

## **APPENDIX I**

# **WATER MASTER PLAN**

# Water Master Plan

STONE BEETLAND  
SACRAMENTO, CALIFORNIA

APRIL 2023



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## TABLE OF CONTENTS

<b>I.</b>	<b>STUDY PURPOSE AND OBJECTIVES .....</b>	<b>1</b>
<b>II.</b>	<b>STUDY AREA.....</b>	<b>1</b>
<b>III.</b>	<b>DEMAND AND PEAKING FACTOR PROJECTIONS.....</b>	<b>2</b>
<b>IV.</b>	<b>PROPOSED WATER SYSTEM.....</b>	<b>2</b>
<b>V.</b>	<b>HYDRAULIC ANALYSIS SUMMARY .....</b>	<b>3</b>
	A. Model Description .....	3
	B. Assumptions.....	3
	C. Hydraulic Demand Scenarios .....	3
	D. Hydraulic Modeling Results .....	4

### FIGURES

Figure 1	Project Location
Figure 2	Proposed Land Use Plan
Figure 3	Proposed Water System Model

### APPENDICES

Appendix A	Model Results
	- Average Day
	- Maximum Day
	- Peak Hour
	- Maximum Day Plus Fire Flow
Appendix B	SB610 Water Supply Assessment Form
Appendix C	Model Boundary Conditions – Flow Test Results

## **I. STUDY PURPOSE AND OBJECTIVES**

The Stone Beetland property (“Project”) is located directly east of the Delta Shores master-planned community. The Project is approximately 140 acres and is bound by Cosumnes River Boulevard to the south, Delta Shores and the future 24th Street extension to the west, City of Sacramento property and the Detroit Boulevard Neighborhood to the north and the Sacramento Regional Transit Blue Line light rail line and station, and Morrison Creek to the east. See Figure 1 depicting the Project Location.

The proposed Project includes the development of a mixed-use community with a range of residential densities that transition from similar housing types as the surrounding communities to higher densities surrounding the Light Rail station, promoting transit-oriented development. The current land uses within the Project include approximately 1,163 residential units, 6 acres of commercial uses and 28 acres of trails, open space and integrated drainage facilities. See Figure 2 depicting the proposed Project Land Use Plan.

The proposed Project was considered as a future development site within the Delta Shores Water Master Plan, dated June 2013. Accordingly, the infrastructure surrounding the Project has been planned to provide capacity for the Project. This includes an existing 24-inch transmission pipeline and a 12-inch diameter pipeline that were installed in Cosumnes River Boulevard along the Project’s southern boundary and with existing 12-inch stubs into the Project. This study is to confirm the design conditions and criteria of the proposed distribution lines within the Project meet the City of Sacramento criteria and Project demands.

## **II. STUDY AREA**

The Study Area of this Plan includes the Project Site and surrounding infrastructure included in Cosumnes River Boulevard and future 24<sup>th</sup> Street. The proposed water distribution system includes the backbone framework within the Project Site reflected on Figure 2. The proposed pipelines will range from 8 to 12 inches in diameter.

A water model for the proposed distribution system has been assembled specific to the Stone Beetland project. The model points of connection have been coordinated with the City of Sacramento Department of Utilities and flow tests have been conducted at the following locations:

- POC 1: 8” Main at Southern Terminus of Detroit Boulevard
- POC 2: 12” Main at Cosumnes River Boulevard and Proposed “B” Street

Detailed information for the model boundary conditions provided by the City of Sacramento is enclosed in Appendix C.

### III. DEMAND AND PEAKING FACTOR PROJECTIONS

This study utilizes the water demand values, system losses and peaking factors from the 2018 City of Sacramento Water Study Design Manual. Average Day Demand (ADD) unit water use factors for each land use per the Design Manual have been utilized to calculate the estimated water demand associated with the proposed Project. These water use factors include a 10% unaccounted water loss factor. A peaking factor of 2.0 was used to generate the Maximum Day Demand (MDD) and a 2.6 peaking factor was used to generate the Peak Hour Demand (PHD). The Project demands are summarized in Table 1.

**Table 1 – Project Demands**

Land Use	Total Units / Area	Base Unit Water Demand Factors (gpd)	Avg. Day Demand (gpd)	Peaking Factors	Max. Day Demand (gpd)	Peaking Factors	Peak Hour Demand (gpd)
Low Density Residential	190 DU	544.54	103,462	2.0	206,924	2.6	269,000
Medium Density Residential	262 DU	348.15	91,214	2.0	182,428	2.6	237,157
High Density Residential	711 DU	107.12	76,164	2.0	152,327	2.6	198,025
Commercial	6.1 AC	1,339	8,168	2.0	16,336	2.6	21,237
Open Space / Park Site	20.5 AC	2,678	54,900	2.0	109,800	2.6	142,740
Transit Station	17.6 AC	0	0	2.0	0	2.6	0
Roadways	18 AC	0	0	2.0	0	2.6	0
<b>TOTALS:</b>			<b>333,908</b>		<b>667,815</b>		<b>868,159</b>

### IV. PROPOSED WATER SYSTEM

The following system criteria for minimum operating conditions were established to ensure that the system criteria distribution systems are adequately sized to serve the Project.

**Table 2 – System Criteria for Minimum Operating Conditions**

Condition	Goal
<b>Average Day Demand Condition</b>	
Minimum Pressure	30 psi
Maximum Pressure	80 psi
Maximum Head Loss	7 ft/kft
Maximum Velocity	5 fps
Minimum Velocity	0.10 fps
<b>Maximum Day Plus Fire Flow Demand Condition</b>	
Minimum Pressure	20 psi
Maximum Head Loss	10 ft/kft
Maximum Velocity	10 fps
<b>Peak Hour Demand Condition</b>	
Minimum Pressure	30 psi
Maximum Head Loss	7 ft/kft
Maximum Velocity	7 fps

## **V. HYDRAULIC ANALYSIS SUMMARY**

### **A. Model Description**

H2O NET Water Version 17.0 was used for the water modeling. The model was updated to include the street framework and specific parcel layouts and demands within the Project area. The hydraulic modeling assumptions, criteria, and results are described below. The proposed water system that was included in the model is depicted on Figure 3.

### **B. Assumptions**

The following are the assumptions of the hydraulic modeling:

- A Hazen Williams “C” value of 130 was used to represent all pipe material, including Ductile Iron Pipe (DIP), Welded Steel, Concrete Cylinder and Polyvinyl Chloride (PVC) mains.
- Extended Period Simulations (EPS) are not warranted for this Study.
- Water demands and boundary pressure conditions were provided by the City of Sacramento Department of Utilities at two separate points of connection. These boundary conditions and flow test results are enclosed in Appendix C.

### **C. Hydraulic Demand Scenarios**

Three hydraulic demand scenarios were modeled to observe the operating behavior and to determine water supply facility sizing for the Project. This was done to size distribution lines and to check fire flow pressures and velocities through the mains. Fire flow demands are analyzed at appropriate nodes in the system and the results are used to determine the maximum available flow while maintaining the minimum required 20 psi pressure. The locations within the system that are most sensitive to fire flow demand are analyzed to determine the overall system response to the fire flow.

## D. Hydraulic Modeling Results

The hydraulic modeling criteria were used to determine the ability of the designed system to convey adequate flows and sustain sufficient pressures. In review of the various demand scenarios, the transmission and distribution mains are sized to meet current City of Sacramento Department of Utilities design standards with respect to pressure and velocity.

The table below summarize the normal operating hydraulic results from the various demand scenarios utilizing the criteria outlined above. Detailed results from each demand scenario can be found in Appendix A.

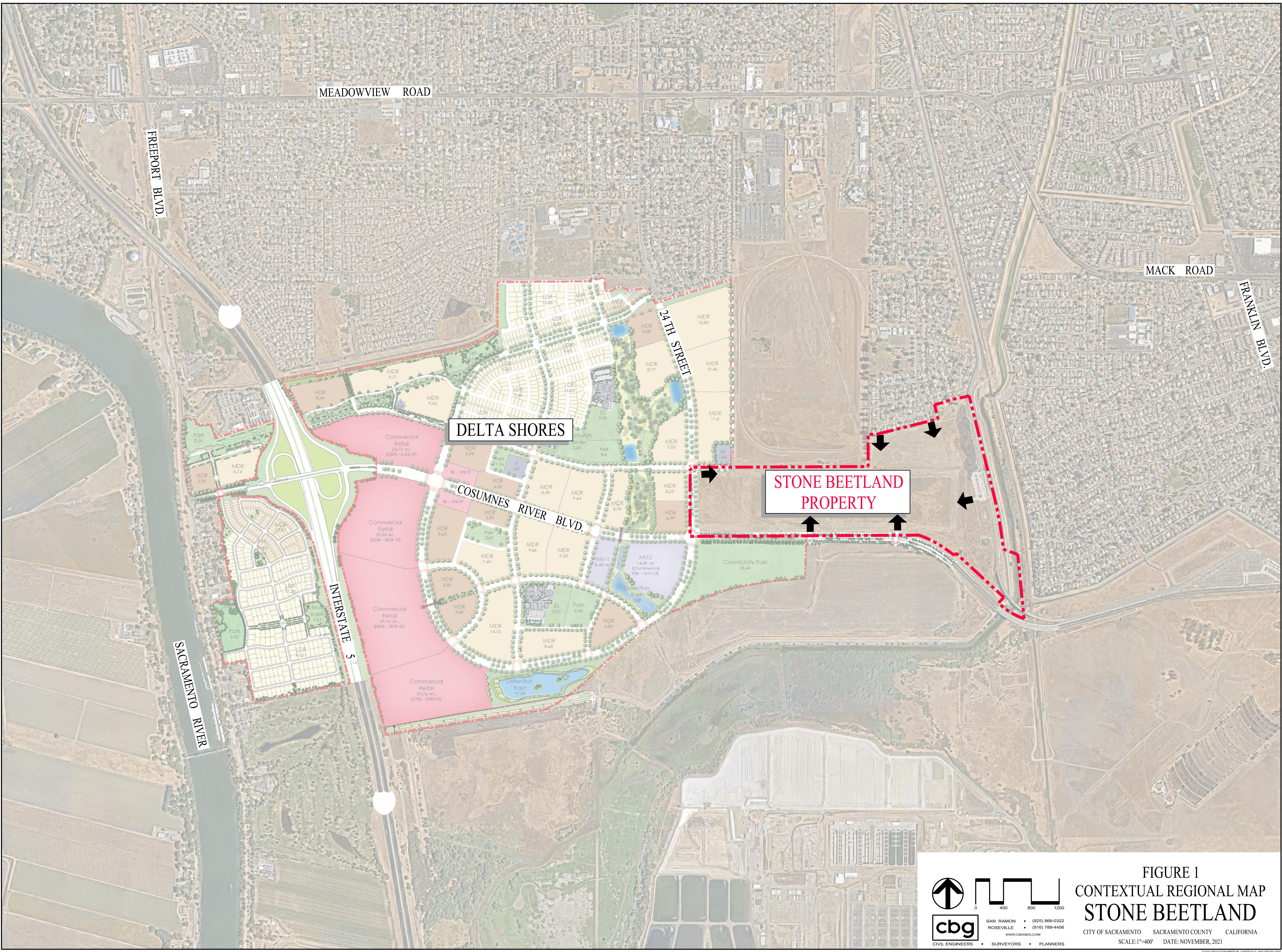
**Table 3 – Modeling Results**

<b>Demand Scenario</b>	<b>POC 1 Operating Pressure Node J169 (psi)</b>	<b>POC 2 Operating Pressure Node J299 (psi)</b>	<b>Minimum Pressure in Development (psi)</b>	<b>Minimum Pressure Location (Node)</b>	<b>Maximum Velocity in Development (fps)</b>	<b>Maximum Velocity Location (Pipe)</b>
Average Day	34.66	34.64	34.64	J299	0.42	P789
Maximum Day	34.57	34.51	34.51	J245	0.80	P789
Peak Hour	34.48	34.38	34.38	J245	1.04	P789
Maximum Day Plus Fire Flow	29.18	28.04	22.33	J243	4.67	P789

POC 1: 8-inch main at the Southern Terminus of Detroit Boulevard  
 POC 2: 12-inch main at Cosumnes River Boulevard and Street B

# FIGURES





**FIGURE 1**  
**CONTEXTUAL REGIONAL MAP**  
**STONE BEETLAND**  
 CITY OF SACRAMENTO SACRAMENTO COUNTY CALIFORNIA  
 SCALE: 1"=400' DATE: NOVEMBER, 2021

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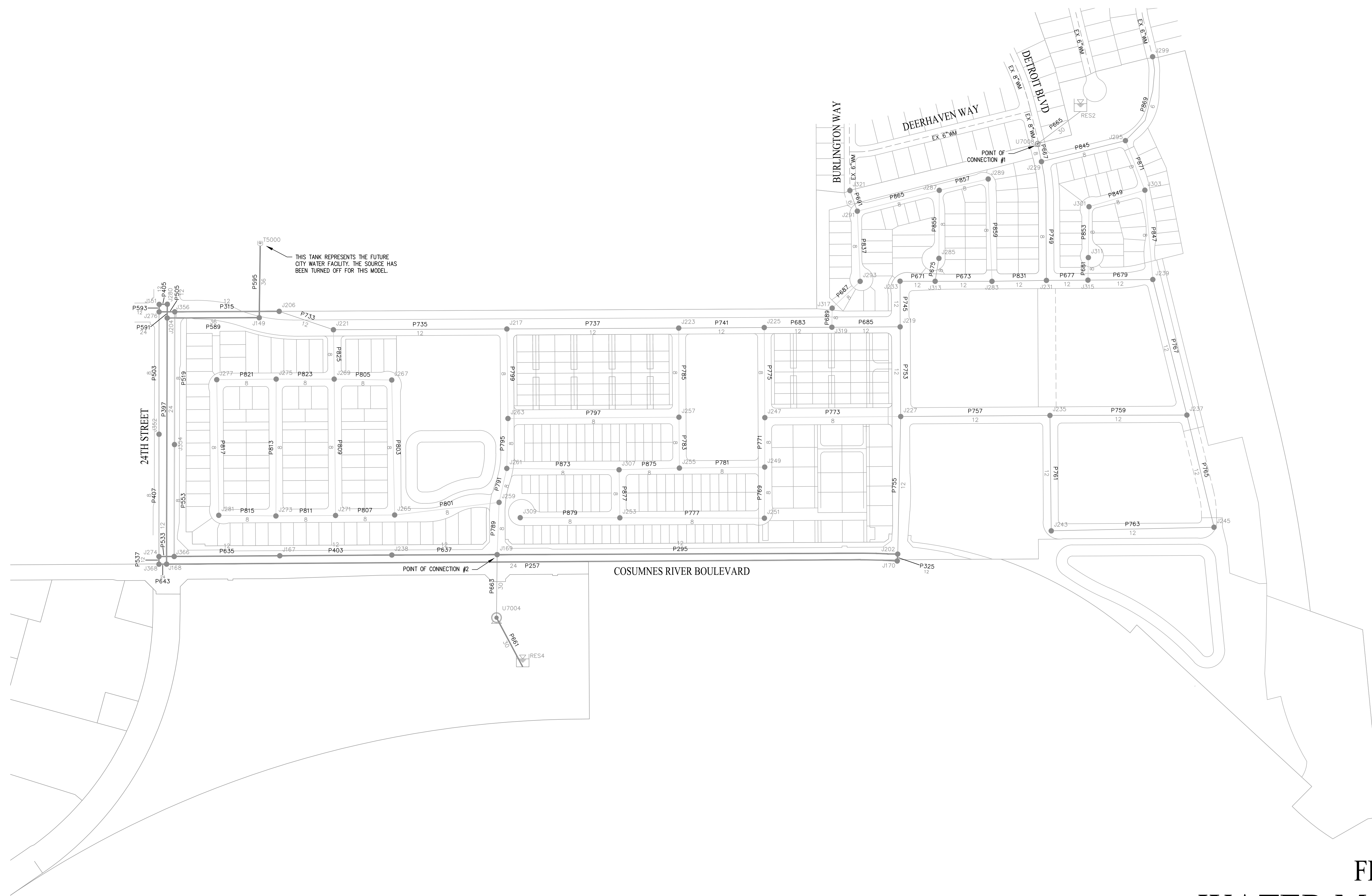
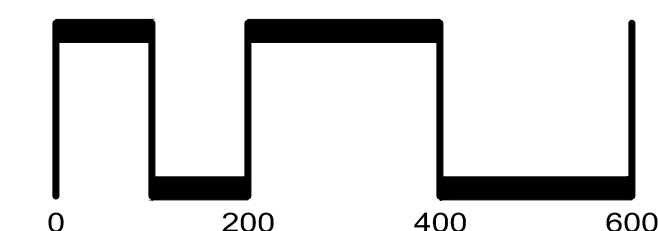
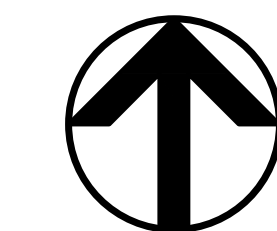


FIGURE 3  
**WATER MODEL SYSTEM**  
**STONE BEETLAND**

CITY OF SACRAMENTO SACRAMENTO COUNTY CALIFORNIA  
 SCALE: 1"=200' DATE: MARCH 31, 2023



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# **APPENDICES**

# **APPENDIX A**

## **Model Results**

Average Day

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
1	<input type="checkbox"/>	J169	0.00	10.00	90.00	34.66
2	<input type="checkbox"/>	J238	0.00	10.00	89.99	34.66
3	<input type="checkbox"/>	J167	0.00	10.00	89.98	34.66
4	<input type="checkbox"/>	J366	0.00	10.00	89.98	34.65
5	<input type="checkbox"/>	J274	0.00	10.00	89.98	34.65
6	<input type="checkbox"/>	J354	0.00	10.00	89.98	34.65
7	<input type="checkbox"/>	J352	0.00	10.00	89.97	34.65
8	<input type="checkbox"/>	J368	0.00	10.00	89.98	34.65
9	<input type="checkbox"/>	J168	0.00	10.00	89.97	34.65
10	<input type="checkbox"/>	J259	1.13	10.00	89.97	34.65
11	<input type="checkbox"/>	J149	0.00	10.00	89.97	34.65
12	<input type="checkbox"/>	J204	0.00	10.00	89.97	34.65
13	<input type="checkbox"/>	J280	0.00	10.00	89.97	34.65
14	<input type="checkbox"/>	J151	0.00	10.00	89.97	34.65
15	<input type="checkbox"/>	J170	0.00	10.00	89.97	34.65
16	<input type="checkbox"/>	J276	0.00	10.00	89.97	34.65
17	<input type="checkbox"/>	J202	0.00	10.00	89.97	34.65
18	<input type="checkbox"/>	J356	0.00	10.00	89.97	34.65
19	<input type="checkbox"/>	J206	0.00	10.00	89.97	34.65
20	<input type="checkbox"/>	J221	0.00	10.00	89.97	34.65
21	<input type="checkbox"/>	J265	4.16	10.00	89.97	34.65
22	<input type="checkbox"/>	J267	2.27	10.00	89.97	34.65
23	<input type="checkbox"/>	J269	3.78	10.00	89.97	34.65
24	<input type="checkbox"/>	J271	5.67	10.00	89.97	34.65
25	<input type="checkbox"/>	J261	6.14	10.00	89.97	34.65
26	<input type="checkbox"/>	J217	2.90	10.00	89.97	34.65
27	<input type="checkbox"/>	J275	4.16	10.00	89.97	34.65
28	<input type="checkbox"/>	J273	5.67	10.00	89.97	34.65
29	<input type="checkbox"/>	J281	5.21	10.00	89.97	34.65
30	<input type="checkbox"/>	J277	5.67	10.00	89.97	34.65
31	<input type="checkbox"/>	J263	12.22	10.00	89.97	34.65
32	<input type="checkbox"/>	J223	2.90	10.00	89.96	34.65
33	<input type="checkbox"/>	J257	4.84	10.00	89.96	34.65
34	<input type="checkbox"/>	J307	4.11	10.00	89.96	34.65
35	<input type="checkbox"/>	J255	2.18	10.00	89.96	34.65
36	<input type="checkbox"/>	J253	6.04	10.00	89.96	34.65
37	<input type="checkbox"/>	J309	2.42	10.00	89.96	34.65
38	<input type="checkbox"/>	J225	2.90	10.00	89.96	34.65
39	<input type="checkbox"/>	J249	2.42	10.00	89.96	34.65
40	<input type="checkbox"/>	J251	7.49	10.00	89.96	34.65
41	<input type="checkbox"/>	J247	14.12	10.00	89.96	34.65
42	<input type="checkbox"/>	J227	18.85	10.00	89.96	34.65
43	<input type="checkbox"/>	J319	0.00	10.00	89.96	34.65
44	<input type="checkbox"/>	J317	0.00	10.00	89.96	34.65
45	<input type="checkbox"/>	J219	1.21	10.00	89.96	34.65
46	<input type="checkbox"/>	J293	3.03	10.00	89.96	34.65
47	<input type="checkbox"/>	J233	4.48	10.00	89.96	34.64
48	<input type="checkbox"/>	J321	0.00	10.00	89.96	34.64
49	<input type="checkbox"/>	J291	3.03	10.00	89.96	34.64
50	<input type="checkbox"/>	J313	0.00	10.00	89.96	34.64
51	<input type="checkbox"/>	J285	3.03	10.00	89.96	34.64
52	<input type="checkbox"/>	J287	1.89	10.00	89.96	34.64
53	<input type="checkbox"/>	J289	3.03	10.00	89.95	34.64
54	<input type="checkbox"/>	J283	3.03	10.00	89.95	34.64
55	<input type="checkbox"/>	J235	13.22	10.00	89.95	34.64
56	<input type="checkbox"/>	J231	9.67	10.00	89.95	34.64
57	<input type="checkbox"/>	J315	0.00	10.00	89.95	34.64
58	<input type="checkbox"/>	J239	5.57	10.00	89.95	34.64
59	<input type="checkbox"/>	J243	5.06	10.00	89.95	34.64
60	<input type="checkbox"/>	J311	2.27	10.00	89.95	34.64
61	<input type="checkbox"/>	J237	8.74	10.00	89.95	34.64

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
62	<input type="checkbox"/>	J229	3.03	10.00	89.95	34.64
63	<input type="checkbox"/>	J301	3.03	10.00	89.95	34.64
64	<input type="checkbox"/>	J303	3.78	10.00	89.95	34.64
65	<input type="checkbox"/>	J295	1.51	10.00	89.95	34.64
66	<input type="checkbox"/>	J245	22.17	10.00	89.95	34.64
67	<input type="checkbox"/>	J299	3.53	10.00	89.95	34.64



	ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	HL/1000 (ft/k-ft)
1	P789	J169	J259	206.04	8.00	130.00	65.18	0.42	0.12
2	P791	J259	J261	137.35	8.00	130.00	42.85	0.27	0.05
3	P755	J227	J202	542.10	12.00	130.00	-90.19	0.26	0.03
4	P739	J217	J169	893.75	8.00	130.00	-34.10	0.22	0.04
5	P403	J167	J238	441.66	12.00	130.00	-68.74	0.19	0.02
6	P635	J366	J167	416.28	12.00	130.00	-68.74	0.19	0.02
7	P637	J238	J169	415.02	12.00	130.00	-68.74	0.19	0.02
8	P295	J169	J202	1,578.94	12.00	130.00	63.55	0.18	0.02
9	P533	J274	J366	60.00	12.00	130.00	-61.43	0.17	0.01
10	P537	J274	J368	29.96	12.00	130.00	57.01	0.16	0.01
11	P873	J261	J307	442.54	8.00	130.00	21.62	0.14	0.02
12	P801	J259	J265	414.60	8.00	130.00	21.20	0.14	0.01
13	P737	J223	J217	677.43	12.00	130.00	-46.90	0.13	0.01
14	P745	J233	J219	179.85	12.00	130.00	-46.41	0.13	0.01
15	P757	J235	J227	588.20	12.00	130.00	-43.99	0.12	0.01
16	P741	J225	J223	337.20	12.00	130.00	-42.36	0.12	0.01
17	P315	J356	J206	411.71	12.00	130.00	42.10	0.12	0.01
18	P733	J221	J206	225.66	12.00	130.00	-42.10	0.12	0.01
19	P661	RES4	U7004	50.00	30.00	130.00	231.56	0.11	0.00
20	P663	U7004	J169	5.00	30.00	130.00	231.56	0.11	0.00
21	P505	J276	J356	61.69	12.00	130.00	34.79	0.10	0.01
22	P825	J269	J221	194.47	8.00	130.00	-15.39	0.10	0.01
23	P795	J261	J263	196.68	8.00	130.00	15.08	0.10	0.01
24	P683	J225	J319	266.49	12.00	130.00	32.97	0.09	0.00
25	P671	J233	J313	138.16	12.00	130.00	32.09	0.09	0.00
26	P797	J257	J263	674.05	8.00	130.00	-13.87	0.09	0.01
27	P877	J253	J307	189.37	8.00	130.00	-13.86	0.09	0.01
28	P593	J151	J276	29.39	12.00	130.00	30.37	0.09	0.00
29	P405	J280	J151	32.15	12.00	130.00	30.37	0.09	0.00
30	P687	J293	J317	152.75	8.00	130.00	-12.70	0.08	0.01
31	P689	J317	J319	75.24	8.00	130.00	-12.70	0.08	0.01
32	P831	J231	J283	214.59	12.00	130.00	-27.75	0.08	0.00
33	P753	J219	J227	353.29	12.00	130.00	-27.34	0.08	0.00
34	P781	J249	J255	336.20	8.00	130.00	-12.14	0.08	0.01
35	P673	J313	J283	224.11	12.00	130.00	27.09	0.08	0.00
36	P735	J217	J221	683.58	12.00	130.00	-26.71	0.08	0.00
37	P325	J170	J202	27.23	12.00	130.00	26.64	0.08	0.00
38	P807	J265	J271	232.86	8.00	130.00	11.43	0.07	0.00
39	P823	J275	J269	228.70	8.00	130.00	-11.24	0.07	0.00
40	P799	J263	J217	352.64	8.00	130.00	-11.01	0.07	0.00
41	P783	J255	J257	200.47	8.00	130.00	-10.67	0.07	0.00
42	P747	J231	J233	576.84	8.00	130.00	-9.84	0.06	0.00
43	P837	J291	J293	276.72	8.00	130.00	-9.67	0.06	0.00
44	P811	J271	J273	235.09	8.00	130.00	9.47	0.06	0.00
45	P685	J319	J219	269.08	12.00	130.00	20.27	0.06	0.00
46	P677	J231	J315	163.70	12.00	130.00	17.58	0.05	0.00
47	P771	J249	J247	194.85	8.00	130.00	7.63	0.05	0.00
48	P553	J366	J354	440.90	8.00	130.00	7.31	0.05	0.00
49	P519	J356	J354	523.02	8.00	130.00	-7.31	0.05	0.00
50	P681	J311	J315	88.91	8.00	130.00	-7.18	0.05	0.00
51	P761	J243	J235	454.61	12.00	130.00	-15.65	0.04	0.00
52	P759	J237	J235	539.80	12.00	130.00	-15.12	0.04	0.00
53	P857	J287	J289	197.91	8.00	130.00	6.72	0.04	0.00
54	P865	J287	J291	333.25	8.00	130.00	-6.64	0.04	0.00
55	P775	J247	J225	354.94	8.00	130.00	-6.49	0.04	0.00
56	P643	J368	J168	30.00	24.00	130.00	57.01	0.04	0.00
57	P869	J295	J299	366.86	6.00	130.00	3.53	0.04	0.00
58	P821	J277	J275	234.18	8.00	130.00	-5.67	0.04	0.00
59	P749	J229	J231	469.29	8.00	130.00	-5.66	0.04	0.00
60	P803	J265	J267	531.78	8.00	130.00	5.61	0.04	0.00
61	P777	J251	J253	569.75	8.00	130.00	-5.40	0.03	0.00

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	HL/1000 (ft/k-ft)
62	<input type="checkbox"/>	P815	J273	J281	225.33	8.00	130.00	5.21	0.03	0.00
63	<input type="checkbox"/>	P765	J245	J237	454.61	12.00	130.00	-11.58	0.03	0.00
64	<input type="checkbox"/>	P675	J285	J313	91.58	8.00	130.00	-5.00	0.03	0.00
65	<input type="checkbox"/>	P853	J301	J311	200.46	8.00	130.00	-4.91	0.03	0.00
66	<input type="checkbox"/>	P763	J245	J243	641.81	12.00	130.00	-10.59	0.03	0.00
67	<input type="checkbox"/>	P751	J239	J231	419.44	8.00	130.00	-4.69	0.03	0.00
68	<input type="checkbox"/>	P679	J315	J239	255.73	12.00	130.00	10.39	0.03	0.00
69	<input type="checkbox"/>	P503	J276	J352	482.01	8.00	130.00	-4.42	0.03	0.00
70	<input type="checkbox"/>	P407	J352	J274	482.01	8.00	130.00	-4.42	0.03	0.00
71	<input type="checkbox"/>	P847	J303	J239	353.40	8.00	130.00	-4.31	0.03	0.00
72	<input type="checkbox"/>	P809	J271	J269	537.32	8.00	130.00	-3.71	0.02	0.00
73	<input type="checkbox"/>	P859	J289	J283	403.45	8.00	130.00	3.69	0.02	0.00
74	<input type="checkbox"/>	P875	J307	J255	237.90	8.00	130.00	3.65	0.02	0.00
75	<input type="checkbox"/>	P591	J280	J204	54.27	24.00	130.00	-30.37	0.02	0.00
76	<input type="checkbox"/>	P397	J204	J168	969.72	24.00	130.00	-30.37	0.02	0.00
77	<input type="checkbox"/>	P805	J267	J269	226.91	8.00	130.00	3.34	0.02	0.00
78	<input type="checkbox"/>	P257	J170	J168	2,880.19	24.00	130.00	-26.64	0.02	0.00
79	<input type="checkbox"/>	P845	J295	J229	341.23	8.00	130.00	-2.63	0.02	0.00
80	<input type="checkbox"/>	P879	J253	J309	392.67	8.00	130.00	2.42	0.02	0.00
81	<input type="checkbox"/>	P871	J303	J295	209.72	8.00	130.00	2.41	0.02	0.00
82	<input type="checkbox"/>	P767	J237	J239	550.60	12.00	130.00	-5.20	0.01	0.00
83	<input type="checkbox"/>	P769	J251	J249	201.37	8.00	130.00	-2.09	0.01	0.00
84	<input type="checkbox"/>	P855	J285	J287	268.07	8.00	130.00	1.97	0.01	0.00
85	<input type="checkbox"/>	P849	J303	J301	229.53	8.00	130.00	-1.88	0.01	0.00
86	<input type="checkbox"/>	P785	J257	J223	351.06	8.00	130.00	-1.64	0.01	0.00
87	<input type="checkbox"/>	P813	J273	J275	539.11	8.00	130.00	-1.41	0.01	0.00
88	<input type="checkbox"/>	P667	U7008	J229	72.10	8.00	130.00	0.00	0.00	0.00
89	<input type="checkbox"/>	P691	J291	J321	86.30	6.00	130.00	0.00	0.00	0.00
90	<input type="checkbox"/>	P773	J247	J227	535.60	8.00	130.00	0.00	0.00	0.00
91	<input type="checkbox"/>	P665	RES2	U7008	10.00	30.00	130.00	0.00	0.00	0.00
92	<input type="checkbox"/>	P595	J149	T5000	282.60	36.00	130.00	0.00	0.00	0.00
93	<input type="checkbox"/>	P589	J204	J149	362.77	36.00	130.00	0.00	0.00	0.00
94	<input type="checkbox"/>	P817	J281	J277	534.50	8.00	130.00	0.00	0.00	0.00

Maximum Day

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
1	<input type="checkbox"/>	J169	0.00	10.00	89.78	34.57
2	<input type="checkbox"/>	J238	0.00	10.00	89.75	34.56
3	<input type="checkbox"/>	J167	0.00	10.00	89.72	34.54
4	<input type="checkbox"/>	J259	8.70	10.00	89.70	34.53
5	<input type="checkbox"/>	J366	0.00	10.00	89.70	34.53
6	<input type="checkbox"/>	J274	0.00	10.00	89.69	34.53
7	<input type="checkbox"/>	J354	0.00	10.00	89.69	34.53
8	<input type="checkbox"/>	J368	0.00	10.00	89.69	34.53
9	<input type="checkbox"/>	J168	0.00	10.00	89.69	34.53
10	<input type="checkbox"/>	J170	0.00	10.00	89.69	34.53
11	<input type="checkbox"/>	J202	0.00	10.00	89.69	34.53
12	<input type="checkbox"/>	J149	0.00	10.00	89.69	34.53
13	<input type="checkbox"/>	J204	0.00	10.00	89.69	34.53
14	<input type="checkbox"/>	J280	0.00	10.00	89.69	34.53
15	<input type="checkbox"/>	J151	0.00	10.00	89.69	34.53
16	<input type="checkbox"/>	J276	0.00	10.00	89.69	34.53
17	<input type="checkbox"/>	J356	0.00	10.00	89.69	34.53
18	<input type="checkbox"/>	J352	45.12	10.00	89.68	34.53
19	<input type="checkbox"/>	J206	0.00	10.00	89.68	34.53
20	<input type="checkbox"/>	J221	0.00	10.00	89.68	34.52
21	<input type="checkbox"/>	J261	7.74	10.00	89.68	34.52
22	<input type="checkbox"/>	J265	8.32	10.00	89.68	34.52
23	<input type="checkbox"/>	J217	5.80	10.00	89.67	34.52
24	<input type="checkbox"/>	J267	5.30	10.00	89.67	34.52
25	<input type="checkbox"/>	J269	7.56	10.00	89.67	34.52
26	<input type="checkbox"/>	J271	11.34	10.00	89.67	34.52
27	<input type="checkbox"/>	J263	23.44	10.00	89.67	34.52
28	<input type="checkbox"/>	J275	9.08	10.00	89.67	34.52
29	<input type="checkbox"/>	J273	11.34	10.00	89.67	34.52
30	<input type="checkbox"/>	J277	7.56	10.00	89.67	34.52
31	<input type="checkbox"/>	J281	10.58	10.00	89.67	34.52
32	<input type="checkbox"/>	J223	5.80	10.00	89.66	34.52
33	<input type="checkbox"/>	J307	0.00	10.00	89.66	34.52
34	<input type="checkbox"/>	J257	21.96	10.00	89.66	34.52
35	<input type="checkbox"/>	J255	9.68	10.00	89.66	34.51
36	<input type="checkbox"/>	J309	0.00	10.00	89.65	34.51
37	<input type="checkbox"/>	J253	12.08	10.00	89.65	34.51
38	<input type="checkbox"/>	J225	4.36	10.00	89.65	34.51
39	<input type="checkbox"/>	J249	4.36	10.00	89.65	34.51
40	<input type="checkbox"/>	J227	15.96	10.00	89.65	34.51
41	<input type="checkbox"/>	J247	10.16	10.00	89.65	34.51
42	<input type="checkbox"/>	J251	22.72	10.00	89.65	34.51
43	<input type="checkbox"/>	J319	0.00	10.00	89.65	34.51
44	<input type="checkbox"/>	J219	4.36	10.00	89.65	34.51
45	<input type="checkbox"/>	J317	0.00	10.00	89.65	34.51
46	<input type="checkbox"/>	J293	5.30	10.00	89.65	34.51
47	<input type="checkbox"/>	J233	2.26	10.00	89.65	34.51
48	<input type="checkbox"/>	J321	0.00	10.00	89.64	34.51
49	<input type="checkbox"/>	J291	5.30	10.00	89.64	34.51
50	<input type="checkbox"/>	J313	0.00	10.00	89.64	34.51
51	<input type="checkbox"/>	J285	4.54	10.00	89.64	34.51
52	<input type="checkbox"/>	J287	5.30	10.00	89.64	34.51
53	<input type="checkbox"/>	J289	6.06	10.00	89.64	34.51
54	<input type="checkbox"/>	J283	6.06	10.00	89.64	34.51
55	<input type="checkbox"/>	J231	3.02	10.00	89.64	34.51
56	<input type="checkbox"/>	J315	0.00	10.00	89.64	34.51
57	<input type="checkbox"/>	J311	0.00	10.00	89.64	34.51
58	<input type="checkbox"/>	J229	3.78	10.00	89.64	34.51
59	<input type="checkbox"/>	J299	0.00	10.00	89.64	34.51
60	<input type="checkbox"/>	J295	2.26	10.00	89.64	34.51
61	<input type="checkbox"/>	J239	3.02	10.00	89.64	34.51

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
62	<input type="checkbox"/>	J301	6.80	10.00	89.64	34.51
63	<input type="checkbox"/>	J303	6.06	10.00	89.64	34.51
64	<input type="checkbox"/>	J237	0.00	10.00	89.64	34.51
65	<input type="checkbox"/>	J235	76.66	10.00	89.64	34.51
66	<input type="checkbox"/>	J243	0.00	10.00	89.64	34.51
67	<input type="checkbox"/>	J245	40.46	10.00	89.64	34.51

Beetland 3.0 MDD Pipe Report

	ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	HL/1000 (ft/k-ft)
1	P789	J169	J259	206.04	8.00	130.00	125.05	0.80	0.39
2	P791	J259	J261	137.35	8.00	130.00	75.00	0.48	0.15
3	P755	J227	J202	542.10	12.00	130.00	-147.01	0.42	0.07
4	P739	J217	J169	893.75	8.00	130.00	-64.65	0.41	0.11
5	P403	J167	J238	441.66	12.00	130.00	-135.95	0.39	0.06
6	P635	J366	J167	416.28	12.00	130.00	-135.95	0.39	0.06
7	P637	J238	J169	415.02	12.00	130.00	-135.95	0.39	0.06
8	P295	J169	J202	1,578.94	12.00	130.00	124.56	0.35	0.05
9	P533	J274	J366	60.00	12.00	130.00	-121.60	0.34	0.05
10	P537	J274	J368	29.96	12.00	130.00	96.70	0.27	0.03
11	P801	J259	J265	414.60	8.00	130.00	41.35	0.26	0.05
12	P757	J235	J227	588.20	12.00	130.00	-84.64	0.24	0.03
13	P873	J261	J307	442.54	8.00	130.00	37.22	0.24	0.04
14	P737	J223	J217	677.43	12.00	130.00	-79.23	0.22	0.02
15	P593	J151	J276	29.39	12.00	130.00	74.24	0.21	0.02
16	P405	J280	J151	32.15	12.00	130.00	74.24	0.21	0.02
17	P661	RES4	U7004	50.00	30.00	130.00	450.20	0.20	0.01
18	P663	U7004	J169	5.00	30.00	130.00	450.20	0.20	0.01
19	P745	J233	J219	179.85	12.00	130.00	-71.46	0.20	0.02
20	P315	J356	J206	411.71	12.00	130.00	68.37	0.19	0.02
21	P733	J221	J206	225.66	12.00	130.00	-68.37	0.19	0.02
22	P795	J261	J263	196.68	8.00	130.00	30.04	0.19	0.03
23	P825	J269	J221	194.47	8.00	130.00	-29.73	0.19	0.03
24	P741	J225	J223	337.20	12.00	130.00	-63.13	0.18	0.02
25	P407	J352	J274	482.01	8.00	130.00	-24.90	0.16	0.02
26	P797	J257	J263	674.05	8.00	130.00	-24.86	0.16	0.02
27	P505	J276	J356	61.69	12.00	130.00	54.02	0.15	0.01
28	P671	J233	J313	138.16	12.00	130.00	53.55	0.15	0.01
29	P877	J253	J307	189.37	8.00	130.00	-23.38	0.15	0.02
30	P683	J225	J319	266.49	12.00	130.00	50.90	0.14	0.01
31	P807	J265	J271	232.86	8.00	130.00	21.96	0.14	0.02
32	P823	J275	J269	228.70	8.00	130.00	-20.96	0.13	0.01
33	P687	J293	J317	152.75	8.00	130.00	-20.78	0.13	0.01
34	P689	J317	J319	75.24	8.00	130.00	-20.78	0.13	0.01
35	P753	J219	J227	353.29	12.00	130.00	-45.70	0.13	0.01
36	P503	J276	J352	482.01	8.00	130.00	20.22	0.13	0.01
37	P673	J313	J283	224.11	12.00	130.00	43.54	0.12	0.01
38	P831	J231	J283	214.59	12.00	130.00	-41.76	0.12	0.01
39	P799	J263	J217	352.64	8.00	130.00	-18.26	0.12	0.01
40	P811	J271	J273	235.09	8.00	130.00	17.60	0.11	0.01
41	P781	J249	J255	336.20	8.00	130.00	-17.37	0.11	0.01
42	P735	J217	J221	683.58	12.00	130.00	-38.64	0.11	0.01
43	P677	J231	J315	163.70	12.00	130.00	35.32	0.10	0.01
44	P747	J231	J233	576.84	8.00	130.00	-15.66	0.10	0.01
45	P837	J291	J293	276.72	8.00	130.00	-15.48	0.10	0.01
46	P767	J237	J239	550.60	12.00	130.00	-32.48	0.09	0.00
47	P553	J366	J354	440.90	8.00	130.00	14.35	0.09	0.01
48	P519	J356	J354	523.02	8.00	130.00	-14.35	0.09	0.01
49	P875	J307	J255	237.90	8.00	130.00	13.85	0.09	0.01
50	P685	J319	J219	269.08	12.00	130.00	30.13	0.09	0.00
51	P783	J255	J257	200.47	8.00	130.00	-13.20	0.08	0.01
52	P679	J315	J239	255.73	12.00	130.00	26.68	0.08	0.00
53	P769	J251	J249	201.37	8.00	130.00	-11.42	0.07	0.00
54	P765	J245	J237	454.61	12.00	130.00	-25.53	0.07	0.00
55	P777	J251	J253	569.75	8.00	130.00	-11.30	0.07	0.00
56	P803	J265	J267	531.78	8.00	130.00	11.07	0.07	0.00
57	P643	J368	J168	30.00	24.00	130.00	96.70	0.07	0.00
58	P751	J239	J231	419.44	8.00	130.00	-10.43	0.07	0.00
59	P857	J287	J289	197.91	8.00	130.00	10.35	0.07	0.00
60	P785	J257	J223	351.06	8.00	130.00	-10.30	0.07	0.00
61	P865	J287	J291	333.25	8.00	130.00	-10.18	0.06	0.00

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	HL/1000 (ft/k-ft)
62	<input type="checkbox"/>	P675	J285	J313	91.58	8.00	130.00	-10.01	0.06	0.00
63	<input type="checkbox"/>	P325	J170	J202	27.23	12.00	130.00	22.46	0.06	0.00
64	<input type="checkbox"/>	P821	J277	J275	234.18	8.00	130.00	-9.28	0.06	0.00
65	<input type="checkbox"/>	P815	J273	J281	225.33	8.00	130.00	8.86	0.06	0.00
66	<input type="checkbox"/>	P749	J229	J231	469.29	8.00	130.00	-8.65	0.06	0.00
67	<input type="checkbox"/>	P853	J301	J311	200.46	8.00	130.00	-8.64	0.06	0.00
68	<input type="checkbox"/>	P681	J311	J315	88.91	8.00	130.00	-8.64	0.06	0.00
69	<input type="checkbox"/>	P397	J204	J168	969.72	24.00	130.00	-74.24	0.05	0.00
70	<input type="checkbox"/>	P591	J280	J204	54.27	24.00	130.00	-74.24	0.05	0.00
71	<input type="checkbox"/>	P775	J247	J225	354.94	8.00	130.00	-7.86	0.05	0.00
72	<input type="checkbox"/>	P809	J271	J269	537.32	8.00	130.00	-6.98	0.04	0.00
73	<input type="checkbox"/>	P761	J243	J235	454.61	12.00	130.00	-14.93	0.04	0.00
74	<input type="checkbox"/>	P763	J245	J243	641.81	12.00	130.00	-14.93	0.04	0.00
75	<input type="checkbox"/>	P805	J267	J269	226.91	8.00	130.00	5.77	0.04	0.00
76	<input type="checkbox"/>	P855	J285	J287	268.07	8.00	130.00	5.47	0.03	0.00
77	<input type="checkbox"/>	P845	J295	J229	341.23	8.00	130.00	-4.87	0.03	0.00
78	<input type="checkbox"/>	P859	J289	J283	403.45	8.00	130.00	4.29	0.03	0.00
79	<input type="checkbox"/>	P759	J237	J235	539.80	12.00	130.00	6.95	0.02	0.00
80	<input type="checkbox"/>	P871	J303	J295	209.72	8.00	130.00	-2.61	0.02	0.00
81	<input type="checkbox"/>	P813	J273	J275	539.11	8.00	130.00	-2.60	0.02	0.00
82	<input type="checkbox"/>	P257	J170	J168	2,880.19	24.00	130.00	-22.46	0.02	0.00
83	<input type="checkbox"/>	P849	J303	J301	229.53	8.00	130.00	-1.84	0.01	0.00
84	<input type="checkbox"/>	P817	J281	J277	534.50	8.00	130.00	-1.72	0.01	0.00
85	<input type="checkbox"/>	P847	J303	J239	353.40	8.00	130.00	-1.62	0.01	0.00
86	<input type="checkbox"/>	P771	J249	J247	194.85	8.00	130.00	1.58	0.01	0.00
87	<input type="checkbox"/>	P773	J247	J227	535.60	8.00	130.00	-0.72	0.00	0.00
88	<input type="checkbox"/>	P691	J291	J321	86.30	6.00	130.00	0.00	0.00	0.00
89	<input type="checkbox"/>	P869	J295	J299	366.86	6.00	130.00	0.00	0.00	0.00
90	<input type="checkbox"/>	P667	U7008	J229	72.10	8.00	130.00	0.00	0.00	0.00
91	<input type="checkbox"/>	P665	RES2	U7008	10.00	30.00	130.00	0.00	0.00	0.00
92	<input type="checkbox"/>	P595	J149	T5000	282.60	36.00	130.00	0.00	0.00	0.00
93	<input type="checkbox"/>	P589	J204	J149	362.77	36.00	130.00	0.00	0.00	0.00
94	<input type="checkbox"/>	P879	J253	J309	392.67	8.00	130.00	0.00	0.00	0.00

Peak Hour



		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
1	<input type="checkbox"/>	J169	0.00	10.00	89.58	34.48
2	<input type="checkbox"/>	J238	0.00	10.00	89.54	34.46
3	<input type="checkbox"/>	J167	0.00	10.00	89.49	34.44
4	<input type="checkbox"/>	J259	11.31	10.00	89.45	34.42
5	<input type="checkbox"/>	J366	0.00	10.00	89.45	34.42
6	<input type="checkbox"/>	J274	0.00	10.00	89.44	34.42
7	<input type="checkbox"/>	J354	0.00	10.00	89.44	34.42
8	<input type="checkbox"/>	J368	0.00	10.00	89.44	34.42
9	<input type="checkbox"/>	J168	0.00	10.00	89.44	34.42
10	<input type="checkbox"/>	J170	0.00	10.00	89.44	34.42
11	<input type="checkbox"/>	J202	0.00	10.00	89.44	34.42
12	<input type="checkbox"/>	J149	0.00	10.00	89.44	34.42
13	<input type="checkbox"/>	J204	0.00	10.00	89.44	34.42
14	<input type="checkbox"/>	J280	0.00	10.00	89.44	34.42
15	<input type="checkbox"/>	J151	0.00	10.00	89.44	34.42
16	<input type="checkbox"/>	J276	0.00	10.00	89.44	34.42
17	<input type="checkbox"/>	J356	0.00	10.00	89.44	34.42
18	<input type="checkbox"/>	J352	58.66	10.00	89.43	34.42
19	<input type="checkbox"/>	J206	0.00	10.00	89.43	34.41
20	<input type="checkbox"/>	J221	0.00	10.00	89.42	34.41
21	<input type="checkbox"/>	J261	10.06	10.00	89.41	34.41
22	<input type="checkbox"/>	J265	10.82	10.00	89.41	34.41
23	<input type="checkbox"/>	J217	7.54	10.00	89.41	34.41
24	<input type="checkbox"/>	J267	6.89	10.00	89.41	34.41
25	<input type="checkbox"/>	J269	9.83	10.00	89.41	34.41
26	<input type="checkbox"/>	J271	14.74	10.00	89.41	34.41
27	<input type="checkbox"/>	J263	30.47	10.00	89.41	34.41
28	<input type="checkbox"/>	J275	11.80	10.00	89.40	34.41
29	<input type="checkbox"/>	J273	14.74	10.00	89.40	34.41
30	<input type="checkbox"/>	J277	9.83	10.00	89.40	34.41
31	<input type="checkbox"/>	J281	13.75	10.00	89.40	34.41
32	<input type="checkbox"/>	J223	7.54	10.00	89.39	34.40
33	<input type="checkbox"/>	J307	0.00	10.00	89.38	34.40
34	<input type="checkbox"/>	J257	28.55	10.00	89.38	34.40
35	<input type="checkbox"/>	J255	12.58	10.00	89.38	34.40
36	<input type="checkbox"/>	J309	0.00	10.00	89.38	34.40
37	<input type="checkbox"/>	J253	15.70	10.00	89.38	34.40
38	<input type="checkbox"/>	J225	5.67	10.00	89.38	34.39
39	<input type="checkbox"/>	J249	5.67	10.00	89.38	34.39
40	<input type="checkbox"/>	J227	20.75	10.00	89.38	34.39
41	<input type="checkbox"/>	J247	13.21	10.00	89.38	34.39
42	<input type="checkbox"/>	J251	29.54	10.00	89.38	34.39
43	<input type="checkbox"/>	J319	0.00	10.00	89.37	34.39
44	<input type="checkbox"/>	J219	5.67	10.00	89.37	34.39
45	<input type="checkbox"/>	J317	0.00	10.00	89.37	34.39
46	<input type="checkbox"/>	J293	6.89	10.00	89.37	34.39
47	<input type="checkbox"/>	J233	2.94	10.00	89.37	34.39
48	<input type="checkbox"/>	J321	0.00	10.00	89.36	34.39
49	<input type="checkbox"/>	J291	6.89	10.00	89.36	34.39
50	<input type="checkbox"/>	J313	0.00	10.00	89.36	34.39
51	<input type="checkbox"/>	J285	5.90	10.00	89.36	34.39
52	<input type="checkbox"/>	J287	6.89	10.00	89.36	34.39
53	<input type="checkbox"/>	J289	7.88	10.00	89.36	34.39
54	<input type="checkbox"/>	J283	7.88	10.00	89.36	34.39
55	<input type="checkbox"/>	J231	3.93	10.00	89.36	34.39
56	<input type="checkbox"/>	J315	0.00	10.00	89.36	34.39
57	<input type="checkbox"/>	J311	0.00	10.00	89.36	34.39
58	<input type="checkbox"/>	J229	4.91	10.00	89.36	34.39
59	<input type="checkbox"/>	J299	0.00	10.00	89.36	34.38
60	<input type="checkbox"/>	J295	2.94	10.00	89.36	34.38
61	<input type="checkbox"/>	J239	3.93	10.00	89.36	34.38

		ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
62	<input type="checkbox"/>	J301	8.84	10.00	89.36	34.38
63	<input type="checkbox"/>	J303	7.88	10.00	89.36	34.38
64	<input type="checkbox"/>	J237	0.00	10.00	89.35	34.38
65	<input type="checkbox"/>	J235	99.66	10.00	89.35	34.38
66	<input type="checkbox"/>	J243	0.00	10.00	89.35	34.38
67	<input type="checkbox"/>	J245	52.60	10.00	89.35	34.38

	ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	HL/1000 (ft/k-ft)
1	P789	J169	J259	206.04	8.00	130.00	162.57	1.04	0.63
2	P791	J259	J261	137.35	8.00	130.00	97.50	0.62	0.25
3	P755	J227	J202	542.10	12.00	130.00	-191.13	0.54	0.12
4	P739	J217	J169	893.75	8.00	130.00	-84.04	0.54	0.19
5	P403	J167	J238	441.66	12.00	130.00	-176.74	0.50	0.10
6	P635	J366	J167	416.28	12.00	130.00	-176.74	0.50	0.10
7	P637	J238	J169	415.02	12.00	130.00	-176.74	0.50	0.10
8	P295	J169	J202	1,578.94	12.00	130.00	161.93	0.46	0.09
9	P533	J274	J366	60.00	12.00	130.00	-158.08	0.45	0.08
10	P537	J274	J368	29.96	12.00	130.00	125.71	0.36	0.05
11	P801	J259	J265	414.60	8.00	130.00	53.76	0.34	0.08
12	P757	J235	J227	588.20	12.00	130.00	-110.04	0.31	0.04
13	P873	J261	J307	442.54	8.00	130.00	48.39	0.31	0.07
14	P737	J223	J217	677.43	12.00	130.00	-103.00	0.29	0.04
15	P593	J151	J276	29.39	12.00	130.00	96.51	0.27	0.03
16	P405	J280	J151	32.15	12.00	130.00	96.51	0.27	0.03
17	P661	RES4	U7004	50.00	30.00	130.00	585.28	0.27	0.01
18	P663	U7004	J169	5.00	30.00	130.00	585.28	0.27	0.01
19	P745	J233	J219	179.85	12.00	130.00	-92.91	0.26	0.03
20	P315	J356	J206	411.71	12.00	130.00	88.88	0.25	0.03
21	P733	J221	J206	225.66	12.00	130.00	-88.88	0.25	0.03
22	P795	J261	J263	196.68	8.00	130.00	39.05	0.25	0.04
23	P825	J269	J221	194.47	8.00	130.00	-38.64	0.25	0.04
24	P741	J225	J223	337.20	12.00	130.00	-82.07	0.23	0.02
25	P407	J352	J274	482.01	8.00	130.00	-32.37	0.21	0.03
26	P797	J257	J263	674.05	8.00	130.00	-32.32	0.21	0.03
27	P505	J276	J356	61.69	12.00	130.00	70.23	0.20	0.02
28	P671	J233	J313	138.16	12.00	130.00	69.62	0.20	0.02
29	P877	J253	J307	189.37	8.00	130.00	-30.39	0.19	0.03
30	P683	J225	J319	266.49	12.00	130.00	66.18	0.19	0.02
31	P807	J265	J271	232.86	8.00	130.00	28.55	0.18	0.03
32	P823	J275	J269	228.70	8.00	130.00	-27.25	0.17	0.02
33	P687	J293	J317	152.75	8.00	130.00	-27.01	0.17	0.02
34	P689	J317	J319	75.24	8.00	130.00	-27.01	0.17	0.02
35	P753	J219	J227	353.29	12.00	130.00	-59.41	0.17	0.01
36	P503	J276	J352	482.01	8.00	130.00	26.29	0.17	0.02
37	P673	J313	J283	224.11	12.00	130.00	56.61	0.16	0.01
38	P831	J231	J283	214.59	12.00	130.00	-54.30	0.15	0.01
39	P799	J263	J217	352.64	8.00	130.00	-23.73	0.15	0.02
40	P811	J271	J273	235.09	8.00	130.00	22.87	0.15	0.02
41	P781	J249	J255	336.20	8.00	130.00	-22.58	0.14	0.02
42	P735	J217	J221	683.58	12.00	130.00	-50.24	0.14	0.01
43	P677	J231	J315	163.70	12.00	130.00	45.92	0.13	0.01
44	P747	J231	J233	576.84	8.00	130.00	-20.36	0.13	0.01
45	P837	J291	J293	276.72	8.00	130.00	-20.12	0.13	0.01
46	P767	J237	J239	550.60	12.00	130.00	-42.22	0.12	0.01
47	P553	J366	J354	440.90	8.00	130.00	18.65	0.12	0.01
48	P519	J356	J354	523.02	8.00	130.00	-18.65	0.12	0.01
49	P875	J307	J255	237.90	8.00	130.00	18.00	0.11	0.01
50	P685	J319	J219	269.08	12.00	130.00	39.17	0.11	0.01
51	P783	J255	J257	200.47	8.00	130.00	-17.16	0.11	0.01
52	P679	J315	J239	255.73	12.00	130.00	34.69	0.10	0.01
53	P769	J251	J249	201.37	8.00	130.00	-14.85	0.09	0.01
54	P765	J245	J237	454.61	12.00	130.00	-33.19	0.09	0.00
55	P777	J251	J253	569.75	8.00	130.00	-14.69	0.09	0.01
56	P803	J265	J267	531.78	8.00	130.00	14.39	0.09	0.01
57	P643	J368	J168	30.00	24.00	130.00	125.71	0.09	0.00
58	P751	J239	J231	419.44	8.00	130.00	-13.56	0.09	0.01
59	P857	J287	J289	197.91	8.00	130.00	13.45	0.09	0.01
60	P785	J257	J223	351.06	8.00	130.00	-13.39	0.09	0.01
61	P865	J287	J291	333.25	8.00	130.00	-13.23	0.08	0.01

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	HL/1000 (ft/k-ft)
62	<input type="checkbox"/>	P675	J285	J313	91.58	8.00	130.00	-13.01	0.08	0.01
63	<input type="checkbox"/>	P325	J170	J202	27.23	12.00	130.00	29.20	0.08	0.00
64	<input type="checkbox"/>	P821	J277	J275	234.18	8.00	130.00	-12.07	0.08	0.01
65	<input type="checkbox"/>	P815	J273	J281	225.33	8.00	130.00	11.51	0.07	0.00
66	<input type="checkbox"/>	P749	J229	J231	469.29	8.00	130.00	-11.24	0.07	0.00
67	<input type="checkbox"/>	P853	J301	J311	200.46	8.00	130.00	-11.23	0.07	0.00
68	<input type="checkbox"/>	P681	J311	J315	88.91	8.00	130.00	-11.23	0.07	0.00
69	<input type="checkbox"/>	P397	J204	J168	969.72	24.00	130.00	-96.51	0.07	0.00
70	<input type="checkbox"/>	P591	J280	J204	54.27	24.00	130.00	-96.51	0.07	0.00
71	<input type="checkbox"/>	P775	J247	J225	354.94	8.00	130.00	-10.22	0.07	0.00
72	<input type="checkbox"/>	P809	J271	J269	537.32	8.00	130.00	-9.07	0.06	0.00
73	<input type="checkbox"/>	P761	J243	J235	454.61	12.00	130.00	-19.41	0.06	0.00
74	<input type="checkbox"/>	P763	J245	J243	641.81	12.00	130.00	-19.41	0.06	0.00
75	<input type="checkbox"/>	P805	J267	J269	226.91	8.00	130.00	7.50	0.05	0.00
76	<input type="checkbox"/>	P855	J285	J287	268.07	8.00	130.00	7.11	0.05	0.00
77	<input type="checkbox"/>	P845	J295	J229	341.23	8.00	130.00	-6.33	0.04	0.00
78	<input type="checkbox"/>	P859	J289	J283	403.45	8.00	130.00	5.57	0.04	0.00
79	<input type="checkbox"/>	P759	J237	J235	539.80	12.00	130.00	9.03	0.03	0.00
80	<input type="checkbox"/>	P871	J303	J295	209.72	8.00	130.00	-3.39	0.02	0.00
81	<input type="checkbox"/>	P813	J273	J275	539.11	8.00	130.00	-3.38	0.02	0.00
82	<input type="checkbox"/>	P257	J170	J168	2,880.19	24.00	130.00	-29.20	0.02	0.00
83	<input type="checkbox"/>	P849	J303	J301	229.53	8.00	130.00	-2.39	0.02	0.00
84	<input type="checkbox"/>	P817	J281	J277	534.50	8.00	130.00	-2.24	0.01	0.00
85	<input type="checkbox"/>	P847	J303	J239	353.40	8.00	130.00	-2.10	0.01	0.00
86	<input type="checkbox"/>	P771	J249	J247	194.85	8.00	130.00	2.06	0.01	0.00
87	<input type="checkbox"/>	P773	J247	J227	535.60	8.00	130.00	-0.93	0.01	0.00
88	<input type="checkbox"/>	P691	J291	J321	86.30	6.00	130.00	0.00	0.00	0.00
89	<input type="checkbox"/>	P869	J295	J299	366.86	6.00	130.00	0.00	0.00	0.00
90	<input type="checkbox"/>	P667	U7008	J229	72.10	8.00	130.00	0.00	0.00	0.00
91	<input type="checkbox"/>	P665	RES2	U7008	10.00	30.00	130.00	0.00	0.00	0.00
92	<input type="checkbox"/>	P595	J149	T5000	282.60	36.00	130.00	0.00	0.00	0.00
93	<input type="checkbox"/>	P589	J204	J149	362.77	36.00	130.00	0.00	0.00	0.00
94	<input type="checkbox"/>	P879	J253	J309	392.67	8.00	130.00	0.00	0.00	0.00

Maximum Day Plus Fire Flow

		ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
1	<input type="checkbox"/>	J243	0.00	34.51	89.64	3,500.00	22.33	3,901.92	20.00
2	<input type="checkbox"/>	J309	0.00	34.51	89.65	1,500.00	22.54	1,689.30	20.00
3	<input type="checkbox"/>	J235	76.66	34.51	89.64	3,500.00	24.16	4,408.56	20.00
4	<input type="checkbox"/>	J227	15.96	34.51	89.65	3,500.00	26.35	5,074.69	20.00
5	<input type="checkbox"/>	J202	0.00	34.53	89.69	3,500.00	27.17	5,396.87	20.00
6	<input type="checkbox"/>	J245	40.46	34.51	89.64	2,500.00	27.22	3,933.80	20.00
7	<input type="checkbox"/>	J281	10.58	34.52	89.67	1,500.00	27.31	2,344.70	20.00
8	<input type="checkbox"/>	J277	7.56	34.52	89.67	1,500.00	27.32	2,344.68	20.00
9	<input type="checkbox"/>	J237	0.00	34.51	89.64	2,500.00	28.17	4,297.12	20.00
10	<input type="checkbox"/>	J239	3.02	34.51	89.64	2,500.00	28.66	4,572.15	20.00
11	<input type="checkbox"/>	J273	11.34	34.52	89.67	1,500.00	28.69	2,715.51	20.00
12	<input type="checkbox"/>	J315	0.00	34.51	89.64	2,500.00	28.72	4,606.34	20.00
13	<input type="checkbox"/>	J283	6.06	34.51	89.64	2,500.00	28.84	4,668.77	20.00
14	<input type="checkbox"/>	J275	9.08	34.52	89.67	1,500.00	28.86	2,769.90	20.00
15	<input type="checkbox"/>	J313	0.00	34.51	89.64	2,500.00	28.91	4,702.77	20.00
16	<input type="checkbox"/>	J231	3.02	34.51	89.64	2,500.00	28.94	4,746.89	20.00
17	<input type="checkbox"/>	J267	5.30	34.52	89.67	1,500.00	28.95	2,790.92	20.00
18	<input type="checkbox"/>	J233	2.26	34.51	89.65	2,500.00	29.06	4,795.05	20.00
19	<input type="checkbox"/>	J251	22.72	34.51	89.65	1,500.00	29.11	2,916.48	20.00
20	<input type="checkbox"/>	J253	12.08	34.51	89.65	1,500.00	29.13	2,901.93	20.00
21	<input type="checkbox"/>	J319	0.00	34.51	89.65	2,500.00	29.14	4,822.05	20.00
22	<input type="checkbox"/>	J219	4.36	34.51	89.65	2,500.00	29.29	4,949.38	20.00
23	<input type="checkbox"/>	J291	5.30	34.51	89.64	1,500.00	29.33	2,982.07	20.00
24	<input type="checkbox"/>	J271	11.34	34.52	89.67	1,500.00	29.56	3,051.79	20.00
25	<input type="checkbox"/>	J289	6.06	34.51	89.64	1,500.00	29.79	3,201.21	20.00
26	<input type="checkbox"/>	J293	5.30	34.51	89.65	1,500.00	29.83	3,225.80	20.00
27	<input type="checkbox"/>	J295	2.26	34.51	89.64	1,500.00	29.85	3,252.89	20.00
28	<input type="checkbox"/>	J301	6.80	34.51	89.64	1,500.00	29.95	3,312.67	20.00
29	<input type="checkbox"/>	J265	8.32	34.52	89.68	1,500.00	30.04	3,281.90	20.00
30	<input type="checkbox"/>	J307	0.00	34.52	89.66	1,500.00	30.31	3,496.58	20.00
31	<input type="checkbox"/>	J269	7.56	34.52	89.67	1,500.00	30.33	3,470.06	20.00
32	<input type="checkbox"/>	J287	5.30	34.51	89.64	1,500.00	30.33	3,544.08	20.00
33	<input type="checkbox"/>	J249	4.36	34.51	89.65	1,500.00	30.38	3,591.97	20.00
34	<input type="checkbox"/>	J303	6.06	34.51	89.64	1,500.00	30.46	3,649.69	20.00
35	<input type="checkbox"/>	J229	3.78	34.51	89.64	1,500.00	30.54	3,875.24	20.00
36	<input type="checkbox"/>	J311	0.00	34.51	89.64	1,500.00	30.56	3,738.97	20.00
37	<input type="checkbox"/>	J255	9.68	34.51	89.66	1,500.00	30.57	3,724.52	20.00
38	<input type="checkbox"/>	J285	4.54	34.51	89.64	1,500.00	30.68	3,817.76	20.00
39	<input type="checkbox"/>	J257	21.96	34.52	89.66	1,500.00	30.71	3,846.14	20.00
40	<input type="checkbox"/>	J247	10.16	34.51	89.65	1,500.00	30.75	3,907.59	20.00
41	<input type="checkbox"/>	J263	23.44	34.52	89.67	1,500.00	30.92	3,983.73	20.00
42	<input type="checkbox"/>	J261	7.74	34.52	89.68	1,500.00	31.22	4,221.57	20.00
43	<input type="checkbox"/>	J223	5.80	34.52	89.66	1,500.00	31.47	4,778.25	20.00
44	<input type="checkbox"/>	J225	4.36	34.51	89.65	1,500.00	31.50	4,825.38	20.00
45	<input type="checkbox"/>	J259	8.70	34.53	89.70	1,500.00	31.53	4,493.57	20.00
46	<input type="checkbox"/>	J217	5.80	34.52	89.67	1,500.00	31.66	4,921.29	20.00

Beetland 3.0 Max Day + Fire Pipe Report

	ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
1	P789	J169	J259	206.04	8.00	130.00	732.40	4.67	2.11	10.26
2	P325	J170	J202	27.23	12.00	130.00	1,555.60	4.41	0.16	5.75
3	P667	U7008	J229	72.10	8.00	130.00	658.33	4.20	0.61	8.42
4	P295	J169	J202	1,578.94	12.00	130.00	1,081.75	3.07	4.63	2.93
5	P637	J238	J169	415.02	12.00	130.00	-1,072.51	3.04	1.20	2.89
6	P403	J167	J238	441.66	12.00	130.00	-1,072.51	3.04	1.27	2.89
7	P635	J366	J167	416.28	12.00	130.00	-1,072.51	3.04	1.20	2.89
8	P533	J274	J366	60.00	12.00	130.00	-1,013.87	2.88	0.16	2.60
9	P537	J274	J368	29.96	12.00	130.00	995.71	2.82	0.08	2.51
10	P791	J259	J261	137.35	8.00	130.00	440.90	2.81	0.55	4.01
11	P739	J217	J169	893.75	8.00	130.00	-405.21	2.59	3.06	3.43
12	P755	J227	J202	542.10	12.00	130.00	862.65	2.45	1.05	1.93
13	P749	J229	J231	469.29	8.00	130.00	356.23	2.27	1.27	2.70
14	P845	J295	J229	341.23	8.00	130.00	-298.32	1.90	0.66	1.94
15	P871	J303	J295	209.72	8.00	130.00	-296.06	1.89	0.40	1.92
16	P801	J259	J265	414.60	8.00	130.00	282.79	1.81	0.73	1.76
17	P505	J276	J356	61.69	12.00	130.00	-586.85	1.66	0.06	0.94
18	P405	J280	J151	32.15	12.00	130.00	-559.90	1.59	0.03	0.87
19	P593	J151	J276	29.39	12.00	130.00	-559.90	1.59	0.03	0.87
20	P795	J261	J263	196.68	8.00	130.00	244.87	1.56	0.27	1.35
21	P315	J356	J206	411.71	12.00	130.00	-528.21	1.50	0.32	0.78
22	P733	J221	J206	225.66	12.00	130.00	528.21	1.50	0.18	0.78
23	P663	U7004	J169	5.00	30.00	130.00	3,291.87	1.49	0.00	0.27
24	P661	RES4	U7004	50.00	30.00	130.00	3,291.87	1.49	0.01	0.27
25	P753	J219	J227	353.29	12.00	130.00	498.76	1.41	0.25	0.70
26	P825	J269	J221	194.47	8.00	130.00	211.71	1.35	0.20	1.03
27	P873	J261	J307	442.54	8.00	130.00	188.29	1.20	0.37	0.83
28	P257	J170	J168	2,880.19	24.00	130.00	-1,555.60	1.10	0.57	0.20
29	P807	J265	J271	232.86	8.00	130.00	164.77	1.05	0.15	0.65
30	P847	J303	J239	353.40	8.00	130.00	161.02	1.03	0.22	0.62
31	P773	J247	J227	535.60	8.00	130.00	160.89	1.03	0.33	0.62
32	P767	J237	J239	550.60	12.00	130.00	-336.08	0.95	0.19	0.34
33	P735	J217	J221	683.58	12.00	130.00	316.50	0.90	0.21	0.30
34	P771	J249	J247	194.85	8.00	130.00	134.82	0.86	0.09	0.45
35	P849	J303	J301	229.53	8.00	130.00	128.98	0.82	0.09	0.41
36	P741	J225	J223	337.20	12.00	130.00	-281.22	0.80	0.08	0.24
37	P799	J263	J217	352.64	8.00	130.00	123.60	0.79	0.13	0.38
38	P681	J311	J315	88.91	8.00	130.00	122.18	0.78	0.03	0.37
39	P853	J301	J311	200.46	8.00	130.00	122.18	0.78	0.07	0.37
40	P745	J233	J219	179.85	12.00	130.00	257.66	0.73	0.04	0.21
41	P643	J368	J168	30.00	24.00	130.00	995.71	0.71	0.00	0.09
42	P803	J265	J267	531.78	8.00	130.00	109.70	0.70	0.16	0.30
43	P685	J319	J219	269.08	12.00	130.00	245.47	0.70	0.05	0.19
44	P683	J225	J319	266.49	12.00	130.00	240.63	0.68	0.05	0.18
45	P805	J267	J269	226.91	8.00	130.00	104.40	0.67	0.06	0.28
46	P875	J307	J255	237.90	8.00	130.00	102.88	0.66	0.06	0.27
47	P831	J231	J283	214.59	12.00	130.00	227.62	0.65	0.04	0.16
48	P797	J257	J263	674.05	8.00	130.00	-97.83	0.62	0.17	0.25
49	P757	J235	J227	588.20	12.00	130.00	218.96	0.62	0.09	0.15
50	P737	J223	J217	677.43	12.00	130.00	-206.51	0.59	0.09	0.14
51	P781	J249	J255	336.20	8.00	130.00	-88.56	0.57	0.07	0.21
52	P759	J237	J235	539.80	12.00	130.00	197.22	0.56	0.07	0.13
53	P877	J253	J307	189.37	8.00	130.00	-85.41	0.55	0.04	0.19
54	P671	J233	J313	138.16	12.00	130.00	-190.23	0.54	0.02	0.12
55	P811	J271	J273	235.09	8.00	130.00	81.78	0.52	0.04	0.18
56	P673	J313	J283	224.11	12.00	130.00	-183.66	0.52	0.02	0.11
57	P785	J257	J223	351.06	8.00	130.00	80.51	0.51	0.06	0.17
58	P777	J251	J253	569.75	8.00	130.00	-73.33	0.47	0.08	0.14
59	P809	J271	J269	537.32	8.00	130.00	71.65	0.46	0.07	0.14
60	P747	J231	J233	576.84	8.00	130.00	69.69	0.44	0.08	0.13
61	P679	J315	J239	255.73	12.00	130.00	140.70	0.40	0.02	0.07

		ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000
62	<input type="checkbox"/>	P397	J204	J168	969.72	24.00	130.00	559.90	0.40	0.03	0.03
63	<input type="checkbox"/>	P591	J280	J204	54.27	24.00	130.00	559.90	0.40	0.00	0.03
64	<input type="checkbox"/>	P765	J245	J237	454.61	12.00	130.00	-138.85	0.39	0.03	0.07
65	<input type="checkbox"/>	P553	J366	J354	440.90	8.00	130.00	58.64	0.37	0.04	0.10
66	<input type="checkbox"/>	P519	J356	J354	523.02	8.00	130.00	-58.64	0.37	0.05	0.10
67	<input type="checkbox"/>	P769	J251	J249	201.37	8.00	130.00	50.61	0.32	0.01	0.07
68	<input type="checkbox"/>	P665	RES2	U7008	10.00	30.00	130.00	658.33	0.30	0.00	0.01
69	<input type="checkbox"/>	P763	J245	J243	641.81	12.00	130.00	98.39	0.28	0.02	0.03
70	<input type="checkbox"/>	P761	J243	J235	454.61	12.00	130.00	98.39	0.28	0.02	0.03
71	<input type="checkbox"/>	P823	J275	J269	228.70	8.00	130.00	43.22	0.28	0.01	0.05
72	<input type="checkbox"/>	P859	J289	J283	403.45	8.00	130.00	-37.91	0.24	0.02	0.04
73	<input type="checkbox"/>	P751	J239	J231	419.44	8.00	130.00	-37.38	0.24	0.02	0.04
74	<input type="checkbox"/>	P775	J247	J225	354.94	8.00	130.00	-36.23	0.23	0.01	0.04
75	<input type="checkbox"/>	P813	J273	J275	539.11	8.00	130.00	35.57	0.23	0.02	0.04
76	<input type="checkbox"/>	P815	J273	J281	225.33	8.00	130.00	34.87	0.22	0.01	0.04
77	<input type="checkbox"/>	P857	J287	J289	197.91	8.00	130.00	-31.85	0.20	0.01	0.03
78	<input type="checkbox"/>	P503	J276	J352	482.01	8.00	130.00	26.96	0.17	0.01	0.02
79	<input type="checkbox"/>	P817	J281	J277	534.50	8.00	130.00	24.29	0.16	0.01	0.02
80	<input type="checkbox"/>	P407	J352	J274	482.01	8.00	130.00	-18.16	0.12	0.01	0.01
81	<input type="checkbox"/>	P821	J277	J275	234.18	8.00	130.00	16.73	0.11	0.00	0.01
82	<input type="checkbox"/>	P865	J287	J291	333.25	8.00	130.00	15.44	0.10	0.00	0.01
83	<input type="checkbox"/>	P855	J285	J287	268.07	8.00	130.00	-11.11	0.07	0.00	0.00
84	<input type="checkbox"/>	P837	J291	J293	276.72	8.00	130.00	10.14	0.06	0.00	0.00
85	<input type="checkbox"/>	P677	J231	J315	163.70	12.00	130.00	18.52	0.05	0.00	0.00
86	<input type="checkbox"/>	P675	J285	J313	91.58	8.00	130.00	6.57	0.04	0.00	0.00
87	<input type="checkbox"/>	P687	J293	J317	152.75	8.00	130.00	4.84	0.03	0.00	0.00
88	<input type="checkbox"/>	P689	J317	J319	75.24	8.00	130.00	4.84	0.03	0.00	0.00
89	<input type="checkbox"/>	P783	J255	J257	200.47	8.00	130.00	4.64	0.03	0.00	0.00
90	<input type="checkbox"/>	P869	J295	J299	366.86	6.00	130.00	0.00	0.00	0.00	0.00
91	<input type="checkbox"/>	P595	J149	T5000	282.60	36.00	130.00	0.00	0.00	0.00	0.00
92	<input type="checkbox"/>	P589	J204	J149	362.77	36.00	130.00	0.00	0.00	0.00	0.00
93	<input type="checkbox"/>	P691	J291	J321	86.30	6.00	130.00	0.00	0.00	0.00	0.00
94	<input type="checkbox"/>	P879	J253	J309	392.67	8.00	130.00	0.00	0.00	0.00	0.00



**APPENDIX B**  
**SB610 Water Supply Assessment Form**

**City of Sacramento**  
**SB 610/SB 221 Water Supply Assessment and Certification Form**

This form may be used to complete water supply assessments for projects located in an area covered by the City’s most recent Urban Water Management Plan.

Note: Please do not use this form if the projected water demand for your project area was not included in the City’s latest Urban Water Management Plan. To review the City’s Urban Water Management Plan, please visit:  
<https://www.cityofsacramento.org/Utilities/Reports>

**Project:**

**Date:**

**Project Applicant (Name of Company):**

**Applicant Contact (Name of Individual):**

**Phone Number:**

**E-mail:**

**Address:**

---

**Project Applicant to fill in the following:**

1. Does the project include:

<b>Type of Development</b>	<b>Yes</b>	<b>No</b>
A proposed residential development of 500 or more dwelling units		
A shopping Center employing more than 1,000 persons or having more than 500,000 square feet?		
A Commercial Office building employing more than 1,000 persons or having more than 250,000 square feet?		
A proposed hotel or motel, or both, having more than 500 rooms		
A proposed industrial, manufacturing, or processing plant or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area		
A mixed use project that includes one or more of the projects specified above		
A project that would demand an amount of water equivalent to, or greater than, the water required by a 500 dwelling unit project		

If the answer is no to all of the above, a water supply assessment is not required for the project.

2. Is the projected water demand for the project location included in the City's 2020 Urban Water Management Plan, adopted June 29, 2021?

Yes: \_\_\_\_\_

No: \_\_\_\_\_

If the answer is no, you cannot use this form. Please refer to the requirements of SB 610 for preparing a water supply assessment.

3. Please fill in the project demands below:

Type of Development	Land Use Category	Demand Factor		Proposed Development			Current Zoning		
		Residential Water Use Factor, afy/dwelling unit	Non-Residential Water Use Factor, afy/employee	Number Dwelling Units	Number Employees	Total Demand	Number Dwelling Units	Number Employees	Total Demand
Residential - Low	Rural Residential (RR)								
	Suburban Neighborhood Low Density (SNLD)								
	Traditional Neighborhood Low Density (TLDR)								
Residential - Medium	Suburban Neighborhood Medium Density (SMDR)								
	Urban Neighborhood Low Density (ULDR)								
Residential - High	Suburban Neighborhood High Density (SHDR)								
	Traditional Neighborhood Medium Density (TMDR)								
	Urban Neighborhood Medium Density (UMDR)								
	Traditional Neighborhood High Density (THDR)								
Mixed Use	Employment Center Mid Rise (ECMR)								
	Suburban Center (SCnt)								
	Suburban Corridor (Scor)								
	Traditional Center (TCnt)								

Mixed Use - Higher Density	Urban Center High (UCntHigh)								
	Urban Center Low (UcntLow)								
	Urban Corridor High (UCorHigh)								
	Urban Corridor Low (UCorLow)								
Central Business District	Central Business District (CBD)								
	Urban Neighborhood High Density (UHDR)								
Commercial	Regional Commercial (RC)								
	Employment Center Low Rise (ECLR)								
Industrial	Industrial (IND)								
Public	Public/Quasi-Public (PUB)								
Park	Parks and Recreation (PRK)								
Open Space	Open Space (OS)								
Other									
Other									
Other									
<b>Total Demand (AFY)</b>									

4. Required Elements of Water Supply Assessment (Water Code § 10910)

A. Water supply entitlements, water rights or water service contracts (Water Code § 10910(d)):

The City's water supply entitlements, water rights and water service contract are identified and discussed in the Urban Water Management Plan, Chapters 3, 6, and 7.

All infrastructure necessary to deliver a water supply to the project is in place, excepting any distribution facilities required to be constructed and financed by the project applicant: Yes: \_\_\_\_\_ No: \_\_\_\_\_

- B. Identification of other sources of water supply if no water has been received under City's existing entitlements, water rights or water service contracts (Water Code § 10910(e)):

Not applicable.

- C. Information and analysis pertaining to groundwater supply (Water Code § 10910(f)):

Addressed by Urban Water Management Plan, Chapters 3, 6, and 7.

**Verification of Water Supply**  
**(for residential development of more than 500 dwelling units)**

Based on the City's most recent Urban Water Management Plan, are there sufficient water supplies for the project during normal, single dry and multiple dry years over a 20 year period?

Yes: \_\_\_\_\_

No: \_\_\_\_\_

By: \_\_\_\_\_ 

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**This box to be filled in by the City**

Distribution:

Applicant

Development Services Department (Org: 4913) – Assigned Planner: \_\_\_\_\_

Utilities Department (Org: 3334) - Development Review (Tony Bertrand)

Utilities Department (Org: 3332) - Capital Improvements (Brett Ewart)

**APPENDIX C**  
**Model Boundary Conditions –**  
**Flow Test Results**

# WATER SUPPLY TEST - DEPARTMENT OF UTILITIES

<b>City of Sacramento</b> <b>Community Development Dept.</b> <b>300 Richards Blvd., 3rd Floor</b> <b>Sacramento, CA 95811</b>	WORK ORDER #: 576962	WST NUMBER: 2301891
	ANALYSIS FEE: \$519.00	DATE PAID: 2/1/2023
	FIELD TEST FEE: \$1,092.00	DATE PAID: 2/1/2023
	HYDRAULIC BOUNDARY CONDITION	DATE PAID: N/A
CONTACT: Rick Hansen	FEE: \$615.00; optional see item (3) below.	TEST NUMBER: 1 of 2
COMPANY: MSA a CBG Co.	PHONE NUMBER: 916-788-4456	EMAIL: RickHansen@msa-cbg.com
ADDRESS: 1430 Blue Oaks Blvd Ste 110, Roseville, CA	BOUNDARY CONDITION Stone Beetland Development	
	ASSESSOR'S PARCEL NUMBER: 053-0010-048, 049, 076; 119-0090-014; 119-0080-001; 119-0080-029 (Portion)	

**The undersigned agrees to the following items and conditions:**

- (1) The street address and/or parcel number shown above is correct
- (2) Water supply data is developed from several sources of information which may include water supply test data, computer models, and pressure recording stations. The water supply data given is to be used for design purposes.
- (3) Based on hydrant locations, test results may not provide accurate flow information at the point of connection, for a fee the City can provide the hydraulic analysis necessary to transfer the results to a single point of connection.
- (4) Although the water supply data reported herein is believed to be accurate, the City makes no warranty, guaranty, certification or other representation of any kind that such data is accurate or correct, or that the pressures and/or flow rates reported herein can or will be maintained. The undersigned agrees that the City, its officers and employees shall not be liable for any damages of any kind resulting from the use of or reliance upon the water supply data reported herein by the undersigned or by any third party.
- (5) When more than one water supply test has been performed, the decision is left to the Fire Plan Checker as to which water supply test is to be used.
- (6) If the undersigned desires to witness the water supply test performed by the City, please check the box below:  
 I want to witness this water supply test, which will be scheduled at the convenience of the Department of Utilities.
- (7) If the undersigned elects to hire a licensed engineer, at the undersigned's sole expense, to witness and certify the water supply test performed by the City, please check the box below:  
 At my expense, I will arrange for a licensed engineer to witness and certify this water supply test, which will be scheduled at the convenience of the Department of Utilities.

PRINT NAME: Rick Hansen

SIGNATURE: *Rick C. Hansen*

DATE: 01.26.2023

DATE OF TEST: 2/6/2023				TIME OF TEST: 8am						
WTR. MAIN SIZE: 12				TEST CONDUCTED BY: J.Ramirez						
	Hydrant Number	Map Page	Static Pres. (PSI)	Residual Pres. (PSI)	Pitot Pres. (PSI)	Outlet Dia. (Inches)	Coefficient		Calc. Flow @ Pres. (GPM)	Flow @ 20 PSI (G.P.M.)
							C <sub>1</sub>	C <sub>2</sub>		
Residual	601	XX16	52	40						
Flowed	502	XX16			31	4.5	0.90	0.83	2512	3220
Flowed	603	XX16			30	4.5	0.90	0.83	2471	3168
Flowed										
Flowed										

\* THE WATER SUPPLY TEST DATA IS NOT TO BE USED FOR THE DESIGN OF DOMESTIC WATER SYSTEMS.  
 \* (STATIC PRES. - RESIDUAL PRES.) / (STATIC PRES. - 20 PSI) MUST NOT BE LESS THAN 25%. THEREFORE, THESE RESULTS ARE ONLY VALID FOR RESIDUAL PRESSURES LESS THAN 44 PSI

### WATER SUPPLY DATA SUMMARY

	Design (1)
Static Pressure	39 PSI
Residual Pressure	27 PSI
Total Flow @ Residual	5000 G.P.M.
Total Flow @ 20 PSI	6400 G.P.M.

(1) The Design Water Supply Data reflects fluctuations and future demands on the water distribution system. It is to be used for design purposes.

HPA

7/202

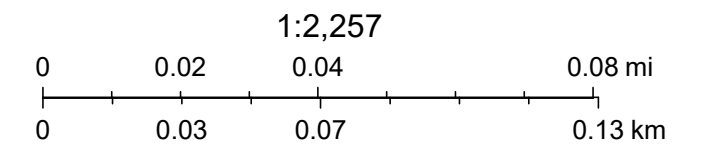
# Hydrants use for WST



2/9/2023, 11:05:29 AM

- DOU MapBook Grid
- Water Casings (Other Owned)
- Water Lateral Lines (Other Owned)
- Lateral Line
- Water Mains (Other Owned)
- Transmission
- Distribution
- Water Control Valves (Other Owned)
- Air Release
- Water System Valves (Other Owned)
- Butterfly
- Water Lateral Lines (City Owned)
- Air Release
- Blowoff
- Domestic
- Hydrant
- Irrigation
- Water Mains (City Owned)
- Transmission
- Distribution
- Water Service Connections (New) (City Owned)
- Irrigation
- Water Test Stations (City Owned)

- Water Access Points (City Owned)
- Manhole
- Water Hydrants (City Owned)
- Standard
- Water Control Valves (City Owned)
- Air Release
- Blowoff
- Water System Valves (City Owned)
- Butterfly
- Gate
- Water Pressure
- 38 - 41
- Cubic\_2022
- Red: Red
- Green: Green



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# WATER SUPPLY TEST - DEPARTMENT OF UTILITIES

<b>City of Sacramento</b> <b>Community Development Dept.</b> <b>300 Richards Blvd., 3rd Floor</b> <b>Sacramento, CA 95811</b>	WORK ORDER #: 576962	WST NUMBER: 2301891
	ANALYSIS FEE: \$519.00	DATE PAID:
	FIELD TEST FEE: \$1,092.00	DATE PAID:
	HYDRAULIC BOUNDARY CONDITION	DATE PAID: N/A
CONTACT: Rick Hansen	FEE: \$481.00; optional see item (3) below.	TEST NUMBER: 2 of 2
COMPANY: MSA a CBG Co.	PHONE NUMBER: 916-788-4456	EMAIL: RickHansen@msa-cbg.com
ADDRESS: 1430 Blue Oaks Blvd Ste 110, Roseville, CA	ADDRESS OF TEST: Stone Beetland Development	
	ASSESSOR'S PARCEL NUMBER: 053-0010-048, 049, 076; 119-0090-014; 119-00	

**The undersigned agrees to the following items and conditions:**

- (1) The street address and/or parcel number shown above is correct
- (2) Water supply data is developed from several sources of information which may include water supply test data, computer models, and pressure recording stations. The water supply data given is to be used for design purposes.
- (3) Based on hydrant locations, test results may not provide accurate flow information at the point of connection, for a fee the City can provide the hydraulic analysis necessary to transfer the results to a single point of connection.
- (4) Although the water supply data reported herein is believed to be accurate, the City makes no warranty, guaranty, certification or other representation of any kind that such data is accurate or correct, or that the pressures and/or flow rates reported herein can or will be maintained. The undersigned agrees that the City, its officers and employees shall not be liable for any damages of any kind resulting from the use of or reliance upon the water supply data reported herein by the undersigned or by any third party.
- (5) When more than one water supply test has been performed, the decision is left to the Fire Plan Checker as to which water supply test is to be used.
- (6) If the undersigned desires to witness the water supply test performed by the City, please check the box below:  
 I want to witness this water supply test, which will be scheduled at the convenience of the Department of Utilities.
- (7) If the undersigned elects to hire a licensed engineer, at the undersigned's sole expense, to witness and certify the water supply test performed by the City, please check the box below:  
 At my expense, I will arrange for a licensed engineer to witness and certify this water supply test, which will be scheduled at the convenience of the Department of Utilities.

PRINT NAME: Rick Hansen  
 DATE:

SIGNATURE:

DATE OF TEST: 44963				TIME OF TEST: 8am						
WTR. MAIN SIZE: 12				TEST CONDUCTED BY: J.Ramirez						
	Hydrant Number	Map Page	Static Pres. (PSI)	Residual Pres. (PSI)	Pitot Pres. (PSI)	Outlet Dia. (Inches)	Coefficient		Calc. Flow @ Pres. (GPM)	Flow @ 20 PSI (G.P.M.)
							C <sub>1</sub>	C <sub>2</sub>		
Residual	meter ser	WW17	51	32						
Flowed	801	WW17			20	4.5	0.90	0.83	2018	1839
Flowed										
Flowed										
Flowed										

\* THE WATER SUPPLY TEST DATA IS NOT TO BE USED FOR THE DESIGN OF DOMESTIC WATER SYSTEMS.  
 \* (STATIC PRES. - RESIDUAL PRES.) / (STATIC PRES. - 20 PSI) MUST NOT BE LESS THAN 25%. THEREFORE, THESE RESULTS ARE ONLY VALID FOR RESIDUAL PRESSURES LESS THAN 43 PSI

**WATER SUPPLY DATA SUMMARY**

	Design (1)
Static Pressure	36 PSI
Residual Pressure	17 PSI
Total Flow @ Residual	2000 G.P.M.
Total Flow @ 20 PSI	1800 G.P.M.

(1) The Design Water Supply Data reflects fluctuations and future demands on the water distribution system. It is to be used for design purposes.

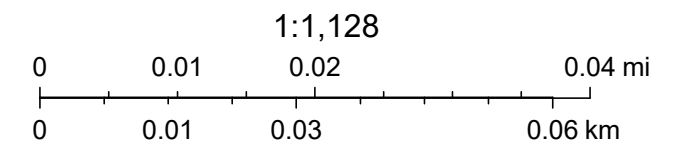
# Hydrants use for WST



2/9/2023, 11:16:27 AM

- DOU MapBook Grid
- Water Lateral Lines (City Owned)
- Hydrant
- Water Mains (City Owned)
- Distribution
- Water Service Connections (Centroids) (City Owned)

- |   |                       |
|---|-----------------------|
| <b>Water Hydrants (City Owned)</b>      | <b>Water Pressure</b> |
| Standard                                | 34 - 37               |
| <b>Water System Valves (City Owned)</b> | <b>Cubic_2022</b>     |
| Gate                                    | Red: Red              |
| <b>Water Fittings (City Owned)</b>      | Green: Green          |
| Elbow                                   | Blue: Blue            |
| Tee                                     | Parcel Boundary       |



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