

City of Sumas														Future 2016 System
Node Demand Information:														Future 2016 System
January 18, 2011														
Node #	Location	Downstream Nodes	Node Location	2016 # of Services	Demand (gpm) per Node	SMALL USERS			Residential User PHD	# of Larg. Users	LARGE USER (gpm)	Major User #	PHD NODE DEMAND (gpm)	
						Cum. # of Services	Cum. MID	MID Node Demand (gpm)						
410	Edge View St, E of pumps		DE	9	7.5	9	31.0	31.0	29.6				29.62	
412	Spring St, E of pumps		DE	3	2.5	3	19.0	19.0	18.2				18.15	
257	Edge View & Spring St, E of	410, 412	DE	0	0.0	12	37.0	-13.0	-12.4				-12.42	
256	Border & Spring St, E of pu	257, 410, 412	loop	1	0.8	13	10.8	-26.2	-25.0				-25.04	
242	Kneuman, S of pumps		loop	0	0.0	0	0.0	0.0	0.0				0.00	
117	pumps		loop	0	0.0	0	0.0	0.0	0.0				0.00	
243	pumps		loop	0	0.0	0	0.0	0.0	0.0				0.00	
115	Border, W of Arthur		loop	0	0.0	0	0.0	0.0	0.0	1.0	6.5	47	6.47	
118	Border, W of Arthur		loop	1	0.8	1	0.8	0.8	0.8				0.79	
250	Kneuman, E of Spring St		loop	2	1.7	2	1.7	1.7	1.6				1.59	
119	Kneuman, S of Arthur		loop	7	5.8	7	5.8	5.8	5.6				5.55	
374	E end of Arthur's Way		DE	3	2.5	3	19.0	19.0	18.2				18.15	
373	W end of Arthur's Way		DE	4	3.3	4	21.0	21.0	20.1				20.06	
372	Arthur's Way, W of tanks	373, 374	DE	2	1.7	9	31.0	-9.0	-8.6				-8.60	
371	Border, W of tanks	372, 373, 374	loop	0	0.0	9	7.5	-23.5	-22.5				-22.48	
120	Border, near tanks		loop	1	0.8	1	0.8	0.8	0.8				0.79	
121	W Garfield, end of Wash Ave		loop	2	1.7	2	1.7	1.7	1.6				1.59	
122	Barbo Rd and Front St	382, 383, 384	loop	4	3.3	4	3.3	3.3	3.2	1.0	30.0	future user 2016	33.17	
123	Front St, Cedar Prime entrance		loop	2	1.7	2	1.7	1.7	1.6		30.0	future user 2016	31.59	
248	Front St, W side of IKO		loop	0	0.0	0	0.0	0.0	0.0				0.00	
400	IKO, hydrant W side		DE	0	0.0	0	0.0	0.0	0.0				0.00	
398	IKO	400	loop	0	0.0	0	0.0	0.0	0.0				0.00	
396	IKO		loop	1	0.8	1	0.8	0.8	0.8	1.0	118.9	#55 + future user 2016	118.88	
247	Front St, E side of IKO		loop	0	0.0	0	0.0	0.0	0.0				0.00	
124	E end Wash Ave, near tanks		loop	1	0.8	1	0.8	0.8	0.8				0.79	
378	Tank		loop	0	0.0	0	0.0	0.0	0.0				0.00	
272	Just E of tanks		loop	0	0.0	0	0.0	0.0	0.0				0.00	
274	Victoria Court, SE of tanks		loop	3	2.5	3	2.5	2.5	2.4				2.38	
275	Victoria Court, SE of tanks		loop	0	0.0	0	0.0	0.0	0.0				0.00	
125	Border, E of tanks		loop	0	0.0	0	0.0	0.0	0.0				0.00	
126	Border @ RR tracks		loop	2	1.7	2	1.7	1.7	1.6				1.59	
127	RR tracks N or W end of Cleveland		loop	0	0.0	0	0.0	0.0	0.0				0.00	
128	S end of Barkley Ave, E of H	fold 622 + 623	loop	3	2.5	3	2.5	2.5	2.4				2.38	
263	W. Garfield & N end of Bob Mitchell Way		loop	0	0.0	0	0.0	0.0	0.0				0.00	
129	N end of Bob Mitchell @ Garfield		loop	1	0.8	1	0.8	0.8	0.8				0.79	
130	Bob Mitchell btwn 2nd and 3rd		loop	0	0.0	0	0.0	0.0	0.0				0.00	
131	W 2nd St, E of Bob Mitchell		loop	3	2.5	3	2.5	2.5	2.4				2.38	
132	Locust St, btwn 2nd and 3rd, E of Bob Mit		DE	4	3.3	4	21.0	21.0	20.1				20.06	
133	Johnson St, N of W 3rd St	132	loop	3	2.5	7	5.8	-15.2	-14.5				-14.51	
134	RR and Garfield		loop	0	0.0	0	0.0	0.0	0.0				0.00	
251	Garfield, E of RR		loop	0	0.0	0	0.0	0.0	0.0	1.0	2.2	35	2.24	
270	W end of First St, N		DE	1	0.8	1	15.0	15.0	14.3				14.33	
269	W end of First St, S		DE	1	0.8	1	15.0	15.0	14.3				14.33	
135	W end of First St	269, 270	DE	1	0.8	3	19.0	-11.0	-10.5				-10.51	
252	First St btwn RR and Cherry	135, 269, 270	DE	0	0.0	3	19.0	0.0	0.0				0.00	
142	Cherry & First St	252, 135, 269	loop	2	1.7	5	4.2	-14.8	-14.2	1.0	3.7	40	-10.45	
116	RR and Second St	none	loop	0	0.0	0	0.0	0.0	0.0				0.00	
271	N of 2nd St, W of RR		DE	2	1.7	2	17.0	17.0	16.2				16.24	
136	2nd St btwn RR and Cherry	271	loop	2	1.7	4	3.3	-13.7	-13.1				-13.07	
138	Cherry St & Harrison		loop	0	0.0	0	0.0	0.0	0.0				0.00	
139	Cherry St & S of Harrison		loop	0	0.0	0	0.0	0.0	0.0	1.0	4.0	41	3.97	
140	Cherry St & Garfield		loop	1	0.8	1	0.8	0.8	0.8	1.0	4.5	44	5.25	
141	Cherry St & Cleveland	none	loop	3	2.5	3	2.5	2.5	2.4	1.0	4.2	42	6.62	
143	Cherry St & Second St		loop	3	2.5	3	2.5	2.5	2.4	1.0	2.3	36	4.69	
137	Boundary Ave, E of Cherry St		DE	2	1.7	2	17.0	17.0	16.2	1.0	3.6	38	19.86	
144	Sumas Ave, N of Harrison St	137	DE	1	0.8	3	19.0	2.0	1.9				1.91	
145	Sumas Ave & Harrison St	144, 137	loop	4	3.3	7	5.8	-13.2	-12.6				-12.60	
146	Cleveland & Sumas Ave		loop	3	2.5	3	2.5	2.5	2.4				2.38	
260	Cleveland & Sumas Ave		loop	2	1.7	2	1.7	1.7	1.6	1.0	11.7	50	13.32	
147	Garfield & Sumas		loop	12	10.0	12	10.0	10.0	9.5				9.52	
266	S of Garfield on Sumas		DE	2	1.7	2	17.0	17.0	16.2				16.24	
148	Garfield & Sumas	266	loop	2	1.7	4	3.3	-13.7	-13.1				-13.07	
149	First St & Sumas		loop	12	10.0	12	10.0	10.0	9.5				9.52	
150	Second St btwn Cherry & Sumas		loop	2	1.7	2	1.7	1.7	1.6				1.59	
151	Second St & Sumas		loop	4	3.3	4	3.3	3.3	3.2				3.17	
152	Btwn 2nd & 3rd, Btwn Cherry & Sumas		loop	2	1.7	2	1.7	1.7	1.6				1.59	
153	Sumas Ave, btwn 2nd & 3rd		loop	1	0.8	1	0.8	0.8	0.8				0.79	
154b	N of Harrison & Fisk		DE	2	1.7	2	17.0	17.0	16.2				16.24	
154a	N of Harrison & Fisk	154b	DE	0	0.0	2	17.0	0.0	0.0				0.00	
154	Harrison & Fisk	154a, 154b	loop	6	5.0	8	6.6	-10.4	-9.9				-9.90	
155	Cleveland & Fisk	none	loop	7	5.8	7	5.8	5.8	5.6				5.55	
157	Garfield & Fisk		loop	6	5.0	6	5.0	5.0	4.8				4.76	
158	Lawson & Harrison		loop	2	1.7	2	1.7	1.7	1.6				1.59	
159	Lawson & Cleveland	none	loop	6	5.0	6	5.0	5.0	4.8				4.76	
160	Lawson & Garfield		loop	8	6.6	8	6.6	6.6	6.3				6.35	
161	Lawson & First		loop	10	8.3	10	8.3	8.3	7.9				7.93	
162	Lawson & Second		loop	18	14.9	18	14.9	14.9	14.3				14.28	
168	E end of Harrison		DE	1	0.8	1	15.0	15.0	14.3				14.33	
163	Harrison, E of Lawson St	168	loop	1	0.8	2	1.7	-13.3	-12.7				-12.74	
164	Cleveland E of Lawson St		loop	4	3.3	4	3.3	3.3	3.2				3.17	

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						Cum. # of Services	Cum. MID	MID Node Demand (gpm)						
2016														
165	Garfield & Gough St		loop	5	4.2	5	4.2	4.2	4.0					3.97
166	First St & Gough St		loop	5	4.2	5	4.2	4.2	4.0					3.97
167	Second St S of Gough St		loop	8	6.6	8	6.6	6.6	6.3					6.35
169	Garfield St, E of Gough		loop	1	0.8	1	0.8	0.8	0.8					0.79
368	S end of Roosevelt		DE	6	5.0	6	25.0	25.0	23.9					23.89
367	Garfield St & Roosevelt Ct.	368	loop	2	1.7	8	6.6	-18.4	-17.5					-17.54
170	Garfield & Jefferson Ct.		loop	0	0.0	0	0.0	0.0	0.0					0.00
175	S end of Jefferson Ct		DE	5	4.2	5	23.0	23.0	22.0					21.97
171	Jefferson Ct & Lincoln Circle	175	loop	2	1.7	7	5.8	-17.2	-16.4					-16.42
173	E end Lincoln Circle		loop	6	5.0	6	5.0	5.0	4.8					4.76
172	Garfield & Wilson Lane		loop	3	2.5	3	2.5	2.5	2.4					2.38
265	E end Taylor Circle		DE	7	5.8	7	27.0	27.0	25.8					25.80
264	Wilson Lane & Taylor Circle	265	loop	7	5.8	14	11.6	-15.4	-14.7					-14.69
246	S end of Wilson Lane		DE	5	4.2	5	23.0	23.0	22.0					21.97
245	Wilson Lane	246	loop	6	5.0	11	9.1	-13.9	-13.2					-13.25
380	N of Garfield, E of Wilson Lane		DE	1	0.8	1	15.0	15.0	14.3					14.33
379	Garfield Rd, E of Wilson Lane	380	loop	0	0.0	1	0.8	-14.2	-13.5					-13.54
174	E end of Garfield		loop	2	1.7	2	1.7	1.7	1.6		172.3	SRWA Jones Road Connection		173.85
176	E end of First St.		loop	4	3.3	4	3.3	3.3	3.2					3.17
177	E end of Second St-3 apt buildings		loop	1	0.8	1	0.8	0.8	0.8					0.79
268	E end of Victoria St & Heron Lane		DE	2	1.7	2	17.0	17.0	16.2					16.24
178	N end of Victoria St	268	DE	1	0.8	3	19.0	2.0	1.9					1.91
179	Victoria St, N of Mitchell	178, 268	DE	0	0.0	3	19.0	0.0	0.0					0.00
180	Victoria St & Mitchell St	179, 178, 268	loop	2	1.7	5	4.2	-14.8	-14.2					-14.19
182	E of Victoria St, S of Mitchell		DE	3	2.5	3	19.0	19.0	18.2					18.15
181	E of Victoria St, S of Mitchell	182	loop	0	0.0	3	2.5	-16.5	-15.8					-15.77
183	Victoria St & Morton		loop	3	2.5	3	2.5	2.5	2.4					2.38
184	Rock Rd & Swartwood rd		loop	2	1.7	2	1.7	1.7	1.6					1.59
346	S end of Swartwood Rd		DE	7	5.8	7	27.0	27.0	25.8					25.80
330	Swartwood Rd & Rock Rd	346	loop	0	0.0	7	5.8	-21.2	-20.2					-20.24
349	Swartwood Rd & Rock Rd		loop	0	0.0	0	0.0	0.0	0.0		399.0	SRWA Rock Road Connection		398.98
185	Front St & Victoria St		loop	9	7.5	9	7.5	7.5	7.1					7.14
186	Mitchell Rd, W of Victoria St		loop	2	1.7	2	1.7	1.7	1.6					1.59
187	Morton Rd, W of Victoria St		loop	6	5.0	6	5.0	5.0	4.8					4.76
188	Front St btwn Hovel and Victoria		loop	25	20.8	25	20.8	20.8	19.8					19.83
715	Hovel Rd at ball fields		loop	28	23.2	28	23.2	23.2	22.2		179.4	SRWA Hovel Road Connection		201.56
714		New Ballpark Sprinklers	DE	1	0.8	1	15.0	15.0	14.3	1.0	8.1	48		22.45
713			DE	0	0.0	1	15.0	0.0	0.0					0.00
712		714,713,715	loop	60	49.8	61	50.6	35.6	34.1				future user 2016	34.06
190	Hovel Rd N of ball field		loop	7	5.8	7	5.8	5.8	5.6					5.55
189	Front St & Hovel Rd		loop	6	5.0	6	5.0	5.0	4.8					4.76
191	S of Front St, S of S end of Lawson		loop	2	1.7	2	1.7	1.7	1.6					1.59
193	Lawson St S side Front St		loop	0	0.0	0	0.0	0.0	0.0					0.00
365	Boon St S side Front St	none	loop	10	8.3	10	8.3	8.3	7.9	1.0	3.7	39		-11.63
194	Boon Street complex		loop	10	8.3	10	8.3	8.3	7.9					7.93
791	Boon Street complex		loop	0	0.0	0	0.0	0.0	0.0	1.0	4.4	43		4.44
726	Boon Street complex		loop	20	16.6	20	16.6	16.6	15.9					15.87
721	Noble & Lawson		DE	3	2.5	3	19.0	19.0	18.2					18.15
723	Noble & Lawson	721	loop	5	4.2	8	6.6	-12.4	-11.8					-11.81
724	Boon St N side Front St		DE	4	3.3	4	21.0	21.0	20.1					20.06
192	Lawson St N side Front St	724	loop	0	0.0	4	3.3	-17.7	-16.9					-16.89
195	Lawson St N of Front St		loop	3	2.5	3	2.5	2.5	2.4					2.38
196	Lawson & Morton		loop	3	2.5	3	2.5	2.5	2.4					2.38
197	Mitchell, E of Lawson		loop	1	0.8	1	0.8	0.8	0.8					0.79
198	Lawson & Mitchell		loop	3	2.5	3	2.5	2.5	2.4					2.38
255	Gough St N of Mitchell	end	DE	1	0.8	1	15.0	15.0	14.3					14.33
200	Gough St N of Mitchell	255	loop	3	2.5	4	3.3	-11.7	-11.2					-11.16
199	Lawson btwn Mitch & Vanc		loop	1	0.8	1	0.8	0.8	0.8					0.79
201	Lawson & Vancouver		loop	6	5.0	6	5.0	5.0	4.8					4.76
202	Lawson & Columbia		loop	3	2.5	3	2.5	2.5	2.4					2.38
204	E end of Third St		DE	5	4.2	5	23.0	23.0	22.0					21.97
203	Third St & Lawson	204	loop	7	5.8	12	10.0	-13.0	-12.5					-12.46
205	Third St btwn Lawson & Sumas		loop	3	2.5	3	2.5	2.5	2.4					2.38
206	Third St & Sumas		loop	3	2.5	3	2.5	-2.5	2.4					2.38
207	Third St & Cherry		loop	1	0.8	1	0.8	0.8	0.8	1.0	15.2	52		15.99
208	Cherry St just S of Columbia		loop	0	0.0	0	0.0	0.0	0.0	1.0	13.8	51		13.82
209	W end of Columbia @ Cherry		DE	7	5.8	7	27.0	27.0	25.8					25.80
261	Columbia btwn Cher & Sumas	209	DE	0	0.0	7	27.0	0.0	0.0					0.00
211	Columbia & Sumas	261, 209	loop	2	1.7	9	7.5	-19.5	-18.7					-18.66
210	Sumas btwn Columbia & Third		loop	1	0.8	1	0.8	0.8	0.8					0.79
213	Vancouver near Cherry St		DE	4	3.3	4	21.0	21.0	20.1					20.06
253	Vancouver near Sumas Ave	213	DE	0	0.0	4	21.0	0.0	0.0					0.00
212	Vancouver & Sumas Ave	253, 213	loop	6	5.0	10	8.3	-12.7	-12.1					-12.13
214	Cherry St & W end of Vancouver		loop	1	0.8	1	0.8	0.8	0.8					0.79
215	W end Mitchell by Cherry		DE	6	5.0	6	25.0	25.0	23.9					23.89
262	Mitchell btwn Cher & Sumas	215	DE	0	0.0	6	25.0	0.0	0.0					0.00

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						Cum. # of Services	Cum. MID	MID Node Demand (gpm)																						
2016																														
216	Mitchell & Sumas	262, 215	loop	6	5.0	12	10.0	-15.0	-14.4				-14.37																	
217	E end of alley E of Sumas btwn Morton & Sumas		DE	1	0.8	1	15.0	15.0	14.3				14.33																	
218	Sumas btwn Morton&Mitch 217		loop	4	3.3	5	4.2	-10.8	-10.4				-10.36																	
219	E of Cherry St and alley N of Morton		loop	5	4.2	5	4.2	4.2	4.0	1.0	4.6	45	3.97																	
220	W side of Cherry No of Morton		loop	2	1.7	2	1.7	1.7	1.6				6.15																	
221	Morton & Cherry		loop	2	1.7	2	1.7	1.7	1.6				1.59																	
224	Cherry S of Morton		loop	3	2.5	3	2.5	2.5	2.4				2.38																	
222	Morton btwn Cherry and Sumas		loop	3	2.5	3	2.5	2.5	2.4				2.38																	
254	Morton btwn Cherry and Sumas		loop	0	0.0	0	0.0	0.0	0.0				0.00																	
223	Morton & Sumas		loop	1	0.8	1	0.8	0.8	0.8				0.79																	
224	Sumas S of Morton		loop	3	2.5	3	2.5	2.5	2.4				2.38																	
225	Sumas Ave & Front St	none	loop	4	3.3	4	3.3	3.3	3.2				3.17																	
226	RR and Front St		loop	1	0.8	1	0.8	0.8	0.8				0.79																	
227	SR9, W of Noble St		DE	2	1.7	2	17.0	17.0	16.2				16.24																	
228	Noble St & Sumas Ave	227	loop	1	0.8	3	2.5	-14.5	-13.9				-13.86																	
229	Sumas Ave N of Noble		loop	5	4.2	5	4.2	4.2	4.0				3.97																	
230	S end of Sumas Ave		loop	3	2.5	3	2.5	2.5	2.4				2.38																	
729	SR9 at Rodeo Grounds		DE	2	1.7	2	17.0	17.0	16.2				16.24																	
728	SR9 at Rodeo Grounds	729	loop	0	0.0	2	1.7	-15.3	-14.7	1.0	4.9	46	-9.77																	
267	S end of Cherry/ SRWA connection		loop	14	11.6	14	11.6	11.6	11.1	1.0	308.0	#53 + SRWA Easterbrook Rond Connection	319.09																	
231	Front St & Johnson		loop	1	0.8	1	0.8	0.8	0.8				0.79																	
232	S of Front at go carts		loop	3	2.5	3	2.5	2.5	2.4				2.38																	
233	Elenbaas		loop	0	0.0	0	0.0	0.0	0.0	1.0	20.6	54	20.57																	
234	Johnson St N of Front St		loop	2	1.7	2	1.7	1.7	1.6				1.59																	
235	N of Front St, W of Johnson St		loop	0	0.0	0	0.0	0.0	0.0				0.00																	
236	Johnson St N of Front St		loop	1	0.8	1	0.8	0.8	0.8				0.79																	
237	Johnson St N of Front St		loop	1	0.8	1	0.8	0.8	0.8				0.79																	
239	Teal Jones		DE	1	0.8	1	15.0	15.0	14.3				14.33																	
238	Teal Jones	239	loop	0	0.0	1	0.8	-14.2	-13.5	1.0	9.2	49	-4.32																	
240	Teal Jones		loop	0	0.0	0	0.0	0.0	0.0				0.00																	
241	Teal Jones		loop	1	0.8	1	0.8	0.8	0.8				0.79																	
273	PSE		DE	1	0.8	1	15.0	15.0	14.3				14.33																	
381	Front St @ Socco		DE	1	0.8	1	15.0	15.0	14.3				14.33																	
258	Front St @ Cedar Prime	273, 381	loop	0	0.0	2	1.7	-28.3	-27.1	1.0	2.8	37	-24.24																	
394	South end of Socco		DE	0	0.0	0	0.0	0.0	0.0				0.00																	
392	S end Darrell Jones	394	DE	0	0.0	0	0.0	0.0	0.0				0.00																	
390	Front St & Darrell Jones	392, 394	DE	0	0.0	0	0.0	0.0	0.0				0.00																	
388	Front St E of IKO	390, 392, 394	DE	0	0.0	0	0.0	0.0	0.0				0.00																	
386	Hesselgrave E of IKO	388, 390, 392	loop	0	0.0	0	0.0	0.0	0.0				0.00																	
370	Border Patrol S of Front St		DE	1	0.8	1	15.0	15.0	14.3				14.33																	
369	Front St @ Border Patrol	370	loop	0	0.0	1	0.8	-14.2	-13.5				-13.34																	
				637	528.9			528.9	505	22.0	1,368		1,873																	
				521		2010 # of Connections							1,040 SRWA																	
				116		additional connections							238 2010 Large Users																	
						Maximum Instantaneous Demand - calculated for entire system						90 New Large Users																		
						System MID (gpm)						1,368																		
						528.9																								
						(Formula from 1983 Sizing Guidelines table)																								
						MID=0.7*(# of connections -100)+153																								
						MDD = 2 * ADD																								
						ADD = gal/day (Residential ADD from Calculations)																								
						MDD =																								
						PHD = gpm																								
						PHD/MID=																								
						Equation 5-1: Determine PHD																								
						PHD = (ADD/1440) [(C)(N) + F] + 18																								
						Where PHD = Peak Hourly Demand, (gallons per minute)																								
						C = Coefficient Associated with Ranges of ERUs																								
						N = Number of ERUs																								
						F = Factor Associated with Ranges of ERUs																								
						MDD = Maximum Day Demand, (gpd/ERU)																								
						Table 5-1																								
						<table border="1"> <thead> <tr> <th>Number of ERUs (N)</th> <th>C</th> <th>F</th> </tr> </thead> <tbody> <tr> <td>15 - 50</td> <td>3.0</td> <td>0</td> </tr> <tr> <td>51 - 100</td> <td>2.5</td> <td>25</td> </tr> <tr> <td>101 - 250</td> <td>2.0</td> <td>75</td> </tr> <tr> <td>251 - 500</td> <td>1.8</td> <td>125</td> </tr> <tr> <td>> 500</td> <td>1.6</td> <td>225</td> </tr> </tbody> </table>						Number of ERUs (N)	C	F	15 - 50	3.0	0	51 - 100	2.5	25	101 - 250	2.0	75	251 - 500	1.8	125	> 500	1.6	225	
Number of ERUs (N)	C	F																												
15 - 50	3.0	0																												
51 - 100	2.5	25																												
101 - 250	2.0	75																												
251 - 500	1.8	125																												
> 500	1.6	225																												

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***** KYPIPE 5 *****
*
*           Pipe Network Modeling Software
*
*           Copyrighted by KYPIPE LLC
*           Version 5 - February 2010
*
*****
    
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Date & Time: Mon Jan 24 11:40:03 2011

Master File : p:\s\sums0001\0600info\water\steady state\2011-01-24 2016 ss\2011-01-24 2016 ss.P2K

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*****
SUMMARY OF ORIGINAL DATA
*****
    
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Tank Diameter: 60 ft; Water Elevation 201 ft.
 No Pumps ON

EXISTING PIPE SYSTEM

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES		LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
	#1	#2				
P-379	O-Pump 5	379B	2.00	6.00	130.0000	0.00
P-380	O-Pump 4R	380B	2.00	6.00	130.0000	0.00
P-382	146	155	343.00	6.00	130.0000	0.00
P-383	119	121	1154.00	2.00	130.0000	0.00
P-384	120	124	294.00	10.00	130.0000	0.00
P-385	125	126	390.00	6.00	100.0000	0.00
P-386	126	127	385.00	6.00	130.0000	0.00
P-387	127	139	418.00	6.00	130.0000	0.00
P-388	129	130	1244.00	8.00	130.0000	0.00
P-389	129	131	628.00	8.00	100.0000	0.00
P-390	133	131	137.00	8.00	100.0000	0.00
P-391	133	132	591.00	6.00	130.0000	0.00
P-392	237	133	530.00	8.00	100.0000	0.00
P-394	136	143	127.00	6.00	100.0000	0.00
P-395	144	137	325.00	2.00	130.0000	0.00
P-396	139	138	125.00	6.00	130.0000	0.00
P-397	138	145	367.00	4.00	100.0000	0.00
P-398	139	140	154.00	6.00	130.0000	0.00
P-399	140	141	300.00	6.00	130.0000	0.00
P-400	141	147	361.00	8.00	130.0000	0.00
P-401	141	142	313.00	6.00	130.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-402	143	142	302.00	6.00	130.0000	0.00
P-403	145	144	144.00	6.00	130.0000	0.00
P-404	145	146	316.00	6.00	130.0000	0.00
P-405	147	146	268.00	6.00	130.0000	0.00
P-406	147	148	139.00	8.00	130.0000	0.00
P-407	148	157	255.00	8.00	130.0000	0.00
P-408	142	149	499.00	4.00	140.0000	0.00
P-409	143	150	286.00	4.00	100.0000	0.00
P-410	150	151	215.00	4.00	100.0000	0.00
P-411	150	152	158.00	2.00	80.0000	0.00
P-412	152	153	211.00	2.00	100.0000	0.00
P-413	153	206	144.00	6.00	100.0000	0.00
P-414	151	153	150.00	6.00	100.0000	0.00
P-415	145	154	354.00	4.00	100.0000	0.00
P-416	154	158	365.00	4.00	100.0000	0.00
P-417	155	159	380.00	6.00	130.0000	0.00
P-418	140	260	239.00	2.00	130.0000	0.00
P-419	157	160	326.00	8.00	130.0000	0.00
P-420	149	161	606.00	2.00	100.0000	0.00
P-421	151	162	611.00	4.00	100.0000	0.00
P-422	158	163	371.00	2.00	130.0000	0.00
P-423	158	159	286.00	4.00	100.0000	0.00
P-424	159	164	360.00	4.00	130.0000	0.00
P-425	159	160	288.00	4.00	100.0000	0.00
P-426	160	165	345.00	8.00	130.0000	0.00
P-427	161	160	329.00	4.00	100.0000	0.00
P-428	161	166	359.00	6.00	130.0000	0.00
P-429	162	161	284.00	4.00	100.0000	0.00
P-430	162	167	332.00	4.00	100.0000	0.00
P-431	203	162	291.00	4.00	100.0000	0.00
P-432	163	168	810.00	2.00	130.0000	0.00
P-433	379	380	156.00	2.00	130.0000	0.00
P-434	166	176	352.00	6.00	130.0000	0.00
P-435	167	177	370.00	4.00	100.0000	0.00
P-436	170	172	490.00	8.00	130.0000	0.00
P-437	172	379	182.00	8.00	130.0000	0.00
P-438	170	171	201.00	6.00	130.0000	0.00
P-439	171	175	140.00	6.00	130.0000	0.00
P-440	171	173	156.00	6.00	130.0000	0.00
P-441	179	178	321.00	4.00	100.0000	0.00
P-442	180	179	325.00	4.00	100.0000	0.00
P-443	100	181	169.00	6.00	130.0000	0.00
P-444	181	182	237.00	2.00	130.0000	0.00
P-445	181	183	148.00	6.00	130.0000	0.00
P-446	183	185	344.00	6.00	130.0000	0.00
P-447	185	184	373.00	8.00	100.0000	0.00
P-448	186	180	473.00	6.00	100.0000	0.00
P-449	186	187	320.00	4.00	100.0000	0.00
P-450	187	183	483.00	4.00	100.0000	0.00
P-451	188	185	540.00	6.00	100.0000	0.00
P-452	189	188	315.00	10.00	100.0000	0.00
P-453	189	190	428.00	8.00	100.0000	0.00
P-454	195	196	173.00	6.00	130.0000	0.00
P-455	196	198	341.00	6.00	130.0000	0.00
P-456	197	186	472.00	6.00	100.0000	0.00
P-457	198	197	490.00	6.00	100.0000	0.00
P-458	199	198	168.00	4.00	100.0000	0.00
P-459	199	200	493.00	4.00	100.0000	0.00
P-460	201	199	168.00	4.00	100.0000	0.00
P-461	202	201	390.00	4.00	100.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-462	203	202	397.00	4.00	100.0000	0.00
P-463	203	204	504.00	6.00	80.0000	0.00
P-464	206	205	404.00	6.00	130.0000	0.00
P-465	205	203	203.00	6.00	130.0000	0.00
P-466	210	206	237.00	6.00	100.0000	0.00
P-467	379	174	699.00	8.00	130.0000	0.00
P-468	207	208	505.00	6.00	100.0000	0.00
P-469	208	214	234.00	6.00	100.0000	0.00
P-470	211	210	194.00	6.00	100.0000	0.00
P-471	212	211	311.00	6.00	100.0000	0.00
P-472	212	201	520.00	4.00	130.0000	0.00
P-473	214	220	510.00	6.00	100.0000	0.00
P-474	216	212	334.00	6.00	100.0000	0.00
P-475	216	198	516.00	4.00	100.0000	0.00
P-476	218	216	178.00	6.00	100.0000	0.00
P-477	218	217	134.00	1.00	130.0000	0.00
P-478	219	218	506.00	6.00	130.0000	0.00
P-479	244	220	328.00	6.00	130.0000	0.00
P-480	218	223	162.00	6.00	100.0000	0.00
P-481	229	191	527.00	2.00	120.0000	0.00
P-482	223	224	169.00	6.00	100.0000	0.00
P-483	200	197	166.00	4.00	120.0000	0.00
P-484	224	225	191.00	6.00	100.0000	0.00
P-485	225	193	522.00	10.00	100.0000	0.00
P-486	225	192	546.00	4.00	130.0000	0.00
P-487	226	225	553.00	10.00	100.0000	0.00
P-488	228	227	473.00	2.00	80.0000	0.00
P-489	225	229	112.00	8.00	80.0000	0.00
P-490	228	230	378.00	8.00	80.0000	0.00
P-491	229	228	152.00	8.00	80.0000	0.00
P-492	231	226	740.00	12.00	130.0000	0.00
P-493	232	414	486.00	8.00	130.0000	0.00
P-494	233	235	537.00	8.00	130.0000	0.00
P-495	234	231	265.00	8.00	100.0000	0.00
P-496	123	231	1252.00	10.00	130.0000	0.00
P-497	235	234	268.00	8.00	130.0000	0.00
P-498	234	236	489.00	8.00	100.0000	0.00
P-499	236	237	614.00	8.00	100.0000	0.00
P-500	238	235	333.00	8.00	130.0000	0.00
P-501	238	239	289.00	8.00	130.0000	0.00
P-502	240	238	310.00	8.00	130.0000	0.00
P-503	241	240	762.00	8.00	130.0000	0.00
P-504	130	241	940.00	8.00	130.0000	0.00
P-505	192	195	136.00	6.00	130.0000	0.00
P-506	124	T-1	104.00	10.00	100.0000	0.00
P-507	R-5	379A	24.00	10.00	130.0000	0.00
P-508	379B	117	80.00	10.00	130.0000	0.00
P-509	117	242	231.00	10.00	130.0000	0.00
P-510	242	122	3449.00	10.00	130.0000	0.00
P-511	243	117	206.00	10.00	130.0000	0.00
P-512	R-4R	380A	24.00	10.00	130.0000	0.00
P-513	380B	243	80.00	10.00	116.0000	0.00
P-514	226	244	195.00	6.00	100.0000	0.00
P-515	244	224	554.00	2.00	130.0000	0.00
P-516	177	176	279.00	6.00	130.0000	0.00
P-517	163	164	264.00	4.00	120.0000	0.00
P-518	223	196	514.00	2.00	120.0000	0.00
P-519	173	245	344.00	6.00	130.0000	0.00
P-520	245	246	196.00	6.00	120.0000	0.00
P-522	248	247	277.00	10.00	130.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-523	131	136	662.00	8.00	100.0000	0.00
P-524	207	136	374.00	6.00	100.0000	0.00
P-525	118	250	677.00	4.00	130.0000	0.00
P-526	250	119	1439.00	2.00	130.0000	0.00
P-527	251	141	123.00	8.00	130.0000	0.00
P-528	134	251	143.00	8.00	140.0000	0.00
P-529	142	252	100.00	6.00	130.0000	0.00
P-530	252	135	57.00	2.00	100.0000	0.00
P-531	212	253	95.00	6.00	100.0000	0.00
P-532	253	213	369.00	4.00	140.0000	0.00
P-533	254	223	223.00	6.00	100.0000	0.00
P-534	222	254	137.00	4.00	130.0000	0.00
P-535	200	255	134.00	1.00	120.0000	0.00
P-536	191	193	103.00	2.00	130.0000	0.00
P-537	243	256	1476.00	10.00	130.0000	0.00
P-538	256	110	671.00	10.00	130.0000	0.00
P-539	256	257	148.00	6.00	130.0000	0.00
P-540	123	258	62.00	8.00	130.0000	0.00
P-541	258	232	838.00	8.00	130.0000	0.00
P-542	258	381	347.00	8.00	130.0000	0.00
P-543	260	146	132.00	6.00	130.0000	0.00
P-545	211	261	94.00	6.00	100.0000	0.00
P-546	261	209	296.00	4.00	140.0000	0.00
P-547	216	262	80.00	4.00	100.0000	0.00
P-548	262	215	226.00	2.00	100.0000	0.00
P-549	121	263	792.00	8.00	130.0000	0.00
P-550	128	263	136.00	8.00	130.0000	0.00
P-551	263	129	183.00	8.00	100.0000	0.00
P-552	245	264	233.00	6.00	120.0000	0.00
P-553	264	172	184.00	6.00	130.0000	0.00
P-554	264	265	202.00	6.00	130.0000	0.00
P-555	148	266	159.00	6.00	130.0000	0.00
P-556	178	268	813.00	2.00	130.0000	0.00
P-557	135	269	144.00	2.00	130.0000	0.00
P-558	135	270	134.00	2.00	130.0000	0.00
P-559	136	271	112.00	2.00	130.0000	0.00
P-560	124	272	288.00	10.00	100.0000	0.00
P-561	272	125	298.00	12.00	100.0000	0.00
P-562	258	417	740.00	10.00	130.0000	0.00
P-563	272	274	384.00	1.00	130.0000	0.00
P-564	274	128	246.00	1.00	130.0000	0.00
P-565	125	275	405.00	0.00	100.0000	0.00
P-566	275	128	326.00	8.00	100.0000	0.00
P-567	220	219	46.00	6.00	130.0000	0.00
P-568	414	233	435.00	8.00	130.0000	0.00
P-569	414	416	261.00	8.00	130.0000	0.00
P-570	417	273	429.00	10.00	130.0000	0.00
P-571	417	418	319.00	8.00	130.0000	0.00
P-637	330	349	180.00	8.00	130.0000	0.00
P-640	184	330	52.00	8.00	100.0000	0.00
P-645	330	346	648.00	8.00	130.0000	0.00
P-688	128	134	643.00	8.00	130.0000	0.00
P-689	165	169	351.00	8.00	130.0000	0.00
P-690	193	192	47.00	6.00	130.0000	0.00
P-691	365	189	385.00	10.00	130.0000	0.00
P-692	365	422	450.00	8.00	130.0000	0.00
P-693	193	365	210.00	10.00	100.0000	0.00
P-696	169	367	246.00	8.00	130.0000	0.00
P-697	367	170	355.00	8.00	130.0000	0.00
P-698	367	368	256.00	8.00	130.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-699	122	369	569.00	10.00	130.0000	0.00
P-700	369	248	242.00	10.00	130.0000	0.00
P-701	369	276	722.00	10.00	130.0000	0.00
P-702	118	115	606.00	10.00	130.0000	0.00
P-703	371	120	804.00	10.00	130.0000	0.00
P-704	371	372	254.00	8.00	130.0000	0.00
P-705	372	374	258.00	4.00	130.0000	0.00
P-706	372	373	693.00	4.00	130.0000	0.00
P-707	257	410	476.00	6.00	130.0000	0.00
P-708	190	712	724.00	8.00	100.0000	0.00
P-709	712	713	1345.00	8.00	100.0000	0.00
P-710	713	714	427.00	4.00	100.0000	0.00
P-711	712	715	579.00	8.00	100.0000	0.00
P-712	276	277	713.00	10.00	130.0000	0.00
P-713	276	370	349.00	10.00	130.0000	0.00
P-714	370	278	206.00	10.00	130.0000	0.00
P-724	228	723	183.00	8.00	130.0000	0.00
P-725	723	721	331.00	8.00	130.0000	0.00
P-727	723	726	415.00	8.00	130.0000	0.00
P-728	115	371	1330.00	10.00	130.0000	0.00
P-732	154	154a	139.00	4.00	130.0000	0.00
P-734	154a	154b	184.00	4.00	130.0000	0.00
P-736	257	412	446.00	6.00	130.0000	0.00
P-756	247	386	168.00	10.00	130.0000	0.00
P-757	306	123	1406.00	10.00	130.0000	0.00
P-759	386	388	106.00	10.00	130.0000	0.00
P-761	388	390	457.00	10.00	130.0000	0.00
P-763	390	392	623.00	8.00	130.0000	0.00
P-765	392	394	365.00	8.00	130.0000	0.00
P-767	248	398	690.00	10.00	130.0000	0.00
P-768	398	400	25.00	6.00	130.0000	0.00
P-769	398	396	496.00	10.00	130.0000	0.00
P-770	396	247	662.00	10.00	130.0000	0.00
P-789	219	221	179.00	4.00	130.0000	0.00
P-790	221	222	148.00	4.00	130.0000	0.00
P-791	420	422	222.00	8.00	130.0000	0.00
P-792	422	194	265.00	8.00	130.0000	0.00
P-793	194	791	225.00	8.00	130.0000	0.00
P-794	726	791	327.00	8.00	130.0000	0.00
P-795	230	728	418.00	8.00	130.0000	0.00
P-796	728	729	250.00	2.00	130.0000	0.00
P-797	728	267	1263.00	8.00	100.0000	0.00
P-799	192	724	213.00	4.00	130.0000	0.00
P-379a	379A	I-Pump 5	2.00	6.00	130.0000	0.00
P-380a	380A	I-Pump 4R	2.00	6.00	130.0000	0.00

P U M P / L O S S E L E M E N T D A T A

THERE IS A DEVICE AT NODE Pump 4R DESCRIBED BY THE FOLLOWING DATA: (ID= 2)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
320.00	0.00	65.00
240.00	600.00	74.00
160.00	800.00	73.50

THERE IS A DEVICE AT NODE Pump 5 DESCRIBED BY THE FOLLOWING DATA: (ID= 1)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
317.00	0.00	63.00
215.00	600.00	43.00
145.00	900.00	59.00

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
115		6.47	140.00	
117		0.00	54.00	
118		0.79	115.00	
119		5.55	40.00	
120		0.79	174.00	
121		1.59	50.00	
122		33.17	46.00	
123		31.59	41.00	
124		0.79	184.00	
125		0.00	75.00	
126		1.59	42.00	
127		0.00	43.00	
128		2.38	45.00	
129		0.79	42.00	
130		0.00	44.00	
131		2.38	40.00	
132		20.06	43.00	
133		-14.51	39.00	
134		0.00	39.00	
135		-10.51	37.00	
136		-13.07	36.00	
137		19.86	37.00	
138		0.00	36.00	
139		3.97	38.00	
140		5.25	38.00	
141		6.62	38.00	
142		-10.45	37.00	
143		4.69	36.00	
144		1.91	37.00	
145		-12.60	37.00	
146		2.38	36.00	
147		9.52	36.00	
148		-13.07	36.00	
149		9.52	36.00	
150		1.59	36.00	
151		3.17	36.00	
152		1.59	36.00	
153		0.79	36.00	
154		-9.90	36.00	
155		5.55	36.00	
157		4.76	36.00	
158		1.59	34.00	
159		4.76	35.00	
160		6.35	37.00	
161		7.93	37.00	

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
162		14.28	35.00	
163		-12.74	33.00	
164		3.17	34.00	
165		3.97	34.00	
166		3.97	35.00	
167		6.35	36.00	
168		14.33	34.00	
169		0.79	34.00	
170		0.00	35.00	
171		-16.42	35.00	
172		2.38	36.00	
173		4.76	35.00	
174		173.85	35.00	
175		21.97	36.00	
176		3.17	36.00	
177		0.79	36.00	
178		1.91	37.00	
179		0.00	38.00	
180		-14.19	37.00	
181		-15.77	38.00	
182		18.15	37.00	
183		2.38	39.00	
184		1.59	38.00	
185		7.14	39.00	
186		1.59	37.00	
187		4.76	37.00	
188		19.83	39.00	
189		4.76	38.00	
190		5.55	39.00	
191		1.59	39.00	
192		-16.89	39.00	
193		0.00	39.00	
194		7.93	38.00	
195		2.38	38.00	
196		2.38	38.00	
197		0.79	37.00	
198		2.38	36.00	
199		0.79	37.00	
200		-11.16	36.00	
201		4.76	37.00	
202		2.38	39.00	
203		-12.46	36.00	
204		21.97	36.00	
205		2.38	36.00	
206		2.38	36.00	
207		15.99	38.00	
208		13.82	39.00	
209		25.80	39.00	
210		0.79	39.00	
211		-18.66	37.00	
212		-12.13	36.00	
213		20.06	40.00	
214		0.79	39.00	
215		23.89	38.00	
216		-14.37	37.00	
217		14.33	37.00	
218		-10.36	37.00	
219		3.97	39.00	
220		6.15	39.00	

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
221		1.59	39.00	
222		2.38	38.00	
223		0.79	37.00	
224		2.38	37.00	
225		3.17	38.00	
226		0.79	40.00	
227		16.24	40.00	
228		-13.86	39.00	
229		3.97	40.00	
230		2.38	41.00	
231		0.79	40.00	
232		2.38	42.00	
233		20.57	43.00	
234		1.59	40.00	
235		0.00	38.00	
236		0.79	40.00	
237		0.79	35.00	
238		-4.32	40.00	
239		14.33	40.00	
240		0.00	41.00	
241		0.79	44.00	
242		0.00	40.00	
243		0.00	50.00	
244		2.38	40.00	
245		-13.25	36.00	
246		21.97	36.00	
247		118.88	43.00	
248		0.00	42.00	
250		1.59	50.00	
251		2.24	37.00	
252		0.00	37.00	
253		0.00	36.00	
254		0.00	37.00	
255		14.33	37.00	
256		-25.04	84.00	
257		-12.42	84.00	
258		-24.24	41.00	
260		13.32	36.00	
261		0.00	37.00	
262		0.00	37.00	
263		0.00	41.00	
264		-14.69	36.00	
265		25.80	36.00	
266		16.24	36.00	
267		319.09	42.00	
268		16.24	38.00	
269		14.33	37.00	
270		14.33	37.00	
271		16.24	37.00	
272		0.00	144.00	
273		14.33	41.00	
274		2.38	92.00	
275		0.00	46.00	
276		0.00	44.00	
277		0.00	45.00	
278		0.00	45.00	
330		-20.24	35.00	
346		25.80	35.00	
349		398.98	35.00	

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
365		11.63	39.00	
367		-17.54	34.50	
368		23.89	36.00	
369		-13.54	44.00	
370		14.33	45.00	
371		-22.48	180.00	
372		-8.60	153.00	
373		20.06	160.00	
374		18.15	150.00	
379		-13.54	36.00	
380		14.33	36.00	
381		14.33	41.00	
386		0.00	43.00	
388		0.00	43.00	
390		0.00	43.00	
392		0.00	42.00	
394		0.00	42.00	
396		0.79	43.00	
398		0.00	43.00	
400		0.00	43.00	
410		29.62	102.00	
412		18.15	54.00	
414		0.00	43.00	
416		0.00	43.00	
417		0.00	41.00	
418		0.00	41.00	
420		0.00	38.00	
422		0.00	38.00	
712		34.06	40.00	
713		0.00	40.00	
714		22.45	40.00	
715		201.56	40.00	
721		18.15	39.00	
723		-11.81	39.00	
724		20.06	39.00	
726		15.87	38.00	
728		-9.77	41.00	
729		16.24	41.00	
791		4.44	38.00	
154a		0.00	36.00	
154b		16.24	36.00	
379A		0.00	50.00	
379B		0.00	50.00	
380A		0.00	50.00	
380B		0.00	50.00	
O-Pump 4R		0.00	50.00	
O-Pump 5		0.00	50.00	
R-5		----	50.00	
R-4R		----	50.00	
T-1		----	186.00	
I-Pump 5		0.00	50.00	
I-Pump 4R		0.00	50.00	

50.00
~~50.00~~
 201.00

TANK WATER LEVEL

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SYSTEM CONFIGURATION

NUMBER OF PIPES(p) = 246
 NUMBER OF END NODES(j) = 210
 NUMBER OF PRIMARY LOOPS(l) = 34
 NUMBER OF SUPPLY NODES(f) = 3
 NUMBER OF SUPPLY ZONES(z) = 1

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 Case: 0

RESULTS OBTAINED AFTER 5 TRIALS: ACCURACY = 0.00025

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL+ML/ 1000 (ft/ft)	HL/ 1000 (ft/ft)
	#1	#2						
P-379	O-Pump 5	379B	0.00	0.00	0.00	0.00	0.00	0.00
P-380	O-Pump 4R	380B	0.00	0.00	0.00	0.00	0.00	0.00
P-382	146	155	55.71	0.12	0.00	0.63	0.35	0.35
P-383	119	121	9.97	3.54	0.00	1.02	3.07	3.07
P-384	120	124	-669.77	0.86	0.00	2.74	2.93	2.93
P-385	125	126	349.94	6.73	0.00	3.97	17.24	17.24
P-386	126	127	348.35	4.05	0.00	3.95	10.52	10.52
P-387	127	139	348.35	4.40	0.00	3.95	10.52	10.52
P-388	129	130	248.44	1.72	0.00	1.59	1.39	1.39
P-389	129	131	303.62	2.05	0.00	1.94	3.27	3.27
P-390	133	131	-223.75	0.25	0.00	1.43	1.86	1.86
P-391	133	132	20.06	0.03	0.00	0.23	0.05	0.05
P-392	237	133	-218.20	0.94	0.00	1.39	1.77	1.77
P-394	136	143	-101.76	0.22	0.00	1.15	1.75	1.75
P-395	144	137	19.86	3.58	0.00	2.03	11.00	11.00
P-396	139	138	81.16	0.09	0.00	0.92	0.71	0.71
P-397	138	145	81.16	3.04	0.00	2.07	8.30	8.30
P-398	139	140	263.21	0.96	0.00	2.99	6.26	6.26
P-399	140	141	239.62	1.58	0.00	2.72	5.26	5.26
P-400	141	147	296.34	0.69	0.00	1.89	1.92	1.92
P-401	141	142	237.51	1.62	0.00	2.69	5.18	5.18
P-402	143	142	-207.78	1.22	0.00	2.36	4.04	4.04
P-403	145	144	21.77	0.01	0.00	0.25	0.06	0.06
P-404	145	146	53.13	0.10	0.00	0.60	0.32	0.32
P-405	147	146	-0.07	0.00	0.00	0.00	0.00	0.00
P-406	147	148	286.89	0.25	0.00	1.83	1.81	1.81
P-407	148	157	283.72	0.45	0.00	1.81	1.77	1.77
P-408	142	149	22.03	0.20	0.00	0.56	0.40	0.40
P-409	143	150	101.33	3.58	0.00	2.59	12.51	12.51
P-410	150	151	88.66	2.10	0.00	2.26	9.77	9.77
P-411	150	152	11.07	1.45	0.00	1.13	9.17	9.17
P-412	152	153	9.48	0.96	0.00	0.97	4.55	4.55
P-413	153	206	119.55	0.34	0.00	1.36	2.36	2.36
P-414	151	153	110.85	0.31	0.00	1.26	2.05	2.05
P-415	145	154	18.86	0.20	0.00	0.48	0.56	0.56

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O . (ft/s)	H L + M L / 1 0 0 0 (ft/ft)	H L / 1 0 0 0 (ft/ft)
	#1	#2						
P-416	154	158	12.52	0.10	0.00	0.32	0.26	0.26
P-417	155	159	50.16	0.11	0.00	0.57	0.29	0.29
P-418	140	260	18.35	2.27	0.00	1.87	9.50	9.50
P-419	157	160	278.96	0.56	0.00	1.78	1.72	1.72
P-420	149	161	12.51	4.61	0.00	1.28	7.60	7.60
P-421	151	162	-25.36	0.59	0.00	0.65	0.96	0.96
P-422	158	163	1.76	0.05	0.00	0.18	0.12	0.12
P-423	158	159	9.17	0.04	0.00	0.23	0.15	0.15
P-424	159	164	3.00	0.00	0.00	0.08	0.01	0.01
P-425	159	160	51.57	1.03	0.00	1.32	3.58	3.58
P-426	160	165	218.27	0.38	0.00	1.39	1.09	1.09
P-427	161	160	-105.91	4.47	0.00	2.70	13.58	13.58
P-428	161	166	46.73	0.09	0.00	0.53	0.25	0.25
P-429	162	161	-63.76	1.51	0.00	1.63	5.31	5.31
P-430	162	167	-32.45	0.50	0.00	0.83	1.52	1.52
P-431	203	162	-56.57	1.24	0.00	1.44	4.25	4.25
P-432	163	168	14.33	4.87	0.00	1.46	6.01	6.01
P-433	379	380	14.33	0.94	0.00	1.46	6.01	6.01
P-434	166	176	42.76	0.08	0.00	0.49	0.22	0.22
P-435	167	177	-38.80	0.78	0.00	0.99	2.12	2.12
P-436	170	172	150.54	0.27	0.00	0.96	0.55	0.55
P-437	172	379	174.64	0.13	0.00	1.11	0.72	0.72
P-438	170	171	56.62	0.07	0.00	0.64	0.36	0.36
P-439	171	175	21.97	0.01	0.00	0.25	0.06	0.06
P-440	171	173	51.07	0.05	0.00	0.58	0.30	0.30
P-441	179	178	18.15	0.17	0.00	0.46	0.52	0.52
P-442	180	179	18.15	0.17	0.00	0.46	0.52	0.52
P-443	180	181	129.79	0.29	0.00	1.47	1.69	1.69
P-444	181	182	18.15	2.21	0.00	1.85	9.31	9.31
P-445	181	183	127.41	0.24	0.00	1.45	1.63	1.63
P-446	183	185	164.31	0.90	0.00	1.86	2.62	2.62
P-447	185	184	406.13	2.09	0.00	2.59	5.60	5.60
P-448	186	180	133.75	1.37	0.00	1.52	2.90	2.90
P-449	186	187	44.05	0.86	0.00	1.12	2.67	2.67
P-450	187	183	39.29	1.05	0.00	1.00	2.16	2.16
P-451	188	185	248.96	4.96	0.00	2.82	9.18	9.18
P-452	189	188	268.79	0.28	0.00	1.10	0.88	0.88
P-453	189	190	263.62	1.08	0.00	1.68	2.51	2.51
P-454	195	196	14.33	0.00	0.00	0.16	0.03	0.03
P-455	196	198	24.63	0.03	0.00	0.28	0.08	0.08
P-456	197	186	179.38	2.36	0.00	2.04	5.00	5.00
P-457	198	197	135.08	1.45	0.00	1.53	2.96	2.96
P-458	199	198	43.74	0.44	0.00	1.12	2.64	2.64
P-459	199	200	48.27	1.56	0.00	1.23	3.17	3.17
P-460	201	199	92.79	1.79	0.00	2.37	10.63	10.63
P-461	202	201	47.55	1.20	0.00	1.21	3.08	3.08
P-462	203	202	49.93	1.34	0.00	1.27	3.37	3.37
P-463	203	204	21.97	0.08	0.00	0.25	0.15	0.15
P-464	206	205	5.25	0.00	0.00	0.06	0.00	0.00
P-465	205	203	2.87	0.00	0.00	0.03	0.00	0.00
P-466	210	206	-111.92	0.49	0.00	1.27	2.09	2.09
P-467	379	174	173.85	0.50	0.00	1.11	0.72	0.72
P-468	207	208	160.09	2.05	0.00	1.82	4.05	4.05
P-469	208	214	146.27	0.80	0.00	1.66	3.43	3.43
P-470	211	210	-111.13	0.40	0.00	1.26	2.06	2.06
P-471	212	211	-103.99	0.57	0.00	1.18	1.82	1.82
P-472	212	201	50.00	1.08	0.00	1.28	2.08	2.08
P-473	214	220	145.48	1.73	0.00	1.65	3.39	3.39
P-474	216	212	-46.06	0.13	0.00	0.52	0.40	0.40
P-475	216	198	69.09	3.18	0.00	1.76	6.16	6.16
P-476	218	216	32.56	0.04	0.00	0.37	0.21	0.21
P-477	218	217	14.33	23.56	0.00	5.85	175.84	175.84
P-478	219	218	147.52	1.08	0.00	1.67	2.14	2.14
P-479	244	220	72.23	0.19	0.00	0.82	0.57	0.57
P-480	218	223	111.00	0.33	0.00	1.26	2.06	2.06
P-481	229	191	4.87	0.50	0.00	0.50	0.94	0.94
P-482	223	224	153.64	0.63	0.00	1.74	3.75	3.75

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O . (ft/s)	H L + M L / 1 0 0 0 (ft/ft)	H L / 1 0 0 0 (ft/ft)
	#1	#2						
P-483	200	197	45.10	0.33	0.00	1.15	1.99	1.99
P-484	224	225	163.34	0.80	0.00	1.85	4.21	4.21
P-485	225	193	493.63	1.41	0.00	2.02	2.71	2.71
P-486	225	192	56.12	1.41	0.00	1.43	2.58	2.58
P-487	226	225	778.97	3.49	0.00	3.18	6.31	6.31
P-488	228	227	16.24	8.81	0.00	1.66	18.63	18.63
P-489	225	229	389.38	0.88	0.00	2.49	7.83	7.83
P-490	228	230	327.94	2.15	0.00	2.09	5.69	5.69
P-491	229	228	380.55	1.14	0.00	2.43	7.50	7.50
P-492	231	226	866.46	1.44	0.00	2.46	1.94	1.94
P-493	232	414	-16.04	0.00	0.00	0.10	0.01	0.01
P-494	233	235	-36.61	0.02	0.00	0.23	0.04	0.04
P-495	234	231	416.06	1.55	0.00	2.66	5.85	5.85
P-496	123	231	451.19	1.77	0.00	1.84	1.41	1.41
P-497	235	234	201.03	0.25	0.00	1.28	0.94	0.94
P-498	234	236	-216.62	0.85	0.00	1.38	1.75	1.75
P-499	236	237	217.41	1.08	0.00	1.39	1.76	1.76
P-500	238	235	237.64	0.42	0.00	1.52	1.28	1.28
P-501	238	239	14.33	0.00	0.00	0.09	0.01	0.01
P-502	240	238	247.65	0.43	0.00	1.58	1.38	1.38
P-503	241	240	247.65	1.05	0.00	1.58	1.38	1.38
P-504	130	241	248.44	1.30	0.00	1.59	1.39	1.39
P-505	192	195	16.71	0.01	0.00	0.19	0.04	0.04
P-506	124	T-1	-1872.82	3.33	0.00	7.65	32.02	32.02
P-507	R-5	379A	0.00	0.00	0.00	0.00	0.00	0.00
P-508	379B	117	0.00	0.00	0.00	0.00	0.00	0.00
P-509	117	242	627.17	0.60	0.00	2.56	2.60	2.60
P-510	242	122	627.17	8.96	0.00	2.56	2.60	2.60
P-511	243	117	627.17	0.54	0.00	2.56	2.60	2.60
P-512	R-4R	380A	0.00	0.00	0.00	0.00	0.00	0.00
P-513	380B	243	0.00	0.00	0.00	0.00	0.00	0.00
P-514	226	244	86.70	0.25	0.00	0.98	1.30	1.30
P-515	244	224	12.09	2.43	0.00	1.23	4.39	4.39
P-516	177	176	-39.59	0.05	0.00	0.45	0.19	0.19
P-517	163	164	0.17	0.00	0.00	0.00	0.00	0.00
P-518	223	196	12.67	2.85	0.00	1.29	5.55	5.55
P-519	173	245	46.31	0.09	0.00	0.53	0.25	0.25
P-520	245	246	21.97	0.01	0.00	0.25	0.07	0.07
P-522	248	247	436.33	0.37	0.00	1.78	1.33	1.33
P-523	131	136	77.48	0.17	0.00	0.49	0.26	0.26
P-524	207	136	-176.08	1.81	0.00	2.00	4.83	4.83
P-525	118	250	17.11	0.19	0.00	0.44	0.29	0.29
P-526	250	119	15.52	10.03	0.00	1.58	6.97	6.97
P-527	251	141	300.86	0.24	0.00	1.92	1.98	1.98
P-528	134	251	303.10	0.25	0.00	1.93	1.75	1.75
P-529	142	252	18.15	0.00	0.00	0.21	0.04	0.04
P-530	252	135	18.15	0.86	0.00	1.85	15.14	15.14
P-531	212	253	20.06	0.01	0.00	0.23	0.09	0.09
P-532	253	213	20.06	0.12	0.00	0.51	0.33	0.33
P-533	254	223	56.10	0.13	0.00	0.64	0.58	0.58
P-534	222	254	56.10	0.35	0.00	1.43	2.58	2.58
P-535	200	255	14.33	27.33	0.00	5.85	203.93	203.93
P-536	191	193	3.28	0.04	0.00	0.33	0.39	0.39
P-537	243	256	-627.17	3.83	0.00	2.56	2.60	2.60
P-538	256	118	-637.48	1.80	0.00	2.60	2.68	2.68
P-539	256	257	35.35	0.02	0.00	0.40	0.15	0.15
P-540	123	258	-9.24	0.00	0.00	0.06	0.00	0.00
P-541	258	232	-13.66	0.01	0.00	0.09	0.01	0.01
P-542	258	381	14.33	0.00	0.00	0.09	0.01	0.01
P-543	260	146	5.03	0.00	0.00	0.06	0.00	0.00
P-544	211	261	25.80	0.01	0.00	0.29	0.14	0.14
P-546	261	209	25.80	0.16	0.00	0.66	0.53	0.53
P-547	216	262	23.89	0.07	0.00	0.61	0.86	0.86
P-548	262	215	23.89	5.69	0.00	2.44	25.19	25.19
P-549	121	263	8.38	0.00	0.00	0.05	0.00	0.00
P-550	128	263	544.47	0.81	0.00	3.47	5.93	5.93
P-551	263	129	552.85	1.81	0.00	3.53	9.91	9.91

P I P E N A M E	NODE NUMBERS		FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL+ML/ 1000 (ft/ft)	HL/ 1000 (ft/ft)
	#1	#2						
P-552	245	264	37.59	0.05	0.00	0.43	0.20	0.20
P-553	264	172	26.48	0.02	0.00	0.30	0.09	0.09
P-554	264	265	25.80	0.02	0.00	0.29	0.08	0.08
P-555	148	266	16.24	0.01	0.00	0.18	0.04	0.04
P-556	178	268	16.24	6.16	0.00	1.66	7.58	7.58
P-557	135	269	14.33	0.87	0.00	1.46	6.01	6.01
P-558	135	270	14.33	0.81	0.00	1.46	6.01	6.01
P-559	136	271	16.24	0.85	0.00	1.66	7.58	7.58
P-560	124	272	1202.26	4.06	0.00	4.91	14.09	14.09
P-561	272	125	1196.13	1.71	0.00	3.39	5.74	5.74
P-562	258	417	14.33	0.00	0.00	0.06	0.00	0.00
P-563	272	274	6.13	14.03	0.00	2.51	36.53	36.53
P-564	274	128	3.75	3.62	0.00	1.53	14.71	14.71
P-565	125	275	846.19	8.83	0.00	5.40	21.80	21.80
P-566	275	128	846.19	7.11	0.00	5.40	21.80	21.80
P-567	220	219	211.56	0.19	0.00	2.40	4.18	4.18
P-568	414	233	-16.04	0.00	0.00	0.10	0.01	0.01
P-569	414	416	0.00	0.00	0.00	0.00	0.00	0.00
P-570	417	273	14.33	0.00	0.00	0.06	0.00	0.00
P-571	417	418	0.00	0.00	0.00	0.00	0.00	0.00
P-637	330	349	398.98	0.60	0.00	2.55	3.33	3.33
P-640	184	330	404.54	0.29	0.00	2.58	5.56	5.56
P-645	330	346	25.80	0.01	0.00	0.16	0.02	0.02
P-688	128	134	303.10	1.29	0.00	1.93	2.00	2.00
P-689	165	169	214.30	0.37	0.00	1.37	1.05	1.05
P-690	193	192	-36.24	0.01	0.00	0.41	0.16	0.16
P-691	365	189	537.17	0.75	0.00	2.19	1.95	1.95
P-692	365	422	-15.65	0.00	0.00	0.10	0.01	0.01
P-693	193	365	533.15	0.66	0.00	2.18	3.13	3.13
P-696	169	367	213.51	0.26	0.00	1.36	1.05	1.05
P-697	367	170	207.16	0.35	0.00	1.32	0.99	0.99
P-698	367	368	23.89	0.00	0.00	0.15	0.02	0.02
P-699	122	369	594.00	1.34	0.00	2.43	2.35	2.35
P-700	369	248	593.21	0.57	0.00	2.42	2.34	2.34
P-701	369	276	14.33	0.00	0.00	0.06	0.00	0.00
P-702	118	115	-655.38	1.71	0.00	2.68	2.82	2.82
P-703	371	120	-668.98	2.35	0.00	2.73	2.93	2.93
P-704	371	372	29.61	0.01	0.00	0.19	0.03	0.03
P-705	372	374	18.15	0.08	0.00	0.46	0.32	0.32
P-706	372	373	20.06	0.27	0.00	0.51	0.38	0.38
P-707	257	410	29.62	0.05	0.00	0.34	0.11	0.11
P-708	190	712	258.07	1.75	0.00	1.65	2.42	2.42
P-709	712	713	22.45	0.04	0.00	0.14	0.03	0.03
P-710	713	714	22.45	0.33	0.00	0.57	0.77	0.77
P-711	712	715	201.56	0.89	0.00	1.29	1.53	1.53
P-712	276	277	0.00	0.00	0.00	0.00	0.00	0.00
P-713	276	370	14.33	0.00	0.00	0.06	0.00	0.00
P-714	370	278	0.00	0.00	0.00	0.00	0.00	0.00
P-724	228	723	50.23	0.01	0.00	0.32	0.07	0.07
P-725	723	721	18.15	0.00	0.00	0.12	0.01	0.01
P-727	723	726	43.89	0.02	0.00	0.28	0.06	0.06
P-728	115	371	-661.85	3.82	0.00	2.70	2.87	2.87
P-732	154	154a	16.24	0.04	0.00	0.41	0.26	0.26
P-734	154a	154b	16.24	0.05	0.00	0.41	0.26	0.26
P-736	257	412	18.15	0.02	0.00	0.21	0.04	0.04
P-756	247	386	473.54	0.26	0.00	1.93	1.54	1.54
P-757	386	123	473.54	2.29	0.00	1.93	1.54	1.54
P-759	386	388	0.00	0.00	0.00	0.00	0.00	0.00
P-761	388	390	0.00	0.00	0.00	0.00	0.00	0.00
P-763	390	392	0.00	0.00	0.00	0.00	0.00	0.00
P-765	392	394	0.00	0.00	0.00	0.00	0.00	0.00
P-767	248	398	156.88	0.14	0.00	0.64	0.20	0.20
P-768	398	400	0.00	0.00	0.00	0.00	0.00	0.00
P-769	398	396	156.88	0.10	0.00	0.64	0.20	0.20
P-770	396	247	156.09	0.13	0.00	0.64	0.20	0.20
P-789	219	221	60.07	0.52	0.00	1.53	2.92	2.92
P-790	221	222	58.48	0.41	0.00	1.49	2.78	2.78

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O. (ft/s)	H L + M L / 1 0 0 0 (ft/ft)	H L / 1 0 0 0 (ft/ft)
	#1	#2						
P-791	420	422	0.00	0.00	0.00	0.00	0.00	0.00
P-792	422	194	-15.65	0.00	0.00	0.10	0.01	0.01
P-793	194	791	-23.58	0.00	0.00	0.15	0.02	0.02
P-794	726	791	28.02	0.01	0.00	0.18	0.02	0.02
P-795	230	728	325.56	0.96	0.00	2.08	2.29	2.29
P-796	728	729	16.24	1.90	0.00	1.66	7.58	7.58
P-797	728	267	319.09	4.52	0.00	2.04	3.58	3.58
P-799	192	724	20.06	0.08	0.00	0.51	0.38	0.38
P-379a	379A	I-Pump 5	0.00	0.00	0.00	0.00	0.00	0.00
P-380a	380A	I-Pump 4R	0.00	0.00	0.00	0.00	0.00	0.00

P U M P / L O S S E L E M E N T R E S U L T S

N A M E	F L O W R A T E (gpm)	I N L E T H E A D (ft)	O U T L E T H E A D (ft)	P U M P H E A D (ft)	E F F I C - E N C Y (%)	U S E F U L P O W E R (Hp)	I N C R E M T L C O S T (\$)	T O T A L C O S T (\$)	# P U M P S P A R A L L E L	# P U M P S S E R I E S	N P S H
											A v a i l . (ft)
Device "Pump 4R" is closed											
Pump 4R	0.00	0.00	133.30	0.0	75.00	0.	0.0	0.0	**	**	33.2
Device "Pump 5" is closed											
Pump 5	0.00	0.00	132.77	0.0	75.00	0.	0.0	0.0	**	**	33.2

N O D E R E S U L T S

N O D E N A M E	N O D E T I T L E	E X T E R N A L D E M A N D (gpm)	H Y D R A U L I C G R A D E (ft)	N O D E E L E V A T I O N (ft)	P R E S S U R E H E A D (ft)	N O D E P R E S S U R E (psi)
115		6.47	190.64	140.00	50.64	21.94
117		0.00	182.77	54.00	128.77	55.80
118		0.79	188.93	115.00	73.93	32.04
119		5.55	178.71	40.00	138.71	60.11
120		0.79	196.81	174.00	22.81	9.88
121		1.59	175.16	50.00	125.16	54.24
122		33.17	173.21	46.00	127.21	55.12
123		31.59	168.38	41.00	127.38	55.20
124		0.79	197.67	184.00	13.67	5.92
125		0.00	191.90	75.00	116.90	50.66
126		1.59	185.18	42.00	143.18	62.04
127		0.00	181.13	43.00	138.13	59.85
128		2.38	175.97	45.00	130.97	56.75
129		0.79	173.35	42.00	131.35	56.92
130		0.00	171.62	44.00	127.62	55.30
131		2.38	171.30	40.00	131.30	56.90
132		20.06	171.01	43.00	128.01	55.47
133		-14.51	171.04	39.00	132.04	57.22
134		0.00	174.68	39.00	135.68	58.79
135		-10.51	171.70	37.00	134.70	58.37
136		-13.07	171.12	36.00	135.12	58.55
137		19.86	170.01	37.00	133.01	57.64
138		0.00	176.64	36.00	140.64	60.94
139		3.97	176.73	38.00	138.73	60.12
140		5.25	175.76	38.00	137.76	59.70
141		6.62	174.19	38.00	136.19	59.01
142		10.45	172.57	37.00	135.57	58.75
143		4.69	171.35	36.00	135.35	58.65

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
144		1.91	173.59	37.00	136.59	59.19
145		-12.60	173.60	37.00	136.60	59.19
146		2.38	173.49	36.00	137.49	59.58
147		9.52	173.49	36.00	137.49	59.58
148		-13.07	173.24	36.00	137.24	59.47
149		9.52	172.37	36.00	136.37	59.09
150		1.59	167.77	36.00	131.77	57.10
151		3.17	165.67	36.00	129.67	56.19
152		1.59	166.32	36.00	130.32	56.47
153		0.79	165.36	36.00	129.36	56.06
154		-9.90	173.40	36.00	137.40	59.54
155		5.55	173.37	36.00	137.37	59.53
157		4.76	172.79	36.00	136.79	59.28
158		1.59	173.30	34.00	139.30	60.36
159		4.76	173.26	35.00	138.26	59.91
160		6.35	172.23	37.00	135.23	58.60
161		7.93	167.76	37.00	130.76	56.66
162		14.28	166.26	35.00	131.26	56.88
163		-12.74	173.26	33.00	140.26	60.78
164		3.17	173.26	34.00	139.26	60.35
165		3.97	171.85	34.00	137.85	59.74
166		3.97	167.67	35.00	132.67	57.49
167		6.35	166.76	36.00	130.76	56.66
168		14.33	168.39	34.00	134.39	58.23
169		0.79	171.48	34.00	137.48	59.58
170		0.00	170.88	35.00	135.88	58.88
171		-16.42	170.80	35.00	135.80	58.85
172		2.38	170.61	36.00	134.61	58.33
173		4.76	170.76	35.00	135.76	58.83
174	SZWA	173.85	169.98	35.00	134.98	58.49
175		21.97	170.79	36.00	134.79	58.41
176		3.17	167.59	36.00	131.59	57.02
177		0.79	167.54	36.00	131.54	57.00
178		1.91	154.73	37.00	117.73	51.02
179		0.00	154.89	38.00	116.89	50.65
180		-14.19	155.06	37.00	118.06	51.16
181		-15.77	154.78	38.00	116.78	50.60
182		18.15	152.57	37.00	115.57	50.08
183		2.38	154.54	39.00	115.54	50.07
184		1.59	151.55	38.00	113.55	49.20
185		7.14	153.64	39.00	114.64	49.60
186		1.59	156.44	37.00	119.44	51.76
187		4.76	155.58	37.00	118.58	51.39
188		19.83	158.59	39.00	119.59	51.82
189		4.76	158.87	38.00	120.87	52.38
190		5.55	157.79	39.00	118.79	51.48
191		1.59	160.32	39.00	121.32	52.57
192		-16.89	160.28	39.00	121.28	52.56
193		0.00	160.28	39.00	121.28	52.55
194		7.93	159.63	38.00	121.63	52.70
195		2.38	160.28	38.00	122.28	52.99
196		2.38	160.27	38.00	122.27	52.99
197		0.79	158.80	37.00	121.80	52.78
198		2.38	160.25	36.00	124.25	53.84
199		0.79	160.69	37.00	123.69	53.60
200		-11.16	159.13	36.00	123.13	53.36
201		4.76	162.48	37.00	125.48	54.37
202		2.38	163.68	39.00	124.68	54.03
203		-12.46	165.02	36.00	129.02	55.91

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
204		21.97	164.94	36.00	128.94	55.87
205		2.38	165.02	36.00	129.02	55.91
206		2.38	165.02	36.00	129.02	55.91
207		15.99	169.32	38.00	131.32	56.90
208		13.82	167.27	39.00	128.27	55.58
209		25.80	163.95	39.00	124.95	54.15
210		0.79	164.53	39.00	125.53	54.39
211		-18.66	164.13	37.00	127.13	55.09
212		-12.13	163.56	36.00	127.56	55.28
213		20.06	163.43	40.00	123.43	53.49
214		0.79	166.47	39.00	127.47	55.24
215		23.89	157.66	38.00	119.66	51.85
216		-14.37	163.42	37.00	126.42	54.78
217		14.33	139.90	37.00	102.90	44.59
218		-10.36	163.46	37.00	126.46	54.80
219		3.97	164.55	39.00	125.55	54.40
220		6.15	164.74	39.00	125.74	54.49
221		1.59	164.02	39.00	125.02	54.18
222		2.38	163.61	38.00	125.61	54.43
223		0.79	163.13	37.00	126.13	54.66
224		2.38	162.49	37.00	125.49	54.38
225		3.17	161.69	38.00	123.69	53.60
226		0.79	165.18	40.00	125.18	54.24
227		16.24	150.86	40.00	110.86	48.04
228		-13.86	159.67	39.00	120.67	52.29
229		3.97	160.81	40.00	120.81	52.35
230		2.38	157.52	41.00	116.52	50.49
231		0.79	166.62	40.00	126.62	54.87
232		2.38	168.39	42.00	126.39	54.77
233		20.57	168.40	43.00	125.40	54.34
234		1.59	168.17	40.00	128.17	55.54
235		0.00	168.42	38.00	130.42	56.52
236		0.79	169.02	40.00	129.02	55.91
237		0.79	170.10	35.00	135.10	58.55
238		-4.32	168.84	40.00	128.84	55.83
239		14.33	168.84	40.00	128.84	55.83
240		0.00	169.27	41.00	128.27	55.58
241		0.79	170.32	44.00	126.32	54.74
242		0.00	182.17	40.00	142.17	61.61
243		0.00	183.30	50.00	133.30	57.76
244		2.30	164.93	40.00	124.93	54.13
245		-13.25	170.67	36.00	134.67	58.36
246		21.97	170.66	36.00	134.66	58.35
247		118.88	170.94	43.00	127.94	55.44
248		0.00	171.31	42.00	129.31	56.03
250		1.59	188.74	50.00	138.74	60.12
251		2.24	174.43	37.00	137.43	59.55
252		0.00	172.56	37.00	135.56	58.74
253		0.00	163.55	36.00	127.55	55.27
254		0.00	163.26	37.00	126.26	54.71
255		14.33	131.80	37.00	94.80	41.08
256		-25.04	187.13	84.00	103.13	44.69
257		-12.42	187.11	84.00	103.11	44.68
258		-24.24	168.39	41.00	127.39	55.20
260		13.32	173.49	36.00	137.49	59.58
261		0.00	164.11	37.00	127.11	55.08
262		0.00	163.36	37.00	126.36	54.75
263		0.00	175.16	41.00	134.16	58.14
264		-14.69	170.62	36.00	134.62	58.34

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
265		25.80	170.61	36.00	134.61	58.33
266		16.24	173.24	36.00	137.24	59.47
267	SRWA	319.09	152.04	42.00	110.04	47.69
268		16.24	148.57	38.00	110.57	47.91
269		14.33	170.83	37.00	133.83	57.99
270		14.33	170.89	37.00	133.89	58.02
271		16.24	170.28	37.00	133.28	57.75
272		0.00	193.61	144.00	49.61	21.50
273		14.33	168.38	41.00	127.38	55.20
274		2.38	179.59	92.00	87.59	37.95
275		0.00	183.07	46.00	137.07	59.40
276		0.00	171.87	44.00	127.87	55.41
277		0.00	171.87	45.00	126.87	54.98
278		0.00	171.87	45.00	126.87	54.98
330		-20.24	151.26	35.00	116.26	50.38
346		25.80	151.25	35.00	116.25	50.37
349	SRWA	398.98	150.66	35.00	115.66	50.12
365		11.63	159.62	39.00	120.62	52.27
367		-17.54	171.23	34.50	136.73	59.25
368		23.89	171.22	36.00	135.22	58.60
369		-13.54	171.87	44.00	127.87	55.41
370		14.33	171.87	45.00	126.87	54.98
371		-22.48	194.45	180.00	14.45	6.26
372		8.60	194.45	153.00	41.45	17.96
373		20.06	194.18	160.00	34.18	14.81
374		18.15	194.37	150.00	44.37	19.22
379		-13.54	170.48	36.00	134.48	58.27
380		14.33	169.54	36.00	133.54	57.87
381		14.33	168.38	41.00	127.38	55.20
386		0.00	170.68	43.00	127.68	55.33
388		0.00	170.68	43.00	127.68	55.33
390		0.00	170.68	43.00	127.68	55.33
392		0.00	170.68	42.00	128.68	55.76
394		0.00	170.68	42.00	128.68	55.76
396		0.79	171.07	43.00	128.07	55.50
398		0.00	171.17	43.00	128.17	55.54
400		0.00	171.17	43.00	128.17	55.54
410		29.62	187.06	102.00	85.06	36.86
412		18.15	187.09	54.00	133.09	57.67
414		0.00	168.39	43.00	125.39	54.34
416		0.00	168.39	43.00	125.39	54.34
417		0.00	168.38	41.00	127.38	55.20
418		0.00	168.38	41.00	127.38	55.20
420		0.00	159.62	38.00	121.62	52.70
422		0.00	159.62	38.00	121.62	52.70
712		34.06	156.04	40.00	116.04	50.29
713		0.00	156.01	40.00	116.01	50.27
714		22.45	155.68	40.00	115.68	50.13
715	SRWA	201.56	155.16	40.00	115.16	49.90
721		18.15	159.66	39.00	120.66	52.28
723		-11.81	159.66	39.00	120.66	52.29
724		20.06	160.20	39.00	121.20	52.52
726		15.87	159.64	38.00	121.64	52.71
728		-9.77	156.57	41.00	115.57	50.08
729		16.24	154.67	41.00	113.67	49.26
791		4.44	159.63	38.00	121.63	52.71
154a		0.00	173.36	36.00	137.36	59.52
154b		16.24	173.31	36.00	137.31	59.50
379A		0.00	50.00	50.00	0.00	0.00

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
379B		0.00	182.77	50.00	132.77	57.53
380A		0.00	50.00	50.00	0.00	0.00
380B		0.00	183.30	50.00	133.30	57.76
O-Pump 4R		0.00	183.30	50.00	133.30	57.76
O-Pump 5		0.00	182.77	50.00	132.77	57.53
R-5		----	50.00	50.00	0.00	0.00
R-4R		----	50.00	50.00	0.00	0.00
T-1		----	201.00	186.00	15.00	6.50
I-Pump 5		0.00	50.00	50.00	0.00	0.00
I-Pump 4R		0.00	50.00	50.00	0.00	0.00

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES (psi)	JUNCTION NUMBER	MINIMUM PRESSURES (psi)
126	62.04	124	5.92
242	61.61	371	6.26
138	60.94	T-1	6.50
163	60.78	120	9.88
158	60.36	373	14.81

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-506	7.65	P-405	0.00
P-477	5.85	P-517	0.00
P-535	5.85	P-465	0.03
P-565	5.40	P-549	0.05
P-566	5.40	P-543	0.06

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-535	203.93	P-405	0.00
P-477	175.84	P-517	0.00
P-563	36.53	P-465	0.00
P-506	32.02	P-570	0.00
P-548	25.19	P-701	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-535	203.93	P-405	0.00

P-477	175.84	P-517	0.00
P-563	36.53	P-465	0.00
P-506	32.02	P-570	0.00
P-548	25.19	P-701	0.00

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

- (+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
- (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
R-5	0.00	
R-4R	0.00	
T-1	1872.82	
NET SYSTEM INFLOW = 1872.82		
NET SYSTEM OUTFLOW = 0.00		
NET SYSTEM DEMAND = 1872.82		

***** HYDRAULIC ANALYSIS COMPLETED *****

SUMAS WATER SYSTEM
2016 Hydrant Fire Flow Analysis

Fire flow/Hydrant Report:

Specified Minimum Pressure (psi or kPa): 20.0
 Minimum Static Pressure (psi or kPa) : 26.7
 Sp.Min Pres@FirePump Suctn (psi or kPa): 0.0

TANK DIAMETER: 60 ft. WATER ELEVATION 201 ft.

NO PUMPS ON

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2
 Flow-3: Flowrate to maintain the specified pressure at Fire Pump Suction
 (Flow-3 is based on combined value of hydrant and hose constants)

Results are based on using PHD at nodes (not MDD)

Hose Constant = 0.00

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
500	H-001										
500	H-002										
500	H-003										
1,000	H-100	0.0	43.0	0.0	55.5	1512.4	1153.0	255	1955.4	1153.0	GREEN
1,000	H-101	0.0	43.0	0.0	55.5	1545.7	1150.7	255	1952.3	1150.7	GREEN
1,000	H-102	0.0	43.0	0.0	55.5	1570.4	1148.3	255	1948.2	1148.3	GREEN
1,000	H-103	0.0	42.0	0.0	56.0	1603.0	1153.6	255	1956.2	1153.6	GREEN
1,000	H-104	0.0	42.0	0.0	56.0	1579.0	1154.5	255	1956.5	1154.5	GREEN
1,000	H-105	0.0	45.0	0.0	55.3	1592.4	1184.0	255	2001.6	1184.0	GREEN
1,000	H-106	0.0	44.0	0.0	55.4	1543.3	1168.2	255	1977.6	1168.2	GREEN
1,000	H-107	0.0	45.0	0.0	55.0	1351.5	1168.1	255	1870.2	1168.1	GREEN
1,000	H-108	0.0	45.0	0.0	55.0	1359.5	1168.1	255	1882.5	1168.1	GREEN
1,000	H-109	0.0	42.0	0.0	55.8	1169.7	1140.1	255	1588.7	1140.1	GREEN
1,000	H-200	0.0	40.0	0.0	57.6	1782.8	1249.6	255	2104.9	1249.6	GREEN
1,000	H-201	0.0	42.0	0.0	56.5	1591.0	1215.0	255	2065.6	1215.0	GREEN

SUMAS WATER SYSTEM
2016 Hydrant Fire Flow Analysis

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
1,000	H-201	0.0	42.0	0.0	56.5	1591.0	1215.0	255	2065.6	1215.0	GREEN
1,000	H-202	0.0	40.0	0.0	57.0	1681.6	1198.3	255	2031.8	1198.3	GREEN
1,000	H-203	0.0	44.0	0.0	55.3	1481.2	1186.2	255	2024.8	1186.2	GREEN
1,000	H-204	0.0	44.0	0.0	55.1	1447.1	1167.2	255	1995.0	1167.2	GREEN
1,000	H-205	0.0	44.0	0.0	54.8	1430.5	1149.9	255	1966.1	1149.9	GREEN
1,000	H-206	0.0	42.0	0.0	55.4	1457.4	1128.9	255	1928.8	1128.9	GREEN
1,000	H-207	0.0	40.0	0.0	55.8	1409.4	1103.8	255	1880.0	1103.8	GREEN
1,000	H-208	0.0	40.0	0.0	55.8	1496.5	1103.8	255	1880.0	1103.8	GREEN
1,000	H-209	0.0	40.0	0.0	55.2	1531.2	1050.0	255	1788.7	1050.0	GREEN
1,000	H-210	0.0	40.0	0.0	54.9	1508.5	1029.4	255	1755.5	1029.4	GREEN
1,000	H-211	0.0	43.0	0.0	54.3	1406.9	1094.0	255	1859.4	1094.0	GREEN
1,000	H-212	0.0	43.0	0.0	54.3	1396.3	1094.0	255	1859.4	1094.0	GREEN
1,000	H-213	0.0	43.0	0.0	54.3	1311.3	1093.9	255	1822.6	1093.9	GREEN
1,000	H-214	0.0	42.0	0.0	54.8	1412.3	1092.6	255	1854.6	1092.6	GREEN
1,000	H-215	0.0	40.0	0.0	55.6	1524.4	1087.0	255	1841.9	1087.0	GREEN
1,000	H-216	0.0	41.0	0.0	55.2	1526.6	1084.9	255	1838.9	1084.9	GREEN
1,000	H-217	0.0	41.0	0.0	55.2	1449.6	1084.9	255	1838.9	1084.9	GREEN
1,000	H-218	0.0	41.0	0.0	55.2	1398.2	1084.9	255	1838.9	1084.9	GREEN
1,000	H-219	0.0	41.0	0.0	55.2	1317.2	1084.8	255	1821.1	1084.8	GREEN
1,000	H-220	0.0	41.0	0.0	55.2	1355.9	1084.9	255	1838.9	1084.9	GREEN
500	H-221	0.0	42.0	0.0	55.2	1469.4	1117.1	255	1906.5	1117.1	GREEN
750	H-302	0.0	37.0	0.0	59.2	1205.3	1172.6	137	1558.2	1172.6	GREEN
750	H-303	0.0	36.0	0.0	61.0	1657.1	1412.5	255	2169.7	1412.5	GREEN
750	H-304	0.0	38.0	0.0	59.8	1724.3	1394.1	255	2288.1	1394.1	GREEN
500	H-305	0.0	36.0	0.0	59.6	1383.7	1318.8	255	1830.7	1318.8	GREEN
500	H-306	0.0	35.0	0.0	59.9	1194.4	1168.3	168	1548.5	1168.3	GREEN
500	H-307	0.0	34.0	0.0	59.7	1286.5	1242.6	380	1678.4	1242.6	GREEN
500	H-308	0.0	37.0	0.0	58.6	1440.2	1278.2	255	1924.2	1278.2	GREEN
750	H-309	0.0	36.0	0.0	59.3	1554.3	1291.8	255	2064.0	1291.8	GREEN
750	H-310	0.0	36.0	0.0	59.6	1723.6	1312.6	255	2216.4	1312.6	GREEN
750	H-311	0.0	37.0	0.0	59.5	1905.8	1345.8	255	2243.2	1345.8	GREEN
500	H-312	0.0	37.0	0.0	58.7	1543.0	1244.5	255	2054.0	1244.5	GREEN
500	H-313	0.0	37.0	0.0	56.7	820.7			1085.6	820.7	ORANGE
500	H-314	0.0	36.0	0.0	57.0	754.5			992.2	754.5	ORANGE

SUMAS WATER SYSTEM
2016 Hydrant Fire Flow Analysis

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
500	H-315	0.0	36.0	0.0	56.7	606.4			793.7	606.4	ORANGE
500	H-317	0.0	36.0	0.0	56.2	786.2			1044.4	786.2	ORANGE
750	H-318	0.0	36.0	0.0	58.6	1606.7	1173.8	255	1978.0	1173.8	GREEN
750	H-319	0.0	38.0	0.0	56.7	1147.5	1071.7	255	1543.6	1071.7	GREEN
500	H-320	0.0	36.0	0.0	55.8	1040.1	910.2	255	1412.1	910.2	ORANGE
500	H-321	0.0	36.0	0.0	55.8	795.6			1063.1	795.6	ORANGE
500	H-322	0.0	37.0	0.0	59.1	783.4			1014.2	783.4	ORANGE
500	H-323	0.0	36.0	0.0	55.9	625.4			828.8	625.4	ORANGE
500	H-324	0.0	35.0	0.0	59.0	1054.3			1398.6	1054.3	GREEN
500	H-350	0.0	35.0	0.0	58.9	966.6			1285.5	966.6	ORANGE
500	H-351	0.0	36.0	0.0	58.3	938.4			1251.7	938.4	ORANGE
500	H-352	0.0	37.0	0.0	57.8	879.6			1182.9	879.6	ORANGE
500	H-353	0.0	36.0	0.0	58.3	923.0			1234.5	923.0	ORANGE
500	H-354	0.0	36.0	0.0	58.4	841.3			1117.7	841.3	ORANGE
500	H-355	0.0	36.0	0.0	58.4	898.1			1196.2	898.1	ORANGE
500	H-400	0.0	37.0	0.0	51.0	268.4	250.4	268	354.3	250.4	RED
500	H-401	0.0	37.0	0.0	51.1	701.1	647.8	268	976.5	647.8	ORANGE
500	H-402	0.0	39.0	0.0	50.0	687.8	677.6	268	1017.5	677.6	ORANGE
500	H-403	0.0	39.0	0.0	51.3	872.5	792.7	255	1275.4	792.7	ORANGE
500	H-404	0.0	38.0	0.0	52.5	1099.5	831.5	255	1431.9	831.5	ORANGE
500	H-405	0.0	37.0	0.0	51.7	732.2	685.8	268	1040.9	685.8	ORANGE
500	H-406	0.0	38.0	0.0	52.7	1032.8	857.0	255	1467.8	857.0	ORANGE
500	H-407	0.0	36.0	0.0	53.8	996.4	703.0	255	1205.4	703.0	ORANGE
500	H-408	0.0	37.0	0.0	54.4	811.9	782.1	255	1104.4	782.1	ORANGE
750	H-409	0.0	37.0	0.0	55.1	957.9	890.3	255	1292.6	890.3	ORANGE
750	H-410	0.0	36.0	0.0	55.3	1027.3	874.7	255	1376.8	874.7	ORANGE
750	H-411	0.0	37.0	0.0	54.8	843.6	793.5	215	1107.2	793.5	ORANGE
750	H-412	0.0	39.0	0.0	55.2	1087.5	997.7	255	1480.8	997.7	ORANGE
750	H-413	0.0	39.0	0.0	54.5	1258.7	952.3	255	1638.5	952.3	ORANGE
750	H-414	0.0	37.0	0.0	54.7	1136.1	909.9	255	1566.2	909.9	ORANGE
750	H-416	0.0	40.0	0.0	54.2	1334.7	975.0	255	1668.4	975.0	ORANGE
750	H-417	0.0	40.0	0.0	53.2	1291.3	910.7	255	1563.9	910.7	ORANGE
500	H-418	0.0	38.0	0.0	53.5	1253.8	876.6	255	1509.9	876.6	ORANGE
500	H-419	0.0	39.0	0.0	52.3	1091.7	858.6	255	1484.4	858.6	ORANGE

SUMAS WATER SYSTEM
2016 Hydrant Fire Flow Analysis

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
500	H-420	0.0	39.0	0.0	52.6	1177.1	842.7	255	1454.1	842.7	ORANGE
500	H-421	0.0	38.0	0.0	52.7	1094.8	844.3	255	1458.2	844.3	ORANGE
500	H-422	0.0	38.0	0.0	52.7	1066.5	844.3	255	1458.2	844.3	ORANGE
500	H-423	0.0	35.0	0.0	50.4	589.0			868.5	589.0	ORANGE
500	H-424	0.0	41.0	0.0	48.6	544.8	530.8	267	804.2	530.8	ORANGE
750	H-425	0.0	41.0	0.0	50.4	788.3	732.5	267	1110.3	732.5	ORANGE
500	H-426	0.0	38.0	0.0	52.7	1089.2	854.0	255	1476.9	854.0	ORANGE
500	H-427	0.0	38.0	0.0	52.7	1088.3	851.3	255	1471.7	851.3	ORANGE
500	H-428	0.0	38.0	0.0	52.7	1093.1	848.4	255	1466.3	848.4	ORANGE
500	H-429	0.0	39.0	0.0	51.2	793.2	767.2	715	1133.0	767.2	ORANGE

2016 Extended Period Simulation
Tank Water Level
60 ft Tank Diameter
Pump 4R on below 204 ft. off above 209 ft.
Pump 5 on below 200 ft. off above 204 ft.
1-31-2011

