

Lake Hills Phase 1

Water Main Report



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David A Stokes
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PHASE 1 INTRODUCTION

The proposed development is the first residential phase of the Lake Hills PUD. The previously permitted Mass Infrastructure/Mass Grading included the analysis for a fully developed +/-560 senior living homes. The first phase proposes 213 single family lots. The calculations provided herein are consistent with the overall design approved by the Town of Howey-in-the-Hills. The average daily flow of the total development is calculated with an ERU = 300 GPD. The total units proposed in the PUD are 563 units x 300 GPD = 168,900 GPD, Phase 1 proposes 213 units x 300 GPD = 63,900 GPD. The remaining capacity is 105,000 GPD.

WATER MAIN ANALYSIS

The water main has been modeled under two conditions: (1) needed fire flow (NFF) per NFPA of 1,000 gpm plus max day flow, and (2) peak hour flow. The model analyses presented in Appendices C and D demonstrate minimum system pressures greater than 20 psi for the needed fire flow plus max day condition.

Appendix A

Potable Water Demand and Needed Fire Flow Demand Summaries

Lake Hills Phase 1

POTABLE WATER DEMANDS			
TYPE	DEMAND PER UNIT (GPD)	# OF UNITS	DEMAND TOTAL (GPD)
Lake Hills	300.00	213	63900
			0
			0
		213	63900
FLOW SUMMARY			
AVG DAILY	63900 GPD	44.38 GPM	
MAX DAY (x2)	127800 GPD	88.75 GPM	
PEAK HOUR (x4)	255600 GPD	177.50 GPM	

Lake Hills

NEEDED FIRE FLOW DEMANDS

Needed Fire Flow = 1,000 GPM

Needed fire flow for single family dwellings shall be as follows: homes 5,000SF or less shall provide 1,000 GPM for 1 hour, homes exceeding 5,000 SF shall provide fire flow in accordance with Table 18.4.5.1.2 of NFPQ 1 (FFPC 2012).

Needed Fire Flow per NFPA = 1,000 GPM

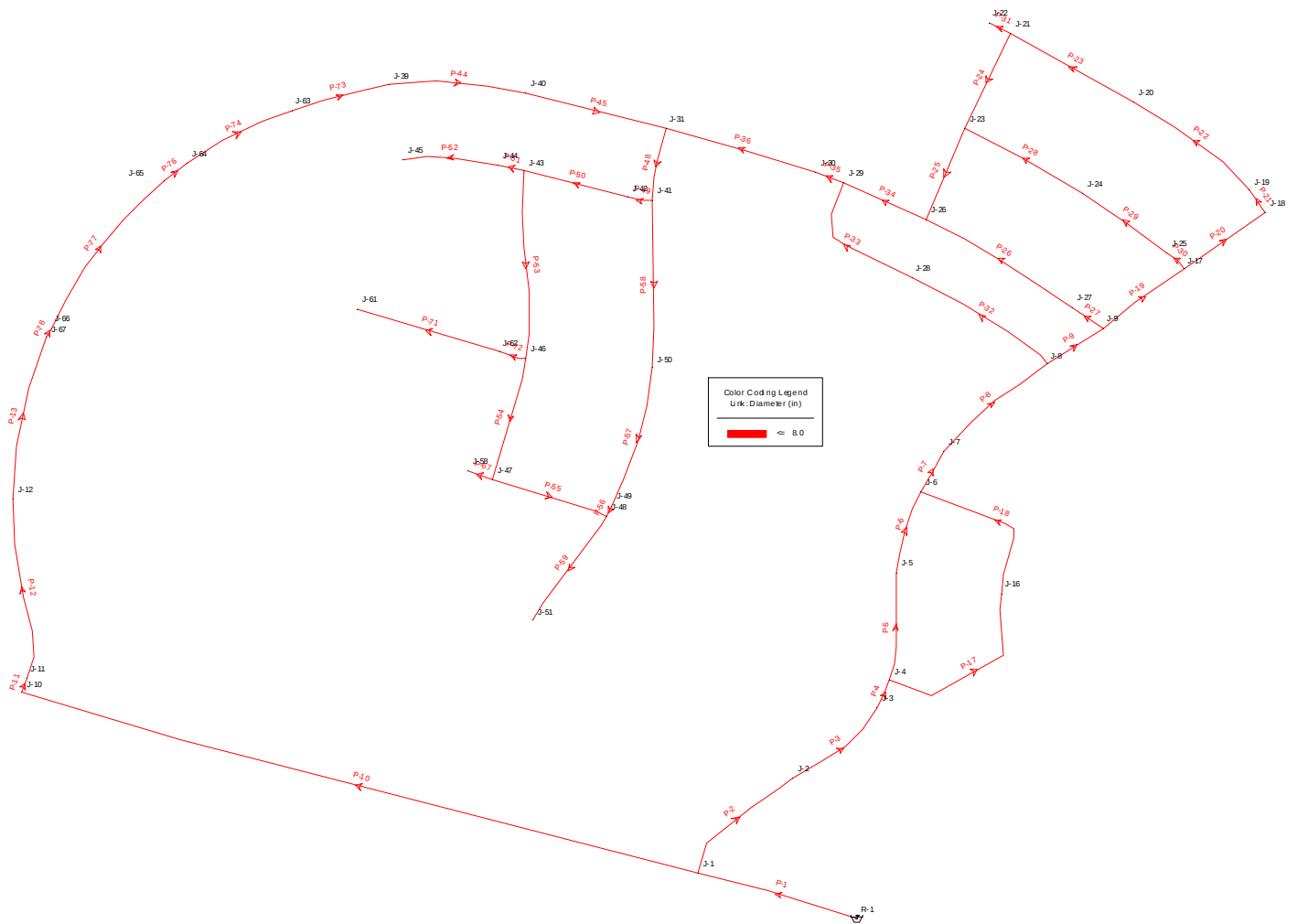
Max Day Demand = 88.75 GPM

TOTAL NFF + MAX DAY DEMAND = 1,088.75 GPM

Appendix B

Water Main Schematic

Scenario: NFF



Appendix C

Needed Fire Flow plus Max Day Flow WaterCAD Hydraulic Analysis

Scenario: NFF
Steady State Analysis
Junction Report

Label	Base Flow (gpm)	Elevation (ft)	Type	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Description
J-1	1.81	100.31	Demand	1.81	218.86	51.29	
J-2	1.81	97.68	Demand	1.81	215.04	50.78	
J-3	1.81	95.14	Demand	1.81	211.92	50.52	
J-4	1.81	94.23	Demand	1.81	210.68	50.38	
J-5	1.81	91.92	Demand	1.81	209.63	50.93	
J-6	1.81	89.32	Demand	1.81	208.78	51.68	
J-7	1.81	88.68	Demand	1.81	207.21	51.28	
J-8	1.81	86.57	Demand	1.81	203.62	50.64	
J-9	1.81	87.33	Demand	1.81	203.00	50.05	
J-10	1.81	92.19	Demand	1.81	210.83	51.33	
J-11	1.81	90.36	Demand	1.81	210.42	51.95	
J-12	1.81	84.60	Demand	1.81	208.18	53.47	
J-16	1.81	91.00	Demand	1.81	209.67	51.34	
J-17	1.81	81.27	Demand	1.81	202.80	52.58	
J-18	1.81	74.79	Demand	1.81	202.76	55.37	
J-19	1.81	74.65	Demand	1.81	202.75	55.42	
J-20	1.81	74.77	Demand	1.81	202.70	55.35	
J-21	1.81	72.72	Demand	1.81	202.65	56.22	
J-22	1.81	72.18	Demand	1.81	202.65	56.45	
J-23	1.81	76.45	Demand	1.81	202.62	54.59	
J-24	1.81	78.41	Demand	1.81	202.71	53.78	
J-25	1.81	78.61	Demand	1.81	202.78	53.72	
J-26	1.81	82.67	Demand	1.81	202.46	51.83	
J-27	1.81	85.73	Demand	1.81	202.88	50.68	
J-28	1.81	82.90	Demand	1.81	202.64	51.80	
J-29	1.81	79.15	Demand	1.81	201.76	53.05	
J-30	1.81	78.86	Demand	1.81	200.67	52.70	
J-31	1.81	76.16	Demand	1.81	196.95	52.26	
J-39	1.81	71.82	Demand	1.81	200.30	55.59	
J-40	1.81	73.71	Demand	1.81	198.65	54.06	
J-41	1.81	76.94	Demand	1.81	191.65	49.63	
J-42	1.81	75.83	Demand	1.81	191.12	49.88	
J-43	1.81	74.32	Demand	1.81	189.67	49.91	
J-44	1.81	74.40	Demand	1.81	189.67	49.87	
J-45	1.81	72.97	Demand	1.81	189.67	50.49	
J-46	1.81	77.74	Demand	1.81	187.34	47.42	
J-47	1.81	82.68	Demand	1.81	185.76	44.60	
J-48	1.81	79.68	Demand	1.81	184.24	45.24	
J-49	1.81	78.48	Demand	1.81	184.87	46.03	
J-50	1.81	75.91	Demand	1.81	188.04	48.51	
J-51	1,001.81	82.89	Demand	1,001.81	176.30	40.41	
J-58	1.81	84.67	Demand	1.81	185.76	43.73	
J-61	1.81	75.10	Demand	1.81	187.34	48.56	
J-62	1.81	76.47	Demand	1.81	187.34	47.97	
J-63	1.81	69.30	Demand	1.81	201.58	57.23	
J-64	1.81	71.89	Demand	1.81	203.04	56.74	
J-65	1.81	73.00	Demand	1.81	203.58	56.49	
J-66	1.81	79.80	Demand	1.81	205.81	54.52	
J-67	1.81	80.27	Demand	1.81	206.16	54.47	

Scenario: NFF
Steady State Analysis
Pipe Report

Label	Diameter (in)	Length (ft)	Material	Start Node	Stop Node	Hazen- Williams C	Upstream Calculated Pressure (psi)	Downstream Calculated Pressure (psi)	Minor Loss Coefficient	Pressure Pipe Headloss (ft)	Velocity (ft/s)
P-1	8.0	405.00	PVC	R-1	J-1	120.0	0.00	51.29	2.00	11.54	6.95
P-2	8.0	342.00	PVC	J-1	J-2	120.0	51.29	50.78	2.00	3.81	4.16
P-3	8.0	272.00	PVC	J-2	J-3	120.0	50.78	50.52	2.00	3.13	4.15
P-4	8.0	74.00	PVC	J-3	J-4	120.0	50.52	50.38	2.00	1.23	4.14
P-5	8.0	266.00	PVC	J-4	J-5	120.0	50.38	50.93	2.00	1.06	2.35
P-6	8.0	208.00	PVC	J-5	J-6	120.0	50.93	51.68	2.00	0.85	2.34
P-7	8.0	113.00	PVC	J-6	J-7	120.0	51.68	51.28	2.00	1.57	4.09
P-8	8.0	332.00	PVC	J-7	J-8	120.0	51.28	50.64	2.00	3.58	4.08
P-9	8.0	162.00	PVC	J-8	J-9	120.0	50.64	50.05	2.00	0.62	2.19
P-10	8.0	1,716.00	PVC	J-1	J-10	120.0	51.29	51.33	2.00	8.03	2.78
P-11	8.0	37.00	PVC	J-10	J-11	120.0	51.33	51.95	2.00	0.40	2.77
P-12	8.0	448.00	PVC	J-11	J-12	120.0	51.95	53.47	2.00	2.24	2.76
P-13	8.0	404.00	PVC	J-12	J-67	120.0	53.47	54.47	2.00	2.03	2.74
P-17	8.0	463.00	PVC	J-4	J-16	120.0	50.38	51.34	2.00	1.02	1.78
P-18	8.0	407.00	PVC	J-16	J-6	120.0	51.34	51.68	2.00	0.89	1.76
P-19	8.0	245.00	PVC	J-9	J-17	120.0	50.05	52.58	2.00	0.20	1.01
P-20	8.0	244.00	PVC	J-17	J-18	120.0	52.58	55.37	2.00	0.04	0.42
P-21	8.0	65.00	PVC	J-18	J-19	120.0	55.37	55.42	2.00	0.01	0.41
P-22	8.0	359.00	PVC	J-19	J-20	120.0	55.42	55.35	2.00	0.05	0.40
P-23	8.0	347.00	PVC	J-20	J-21	120.0	55.35	56.22	2.00	0.05	0.39
P-24	8.0	257.00	PVC	J-21	J-23	120.0	56.22	54.59	2.00	0.03	0.36
P-25	8.0	245.00	PVC	J-23	J-26	120.0	54.59	51.83	2.00	0.16	0.90
P-26	8.0	416.00	PVC	J-26	J-27	120.0	51.83	50.68	2.00	0.41	1.16
P-27	8.0	93.00	PVC	J-27	J-9	120.0	50.68	50.05	2.00	0.13	1.17
P-28	8.0	330.00	PVC	J-23	J-24	120.0	54.59	53.78	2.00	0.08	0.55
P-29	8.0	252.00	PVC	J-24	J-25	120.0	53.78	53.72	2.00	0.07	0.56
P-30	8.0	58.00	PVC	J-25	J-17	120.0	53.72	52.58	2.00	0.02	0.57
P-31	8.0	59.00	PVC	J-22	J-21	120.0	56.45	56.22	2.00	0.00	0.01
P-32	8.0	398.00	PVC	J-8	J-28	120.0	50.64	51.80	2.00	0.99	1.88
P-33	8.0	353.00	PVC	J-28	J-29	120.0	51.80	53.05	2.00	0.88	1.87
P-34	8.0	222.00	PVC	J-29	J-26	120.0	53.05	51.83	2.00	0.70	2.05
P-35	8.0	72.00	PVC	J-29	J-30	120.0	53.05	52.70	2.00	1.09	3.90
P-36	8.0	383.00	PVC	J-30	J-31	120.0	52.70	52.26	2.00	3.72	3.89
P-44	8.0	338.00	PVC	J-39	J-40	120.0	55.59	54.06	2.00	1.65	2.67
P-45	8.0	352.00	PVC	J-40	J-31	120.0	54.06	52.26	2.00	1.70	2.66
P-48	8.0	179.00	PVC	J-31	J-41	120.0	52.26	49.63	2.00	5.30	6.54
P-49	8.0	61.00	PVC	J-41	J-42	120.0	49.63	49.88	2.00	0.53	2.82
P-50	8.0	261.00	PVC	J-42	J-43	120.0	49.88	49.91	2.00	1.45	2.81
P-51	8.0	68.00	PVC	J-43	J-44	120.0	49.91	49.87	2.00	0.00	0.02
P-52	8.0	234.00	PVC	J-44	J-45	120.0	49.87	50.49	2.00	0.00	0.01
P-53	8.0	461.00	PVC	J-43	J-46	120.0	49.91	47.42	2.00	2.32	2.77
P-54	8.0	307.00	PVC	J-46	J-47	120.0	47.42	44.60	2.00	1.59	2.74
P-55	8.0	295.00	PVC	J-47	J-48	120.0	44.60	45.24	2.00	1.51	2.71
P-56	8.0	27.00	PVC	J-48	J-49	120.0	45.24	46.03	2.00	0.63	3.69
P-57	8.0	354.00	PVC	J-49	J-50	120.0	46.03	48.51	2.00	3.16	3.70
P-58	8.0	410.00	PVC	J-50	J-41	120.0	48.51	49.63	2.00	3.62	3.71
P-59	8.0	314.00	PVC	J-48	J-51	120.0	45.24	40.41	2.00	7.94	6.39
P-67	8.0	62.00	PVC	J-58	J-47	120.0	43.73	44.60	2.00	0.00	0.01
P-71	8.0	362.00	PVC	J-61	J-62	120.0	48.56	47.97	2.00	0.00	0.01
P-72	8.0	70.00	PVC	J-62	J-46	120.0	47.97	47.42	2.00	0.00	0.02
P-73	8.0	247.00	PVC	J-39	J-63	120.0	55.59	57.23	2.00	1.28	2.69
P-74	8.0	287.00	PVC	J-63	J-64	120.0	57.23	56.74	2.00	1.46	2.70
P-76	8.0	71.00	PVC	J-64	J-65	120.0	56.74	56.49	2.00	0.54	2.71

Scenario: NFF

Steady State Analysis

Pipe Report

Label	Diameter (in)	Length (ft)	Material	Start Node	Stop Node	Hazen- Williams C	Upstream Calculated Pressure (psi)	Downstream Calculated Pressure (psi)	Minor Loss Coefficient	Pressure Pipe Headloss (ft)	Velocity (ft/s)
P-77	8.0	459.00	PVC	J-65	J-66	120.0	56.49	54.52	2.00	2.23	2.72
P-78	8.0	26.00	PVC	J-66	J-67	120.0	54.52	54.47	2.00	0.35	2.73

Scenario: NFF
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Calculated Hydraulic Grade (ft)	Outflow (gpm)	Description
R-1	230.40	230.40	1,088.69	

Appendix D

Peak Hour Flow WaterCAD Hydraulic Analysis

Scenario: PHF

Steady State Analysis

Junction Report

Label	Base Flow (gpm)	Elevation (ft)	Type	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)	Description
J-1	3.62	100.31	Demand	3.62	230.01	56.12	
J-2	3.62	97.68	Demand	3.62	229.88	57.20	
J-3	3.62	95.14	Demand	3.62	229.78	58.25	
J-4	3.62	94.23	Demand	3.62	229.75	58.63	
J-5	3.62	91.92	Demand	3.62	229.72	59.62	
J-6	3.62	89.32	Demand	3.62	229.69	60.73	
J-7	3.62	88.68	Demand	3.62	229.66	61.00	
J-8	3.62	86.57	Demand	3.62	229.58	61.87	
J-9	3.62	87.33	Demand	3.62	229.57	61.54	
J-10	3.62	92.19	Demand	3.62	229.77	59.52	
J-11	3.62	90.36	Demand	3.62	229.76	60.31	
J-12	3.62	84.60	Demand	3.62	229.70	62.78	
J-16	3.62	91.00	Demand	3.62	229.72	60.02	
J-17	3.62	81.27	Demand	3.62	229.56	64.16	
J-18	3.62	74.79	Demand	3.62	229.56	66.96	
J-19	3.62	74.65	Demand	3.62	229.56	67.02	
J-20	3.62	74.77	Demand	3.62	229.56	66.97	
J-21	3.62	72.72	Demand	3.62	229.56	67.86	
J-22	3.62	72.18	Demand	3.62	229.56	68.09	
J-23	3.62	76.45	Demand	3.62	229.56	66.24	
J-24	3.62	78.41	Demand	3.62	229.56	65.40	
J-25	3.62	78.61	Demand	3.62	229.56	65.31	
J-26	3.62	82.67	Demand	3.62	229.56	63.55	
J-27	3.62	85.73	Demand	3.62	229.56	62.23	
J-28	3.62	82.90	Demand	3.62	229.57	63.46	
J-29	3.62	79.15	Demand	3.62	229.56	65.07	
J-30	3.62	78.86	Demand	3.62	229.56	65.20	
J-31	3.62	76.16	Demand	3.62	229.55	66.36	
J-39	3.62	71.82	Demand	3.62	229.57	68.25	
J-40	3.62	73.71	Demand	3.62	229.56	67.43	
J-41	3.62	76.94	Demand	3.62	229.53	66.02	
J-42	3.62	75.83	Demand	3.62	229.53	66.50	
J-43	3.62	74.32	Demand	3.62	229.52	67.15	
J-44	3.62	74.40	Demand	3.62	229.52	67.11	
J-45	3.62	72.97	Demand	3.62	229.52	67.73	
J-46	3.62	77.74	Demand	3.62	229.52	65.67	
J-47	3.62	82.68	Demand	3.62	229.52	63.53	
J-48	3.62	79.68	Demand	3.62	229.52	64.83	
J-49	3.62	78.48	Demand	3.62	229.52	65.35	
J-50	3.62	75.91	Demand	3.62	229.52	66.46	
J-51	3.62	82.89	Demand	3.62	229.52	63.44	
J-58	3.62	84.67	Demand	3.62	229.52	62.67	
J-61	3.62	75.10	Demand	3.62	229.52	66.81	
J-62	3.62	76.47	Demand	3.62	229.52	66.22	
J-63	3.62	69.30	Demand	3.62	229.59	69.35	
J-64	3.62	71.89	Demand	3.62	229.61	68.24	
J-65	3.62	73.00	Demand	3.62	229.61	67.76	
J-66	3.62	79.80	Demand	3.62	229.65	64.83	
J-67	3.62	80.27	Demand	3.62	229.66	64.63	

Scenario: PHF

Steady State Analysis

Pipe Report

Label	Diameter (in)	Length (ft)	Material	Start Node	Stop Node	Hazen-Williams C	Upstream Calculated Pressure (psi)	Downstream Calculated Pressure (psi)	Minor Loss Coefficient	Pressure Pipe Headloss (ft)	Velocity (ft/s)
P-1	8.0	405.00	PVC	R-1	J-1	120.0	0.00	56.12	2.00	0.39	1.13
P-2	8.0	342.00	PVC	J-1	J-2	120.0	56.12	57.20	2.00	0.13	0.69
P-3	8.0	272.00	PVC	J-2	J-3	120.0	57.20	58.25	2.00	0.10	0.66
P-4	8.0	74.00	PVC	J-3	J-4	120.0	58.25	58.63	2.00	0.03	0.64
P-5	8.0	266.00	PVC	J-4	J-5	120.0	58.63	59.62	2.00	0.03	0.35
P-6	8.0	208.00	PVC	J-5	J-6	120.0	59.62	60.73	2.00	0.02	0.33
P-7	8.0	113.00	PVC	J-6	J-7	120.0	60.73	61.00	2.00	0.03	0.55
P-8	8.0	332.00	PVC	J-7	J-8	120.0	61.00	61.87	2.00	0.08	0.52
P-9	8.0	162.00	PVC	J-8	J-9	120.0	61.87	61.54	2.00	0.02	0.31
P-10	8.0	1,716.00	PVC	J-1	J-10	120.0	56.12	59.52	2.00	0.24	0.42
P-11	8.0	37.00	PVC	J-10	J-11	120.0	59.52	60.31	2.00	0.01	0.40
P-12	8.0	448.00	PVC	J-11	J-12	120.0	60.31	62.78	2.00	0.05	0.38
P-13	8.0	404.00	PVC	J-12	J-67	120.0	62.78	64.63	2.00	0.04	0.35
P-17	8.0	463.00	PVC	J-4	J-16	120.0	58.63	60.02	2.00	0.03	0.27
P-18	8.0	407.00	PVC	J-16	J-6	120.0	60.02	60.73	2.00	0.02	0.24
P-19	8.0	245.00	PVC	J-9	J-17	120.0	61.54	64.16	2.00	0.01	0.16
P-20	8.0	244.00	PVC	J-17	J-18	120.0	64.16	66.96	2.00	0.00	0.07
P-21	8.0	65.00	PVC	J-18	J-19	120.0	66.96	67.02	2.00	0.00	0.05
P-22	8.0	359.00	PVC	J-19	J-20	120.0	67.02	66.97	2.00	0.00	0.02
P-23	8.0	347.00	PVC	J-20	J-21	120.0	66.97	67.86	2.00	0.00	0.00
P-24	8.0	257.00	PVC	J-21	J-23	120.0	67.86	66.24	2.00	0.00	0.05
P-25	8.0	245.00	PVC	J-23	J-26	120.0	66.24	63.55	2.00	0.00	0.05
P-26	8.0	416.00	PVC	J-26	J-27	120.0	63.55	62.23	2.00	0.00	0.11
P-27	8.0	93.00	PVC	J-27	J-9	120.0	62.23	61.54	2.00	0.00	0.13
P-28	8.0	330.00	PVC	J-23	J-24	120.0	66.24	65.40	2.00	0.00	0.02
P-29	8.0	252.00	PVC	J-24	J-25	120.0	65.40	65.31	2.00	0.00	0.04
P-30	8.0	58.00	PVC	J-25	J-17	120.0	65.31	64.16	2.00	0.00	0.07
P-31	8.0	59.00	PVC	J-22	J-21	120.0	68.09	67.86	2.00	0.00	0.02
P-32	8.0	398.00	PVC	J-8	J-28	120.0	61.87	63.46	2.00	0.01	0.19
P-33	8.0	353.00	PVC	J-28	J-29	120.0	63.46	65.07	2.00	0.01	0.17
P-34	8.0	222.00	PVC	J-29	J-26	120.0	65.07	63.55	2.00	0.00	0.03
P-35	8.0	72.00	PVC	J-29	J-30	120.0	65.07	65.20	2.00	0.00	0.18
P-36	8.0	383.00	PVC	J-30	J-31	120.0	65.20	66.36	2.00	0.01	0.15
P-44	8.0	338.00	PVC	J-39	J-40	120.0	68.25	67.43	2.00	0.01	0.22
P-45	8.0	352.00	PVC	J-40	J-31	120.0	67.43	66.36	2.00	0.01	0.19
P-48	8.0	179.00	PVC	J-31	J-41	120.0	66.36	66.02	2.00	0.02	0.32
P-49	8.0	61.00	PVC	J-41	J-42	120.0	66.02	66.50	2.00	0.00	0.17
P-50	8.0	261.00	PVC	J-42	J-43	120.0	66.50	67.15	2.00	0.01	0.15
P-51	8.0	68.00	PVC	J-43	J-44	120.0	67.15	67.11	2.00	0.00	0.05
P-52	8.0	234.00	PVC	J-44	J-45	120.0	67.11	67.73	2.00	0.00	0.02
P-53	8.0	461.00	PVC	J-43	J-46	120.0	67.15	65.67	2.00	0.00	0.08
P-54	8.0	307.00	PVC	J-46	J-47	120.0	65.67	63.53	2.00	0.00	0.01
P-55	8.0	295.00	PVC	J-47	J-48	120.0	63.53	64.83	2.00	0.00	0.04
P-56	8.0	27.00	PVC	J-48	J-49	120.0	64.83	65.35	2.00	0.00	0.08
P-57	8.0	354.00	PVC	J-49	J-50	120.0	65.35	66.46	2.00	0.00	0.10
P-58	8.0	410.00	PVC	J-50	J-41	120.0	66.46	66.02	2.00	0.01	0.13
P-59	8.0	314.00	PVC	J-48	J-51	120.0	64.83	63.44	2.00	0.00	0.02
P-67	8.0	62.00	PVC	J-58	J-47	120.0	62.67	63.53	2.00	0.00	0.02
P-71	8.0	362.00	PVC	J-61	J-62	120.0	66.81	66.22	2.00	0.00	0.02
P-72	8.0	70.00	PVC	J-62	J-46	120.0	66.22	65.67	2.00	0.00	0.05
P-73	8.0	247.00	PVC	J-39	J-63	120.0	68.25	69.35	2.00	0.01	0.24
P-74	8.0	287.00	PVC	J-63	J-64	120.0	69.35	68.24	2.00	0.02	0.26
P-76	8.0	71.00	PVC	J-64	J-65	120.0	68.24	67.76	2.00	0.01	0.28

Scenario: PHF

Steady State Analysis

Pipe Report

Label	Diameter (in)	Length (ft)	Material	Start Node	Stop Node	Hazen- Williams C	Upstream Calculated Pressure (psi)	Downstream Calculated Pressure (psi)	Minor Loss Coefficient	Pressure Pipe Headloss (ft)	Velocity (ft/s)
P-77	8.0	459.00	PVC	J-65	J-66	120.0	67.76	64.83	2.00	0.04	0.31
P-78	8.0	26.00	PVC	J-66	J-67	120.0	64.83	64.63	2.00	0.01	0.33

Scenario: PHF
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Calculated Hydraulic Grade (ft)	Outflow (gpm)	Description
R-1	230.40	230.40	177.38	

Appendix E
HGL Calculations

HGL CALCULATIONS

Lake Hills

PEAK HOUR FLOW HGL

PEAK HOUR FLOW = 177.50 GPM

TIE-IN PRESSURE AT 177.50 GPM = 50 PSI = 115.4 FT

EXISTING PIPE ELEVATION AT TIE-IN = 115 FT

HGL = 115.4 + 115 = 230.4 FT

NEEDED FIRE FLOW HGL

NEEDED FIRE FLOW + MAX DAY FLOW(LARGEST NEEDED FIRE FLOW USED) = 1,088.75 GPM

TIE-IN PRESSURE AT 1,088.75 GPM = 50 PSI = 115.4 FT

EXISTING PIPE ELEVATION AT TIE-IN = 115 FT

HGL = 115.4 + 115 = 230.4 FT