6,770.1	3.18	7,009.8	103.7
J-154	6,774.9	1.27	7,009.8	101.6
J-225	6,774.9	0.00	7,009.8	101.6

# MAX DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-55	993	12.0	100.55	123.0	0.29	0.04
P-248	522	8.0	43.27	120.0	0.28	0.03
P-247	451	8.0	41.99	120.0	0.27	0.03
P-274	1,028	8.0	26.25	120.0	0.17	0.03
P-250	676	12.0	95.64	123.0	0.27	0.02
P-264	257	12.0	143.36	123.0	0.41	0.02
P-49	903	12.0	69.50	123.0	0.20	0.02
P-245	559	8.0	28.80	120.0	0.18	0.02
P-249	407	12.0	97.55	123.0	0.28	0.02
P-53	403	12.0	98.64	123.0	0.28	0.02
P-10	364	12.0	92.45	123.0	0.26	0.01
P-275	437	8.0	27.53	120.0	0.18	0.01
P-114	514	8.0	24.66	120.0	0.16	0.01
P-4	298	12.0	94.37	123.0	0.27	0.01
P-107	572	8.0	20.84	120.0	0.13	0.01
P-229	614	12.0	58.51	123.0	0.17	0.01
P-111	463	8.0	22.11	120.0	0.14	0.01
P-227	515	12.0	58.51	123.0	0.17	0.01
P-48	504	8.0	19.26	120.0	0.12	0.01
P-277	265	8.0	26.25	120.0	0.17	0.01
P-20	358	8.0	21.79	120.0	0.14	0.01
P-46	473	8.0	17.99	120.0	0.11	0.01
P-23	280	8.0	23.07	120.0	0.15	0.01
P-37	428	12.0	51.98	123.0	0.15	0.01
P-278	479	8.0	16.69	120.0	0.11	0.01
P-281	493	8.0	16.69	120.0	0.11	0.01
P-284	555	12.0	43.85	123.0	0.12	0.00
P-223	528	8.0	14.97	120.0	0.10	0.00
P-243	524	8.0	15.44	120.0	0.10	0.00
P-287	293	8.0	19.88	120.0	0.13	0.00
P-286	379	8.0	17.97	120.0	0.11	0.00
P-212	376	12.0	49.58	123.0	0.14	0.00
P-41	354	12.0	50.71	123.0	0.14	0.00
P-279	519	8.0	13.50	120.0	0.09	0.00
P-210	362	12.0	47.67	123.0	0.14	0.00

# MAX DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-224	282	8.0	17.52	120.0	0.11	0.00
P-159	517	8.0	12.23	120.0	0.08	0.00
P-241	423	8.0	12.89	120.0	0.08	0.00
P-206	427	12.0	38.76	123.0	0.11	0.00
P-240	485	8.0	10.35	120.0	0.07	0.00
P-242	371	8.0	13.53	120.0	0.09	0.00
P-199	557	12.0	32.39	123.0	0.09	0.00
P-17	413	8.0	11.28	120.0	0.07	0.00
P-126	577	8.0	8.75	120.0	0.06	0.00
P-204	274	12.0	37.48	123.0	0.11	0.00
P-285	210	12.0	41.94	123.0	0.12	0.00
P-272	49	8.0	27.84	120.0	0.18	0.00
P-221	519	8.0	8.60	120.0	0.05	0.00
P-33	337	8.0	11.15	120.0	0.07	0.00
P-11	486	8.0	9.37	120.0	0.06	0.00
P-200	177	12.0	31.11	123.0	0.09	0.00
P-9	27	12.0	94.37	123.0	0.27	0.00
P-98	471	12.0	17.90	123.0	0.05	0.00
P-28	409	8.0	6.69	120.0	0.04	0.00
P-239	327	8.0	9.07	120.0	0.06	0.00
P-197	510	8.0	6.20	120.0	0.04	0.00
P-225	81	12.0	58.51	123.0	0.17	0.00
P-125	479	8.0	7.32	120.0	0.05	0.00
P-222	233	8.0	11.15	120.0	0.07	0.00
P-211	29	12.0	50.86	123.0	0.14	0.00
P-172	765	12.0	6.06	123.0	0.02	0.00
P-176	499	8.0	2.29	120.0	0.01	0.00
P-122	284	8.0	5.41	120.0	0.03	0.00
P-30	25	8.0	11.15	120.0	0.07	0.00
P-215	241	8.0	3.83	120.0	0.02	0.00
P-99	371	12.0	19.18	123.0	0.05	0.00
P-92	437	12.0	15.35	123.0	0.04	0.00
P-205	56	12.0	40.67	123.0	0.12	0.00
P-27	366	8.0	5.42	120.0	0.03	0.00
P-77	350	8.0	1.91	120.0	0.01	0.00

# MAX DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-119	150	8.0	5.41	120.0	0.03	0.00
P-207	27	12.0	45.76	123.0	0.13	0.00
P-175	228	8.0	1.27	120.0	0.01	0.00
P-262	333	12.0	9.04	120.0	0.03	0.00
P-87	410	12.0	14.08	123.0	0.04	0.00
P-237	168	8.0	7.80	120.0	0.05	0.00
P-24	127	8.0	2.23	120.0	0.01	0.00
P-25	188	8.0	4.14	120.0	0.03	0.00
P-64	225	8.0	1.28	120.0	0.01	0.00
P-65	169	8.0	0.01	120.0	0.00	0.00
P-66	324	8.0	1.27	120.0	0.01	0.00
P-67	37	12.0	7.65	123.0	0.02	0.00
P-68	479	12.0	5.74	123.0	0.02	0.00
P-69	342	8.0	1.91	120.0	0.01	0.00
P-74	238	8.0	1.91	120.0	0.01	0.00
P-76	834	8.0	1.27	120.0	0.01	0.00
P-78	381	8.0	1.91	120.0	0.01	0.00
P-82	376	8.0	2.55	120.0	0.02	0.00
P-95	69	12.0	16.63	123.0	0.05	0.00
P-100	356	8.0	1.27	120.0	0.01	0.00
P-120	27	8.0	5.41	120.0	0.03	0.00
P-129	41	8.0	6.20	120.0	0.04	0.00
P-130	25	8.0	6.20	120.0	0.04	0.00
P-132	490	8.0	2.76	120.0	0.02	0.00
P-133	88	8.0	1.49	120.0	0.01	0.00
P-134	242	8.0	0.43	120.0	0.00	0.00
P-137	410	8.0	1.06	120.0	0.01	0.00
P-138	388	8.0	2.97	120.0	0.02	0.00
P-140	313	12.0	3.94	123.0	0.01	0.00
P-144	282	12.0	5.11	123.0	0.01	0.00
P-145	293	12.0	3.83	123.0	0.01	0.00
P-148	26	8.0	3.83	120.0	0.02	0.00
P-149	140	8.0	3.83	120.0	0.02	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-153	304	8.0	2.55	120.0	0.02	0.00

# MAX DAY

## 105 PSI

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-163	376	8.0	0.64	120.0	0.00	0.00
P-165	17	12.0	2.55	123.0	0.01	0.00
P-166	17	12.0	14.08	123.0	0.04	0.00
P-167	335	12.0	11.53	123.0	0.03	0.00
P-182	395	8.0	0.38	120.0	0.00	0.00
P-185	292	8.0	2.55	120.0	0.02	0.00
P-186	376	8.0	0.64	120.0	0.00	0.00
P-187	492	8.0	1.27	120.0	0.01	0.00
P-193	352	12.0	0.74	123.0	0.00	0.00
P-194	335	12.0	1.38	123.0	0.00	0.00
P-196	484	8.0	1.02	120.0	0.01	0.00
P-198	59	8.0	4.93	120.0	0.03	0.00
P-201	57	8.0	3.18	120.0	0.02	0.00
P-202	315	8.0	1.91	120.0	0.01	0.00
P-216	200	8.0	2.55	120.0	0.02	0.00
P-219	79	8.0	1.91	120.0	0.01	0.00
P-220	431	8.0	1.27	120.0	0.01	0.00
P-236	420	8.0	0.64	120.0	0.00	0.00
P-252	491	8.0	1.28	120.0	0.01	0.00
P-253	22	8.0	1.27	120.0	0.01	0.00
P-255	33	6.0	0.00	130.0	0.00	0.00
P-256	60	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.00	130.0	0.00	0.00
P-259	677	8.0	1.28	120.0	0.01	0.00
P-260	28	8.0	1.27	120.0	0.01	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-263	330	12.0	10.32	120.0	0.03	0.00
P-273	363	8.0	1.59	120.0	0.01	0.00
P-276	42	8.0	1.27	120.0	0.01	0.00
P-280	28	8.0	3.19	120.0	0.02	0.00
P-282	849	8.0	1.27	120.0	0.01	0.00
P-283	509	8.0	0.64	120.0	0.00	0.00

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	6,987.5	140.3
J-64	6,665.9	1.27	6,987.5	139.1
J-61	6,670.4	0.00	6,987.5	137.2
J-66	6,671.2	1.27	6,987.5	136.8
J-204	6,673.1	1.27	6,987.5	136.0
J-203	6,677.4	1.91	6,987.5	134.2
J-209	6,685.2	0.00	6,991.1	132.3
J-210	6,684.8	0.00	6,989.5	131.8
J-215	6,687.2	1.27	6,991.6	131.7
J-216	6,692.4	1.27	6,992.0	129.6
J-45	6,694.6	1.91	6,993.6	129.4
J-56	6,688.6	0.00	6,987.5	129.3
J-202	6,688.6	1.27	6,987.4	129.3
J-67	6,690.0	0.00	6,987.5	128.7
J-44	6,696.3	2.55	6,992.6	128.2
J-43	6,695.9	0.00	6,991.4	127.8
J-42	6,697.7	1.27	6,992.1	127.4
J-217	6,698.9	0.64	6,993.2	127.3
J-218	6,700.9	2.55	6,994.3	127.0
J-38	6,702.3	0.00	6,993.0	125.8
J-4	6,713.7	1.27	7,004.3	125.7
J-48	6,706.3	1.27	6,995.0	124.9
J-208	6,706.0	2.55	6,992.8	124.1
J-68	6,702.3	1.91	6,987.5	123.4
J-201	6,701.3	1.91	6,986.2	123.3
J-50	6,710.8	2.55	6,995.7	123.3
J-54	6,715.4	1.91	6,997.5	122.0
J-9	6,721.6	0.00	7,003.3	121.9
J-10	6,721.6	1.91	7,003.2	121.8
J-35	6,713.0	3.82	6,992.4	120.9
J-120	6,719.2	1.91	6,995.7	119.6
J-32	6,717.3	0.00	6,992.1	118.9
J-31	6,717.3	0.00	6,992.1	118.9
J-69	6,710.4	0.00	6,985.1	118.8
J-11	6,727.2	1.27	7,001.9	118.8
J-198	6,711.6	1.91	6,985.0	118.3



Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-207	6,719.3	2.55	6,991.9	117.9
J-221	6,736.5	1.91	7,006.7	116.9
J-116	6,726.8	3.82	6,995.7	116.3
J-118	6,727.0	0.00	6,995.7	116.2
J-117	6,727.0	0.00	6,995.7	116.2
J-238	6,717.8	1.91	6,983.3	114.9
J-30	6,726.1	1.91	6,991.5	114.8
J-235	6,709.8	0.64	6,975.1	114.8
J-14	6,737.8	1.91	7,002.2	114.4
J-112	6,732.3	3.18	6,995.5	113.9
J-230	6,733.4	0.00	6,995.7	113.5
J-73	6,719.6	1.91	6,980.3	112.8
J-231	6,738.5	0.00	6,998.7	112.6
J-29	6,731.1	1.27	6,991.2	112.5
J-70	6,722.7	0.00	6,982.6	112.5
J-197	6,723.1	1.91	6,982.5	112.2
J-100	6,717.5	1.27	6,976.7	112.2
J-76	6,727.2	1.91	6,985.1	111.6
J-179	6,717.9	1.27	6,975.1	111.3
J-27	6,734.7	1.27	6,990.9	110.9
J-236	6,719.1	0.64	6,975.1	110.8
J-191	6,719.9	1.27	6,975.3	110.5
J-97	6,722.5	1.27	6,977.5	110.3
J-196	6,726.3	1.27	6,981.1	110.3
J-77	6,723.7	1.91	6,978.1	110.0
J-94	6,723.0	0.00	6,976.7	109.8
J-128	6,721.8	0.00	6,975.1	109.6
J-93	6,723.7	1.27	6,976.6	109.4
J-195	6,728.5	1.27	6,980.3	108.9
J-72	6,726.3	1.27	6,978.1	108.9
J-25	6,739.2	0.00	6,990.7	108.8
J-26	6,739.4	1.91	6,990.8	108.8
J-129	6,723.2	1.27	6,974.6	108.8
J-176	6,724.4	0.64	6,975.0	108.4
J-126	6,726.0	0.00	6,976.6	108.4
J-109	6,743.4	2.55	6,993.9	108.4

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-127	6,726.0	0.00	6,976.5	108.4
J-185	6,724.0	1.27	6,974.5	108.4
J-71	6,730.2	0.00	6,980.3	108.2
J-125	6,727.2	2.55	6,976.7	107.9
J-1	6,750.4	1.27	6,999.5	107.8
J-232	6,750.5	0.00	6,999.5	107.7
J-219	6,751.8	1.27	7,000.8	107.7
J-90	6,727.7	1.27	6,976.0	107.4
J-190	6,726.9	1.27	6,974.9	107.3
J-130	6,727.6	0.64	6,974.5	106.8
J-2	6,755.7	1.91	7,002.5	106.8
J-3	6,762.4	2.55	7,008.2	106.4
J-214	6,729.7	0.64	6,975.3	106.3
J-22	6,744.9	1.27	6,989.0	105.6
J-133	6,730.4	0.64	6,974.2	105.5
J-220	6,761.4	1.27	7,005.1	105.4
J-85	6,732.2	0.00	6,975.3	105.2
J-84	6,732.2	0.00	6,975.3	105.2
J-162	6,732.2	0.00	6,975.3	105.2
J-194	6,735.7	1.27	6,978.6	105.1
J-105	6,749.6	1.27	6,992.5	105.1
J-167	6,731.9	1.91	6,974.8	105.1
J-75	6,740.5	1.27	6,982.6	104.8
J-80	6,733.7	1.91	6,975.3	104.5
J-134	6,733.2	1.27	6,973.7	104.1
J-74	6,740.5	1.91	6,980.3	103.7
J-19	6,749.4	0.00	6,986.9	102.7
J-180	6,736.4	0.64	6,973.7	102.7
J-206	6,751.1	0.64	6,986.9	102.0
J-239	6,750.1	1.91	6,985.1	101.7
J-20	6,752.0	1.27	6,986.9	101.6
J-170	6,740.9	1.27	6,974.8	101.2
J-135	6,743.4	2.55	6,973.3	99.5
J-161	6,744.4	1.27	6,973.3	99.0
J-227	6,744.4	0.00	6,973.3	99.0
J-187	6,746.2	0.64	6,972.3	97.8

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-18	6,757.8	1.27	6,982.8	97.4
J-233	6,756.3	0.00	6,980.0	96.8
J-136	6,748.4	1.91	6,971.3	96.5
J-160	6,750.7	0.64	6,971.3	95.5
J-140	6,752.4	0.00	6,970.4	94.3
J-229	6,756.0	1.27	6,970.7	92.9
J-155	6,756.6	1.91	6,971.0	92.8
J-141	6,756.3	1.27	6,968.8	91.9
J-157	6,764.7	1.27	6,974.0	90.6
J-234	6,768.9	0.00	6,977.0	90.1
J-159	6,770.1	3.18	6,977.0	89.5
J-144	6,762.2	0.00	6,967.0	88.6
J-145	6,762.2	0.00	6,965.8	88.1
J-147	6,763.6	1.27	6,959.5	84.8
J-149	6,767.3	0.00	6,959.5	83.2
J-153	6,769.5	1.27	6,945.9	76.3
J-154	6,774.9	1.27	6,923.8	64.4
J-225	6,774.9	0.00	6,923.8	64.4

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-255	33	6.0	1,500.00	130.0	17.02	23.70
P-252	491	8.0	1,501.27	120.0	9.58	22.08
P-153	304	8.0	1,502.55	120.0	9.59	13.67
P-149	140	8.0	1,503.82	120.0	9.60	6.31
P-55	993	12.0	1,281.74	123.0	3.64	4.42
P-248	522	8.0	501.84	120.0	3.20	3.08
P-279	519	8.0	500.36	120.0	3.19	3.05
P-274	1,028	8.0	345.02	120.0	2.20	3.03
P-159	517	8.0	499.09	120.0	3.19	3.02
P-281	493	8.0	503.55	120.0	3.21	2.93
P-278	479	8.0	503.55	120.0	3.21	2.85
P-49	903	12.0	1,029.03	123.0	2.92	2.68
P-247	451	8.0	500.57	120.0	3.20	2.65
P-250	676	12.0	1,137.02	123.0	3.23	2.41
P-286	379	8.0	504.82	120.0	3.22	2.27
P-20	358	8.0	508.64	120.0	3.25	2.17
P-229	614	12.0	1,071.62	123.0	3.04	1.96
P-264	257	12.0	1,643.32	123.0	4.66	1.81
P-53	403	12.0	1,279.83	123.0	3.63	1.79
P-287	293	8.0	506.73	120.0	3.23	1.77
P-107	572	8.0	352.05	120.0	2.25	1.75
P-145	293	12.0	1,503.82	123.0	4.27	1.75
P-284	555	12.0	1,056.97	123.0	3.00	1.73
P-23	280	8.0	509.92	120.0	3.25	1.70
P-199	557	12.0	1,045.50	123.0	2.97	1.70
P-144	282	12.0	1,505.10	123.0	4.27	1.69
P-245	559	8.0	347.57	120.0	2.22	1.67
P-227	515	12.0	1,071.62	123.0	3.04	1.65
P-114	514	8.0	355.87	120.0	2.27	1.61
P-172	765	12.0	813.27	123.0	2.31	1.46
P-249	407	12.0	1,138.93	123.0	3.23	1.45
P-111	463	8.0	353.32	120.0	2.26	1.43
P-126	577	8.0	310.37	120.0	1.98	1.40
P-206	427	12.0	1,051.87	123.0	2.98	1.32
P-275	437	8.0	346.29	120.0	2.21	1.30
P-10	364	12.0	1,133.84	123.0	3.22	1.29

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-197	510	8.0	307.82	120.0	1.96	1.22
P-212	376	12.0	1,062.70	123.0	3.01	1.18
P-148	26	8.0	1,503.82	120.0	9.60	1.17
P-210	362	12.0	1,060.79	123.0	3.01	1.14
P-4	298	12.0	1,135.75	123.0	3.22	1.06
P-193	352	12.0	1,012.38	123.0	2.87	1.01
P-194	335	12.0	1,011.74	123.0	2.87	0.96
P-37	428	12.0	855.87	123.0	2.43	0.90
P-140	313	12.0	1,009.19	123.0	2.86	0.89
P-204	274	12.0	1,050.60	123.0	2.98	0.84
P-277	265	8.0	345.02	120.0	2.20	0.78
P-41	354	12.0	854.60	123.0	2.42	0.74
P-98	471	12.0	729.40	123.0	2.07	0.74
P-243	524	8.0	224.66	120.0	1.43	0.70
P-48	504	8.0	228.48	120.0	1.46	0.69
P-92	437	12.0	726.85	123.0	2.06	0.68
P-285	210	12.0	1,055.06	123.0	2.99	0.65
P-46	473	8.0	227.21	120.0	1.45	0.64
P-87	410	12.0	725.58	123.0	2.06	0.64
P-240	485	8.0	219.57	120.0	1.40	0.62
P-99	371	12.0	730.68	123.0	2.07	0.58
P-132	490	8.0	208.66	120.0	1.33	0.57
P-241	423	8.0	222.11	120.0	1.42	0.55
P-200	177	12.0	1,044.23	123.0	2.96	0.54
P-167	335	12.0	723.03	123.0	2.05	0.52
P-242	371	8.0	222.75	120.0	1.42	0.49
P-137	410	8.0	204.84	120.0	1.31	0.46
P-138	388	8.0	202.93	120.0	1.30	0.43
P-223	528	8.0	170.61	120.0	1.09	0.42
P-239	327	8.0	218.29	120.0	1.39	0.41
P-221	519	8.0	164.24	120.0	1.05	0.39
P-11	486	8.0	149.18	120.0	0.95	0.30
P-28	409	8.0	162.33	120.0	1.04	0.30
P-134	242	8.0	205.48	120.0	1.31	0.27
P-262	333	12.0	495.90	120.0	1.41	0.27
P-263	330	12.0	497.18	120.0	1.41	0.27

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-17	413	8.0	151.09	120.0	0.96	0.26
P-27	366	8.0	161.05	120.0	1.03	0.26
P-225	81	12.0	1,071.62	123.0	3.04	0.26
P-33	337	8.0	166.79	120.0	1.06	0.26
P-224	282	8.0	173.16	120.0	1.11	0.23
P-237	168	8.0	217.02	120.0	1.39	0.21
P-222	233	8.0	166.79	120.0	1.06	0.18
P-205	56	12.0	1,053.78	123.0	2.99	0.17
P-272	49	8.0	359.06	120.0	2.29	0.16
P-198	59	8.0	306.54	120.0	1.96	0.14
P-25	188	8.0	159.78	120.0	1.02	0.13
P-176	499	8.0	93.42	120.0	0.60	0.13
P-196	484	8.0	94.70	120.0	0.60	0.13
P-182	395	8.0	95.34	120.0	0.61	0.11
P-95	69	12.0	728.13	123.0	2.07	0.11
P-133	88	8.0	207.39	120.0	1.32	0.10
P-129	41	8.0	307.82	120.0	1.96	0.10
P-9	27	12.0	1,135.75	123.0	3.22	0.09
P-211	29	12.0	1,063.97	123.0	3.02	0.09
P-24	127	8.0	157.87	120.0	1.01	0.09
P-207	27	12.0	1,058.88	123.0	3.00	0.08
P-130	25	8.0	307.82	120.0	1.96	0.06
P-166	17	12.0	725.58	123.0	2.06	0.03
P-30	25	8.0	166.79	120.0	1.06	0.02
P-125	479	8.0	19.77	120.0	0.13	0.01
P-122	284	8.0	17.86	120.0	0.11	0.00
P-273	363	8.0	14.04	120.0	0.09	0.00
P-119	150	8.0	17.86	120.0	0.11	0.00
P-259	677	8.0	1.27	120.0	0.01	0.00
P-120	27	8.0	17.86	120.0	0.11	0.00
P-82	376	8.0	2.55	120.0	0.02	0.00
P-216	200	8.0	2.55	120.0	0.02	0.00
P-78	381	8.0	1.91	120.0	0.01	0.00
P-64	225	8.0	1.27	120.0	0.01	0.00
P-65	169	8.0	0.00	120.0	0.00	0.00
P-66	324	8.0	1.27	120.0	0.01	0.00

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-67	37	12.0	7.64	123.0	0.02	0.00
P-68	479	12.0	5.73	123.0	0.02	0.00
P-69	342	8.0	1.91	120.0	0.01	0.00
P-74	238	8.0	1.91	120.0	0.01	0.00
P-76	834	8.0	1.27	120.0	0.01	0.00
P-77	350	8.0	1.91	120.0	0.01	0.00
P-100	356	8.0	1.27	120.0	0.01	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-163	376	8.0	0.64	120.0	0.00	0.00
P-165	17	12.0	2.55	123.0	0.01	0.00
P-175	228	8.0	1.27	120.0	0.01	0.00
P-185	292	8.0	2.55	120.0	0.02	0.00
P-186	376	8.0	0.64	120.0	0.00	0.00
P-187	492	8.0	1.27	120.0	0.01	0.00
P-201	57	8.0	3.18	120.0	0.02	0.00
P-202	315	8.0	1.91	120.0	0.01	0.00
P-215	241	8.0	3.82	120.0	0.02	0.00
P-219	79	8.0	1.91	120.0	0.01	0.00
P-220	431	8.0	1.27	120.0	0.01	0.00
P-236	420	8.0	0.64	120.0	0.00	0.00
P-253	22	8.0	1.27	120.0	0.01	0.00
P-256	60	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.00	130.0	0.00	0.00
P-260	28	8.0	1.27	120.0	0.01	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-276	42	8.0	1.27	120.0	0.01	0.00
P-280	28	8.0	3.18	120.0	0.02	0.00
P-282	849	8.0	1.27	120.0	0.01	0.00
P-283	509	8.0	0.64	120.0	0.00	0.00

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-65	6,663.3	0.00	6,989.7	141.2
J-64	6,665.9	1.27	6,989.7	140.1
J-61	6,670.4	0.00	6,989.7	138.1
J-66	6,671.2	1.27	6,989.7	137.8
J-204	6,673.1	1.27	6,989.7	137.0
J-203	6,677.4	1.91	6,989.7	135.1
J-209	6,685.2	0.00	6,992.2	132.8
J-210	6,684.8	0.00	6,991.0	132.5
J-215	6,687.2	1.27	6,992.5	132.1
J-56	6,688.6	0.00	6,989.7	130.3
J-202	6,688.6	1.27	6,989.6	130.2
J-216	6,692.4	1.27	6,992.8	130.0
J-67	6,690.0	0.00	6,989.7	129.7
J-45	6,694.6	1.91	6,994.1	129.6
J-44	6,696.3	2.55	6,993.3	128.5
J-43	6,695.9	0.00	6,992.3	128.3
J-42	6,697.7	1.27	6,992.8	127.7
J-217	6,698.9	0.64	6,993.8	127.6
J-218	6,700.9	2.55	6,994.7	127.1
J-38	6,702.3	0.00	6,993.4	126.0
J-4	6,713.7	1.27	7,004.3	125.7
J-48	6,706.3	1.27	6,995.2	125.0
J-201	6,701.3	1.91	6,988.8	124.4
J-68	6,702.3	1.91	6,989.7	124.3
J-208	6,706.0	2.55	6,992.9	124.1
J-50	6,710.8	2.55	6,995.8	123.3
J-54	6,715.4	1.91	6,997.5	122.1
J-9	6,721.6	0.00	7,003.3	121.9
J-10	6,721.6	1.91	7,003.2	121.8
J-35	6,713.0	3.82	6,991.8	120.6
J-69	6,710.4	0.00	6,988.1	120.1
J-120	6,719.2	1.91	6,995.6	119.6
J-198	6,711.6	1.91	6,988.0	119.6
J-11	6,727.2	1.27	7,001.9	118.9
J-32	6,717.3	0.00	6,991.2	118.5
J-31	6,717.3	0.00	6,991.1	118.5



Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-235	6,709.8	0.64	6,981.3	117.5
J-207	6,719.3	2.55	6,990.7	117.4
J-221	6,736.5	1.91	7,006.7	116.9
J-238	6,717.8	1.91	6,986.8	116.4
J-116	6,726.8	3.82	6,995.5	116.2
J-118	6,727.0	0.00	6,995.5	116.2
J-117	6,727.0	0.00	6,995.5	116.2
J-73	6,719.6	1.91	6,984.8	114.7
J-100	6,717.5	1.27	6,982.4	114.6
J-14	6,737.8	1.91	7,002.2	114.4
J-70	6,722.7	0.00	6,986.4	114.1
J-30	6,726.1	1.91	6,989.7	114.1
J-179	6,717.9	1.27	6,981.3	114.0
J-197	6,723.1	1.91	6,986.3	113.9
J-112	6,732.3	3.18	6,995.1	113.7
J-236	6,719.1	0.64	6,981.3	113.5
J-230	6,733.4	0.00	6,995.4	113.3
J-191	6,719.9	1.27	6,981.4	113.1
J-76	6,727.2	1.91	6,988.1	112.9
J-97	6,722.5	1.27	6,982.9	112.7
J-231	6,738.5	0.00	6,998.5	112.5
J-77	6,723.7	1.91	6,983.3	112.3
J-128	6,721.8	0.00	6,981.3	112.3
J-94	6,723.0	0.00	6,982.4	112.2
J-196	6,726.3	1.27	6,985.4	112.1
J-93	6,723.7	1.27	6,982.3	111.9
J-29	6,731.1	1.27	6,989.0	111.6
J-129	6,723.2	1.27	6,981.0	111.5
J-72	6,726.3	1.27	6,983.3	111.2
J-185	6,724.0	1.27	6,980.9	111.1
J-176	6,724.4	0.64	6,981.3	111.1
J-195	6,728.5	1.27	6,984.8	110.9
J-126	6,726.0	0.00	6,982.3	110.9
J-127	6,726.0	0.00	6,982.2	110.9
J-125	6,727.2	2.55	6,982.4	110.4
J-71	6,730.2	0.00	6,984.8	110.2

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-190	6,726.9	1.27	6,981.2	110.0
J-90	6,727.7	1.27	6,981.9	110.0
J-27	6,734.7	1.27	6,988.3	109.7
J-130	6,727.6	0.64	6,980.9	109.6
J-214	6,729.7	0.64	6,981.4	108.9
J-133	6,730.4	0.64	6,980.7	108.3
J-85	6,732.2	0.00	6,981.5	107.8
J-84	6,732.2	0.00	6,981.4	107.8
J-162	6,732.2	0.00	6,981.4	107.8
J-109	6,743.4	2.55	6,992.6	107.8
J-167	6,731.9	1.91	6,981.1	107.8
J-1	6,750.4	1.27	6,999.3	107.7
J-219	6,751.8	1.27	7,000.7	107.7
J-232	6,750.5	0.00	6,999.3	107.7
J-26	6,739.4	1.91	6,987.9	107.5
J-25	6,739.2	0.00	6,987.7	107.5
J-194	6,735.7	1.27	6,983.7	107.3
J-80	6,733.7	1.91	6,981.4	107.2
J-134	6,733.2	1.27	6,980.4	106.9
J-2	6,755.7	1.91	7,002.4	106.7
J-75	6,740.5	1.27	6,986.4	106.4
J-3	6,762.4	2.55	7,008.2	106.4
J-74	6,740.5	1.91	6,984.8	105.7
J-180	6,736.4	0.64	6,980.4	105.6
J-220	6,761.4	1.27	7,005.1	105.4
J-105	6,749.6	1.27	6,990.4	104.2
J-170	6,740.9	1.27	6,981.1	103.9
J-22	6,744.9	1.27	6,984.6	103.7
J-135	6,743.4	2.55	6,980.1	102.4
J-161	6,744.4	1.27	6,980.1	102.0
J-227	6,744.4	0.00	6,980.1	102.0
J-187	6,746.2	0.64	6,979.4	100.9
J-19	6,749.4	0.00	6,980.6	100.0
J-136	6,748.4	1.91	6,978.8	99.7
J-206	6,751.1	0.64	6,980.6	99.3
J-20	6,752.0	1.27	6,980.6	98.9

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-160	6,750.7	0.64	6,978.8	98.7
J-239	6,750.1	1.91	6,977.3	98.3
J-140	6,752.4	0.00	6,978.2	97.7
J-141	6,756.3	1.27	6,978.2	96.0
J-229	6,756.0	1.27	6,977.5	95.9
J-155	6,756.6	1.91	6,976.9	95.3
J-144	6,762.2	0.00	6,978.2	93.5
J-145	6,762.2	0.00	6,978.2	93.5
J-18	6,757.8	1.27	6,973.1	93.1
J-147	6,763.6	1.27	6,978.2	92.8
J-233	6,756.3	0.00	6,967.8	91.5
J-149	6,767.3	0.00	6,978.2	91.2
J-153	6,769.5	1.27	6,978.2	90.3
J-157	6,764.7	1.27	6,969.6	88.7
J-154	6,774.9	1.27	6,978.2	88.0
J-225	6,774.9	0.00	6,978.2	88.0
J-234	6,768.9	0.00	6,962.4	83.7
J-159	6,770.1	3.18	6,961.1	82.6

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-256	60	6.0	1,500.00	130.0	17.02	9.44
P-159	517	8.0	801.13	120.0	5.11	7.27
P-279	519	8.0	799.86	120.0	5.11	7.27
P-281	493	8.0	703.33	120.0	4.49	5.44
P-278	479	8.0	703.33	120.0	4.49	5.29
P-55	993	12.0	1,273.96	123.0	3.61	4.37
P-286	379	8.0	704.60	120.0	4.50	4.20
P-20	358	8.0	708.43	120.0	4.52	4.00
P-287	293	8.0	706.51	120.0	4.51	3.27
P-274	1,028	8.0	352.81	120.0	2.25	3.16
P-23	280	8.0	709.70	120.0	4.53	3.14
P-248	522	8.0	503.24	120.0	3.21	3.10
P-107	572	8.0	446.00	120.0	2.85	2.72
P-247	451	8.0	501.97	120.0	3.20	2.66
P-114	514	8.0	449.82	120.0	2.87	2.48
P-250	676	12.0	1,135.63	123.0	3.22	2.40
P-49	903	12.0	961.03	123.0	2.73	2.36
P-111	463	8.0	447.27	120.0	2.85	2.21
P-264	257	12.0	1,643.32	123.0	4.66	1.81
P-53	403	12.0	1,272.05	123.0	3.61	1.77
P-245	559	8.0	355.35	120.0	2.27	1.74
P-249	407	12.0	1,137.54	123.0	3.23	1.45
P-275	437	8.0	354.08	120.0	2.26	1.35
P-229	614	12.0	871.84	123.0	2.47	1.34
P-10	364	12.0	1,132.44	123.0	3.21	1.29
P-280	28	8.0	1,503.18	120.0	9.59	1.24
P-284	555	12.0	857.19	123.0	2.43	1.17
P-199	557	12.0	845.72	123.0	2.40	1.15
P-227	515	12.0	871.84	123.0	2.47	1.12
P-4	298	12.0	1,134.35	123.0	3.22	1.06
P-223	528	8.0	276.44	120.0	1.76	1.03
P-172	765	12.0	653.97	123.0	1.86	0.98
P-221	519	8.0	270.07	120.0	1.72	0.97
P-126	577	8.0	250.99	120.0	1.60	0.95
P-206	427	12.0	852.09	123.0	2.42	0.89
P-197	510	8.0	248.44	120.0	1.59	0.82

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-277	265	8.0	352.81	120.0	2.25	0.81
P-212	376	12.0	862.92	123.0	2.45	0.80
P-210	362	12.0	861.01	123.0	2.44	0.77
P-28	409	8.0	268.16	120.0	1.71	0.76
P-193	352	12.0	812.60	123.0	2.31	0.67
P-27	366	8.0	266.89	120.0	1.70	0.67
P-262	333	12.0	804.31	120.0	2.28	0.65
P-263	330	12.0	803.04	120.0	2.28	0.65
P-33	337	8.0	272.62	120.0	1.74	0.64
P-194	335	12.0	811.96	123.0	2.30	0.64
P-140	313	12.0	809.41	123.0	2.30	0.59
P-37	428	12.0	682.04	123.0	1.93	0.59
P-204	274	12.0	850.82	123.0	2.41	0.57
P-224	282	8.0	278.99	120.0	1.78	0.56
P-243	524	8.0	198.72	120.0	1.27	0.56
P-48	504	8.0	202.54	120.0	1.29	0.55
P-46	473	8.0	201.27	120.0	1.28	0.51
P-98	471	12.0	589.00	123.0	1.67	0.50
P-240	485	8.0	193.62	120.0	1.24	0.49
P-41	354	12.0	680.76	123.0	1.93	0.49
P-92	437	12.0	586.45	123.0	1.66	0.46
P-222	233	8.0	272.62	120.0	1.74	0.44
P-285	210	12.0	855.27	123.0	2.43	0.44
P-241	423	8.0	196.17	120.0	1.25	0.44
P-87	410	12.0	585.17	123.0	1.66	0.43
P-99	371	12.0	590.27	123.0	1.67	0.39
P-242	371	8.0	196.81	120.0	1.26	0.39
P-132	490	8.0	168.18	120.0	1.07	0.38
P-200	177	12.0	844.45	123.0	2.40	0.36
P-167	335	12.0	582.63	123.0	1.65	0.35
P-25	188	8.0	265.61	120.0	1.70	0.34
P-239	327	8.0	192.35	120.0	1.23	0.33
P-137	410	8.0	164.36	120.0	1.05	0.31
P-138	388	8.0	162.44	120.0	1.04	0.28
P-11	486	8.0	142.79	120.0	0.91	0.28
P-17	413	8.0	144.70	120.0	0.92	0.24

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-272	49	8.0	453.01	120.0	2.89	0.24
P-24	127	8.0	263.70	120.0	1.68	0.23
P-134	242	8.0	164.99	120.0	1.05	0.18
P-225	81	12.0	871.84	123.0	2.47	0.18
P-237	168	8.0	191.07	120.0	1.22	0.17
P-125	479	8.0	105.93	120.0	0.68	0.16
P-205	56	12.0	854.00	123.0	2.42	0.12
P-273	363	8.0	100.20	120.0	0.64	0.11
P-9	27	12.0	1,134.35	123.0	3.22	0.09
P-198	59	8.0	247.17	120.0	1.58	0.09
P-122	284	8.0	104.02	120.0	0.66	0.09
P-196	484	8.0	75.81	120.0	0.48	0.09
P-176	499	8.0	74.53	120.0	0.48	0.09
P-95	69	12.0	587.72	123.0	1.67	0.07
P-182	395	8.0	76.44	120.0	0.49	0.07
P-133	88	8.0	166.90	120.0	1.07	0.07
P-129	41	8.0	248.44	120.0	1.59	0.07
P-211	29	12.0	864.19	123.0	2.45	0.06
P-207	27	12.0	859.10	123.0	2.44	0.06
P-119	150	8.0	104.02	120.0	0.66	0.05
P-30	25	8.0	272.62	120.0	1.74	0.05
P-130	25	8.0	248.44	120.0	1.59	0.04
P-166	17	12.0	585.17	123.0	1.66	0.02
P-120	27	8.0	104.02	120.0	0.66	0.01
P-185	292	8.0	2.55	120.0	0.02	0.00
P-220	431	8.0	1.27	120.0	0.01	0.00
P-215	241	8.0	3.82	120.0	0.02	0.00
P-252	491	8.0	1.27	120.0	0.01	0.00
P-64	225	8.0	1.27	120.0	0.01	0.00
P-65	169	8.0	0.00	120.0	0.00	0.00
P-66	324	8.0	1.27	120.0	0.01	0.00
P-67	37	12.0	7.64	123.0	0.02	0.00
P-68	479	12.0	5.73	123.0	0.02	0.00
P-69	342	8.0	1.91	120.0	0.01	0.00
P-74	238	8.0	1.91	120.0	0.01	0.00
P-76	834	8.0	1.27	120.0	0.01	0.00

Label	Length (ft)	Diameter (in)	Flow (Absolute) (gpm)	Hazen-Williams C	Velocity (Maximum) (ft/s)	Headloss (ft)
P-77	350	8.0	1.91	120.0	0.01	0.00
P-78	381	8.0	1.91	120.0	0.01	0.00
P-82	376	8.0	2.55	120.0	0.02	0.00
P-100	356	8.0	1.27	120.0	0.01	0.00
P-144	282	12.0	5.10	123.0	0.01	0.00
P-145	293	12.0	3.82	123.0	0.01	0.00
P-148	26	8.0	3.82	120.0	0.02	0.00
P-149	140	8.0	3.82	120.0	0.02	0.00
P-151	177	8.0	0.00	120.0	0.00	0.00
P-153	304	8.0	2.55	120.0	0.02	0.00
P-163	376	8.0	0.64	120.0	0.00	0.00
P-165	17	12.0	2.55	123.0	0.01	0.00
P-175	228	8.0	1.27	120.0	0.01	0.00
P-186	376	8.0	0.64	120.0	0.00	0.00
P-187	492	8.0	1.27	120.0	0.01	0.00
P-201	57	8.0	3.18	120.0	0.02	0.00
P-202	315	8.0	1.91	120.0	0.01	0.00
P-216	200	8.0	2.55	120.0	0.02	0.00
P-219	79	8.0	1.91	120.0	0.01	0.00
P-236	420	8.0	0.64	120.0	0.00	0.00
P-253	22	8.0	1.27	120.0	0.01	0.00
P-255	33	6.0	0.00	130.0	0.00	0.00
P-257	60	6.0	0.00	130.0	0.00	0.00
P-258	52	6.0	0.00	130.0	0.00	0.00
P-259	677	8.0	1.27	120.0	0.01	0.00
P-260	28	8.0	1.27	120.0	0.01	0.00
P-261	38	6.0	0.00	130.0	0.00	0.00
P-276	42	8.0	1.27	120.0	0.01	0.00
P-282	849	8.0	1.27	120.0	0.01	0.00
P-283	509	8.0	0.64	120.0	0.00	0.00

**Saddle Ranch Master Utility Report**  
**Water System Demands**

Junction	# Units Served	Average Day (GPD)	Average Day (GPM)	Max Day (GPD)	Max Day (GPM)
1	2	750	0.52	1,838	1.28
2	3	1,125	0.78	2,756	1.91
3	4	1,500	1.04	3,675	2.55
4	2	750	0.52	1,838	1.28
9	0	0	0.00	0	0.00
10	3	1,125	0.78	2,756	1.91
11	2	750	0.52	1,838	1.28
14	3	1,125	0.78	2,756	1.91
18	2	750	0.52	1,838	1.28
19	0	0	0.00	0	0.00
20	1	375	0.26	919	0.64
22	2	750	0.52	1,838	1.28
25	0	0	0.00	0	0.00
26	3	1,125	0.78	2,756	1.91
27	2	750	0.52	1,838	1.28
29	2	750	0.52	1,838	1.28
30	3	1,125	0.78	2,756	1.91
31	0	0	0.00	0	0.00
32	0	0	0.00	0	0.00
35	6	2,250	1.56	5,513	3.83
38	0	0	0.00	0	0.00
42	2	750	0.52	1,838	1.28
43	0	0	0.00	0	0.00
44	4	1,500	1.04	3,675	2.55
45	3	1,125	0.78	2,756	1.91
48	2	750	0.52	1,838	1.28
50	4	1,500	1.04	3,675	2.55
54	3	1,125	0.78	2,756	1.91
56	0	0	0.00	0	0.00
61	0	0	0.00	0	0.00
64	2	750	0.52	1,838	1.28
65	0	0	0.00	0	0.00
66	2	750	0.52	1,838	1.28
67	0	0	0.00	0	0.00
68	3	1,125	0.78	2,756	1.91
69	0	0	0.00	0	0.00
70	0	0	0.00	0	0.00
71	0	0	0.00	0	0.00
72	2	750	0.52	1,838	1.28
73	3	1,125	0.78	2,756	1.91
74	3	1,125	0.78	2,756	1.91
75	2	750	0.52	1,838	1.28
76	3	1,125	0.78	2,756	1.91
77	3	1,125	0.78	2,756	1.91
80	3	1,125	0.78	2,756	1.91
84	0	0	0.00	0	0.00
85	0	0	0.00	0	0.00
90	2	750	0.52	1,838	1.28
93	2	750	0.52	1,838	1.28
94	0	0	0.00	0	0.00
97	2	750	0.52	1,838	1.28



Junction	# Units Served	Average Day (GPD)	Average Day (GPM)	Max Day (GPD)	Max Day (GPM)
100	2	750	0.52	1,838	1.28
105	2	750	0.52	1,838	1.28
109	4	1,500	1.04	3,675	2.55
112	5	1,875	1.30	4,594	3.19
116	6	2,250	1.56	5,513	3.83
117	0	0	0.00	0	0.00
118	0	0	0.00	0	0.00
120	3	1,125	0.78	2,756	1.91
125	4	1,500	1.04	3,675	2.55
126	0	0	0.00	0	0.00
127	0	0	0.00	0	0.00
128	0	0	0.00	0	0.00
129	2	750	0.52	1,838	1.28
130	1	375	0.26	919	0.64
133	1	375	0.26	919	0.64
134	2	750	0.52	1,838	1.28
135	4	1,500	1.04	3,675	2.55
136	3	1,125	0.78	2,756	1.91
140	0	0	0.00	0	0.00
141	2	750	0.52	1,838	1.28
144	0	0	0.00	0	0.00
145	0	0	0.00	0	0.00
147	2	750	0.52	1,838	1.28
149	0	0	0.00	0	0.00
153	2	750	0.52	1,838	1.28
154	2	750	0.52	1,838	1.28
155	3	1,125	0.78	2,756	1.91
157	2	750	0.52	1,838	1.28
159	5	1,875	1.30	4,594	3.19
160	1	375	0.26	919	0.64
161	2	750	0.52	1,838	1.28
162	0	0	0.00	0	0.00
167	3	1,125	0.78	2,756	1.91
170	2	750	0.52	1,838	1.28
176	1	375	0.26	919	0.64
179	2	750	0.52	1,838	1.28
180	1	375	0.26	919	0.64
185	2	750	0.52	1,838	1.28
187	1	375	0.26	919	0.64
190	2	750	0.52	1,838	1.28
191	2	750	0.52	1,838	1.28
194	2	750	0.52	1,838	1.28
195	2	750	0.52	1,838	1.28
196	2	750	0.52	1,838	1.28
197	3	1,125	0.78	2,756	1.91
198	3	1,125	0.78	2,756	1.91
201	3	1,125	0.78	2,756	1.91
202	2	750	0.52	1,838	1.28
203	3	1,125	0.78	2,756	1.91
204	2	750	0.52	1,838	1.28
206	1	375	0.26	919	0.64
207	4	1,500	1.04	3,675	2.55
208	4	1,500	1.04	3,675	2.55
209	0	0	0.00	0	0.00

Junction	# Units Served	Average Day (GPD)	Average Day (GPM)	Max Day (GPD)	Max Day (GPM)
210	0	0	0.00	0	0.00
214	1	375	0.26	919	0.64
215	2	750	0.52	1,838	1.28
216	2	750	0.52	1,838	1.28
217	1	375	0.26	919	0.64
218	4	1,500	1.04	3,675	2.55
219	2	750	0.52	1,838	1.28
220	2	750	0.52	1,838	1.28
221	3	1,125	0.78	2,756	1.91
225	0	0	0.00	0	0.00
227	0	0	0.00	0	0.00
229	2	750	0.52	1,838	1.28
230	0	0	0.00	0	0.00
231	0	0	0.00	0	0.00
232	0	0	0.00	0	0.00
233	0	0	0.00	0	0.00
234	0	0	0.00	0	0.00
235	1	375	0.26	919	0.64
236	1	375	0.26	919	0.64
238	3	1,125	0.78	2,756	1.91
239	3	1,125	0.78	2,756	1.91
<b>Total</b>	224	84,000	58.33	205,800	142.92

**APPENDIX C**  
**REFERENCE MATERIAL**

# Hydraulic Analysis Report Modeling Criteria

## Junction Inputs

### Water Demands

Land use categories with typical densities and water demands are summarized in Tables 1 through 4.

Specific land use information with estimated dwelling units per acre should be use when available. If the number of dwelling units per acre is not known, the demand rate for different land uses should be calculated on a per acre basis.

Based on a mix of 60% Residential, 30% Commercial and 10% Parks, the water demand for raw land without specific land use, should be 1800/Gal/Day/Acre.

Table 1 - Residential Demand			
Classification	DU/Acre	Avg Gal/Day/Unit	Avg Gal/Day/Acre
Multi Family	6+	290	1800
Medium Residential	6+	290	1800
Low Residential	2 to 5	475	1700
Very Low Residential	<2	700	750

Note: Dwelling Units per acre are based on use of 60% of an acre being buildable.

**Table 2 - Commercial Demand**

Classification	Avg Gal/Day/Acre
Retail	1500
Restaurant	3900
Office	1900
Lodging	2500
Convenience Grocery Stores	6500
Car Wash	9000
Storage/Warehouse	1700
Fitness Club	2500
Office/Industrial Average	1800
Raw Land w/out Specific Land Use	1800

**Table 3 - School Demand**

School Type	Average Acres	Average Gal/Day/Acre
Elementary School	10	2000
Middle School	15	2000
High School	40	2000

Note – School usage will vary depending upon installation of sports fields. The above use numbers are based on sports fields being installed. However, each school will vary and a more accurate water demand can be determined when the number and type of sports fields are determined for the individual site.

**Table 4 - Parks/Recreational Demand**

Use Type	Average Gal/Day/Acre
Golf Course	2200
Neighborhood Park	2200
Community Park	2200
Trail	100
Open Space	100

Input average day demands to model junctions. Input demands in the model should be expressed in million gallons per day, mgd. Model output demands can be expressed as mgd, and/or gpm. Demands should be entered only at junctions on pipes 16" or smaller, and only where demands are expected. Demands are not added at junctions on pipes greater than 16" as these pipes are typically transmission lines. Do not add demands on hydrant nodes, unless it is at the end of a street or cul de sac.

To model max day demands, use the maximum day to average day (MD/AD) peaking factors as shown in Table 5, or as determined by Water Planning & Design and as specified on HGL Response Form. Peaking factors are pressure zone specific.

**Table 5 - Peaking Factors**

Pressure Zone	MD/AD
BRGT	2.65
TMPL	2.65
NFLD	2.50
HILN	2.20
LOLN	2.00

Note: From 2009 Finished Water Master Plan Update

## Junction Elevation

Use proposed ground surface elevation

For elevations at hydrants, add 2 feet to the hydrant flange elevation

## Pipe Inputs

### Diameter

For DIP and PVC, use nominal diameters, for HDPE DR 9, use inside diameters.

HDPE DR 9 Nominal diameter, (inches)	Inside Diameter, ID, (inches)
6	5.274
8	6.917
12	10.090
16	13.302
20	16.528
24	19.722

### Roughness

Nominal Pipe Diameter (inches)	Hazen- Williams Roughness Coefficients (C)
6	118
8	120
12	123
16	124
24	126
36, 42	128
54	130

### Minor Losses

Enter minor losses on hydrant laterals only. Use 4.1 on hydrant laterals.

### Pressure Requirements

- Maintain a minimum pressure of 60 psi under maximum day demands.
- Maintain a minimum pressure of 20 psi under maximum day demands plus fire flow.
- Pressure should not exceed 180 psi. To avoid pressures greater than 180 psi, PRV's may be required. When pressure exceeds 170 psi, DIP is required. Contact Water Planning and Design if pressures exceed 170 psi.

### Head Loss and Velocity Requirements

- Size pipelines for the worst-case scenario of maximum day demand conditions plus fire flow.
- Maintain headloss less than or equal to 3 ft/1000 ft for 8", 12" and 16" pipelines, for maximum day conditions without fire flow.
- Desired velocities are <5 ft/sec for maximum day conditions.
- Desired maximum velocities of 20 ft/sec under maximum day conditions plus fire flow, or other emergency conditions.

## **Fire Flow Modeling Criteria**

Fire flow calculations will be required at all critical hydrants under full-build out conditions and partial build out conditions. Critical hydrants are typically those with the largest required fire flow, and/or the highest flange elevation, in each building area and/or phase. Modeled fire flows should be reduced by 10% then rounded down to whole hundred. For example, a modeled fire flow of 2,663 gpm reduced by 10% is 2,396.7 gpm, which rounded down to whole hundred is 2,300 gpm.