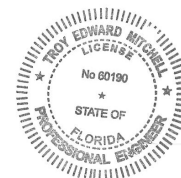


**WATERCAD MODEL
REPORT**

**WATERMARK
8" TRUNK LINE & DISTRIBUTION SYSTEM**

SEPTEMBER 2025



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Watermark Report Summary

This report presents a hydraulic analysis of a water distribution system designed to serve the Watermark subdivision in the town of Howey-in-the-Hills. The system was modeled using an 8" diameter pipe throughout, and multiple demand scenarios were evaluated to ensure reliable water delivery while maintaining adequate pressure and flow throughout the network.

The hydraulic analysis considered the following scenarios:

- Average Daily Demand
- Maximum Daily Demand
- Maximum Daily Demand with Fire Flow at Highest and Lowest Hydrant Elevations

A residential demand projection of 408 gpd/ERU (0.28 gpm/ERU) was used for the hydraulic analysis. For consistency with the Town's Water Master Plan Update, which used a lower demand of 150 gpd/ERU, we validated our model against this baseline and found the results to be consistent and reliable.

Fire flow demands were based on 1,000 gpm for single-family residential homes per the Town's land development code. Pressure criteria for system pressures with fire protection is a minimum normal operating pressure of 35 psi and a minimum system pressure of 20 psi during fire events, as recommended by the *Recommended Standard for Waterworks and Wastewater Facilities* (1997).

Although there are two connection points – one on State Road 19 near the proposed Mission Rise development and another on E Revels Road south of the Venezia community – this analysis is based solely on the Venezia connection. The Mission Rise subdivision has not yet been constructed, and therefore that junction data was excluded from the current model.

Average Daily Demand

In this scenario, we modeled average daily demand. The results of this analysis had a minimum and maximum pressure of 37 psi and 71 psi, respectively.

Maximum Daily Demand

This scenario modeled maximum daily demand. For this hydraulic analysis, MDD was 1.5 times residential average daily demand. The results of this analysis showed minimum pressure as 37 psi and maximum pressure as 71 psi.

Maximum Daily Demand with Fire Flow at Highest Elevation

This scenario modeled maximum daily demand with fire flow at the highest elevated fire hydrant of Phase 1. The results of this analysis showed a minimum and maximum pressure of 26 psi and 67 psi, respectively.

Maximum Daily Demand with Fire Flow at Lowest Elevation

This scenario modeled maximum daily demand with fire flow at the lowest elevated fire hydrant of Phase 1. The results of this analysis showed a minimum and maximum pressure of 29 psi and 67 psi, respectively.

A summary of these results is presented in the table below. These results demonstrate that the system maintains adequate pressure under all modeled conditions, including fire flow at varying elevations.

Scenario Title	System Demand		Fire Flow (gpm)	Junction	System Pressure			
	Type	Demand (gpm/ERU)			Minimum (psi)	Junction	Maximum (psi)	Junction
Average Daily Demand	Average Day	0.28	N/A	N/A	37	J-35	71	J-61
Maximum Daily Demand	Maximum Day	0.42	N/A	N/A	37	J-35	71	J-61
Maximum Daily Demand w/ Fire Flow @ Highest El.	Maximum Day	0.42	1,000	H-13	26	J-35	67	J-61
Maximum Daily Demand w/ Fire Flow @ Lowest El.	Maximum Day	0.42	1,000	H-6	29	J-35	67	J-61

Watermark Water System - 8" Trunk Line

Average Daily Demand

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
124	J-35	163.00	1	1	247.81	37
233	J-65	162.70	1	2	247.81	37
116	J-31	162.50	1	1	247.81	37
225	J-63	161.80	1	3	247.81	37
114	J-30	161.80	1	1	247.81	37
112	J-29	161.40	1	1	247.81	37
86	J-25	155.20	1	1	247.81	40
88	J-26	154.70	1	1	247.81	40
120	J-33	153.20	0	0	247.81	41
122	J-34	152.20	1	3	247.81	41
56	J-11	152.00	2	4	247.83	41
228	J-64	151.60	0	0	247.81	42
58	J-12	150.80	0	0	247.83	42
145	J-44	150.30	1	1	247.81	42
84	J-24	143.60	1	3	247.81	45
60	J-13	143.10	1	3	247.83	45
160	J-49	142.70	0	0	247.83	45
37	J-5	139.50	1	1	247.83	47
35	J-4	137.30	0	0	247.83	48
39	J-6	131.70	1	2	247.82	50
47	J-10	130.90	0	0	247.82	51
129	J-37	129.90	1	4	247.81	51
171	J-52	129.40	0	0	247.81	51
143	J-43	127.40	1	1	247.81	52
220	J-62	126.00	0	0	247.81	53
238	J-66	122.40	1	5	247.81	54
176	J-53	121.80	0	0	247.81	55
127	J-36	121.00	1	2	247.81	55
82	J-23	120.40	1	4	247.81	55
186	J-55	118.75	0	0	247.81	56
181	J-54	118.00	0	0	247.81	56
132	J-38	117.90	1	3	247.81	56
141	J-42	117.70	1	1	247.81	56
153	J-47	117.20	1	6	247.81	57
41	J-7	113.90	0	0	247.82	58
63	J-14	113.90	1	3	247.87	58
65	J-15	110.90	0	0	247.86	59
43	J-8	110.60	2	6	247.82	59
33	J-3	108.90	1	2	247.84	60
45	J-9	108.60	1	2	247.82	60
31	J-2	107.90	0	0	247.84	61
73	J-19	107.40	1	2	247.85	61
136	J-40	105.90	1	4	247.81	61
193	J-56	105.60	1	3	247.81	62
139	J-41	100.50	1	4	247.81	64

Watermark Water System - 8" Trunk Line

Average Daily Demand

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
198	J-57	99.60	1	3	247.81	64
157	J-48	96.90	1	1	247.91	65
134	J-39	91.90	0	0	247.81	67
165	J-51	88.70	0	0	247.81	69
30	J-1	87.50	0	0	247.84	69
76	J-20	85.70	1	0	247.94	70
162	J-50	84.70	1	1	247.81	71
215	J-61	84.30	0	0	247.81	71

Watermark Water System - 8" Trunk Line

Max Daily Demand

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
124	J-35	163.00	1	1	247.61	37
233	J-65	162.70	1	3	247.61	37
116	J-31	162.50	1	2	247.61	37
225	J-63	161.80	1	5	247.61	37
114	J-30	161.80	1	1	247.61	37
112	J-29	161.40	1	1	247.62	37
86	J-25	155.20	1	2	247.61	40
88	J-26	154.70	1	2	247.61	40
120	J-33	153.20	0	0	247.61	41
122	J-34	152.20	1	5	247.61	41
56	J-11	152.00	2	6	247.64	41
228	J-64	151.60	0	0	247.61	42
58	J-12	150.80	0	0	247.65	42
145	J-44	150.30	1	2	247.61	42
84	J-24	143.60	1	5	247.61	45
60	J-13	143.10	1	4	247.66	45
160	J-49	142.70	0	0	247.66	45
37	J-5	139.50	1	1	247.64	47
35	J-4	137.30	0	0	247.65	48
39	J-6	131.70	1	3	247.63	50
47	J-10	130.90	0	0	247.63	51
129	J-37	129.90	1	5	247.61	51
171	J-52	129.40	0	0	247.61	51
143	J-43	127.40	1	1	247.60	52
220	J-62	126.00	0	0	247.60	53
238	J-66	122.40	1	7	247.60	54
176	J-53	121.80	0	0	247.61	54
127	J-36	121.00	1	3	247.61	55
82	J-23	120.40	1	6	247.62	55
186	J-55	118.75	0	0	247.60	56
181	J-54	118.00	0	0	247.60	56
132	J-38	117.90	1	4	247.60	56
141	J-42	117.70	1	1	247.60	56
153	J-47	117.20	1	8	247.60	56
41	J-7	113.90	0	0	247.63	58
63	J-14	113.90	1	4	247.72	58
65	J-15	110.90	0	0	247.72	59
43	J-8	110.60	2	8	247.63	59
33	J-3	108.90	1	3	247.67	60
45	J-9	108.60	1	3	247.63	60
31	J-2	107.90	0	0	247.67	60
73	J-19	107.40	1	3	247.69	61
136	J-40	105.90	1	6	247.60	61
193	J-56	105.60	1	4	247.60	61
139	J-41	100.50	1	5	247.60	64

Watermark Water System - 8" Trunk Line

Max Daily Demand

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
198	J-57	99.60	1	5	247.60	64
157	J-48	96.90	1	1	247.81	65
134	J-39	91.90	0	0	247.60	67
165	J-51	88.70	0	0	247.60	69
30	J-1	87.50	1	0	247.67	69
76	J-20	85.70	1	0	247.88	70
162	J-50	84.70	1	1	247.60	70
215	J-61	84.30	0	0	247.60	71

Watermark Water System - 8" Trunk Line
Max Daily Demand w/ Fire Flow @ Highest El.
Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
124	J-35	163.00	1	1	222.21	26
233	J-65	162.70	1	3	222.70	26
116	J-31	162.50	1	2	222.70	26
225	J-63	161.80	1	5	222.70	26
114	J-30	161.80	1	1	222.71	26
112	J-29	161.40	1	1	222.71	27
86	J-25	155.20	1	2	222.85	29
88	J-26	154.70	1	2	222.85	29
120	J-33	153.20	0	0	222.64	30
122	J-34	152.20	1	5	222.61	30
56	J-11	152.00	2	6	226.05	32
228	J-64	151.60	0	0	222.70	31
58	J-12	150.80	0	0	226.18	33
145	J-44	150.30	1	2	222.70	31
84	J-24	143.60	1	5	223.74	35
60	J-13	143.10	1	4	227.23	36
160	J-49	142.70	0	0	227.23	37
37	J-5	139.50	1	1	226.29	38
35	J-4	137.30	0	0	226.40	39
39	J-6	131.70	1	3	225.82	41
47	J-10	130.90	0	0	225.81	41
129	J-37	129.90	1	5	222.73	40
171	J-52	129.40	0	0	222.73	40
143	J-43	127.40	1	1	222.69	41
220	J-62	126.00	0	0	222.69	42
238	J-66	122.40	1	7	222.69	43
176	J-53	121.80	0	0	222.69	44
127	J-36	121.00	1	3	222.69	44
82	J-23	120.40	1	6	224.72	45
186	J-55	118.75	0	0	222.71	45
181	J-54	118.00	0	0	222.69	45
132	J-38	117.90	1	4	222.70	45
141	J-42	117.70	1	1	222.69	45
153	J-47	117.20	1	8	222.69	46
41	J-7	113.90	0	0	225.45	48
63	J-14	113.90	1	4	231.55	51
65	J-15	110.90	0	0	231.26	52
43	J-8	110.60	2	8	225.41	50
33	J-3	108.90	1	3	227.90	51
45	J-9	108.60	1	3	225.65	51
31	J-2	107.90	0	0	227.90	52
73	J-19	107.40	1	3	229.57	53
136	J-40	105.90	1	6	222.70	51
193	J-56	105.60	1	4	222.70	51
139	J-41	100.50	1	5	222.69	53

Watermark Water System - 8" Trunk Line
Max Daily Demand w/ Fire Flow @ Highest El.
Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
198	J-57	99.60	1	5	222.69	53
157	J-48	96.90	1	1	236.93	61
134	J-39	91.90	0	0	222.70	57
165	J-51	88.70	0	0	222.69	58
30	J-1	87.50	1	0	227.90	61
76	J-20	85.70	1	0	240.77	67
162	J-50	84.70	1	1	222.69	60
215	J-61	84.30	0	0	222.69	60

Watermark Water System - 8" Trunk Line
Max Daily Demand w/ Fire Flow @ Lowest El.
Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
124	J-35	163.00	1	1	229.06	29
233	J-65	162.70	1	3	229.03	29
116	J-31	162.50	1	2	229.03	29
225	J-63	161.80	1	5	229.02	29
114	J-30	161.80	1	1	229.06	29
112	J-29	161.40	1	1	229.07	29
86	J-25	155.20	1	2	228.97	32
88	J-26	154.70	1	2	228.97	32
120	J-33	153.20	0	0	229.00	33
122	J-34	152.20	1	5	229.00	33
56	J-11	152.00	2	6	229.24	33
228	J-64	151.60	0	0	229.01	33
58	J-12	150.80	0	0	229.29	34
145	J-44	150.30	1	2	229.01	34
84	J-24	143.60	1	5	228.87	37
60	J-13	143.10	1	4	229.73	37
160	J-49	142.70	0	0	229.73	38
37	J-5	139.50	1	1	228.68	39
35	J-4	137.30	0	0	228.62	40
39	J-6	131.70	1	3	228.70	42
47	J-10	130.90	0	0	228.70	42
129	J-37	129.90	1	5	228.98	43
171	J-52	129.40	0	0	228.98	43
143	J-43	127.40	1	1	229.00	44
220	J-62	126.00	0	0	229.01	45
238	J-66	122.40	1	7	229.01	46
176	J-53	121.80	0	0	228.99	46
127	J-36	121.00	1	3	228.99	47
82	J-23	120.40	1	6	228.78	47
186	J-55	118.75	0	0	228.98	48
181	J-54	118.00	0	0	229.00	48
132	J-38	117.90	1	4	228.98	48
141	J-42	117.70	1	1	229.00	48
153	J-47	117.20	1	8	229.01	48
41	J-7	113.90	0	0	228.72	50
63	J-14	113.90	1	4	231.55	51
65	J-15	110.90	0	0	230.91	52
43	J-8	110.60	2	8	228.72	51
33	J-3	108.90	1	3	227.94	52
45	J-9	108.60	1	3	228.71	52
31	J-2	107.90	0	0	227.94	52
73	J-19	107.40	1	3	227.21	52
136	J-40	105.90	1	6	228.98	53
193	J-56	105.60	1	4	228.98	53
139	J-41	100.50	1	5	228.99	56

Watermark Water System - 8" Trunk Line
Max Daily Demand w/ Fire Flow @ Lowest El.
Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Unit Demand Collection <Count>	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
198	J-57	99.60	1	5	228.99	56
157	J-48	96.90	1	1	236.93	61
134	J-39	91.90	0	0	228.98	59
165	J-51	88.70	0	0	228.99	61
30	J-1	87.50	1	0	227.94	61
76	J-20	85.70	1	0	240.77	67
162	J-50	84.70	1	1	228.99	62
215	J-61	84.30	0	0	228.99	63

