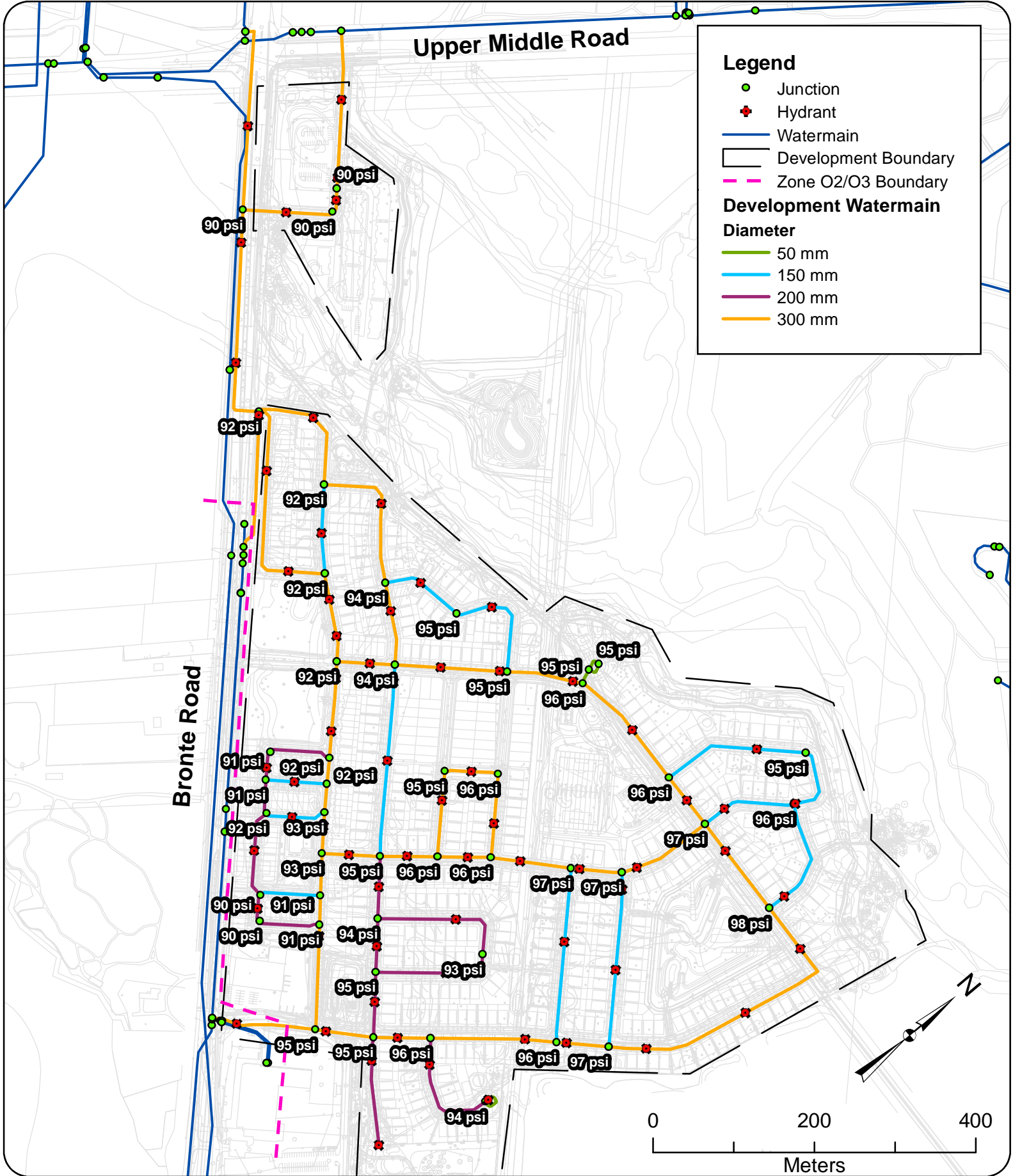
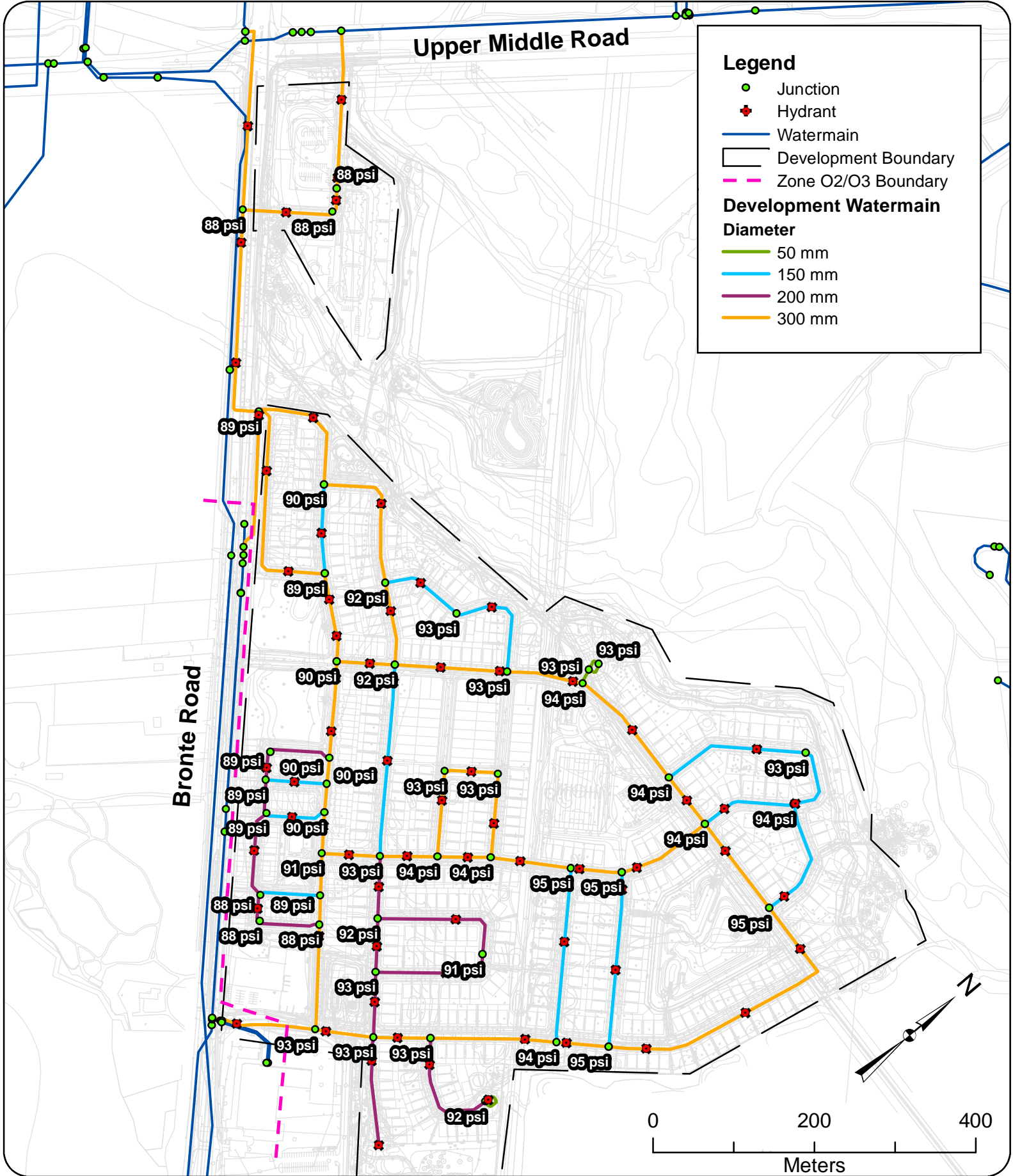




Appendix C Pressure Modeling Results





2016 Peak Hour Demand Modeling Results

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
P-001	J-24	HYD-55	31.64	300	120	0.00	0.00	0.00	0.00
P-002	J-52	J-36	19.74	50	100	-0.26	0.13	0.02	1.08
P-003	J-30	J-36	19.32	50	100	1.06	0.54	0.27	14.08
P-004	J-41	HYD-68	85.55	300	120	25.79	0.36	0.05	0.61
P-005	J-38	HYD-03	14.78	300	120	20.13	0.28	0.01	0.38
P-006	J-39	HYD-04	58.57	300	120	14.47	0.20	0.01	0.21
P-007	J-40	HYD-01	129.08	300	120	28.33	0.40	0.09	0.72
P-008	HYD-68	HYD-02	97.40	300	120	25.79	0.36	0.06	0.61
P-009	J-23	HYD-57	29.64	200	110	0.00	0.00	0.00	0.00
P-010	J-10	HYD-38	70.31	300	120	0.36	0.01	0.00	0.00
P-011	J-16	HYD-45	43.53	150	100	0.90	0.05	0.00	0.05
P-012	J-14	J-15	42.31	200	110	2.10	0.07	0.00	0.05
P-013	J-15	HYD-47	52.64	200	110	1.67	0.05	0.00	0.03
P-014	J-22	HYD-48	17.71	200	110	0.77	0.02	0.00	0.01
P-015	J-21	J-53	76.08	200	110	0.55	0.02	0.00	0.00
P-016	J-13	HYD-44	40.42	150	100	1.18	0.07	0.00	0.08
P-017	J-45	HYD-43	21.03	200	110	2.24	0.07	0.00	0.05
P-018	J-12	J-45	77.56	200	110	3.56	0.11	0.01	0.13
P-019	HYD-65	J-01	88.99	300	120	22.58	0.32	0.04	0.47
P-020	J-01	HYD-08	60.89	150	100	2.33	0.13	0.02	0.29
P-021	J-02	HYD-10	32.25	300	120	20.21	0.29	0.01	0.39
P-022	J-03	HYD-15	21.00	300	120	18.45	0.26	0.01	0.33
P-023	J-12	J-13	32.05	300	120	13.58	0.19	0.01	0.19
P-024	J-16	J-13	35.77	300	120	-11.08	0.16	0.00	0.13
P-025	J-16	HYD-46	16.73	300	120	8.86	0.13	0.00	0.08
P-026	J-17	J-18	52.37	300	120	6.20	0.09	0.00	0.04
P-027	J-21	J-18	36.13	300	120	-4.47	0.06	0.00	0.02
P-028	J-21	HYD-64	14.37	300	120	2.60	0.04	0.00	0.01
P-029	J-51	HYD-07	82.52	300	120	20.22	0.29	0.03	0.39
P-030	J-05	HYD-11	35.48	300	120	13.06	0.18	0.01	0.17
P-031	J-01	HYD-09	86.55	300	120	17.91	0.25	0.03	0.31
P-032	J-04	HYD-17	20.99	150	100	2.04	0.12	0.00	0.23
P-033	J-11	HYD-50	38.28	200	110	2.32	0.07	0.00	0.06
P-034	J-19	HYD-53	34.32	200	110	0.66	0.02	0.00	0.01
P-035	J-20	HYD-54	36.91	200	110	-0.86	0.03	0.00	0.01
P-036	J-09	HYD-35	36.76	300	120	-0.75	0.01	0.00	0.00
P-037	J-10	HYD-36	37.54	300	120	-0.03	0.00	0.00	0.00
P-038	J-17	HYD-49	33.21	300	120	1.34	0.02	0.00	0.00
P-039	J-29	HYD-32	19.84	300	120	-4.29	0.06	0.00	0.02
P-040	J-28	HYD-33	10.64	300	120	-2.52	0.04	0.00	0.01
P-041	J-32	HYD-23	30.75	150	100	0.36	0.02	0.00	0.01
P-042	J-43	HYD-24	88.36	150	100	0.30	0.02	0.00	0.01
P-043	J-31	HYD-22	122.65	150	100	0.72	0.04	0.00	0.03
P-044	J-03	HYD-16	41.12	300	120	0.44	0.01	0.00	0.00
P-045	J-06	HYD-18	8.98	300	120	-11.18	0.16	0.00	0.13
P-046	J-04	HYD-69	57.36	300	120	11.18	0.16	0.01	0.13
P-047	J-23	HYD-58	29.89	300	120	-0.26	0.00	0.00	0.00
P-048	J-25	HYD-60	117.13	300	120	-1.60	0.02	0.00	0.00
P-049	J-26	HYD-61	12.30	300	120	-2.36	0.03	0.00	0.01
P-050	J-27	HYD-29	46.73	300	120	-3.11	0.04	0.00	0.01
P-051	J-06	HYD-19	82.96	300	120	11.10	0.16	0.01	0.13
P-052	J-30	HYD-20	85.17	300	120	9.52	0.13	0.01	0.10
P-053	J-34	HYD-26	89.55	300	120	-3.30	0.05	0.00	0.01
P-054	J-18	J-22	75.67	150	100	0.42	0.02	0.00	0.01
P-055	J-20	HYD-52	87.25	200	110	0.46	0.01	0.00	0.00
P-056	J-19	HYD-51	97.02	200	110	0.60	0.02	0.00	0.00
P-057	J-06	HYD-13	98.90	150	100	-0.18	0.01	0.00	0.00
P-058	J-09	HYD-37	42.35	300	120	0.37	0.01	0.00	0.00
P-059	J-05	HYD-12	46.46	150	100	2.52	0.14	0.02	0.33
P-060	J-25	HYD-59	32.51	200	110	0.67	0.02	0.00	0.01
P-061	HYD-62	J-35	31.89	50	100	0.00	0.00	0.00	0.00
P-062	J-34	HYD-25	23.85	150	100	-0.24	0.01	0.00	0.00
P-063	J-36	J-52	19.73	50	100	0.26	0.13	0.02	1.08
P-064	J-28	HYD-34	91.78	150	100	0.51	0.03	0.00	0.02
P-065	J-29	HYD-31	21.18	150	100	0.51	0.03	0.00	0.02

2016 Peak Hour Demand Modeling Results

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
P-066	J-11	HYD-40	33.52	300	120	0.70	0.01	0.00	0.00
P-067	J-31	HYD-21	36.41	300	120	8.37	0.12	0.00	0.08
P-068	J-35	HYD-62	4.16	200	110	0.00	0.00	0.00	0.00
P-069	J-48	HYD-56	13.42	300	120	1.28	0.02	0.00	0.00
P-070	HYD-64	J-48	116.04	300	120	2.60	0.04	0.00	0.01
P-071	J-49	HYD-39	33.65	300	120	0.00	0.00	0.00	0.00
P-072	HYD-66	J-02	45.27	300	120	20.22	0.29	0.02	0.39
P-073	WCV5164	HYD-06	189.27	300	120	0.00	0.00	0.00	0.00
P-074	J-51	HYD-65	71.74	300	120	22.58	0.32	0.03	0.47
P-075	J-42	HYD-05	40.54	300	120	42.80	0.61	0.06	1.55
P-076	HYD-01	J-42	103.76	300	120	28.33	0.40	0.07	0.72
P-077	HYD-02	J-38	13.22	300	120	25.79	0.36	0.01	0.61
P-078	HYD-03	J-39	16.03	300	120	20.13	0.28	0.01	0.38
P-079	HYD-04	J-42	54.10	300	120	14.47	0.20	0.01	0.21
P-080	HYD-05	HYD-67	149.52	300	120	42.80	0.61	0.23	1.55
P-081	HYD-06	J-51	4.18	300	120	0.00	0.00	0.00	0.00
P-082	HYD-07	HYD-66	152.82	300	120	20.22	0.29	0.06	0.39
P-083	HYD-08	J-02	49.93	150	100	2.33	0.13	0.01	0.29
P-084	HYD-09	J-05	98.71	300	120	17.91	0.25	0.03	0.31
P-085	HYD-10	HYD-14	46.53	300	120	20.21	0.29	0.02	0.39
P-086	HYD-11	J-04	67.54	300	120	13.06	0.18	0.01	0.17
P-087	HYD-12	J-37	58.97	150	100	2.52	0.14	0.02	0.33
P-088	HYD-13	J-37	45.35	150	100	-0.18	0.01	0.00	0.00
P-089	HYD-14	J-03	31.85	300	120	20.21	0.29	0.01	0.39
P-090	HYD-15	HYD-42	66.21	300	120	18.45	0.26	0.02	0.33
P-091	HYD-16	J-04	30.92	300	120	0.44	0.01	0.00	0.00
P-092	HYD-17	HYD-41	97.90	150	100	2.04	0.12	0.02	0.23
P-093	HYD-18	HYD-69	73.14	300	120	-11.18	0.16	0.01	0.13
P-094	HYD-19	J-30	12.53	300	120	11.10	0.16	0.00	0.13
P-095	HYD-20	J-31	74.20	300	120	9.52	0.13	0.01	0.10
P-096	HYD-21	J-32	36.39	300	120	8.37	0.12	0.00	0.08
P-097	HYD-22	J-43	60.52	150	100	0.72	0.04	0.00	0.03
P-098	HYD-23	J-33	89.42	150	100	0.36	0.02	0.00	0.01
P-099	HYD-24	J-33	2.17	150	100	0.30	0.02	0.00	0.01
P-100	HYD-25	J-33	130.43	150	100	-0.24	0.01	0.00	0.00
P-101	HYD-26	J-32	41.85	300	120	-3.30	0.05	0.00	0.01
P-102	HYD-27	J-34	63.77	300	120	-3.11	0.04	0.00	0.01
P-103	HYD-28	HYD-27	138.52	300	120	-3.11	0.04	0.00	0.01
P-104	HYD-29	HYD-28	133.76	300	120	-3.11	0.04	0.00	0.01
P-105	HYD-30	J-27	95.87	150	100	0.51	0.03	0.00	0.02
P-106	HYD-31	HYD-30	100.43	150	100	0.51	0.03	0.00	0.02
P-107	HYD-32	J-32	100.64	300	120	-4.29	0.06	0.00	0.02
P-108	HYD-33	J-29	52.58	300	120	-2.52	0.04	0.00	0.01
P-109	HYD-34	J-26	125.04	150	100	0.51	0.03	0.00	0.02
P-110	HYD-35	J-28	63.75	300	120	-0.75	0.01	0.00	0.00
P-111	HYD-36	J-09	28.61	300	120	-0.03	0.00	0.00	0.00
P-112	HYD-37	J-50	61.52	300	120	0.37	0.01	0.00	0.00
P-113	HYD-38	J-49	36.08	300	120	0.36	0.01	0.00	0.00
P-114	HYD-39	J-50	33.58	300	120	0.00	0.00	0.00	0.00
P-115	HYD-40	J-10	37.58	300	120	0.70	0.01	0.00	0.00
P-116	HYD-41	J-11	119.20	150	100	2.04	0.12	0.03	0.23
P-117	HYD-42	J-12	33.00	300	120	18.45	0.26	0.01	0.33
P-118	HYD-43	J-14	15.26	200	110	2.24	0.07	0.00	0.06
P-119	HYD-44	J-14	35.39	150	100	1.18	0.07	0.00	0.08
P-120	HYD-45	J-15	32.96	150	100	0.90	0.05	0.00	0.05
P-121	HYD-46	J-17	34.13	300	120	8.86	0.13	0.00	0.08
P-122	HYD-47	J-22	59.76	200	110	1.67	0.05	0.00	0.03
P-123	HYD-48	J-53	16.63	200	110	0.77	0.02	0.00	0.01
P-124	HYD-49	J-11	38.90	300	120	1.34	0.02	0.00	0.00
P-125	HYD-50	J-19	39.21	200	110	2.32	0.07	0.00	0.06
P-126	HYD-51	J-47	75.54	200	110	0.60	0.02	0.00	0.00
P-127	HYD-52	J-47	63.17	200	110	0.46	0.01	0.00	0.00
P-128	HYD-53	J-20	32.13	200	110	0.66	0.02	0.00	0.01
P-129	HYD-54	J-23	43.77	200	110	-0.86	0.03	0.00	0.01
P-130	HYD-55	J-48	98.03	300	120	0.00	0.00	0.00	0.00

2016 Peak Hour Demand Modeling Results

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
P-131	HYD-56	J-23	59.66	300	120	1.28	0.02	0.00	0.00
P-132	HYD-57	HYD-63	104.99	200	110	0.00	0.00	0.00	0.00
P-133	HYD-58	J-25	40.79	300	120	-0.26	0.00	0.00	0.00
P-134	HYD-59	J-35	117.55	200	110	0.67	0.02	0.00	0.01
P-135	HYD-60	J-26	39.41	300	120	-1.60	0.02	0.00	0.00
P-136	HYD-61	J-27	52.59	300	120	-2.36	0.03	0.00	0.01
P-137	HYD-67	J-51	89.08	300	120	42.80	0.61	0.14	1.55

2016 Peak Hour Demand Modeling Results

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
J-01	2.34	128.70	193.55	92.18
J-02	2.34	129.04	193.51	91.65
J-03	1.32	128.89	193.47	91.81
J-04	0.27	127.51	193.47	93.77
J-05	2.34	127.41	193.49	93.94
J-06	0.27	126.47	193.45	95.22
J-09	0.36	125.65	193.42	96.34
J-10	0.36	126.01	193.42	95.82
J-11	0.36	126.37	193.42	95.31
J-12	1.32	128.72	193.43	91.99
J-13	1.32	128.50	193.43	92.30
J-14	1.32	129.25	193.42	91.22
J-15	1.32	128.95	193.42	91.65
J-16	1.32	128.28	193.42	92.60
J-17	1.32	128.07	193.42	92.90
J-18	1.32	129.46	193.41	90.92
J-19	1.06	127.13	193.41	94.23
J-20	1.06	126.77	193.41	94.74
J-21	1.32	129.68	193.41	90.60
J-22	1.32	129.80	193.41	90.43
J-23	0.67	126.41	193.41	95.25
J-25	0.67	126.20	193.41	95.55
J-26	1.26	125.70	193.41	96.26
J-27	1.26	125.39	193.41	96.70
J-28	1.26	125.35	193.42	96.76
J-29	1.26	125.25	193.42	96.91
J-30	0.53	126.09	193.44	95.74
J-31	0.42	125.64	193.42	96.36
J-32	0.42	125.40	193.42	96.70
J-33	0.42	126.04	193.42	95.78
J-34	0.42	124.80	193.42	97.55
J-35	0.67	126.95	193.41	94.48
J-36	0.53	126.20	193.17	95.20
J-37	2.34	126.60	193.45	95.04
J-38	5.66	130.84	194.09	89.91
J-39	5.66	130.66	194.08	90.15
J-42	0.00	130.45	194.05	90.42
J-43	0.42	126.53	193.42	95.09
J-45	1.32	129.46	193.42	90.93
J-47	1.06	127.87	193.41	93.17
J-48	1.32	126.76	193.41	94.75
J-49	0.36	126.69	193.42	94.86
J-50	0.36	126.18	193.42	95.58
J-51	0.00	129.13	193.62	91.68
J-52	0.53	126.30	193.15	95.03
J-53	1.32	130.03	193.41	90.10

2031 Peak Hour Demand Modeling Results

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
P-001	J-24	HYD-55	31.64	300	120	0.00	0.00	0.00	0.00
P-002	J-52	J-36	19.74	50	100	-0.26	0.13	0.02	1.08
P-003	J-30	J-36	19.32	50	100	1.06	0.54	0.27	14.08
P-004	J-41	HYD-68	85.55	300	120	8.74	0.12	0.01	0.08
P-005	J-38	HYD-03	14.78	300	120	3.08	0.04	0.00	0.01
P-006	J-39	HYD-04	58.57	300	120	-2.58	0.04	0.00	0.01
P-007	J-40	HYD-01	129.08	300	120	45.38	0.64	0.22	1.73
P-008	HYD-68	HYD-02	97.40	300	120	8.74	0.12	0.01	0.08
P-009	J-23	HYD-57	29.64	200	110	0.00	0.00	0.00	0.00
P-010	J-10	HYD-38	70.31	300	120	0.36	0.01	0.00	0.00
P-011	J-16	HYD-45	43.53	150	100	0.90	0.05	0.00	0.05
P-012	J-14	J-15	42.31	200	110	2.10	0.07	0.00	0.05
P-013	J-15	HYD-47	52.64	200	110	1.67	0.05	0.00	0.03
P-014	J-22	HYD-48	17.71	200	110	0.77	0.02	0.00	0.01
P-015	J-21	J-53	76.08	200	110	0.55	0.02	0.00	0.00
P-016	J-13	HYD-44	40.42	150	100	1.18	0.07	0.00	0.08
P-017	J-45	HYD-43	21.03	200	110	2.24	0.07	0.00	0.05
P-018	J-12	J-45	77.56	200	110	3.56	0.11	0.01	0.13
P-019	HYD-65	J-01	88.99	300	120	22.58	0.32	0.04	0.47
P-020	J-01	HYD-08	60.89	150	100	2.33	0.13	0.02	0.29
P-021	J-02	HYD-10	32.25	300	120	20.21	0.29	0.01	0.39
P-022	J-03	HYD-15	21.00	300	120	18.45	0.26	0.01	0.33
P-023	J-12	J-13	32.05	300	120	13.58	0.19	0.01	0.19
P-024	J-16	J-13	35.77	300	120	-11.08	0.16	0.00	0.13
P-025	J-16	HYD-46	16.73	300	120	8.86	0.13	0.00	0.08
P-026	J-17	J-18	52.37	300	120	6.20	0.09	0.00	0.04
P-027	J-21	J-18	36.13	300	120	-4.47	0.06	0.00	0.02
P-028	J-21	HYD-64	14.37	300	120	2.60	0.04	0.00	0.01
P-029	J-51	HYD-07	82.52	300	120	20.22	0.29	0.03	0.39
P-030	J-05	HYD-11	35.48	300	120	13.06	0.18	0.01	0.17
P-031	J-01	HYD-09	86.55	300	120	17.91	0.25	0.03	0.31
P-032	J-04	HYD-17	20.99	150	100	2.04	0.12	0.00	0.23
P-033	J-11	HYD-50	38.28	200	110	2.32	0.07	0.00	0.06
P-034	J-19	HYD-53	34.32	200	110	0.66	0.02	0.00	0.01
P-035	J-20	HYD-54	36.91	200	110	-0.86	0.03	0.00	0.01
P-036	J-09	HYD-35	36.76	300	120	-0.75	0.01	0.00	0.00
P-037	J-10	HYD-36	37.54	300	120	-0.03	0.00	0.00	0.00
P-038	J-17	HYD-49	33.21	300	120	1.34	0.02	0.00	0.00
P-039	J-29	HYD-32	19.84	300	120	-4.29	0.06	0.00	0.02
P-040	J-28	HYD-33	10.64	300	120	-2.52	0.04	0.00	0.01
P-041	J-32	HYD-23	30.75	150	100	0.36	0.02	0.00	0.01
P-042	J-43	HYD-24	88.36	150	100	0.30	0.02	0.00	0.01
P-043	J-31	HYD-22	122.65	150	100	0.72	0.04	0.00	0.03
P-044	J-03	HYD-16	41.12	300	120	0.44	0.01	0.00	0.00
P-045	J-06	HYD-18	8.98	300	120	-11.18	0.16	0.00	0.13
P-046	J-04	HYD-69	57.36	300	120	11.18	0.16	0.01	0.13
P-047	J-23	HYD-58	29.89	300	120	-0.26	0.00	0.00	0.00
P-048	J-25	HYD-60	117.13	300	120	-1.60	0.02	0.00	0.00
P-049	J-26	HYD-61	12.30	300	120	-2.36	0.03	0.00	0.01
P-050	J-27	HYD-29	46.73	300	120	-3.11	0.04	0.00	0.01
P-051	J-06	HYD-19	82.96	300	120	11.10	0.16	0.01	0.13
P-052	J-30	HYD-20	85.17	300	120	9.52	0.13	0.01	0.10
P-053	J-34	HYD-26	89.55	300	120	-3.30	0.05	0.00	0.01
P-054	J-18	J-22	75.67	150	100	0.42	0.02	0.00	0.01
P-055	J-20	HYD-52	87.25	200	110	0.46	0.01	0.00	0.00
P-056	J-19	HYD-51	97.02	200	110	0.60	0.02	0.00	0.00
P-057	J-06	HYD-13	98.90	150	100	-0.18	0.01	0.00	0.00
P-058	J-09	HYD-37	42.35	300	120	0.37	0.01	0.00	0.00
P-059	J-05	HYD-12	46.46	150	100	2.52	0.14	0.02	0.33
P-060	J-25	HYD-59	32.51	200	110	0.67	0.02	0.00	0.01
P-061	HYD-62	J-35	31.89	50	100	0.00	0.00	0.00	0.00
P-062	J-34	HYD-25	23.85	150	100	-0.24	0.01	0.00	0.00
P-063	J-36	J-52	19.73	50	100	0.26	0.13	0.02	1.08
P-064	J-28	HYD-34	91.78	150	100	0.51	0.03	0.00	0.02
P-065	J-29	HYD-31	21.18	150	100	0.51	0.03	0.00	0.02

2031 Peak Hour Demand Modeling Results

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
P-066	J-11	HYD-40	33.52	300	120	0.70	0.01	0.00	0.00
P-067	J-31	HYD-21	36.41	300	120	8.37	0.12	0.00	0.08
P-068	J-35	HYD-62	4.16	200	110	0.00	0.00	0.00	0.00
P-069	J-48	HYD-56	13.42	300	120	1.28	0.02	0.00	0.00
P-070	HYD-64	J-48	116.04	300	120	2.60	0.04	0.00	0.01
P-071	J-49	HYD-39	33.65	300	120	0.00	0.00	0.00	0.00
P-072	HYD-66	J-02	45.27	300	120	20.22	0.29	0.02	0.39
P-073	WCV5164	HYD-06	189.27	300	120	0.00	0.00	0.00	0.00
P-074	J-51	HYD-65	71.74	300	120	22.58	0.32	0.03	0.47
P-075	J-42	HYD-05	40.54	300	120	42.80	0.61	0.06	1.55
P-076	HYD-01	J-42	103.76	300	120	45.38	0.64	0.18	1.73
P-077	HYD-02	J-38	13.22	300	120	8.74	0.12	0.00	0.08
P-078	HYD-03	J-39	16.03	300	120	3.08	0.04	0.00	0.01
P-079	HYD-04	J-42	54.10	300	120	-2.58	0.04	0.00	0.01
P-080	HYD-05	HYD-67	149.52	300	120	42.80	0.61	0.23	1.55
P-081	HYD-06	J-51	4.18	300	120	0.00	0.00	0.00	0.00
P-082	HYD-07	HYD-66	152.82	300	120	20.22	0.29	0.06	0.39
P-083	HYD-08	J-02	49.93	150	100	2.33	0.13	0.01	0.29
P-084	HYD-09	J-05	98.71	300	120	17.91	0.25	0.03	0.31
P-085	HYD-10	HYD-14	46.53	300	120	20.21	0.29	0.02	0.39
P-086	HYD-11	J-04	67.54	300	120	13.06	0.18	0.01	0.17
P-087	HYD-12	J-37	58.97	150	100	2.52	0.14	0.02	0.33
P-088	HYD-13	J-37	45.35	150	100	-0.18	0.01	0.00	0.00
P-089	HYD-14	J-03	31.85	300	120	20.21	0.29	0.01	0.39
P-090	HYD-15	HYD-42	66.21	300	120	18.45	0.26	0.02	0.33
P-091	HYD-16	J-04	30.92	300	120	0.44	0.01	0.00	0.00
P-092	HYD-17	HYD-41	97.90	150	100	2.04	0.12	0.02	0.23
P-093	HYD-18	HYD-69	73.14	300	120	-11.18	0.16	0.01	0.13
P-094	HYD-19	J-30	12.53	300	120	11.10	0.16	0.00	0.13
P-095	HYD-20	J-31	74.20	300	120	9.52	0.13	0.01	0.10
P-096	HYD-21	J-32	36.39	300	120	8.37	0.12	0.00	0.08
P-097	HYD-22	J-43	60.52	150	100	0.72	0.04	0.00	0.03
P-098	HYD-23	J-33	89.42	150	100	0.36	0.02	0.00	0.01
P-099	HYD-24	J-33	2.17	150	100	0.30	0.02	0.00	0.01
P-100	HYD-25	J-33	130.43	150	100	-0.24	0.01	0.00	0.00
P-101	HYD-26	J-32	41.85	300	120	-3.30	0.05	0.00	0.01
P-102	HYD-27	J-34	63.77	300	120	-3.11	0.04	0.00	0.01
P-103	HYD-28	HYD-27	138.52	300	120	-3.11	0.04	0.00	0.01
P-104	HYD-29	HYD-28	133.76	300	120	-3.11	0.04	0.00	0.01
P-105	HYD-30	J-27	95.87	150	100	0.51	0.03	0.00	0.02
P-106	HYD-31	HYD-30	100.43	150	100	0.51	0.03	0.00	0.02
P-107	HYD-32	J-32	100.64	300	120	-4.29	0.06	0.00	0.02
P-108	HYD-33	J-29	52.58	300	120	-2.52	0.04	0.00	0.01
P-109	HYD-34	J-26	125.04	150	100	0.51	0.03	0.00	0.02
P-110	HYD-35	J-28	63.75	300	120	-0.75	0.01	0.00	0.00
P-111	HYD-36	J-09	28.61	300	120	-0.03	0.00	0.00	0.00
P-112	HYD-37	J-50	61.52	300	120	0.37	0.01	0.00	0.00
P-113	HYD-38	J-49	36.08	300	120	0.36	0.01	0.00	0.00
P-114	HYD-39	J-50	33.58	300	120	0.00	0.00	0.00	0.00
P-115	HYD-40	J-10	37.58	300	120	0.70	0.01	0.00	0.00
P-116	HYD-41	J-11	119.20	150	100	2.04	0.12	0.03	0.23
P-117	HYD-42	J-12	33.00	300	120	18.45	0.26	0.01	0.33
P-118	HYD-43	J-14	15.26	200	110	2.24	0.07	0.00	0.06
P-119	HYD-44	J-14	35.39	150	100	1.18	0.07	0.00	0.08
P-120	HYD-45	J-15	32.96	150	100	0.90	0.05	0.00	0.05
P-121	HYD-46	J-17	34.13	300	120	8.86	0.13	0.00	0.08
P-122	HYD-47	J-22	59.76	200	110	1.67	0.05	0.00	0.03
P-123	HYD-48	J-53	16.63	200	110	0.77	0.02	0.00	0.01
P-124	HYD-49	J-11	38.90	300	120	1.34	0.02	0.00	0.00
P-125	HYD-50	J-19	39.21	200	110	2.32	0.07	0.00	0.06
P-126	HYD-51	J-47	75.54	200	110	0.60	0.02	0.00	0.00
P-127	HYD-52	J-47	63.17	200	110	0.46	0.01	0.00	0.00
P-128	HYD-53	J-20	32.13	200	110	0.66	0.02	0.00	0.01
P-129	HYD-54	J-23	43.77	200	110	-0.86	0.03	0.00	0.01
P-130	HYD-55	J-48	98.03	300	120	0.00	0.00	0.00	0.00

2031 Peak Hour Demand Modeling Results

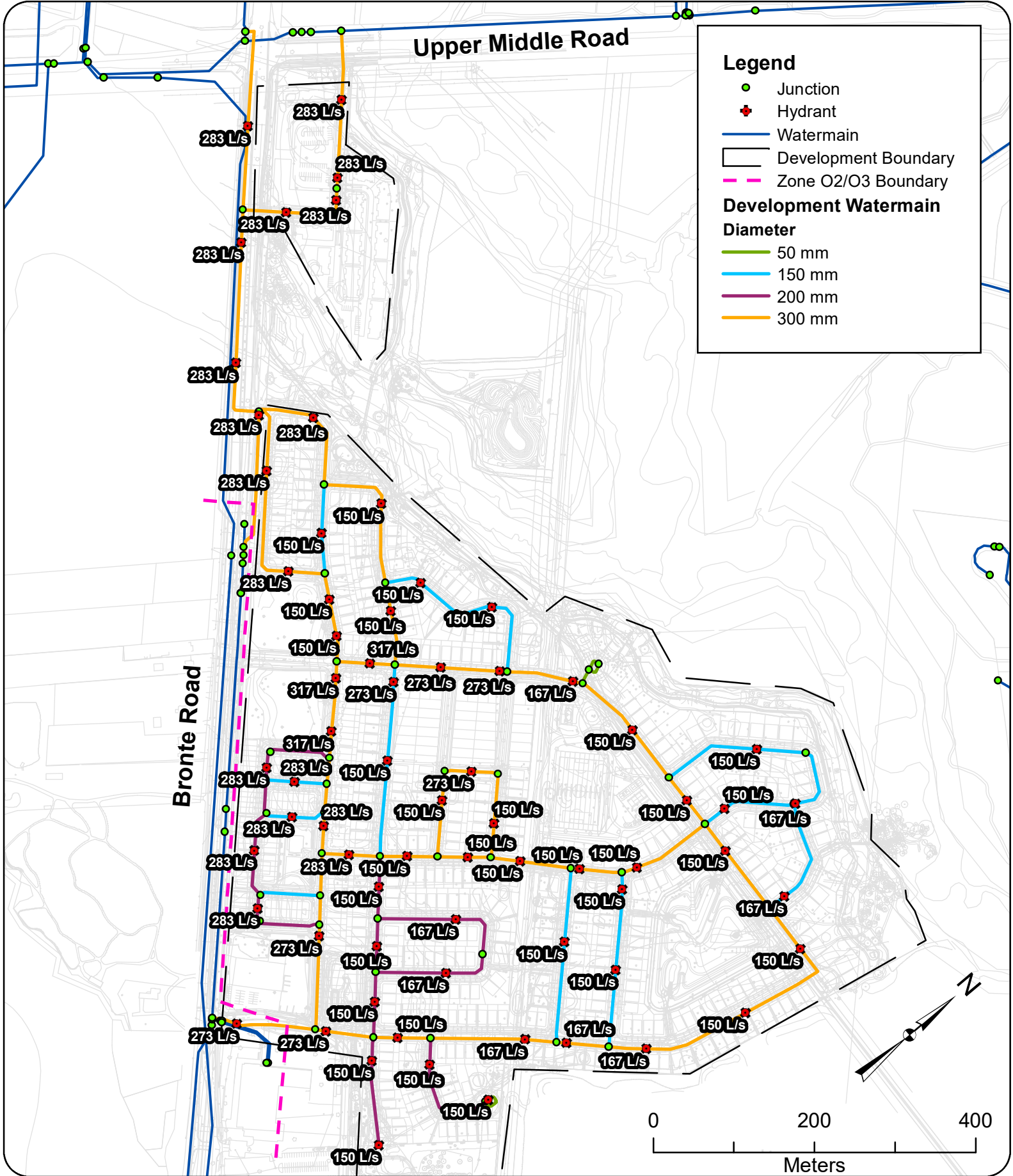
ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
P-131	HYD-56	J-23	59.66	300	120	1.28	0.02	0.00	0.00
P-132	HYD-57	HYD-63	104.99	200	110	0.00	0.00	0.00	0.00
P-133	HYD-58	J-25	40.79	300	120	-0.26	0.00	0.00	0.00
P-134	HYD-59	J-35	117.55	200	110	0.67	0.02	0.00	0.01
P-135	HYD-60	J-26	39.41	300	120	-1.60	0.02	0.00	0.00
P-136	HYD-61	J-27	52.59	300	120	-2.36	0.03	0.00	0.01
P-137	HYD-67	J-51	89.08	300	120	42.80	0.61	0.14	1.55

2031 Peak Hour Demand Modeling Results

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
J-01	2.34	128.70	192.00	89.99
J-02	2.34	129.04	191.97	89.46
J-03	1.32	128.89	191.92	89.61
J-04	0.27	127.51	191.92	91.57
J-05	2.34	127.41	191.94	91.74
J-06	0.27	126.47	191.91	93.02
J-09	0.36	125.65	191.87	94.14
J-10	0.36	126.01	191.87	93.63
J-11	0.36	126.37	191.87	93.12
J-12	1.32	128.72	191.89	89.80
J-13	1.32	128.50	191.88	90.10
J-14	1.32	129.25	191.87	89.02
J-15	1.32	128.95	191.87	89.45
J-16	1.32	128.28	191.88	90.41
J-17	1.32	128.07	191.87	90.70
J-18	1.32	129.46	191.87	88.72
J-19	1.06	127.13	191.87	92.03
J-20	1.06	126.77	191.87	92.54
J-21	1.32	129.68	191.87	88.41
J-22	1.32	129.80	191.87	88.24
J-23	0.67	126.41	191.87	93.05
J-25	0.67	126.20	191.87	93.35
J-26	1.26	125.70	191.87	94.06
J-27	1.26	125.39	191.87	94.50
J-28	1.26	125.35	191.87	94.57
J-29	1.26	125.25	191.87	94.71
J-30	0.53	126.09	191.89	93.55
J-31	0.42	125.64	191.88	94.17
J-32	0.42	125.40	191.87	94.50
J-33	0.42	126.04	191.87	93.59
J-34	0.42	124.80	191.87	95.35
J-35	0.67	126.95	191.87	92.28
J-36	0.53	126.20	191.62	93.00
J-37	2.34	126.60	191.91	92.84
J-38	5.66	130.84	192.51	87.67
J-39	5.66	130.66	192.51	87.92
J-42	0.00	130.45	192.51	88.22
J-43	0.42	126.53	191.87	92.89
J-45	1.32	129.46	191.88	88.73
J-47	1.06	127.87	191.87	90.98
J-48	1.32	126.76	191.87	92.56
J-49	0.36	126.69	191.87	92.66
J-50	0.36	126.18	191.87	93.39
J-51	0.00	129.13	192.08	89.48
J-52	0.53	126.30	191.60	92.83
J-53	1.32	130.03	191.87	87.91



Appendix D Fire Flow Modeling Results



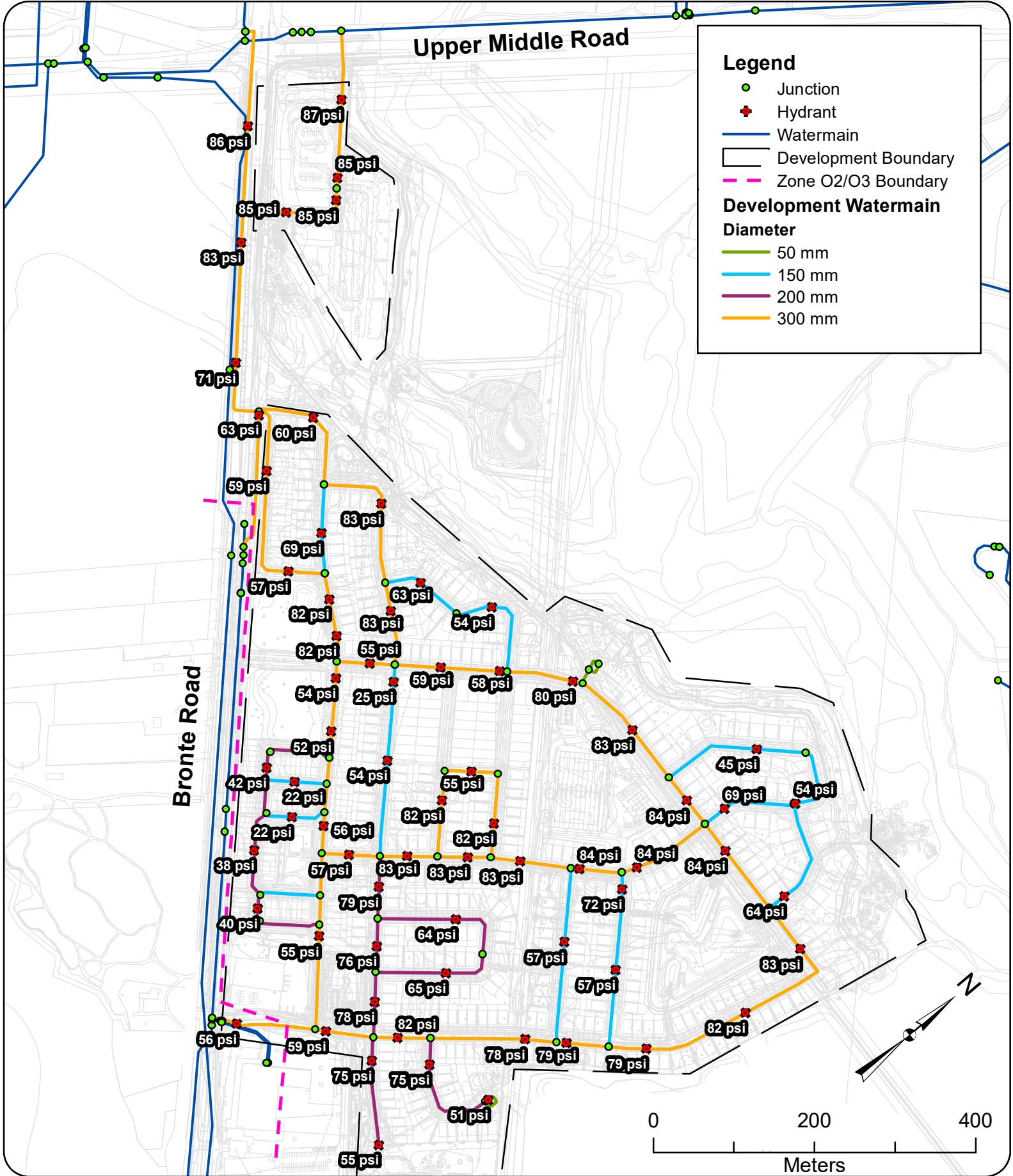
GeoAdvice Engineering Inc.

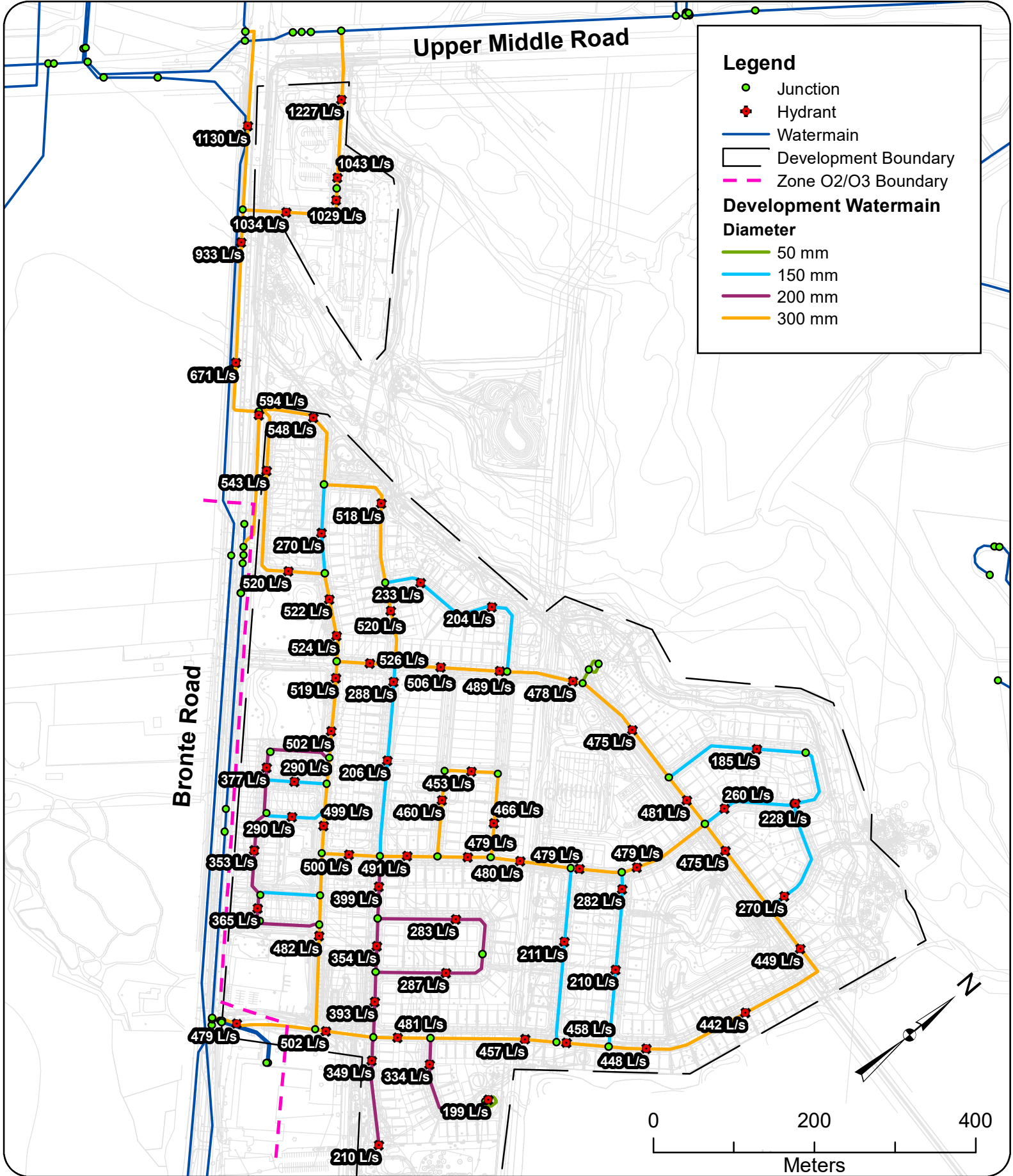
Project: **Hydraulic Capacity and Modeling Analysis
Bronte Green Development**
 Client: **David Schaeffer Engineering Ltd.**
 Date: **April 2019**
 Created by: **Ad'A**
 Reviewed by: **WdS**

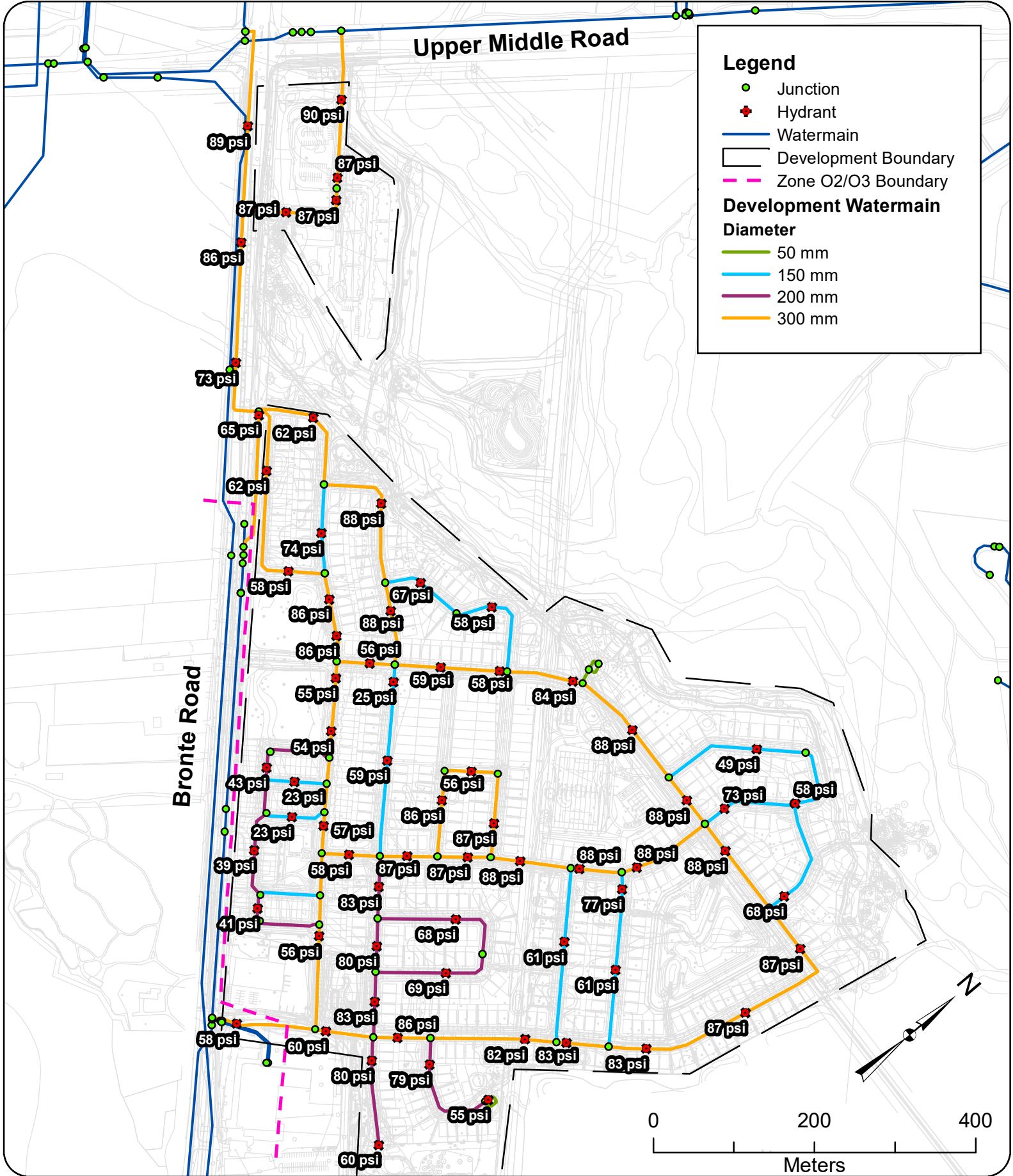
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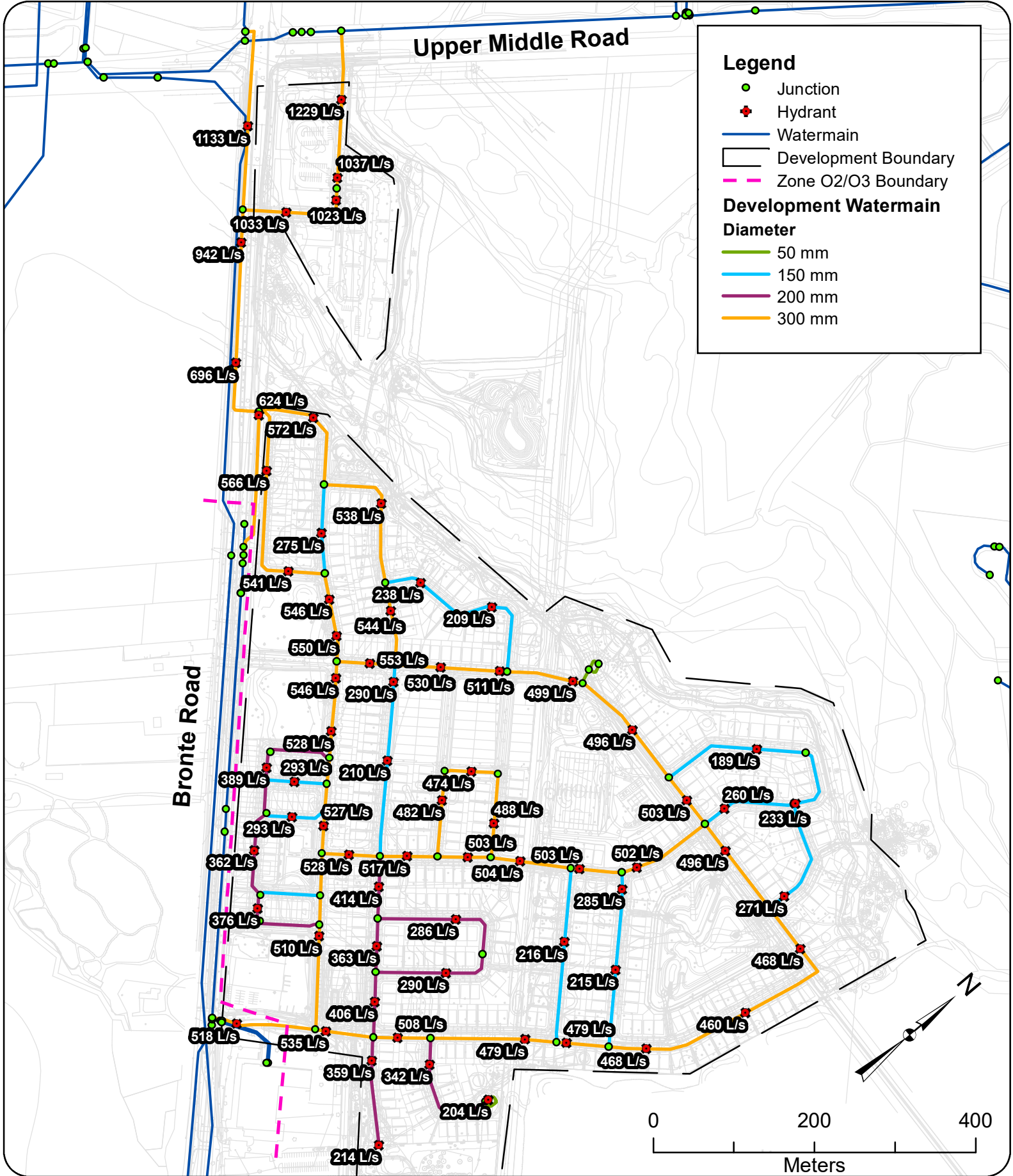
Required Fire Flow

Figure D.1









2016 Maximum Day Demand Plus Fire Flow Modeling Results

ID	Static Demand (L/s)	Static Pressure (psi)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (psi)	Available Flow at Hydrant (L/s)	Available Flow Pressure (psi)
HYD-01	0.00	94	197	283	86	1,130	20
HYD-02	0.00	94	197	283	85	1,043	20
HYD-03	0.00	94	197	283	85	1,029	20
HYD-04	0.00	94	197	283	85	1,034	20
HYD-05	0.00	96	197	283	83	933	20
HYD-06	0.00	96	197	283	63	594	20
HYD-07	0.00	96	197	283	59	543	20
HYD-08	0.00	96	197	150	69	270	20
HYD-09	0.00	98	197	150	83	518	20
HYD-10	0.00	96	197	150	82	522	20
HYD-11	0.00	98	197	150	83	520	20
HYD-12	0.00	99	197	150	63	233	20
HYD-13	0.00	100	197	150	54	204	20
HYD-14	0.00	96	197	150	82	524	20
HYD-15	0.00	97	197	317	54	519	20
HYD-16	0.00	97	197	317	55	526	20
HYD-17	0.00	100	197	273	25	288	20
HYD-18	0.00	99	197	273	58	489	20
HYD-19	0.00	100	197	167	80	478	20
HYD-20	0.00	101	197	150	83	475	20
HYD-21	0.00	101	197	150	84	481	20
HYD-22	0.00	101	197	150	45	185	20
HYD-23	0.00	101	197	150	69	260	20
HYD-24	0.00	100	197	167	54	228	20
HYD-25	0.00	101	197	167	64	270	20
HYD-26	0.00	102	197	150	84	475	20
HYD-27	0.00	101	197	150	83	449	20
HYD-28	0.00	101	197	150	82	442	20
HYD-29	0.00	101	197	167	79	448	20
HYD-30	0.00	101	197	150	57	210	20
HYD-31	0.00	101	197	150	72	282	20
HYD-32	0.00	101	197	150	84	479	20
HYD-33	0.00	101	197	150	84	479	20
HYD-34	0.00	101	197	150	57	211	20
HYD-35	0.00	101	197	150	83	480	20
HYD-36	0.00	101	197	150	83	479	20
HYD-37	0.00	100	197	150	82	466	20
HYD-38	0.00	100	197	150	82	460	20
HYD-39	0.00	100	197	273	55	453	20
HYD-40	0.00	100	197	150	83	491	20
HYD-41	0.00	100	197	150	54	206	20

2016 Maximum Day Demand Plus Fire Flow Modeling Results

ID	Static Demand (L/s)	Static Pressure (psi)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (psi)	Available Flow at Hydrant (L/s)	Available Flow Pressure (psi)
HYD-42	0.00	97	197	317	52	502	20
HYD-43	0.00	96	197	283	42	377	20
HYD-44	0.00	96	197	283	22	290	20
HYD-45	0.00	97	197	283	22	290	20
HYD-46	0.00	97	197	283	56	499	20
HYD-47	0.00	96	197	283	38	353	20
HYD-48	0.00	95	197	283	40	365	20
HYD-49	0.00	99	197	283	57	500	20
HYD-50	0.00	99	197	150	79	399	20
HYD-51	0.00	98	197	167	64	283	20
HYD-52	0.00	99	197	167	65	287	20
HYD-53	0.00	99	197	150	76	354	20
HYD-54	0.00	100	197	150	78	393	20
HYD-55	0.00	99	197	273	56	479	20
HYD-56	0.00	100	197	273	59	502	20
HYD-57	0.00	99	197	150	75	349	20
HYD-58	0.00	100	197	150	82	481	20
HYD-59	0.00	99	197	150	75	334	20
HYD-60	0.00	100	197	167	78	457	20
HYD-61	0.00	101	197	167	79	458	20
HYD-62	0.00	99	197	150	51	199	20
HYD-63	0.00	99	197	150	55	210	20
HYD-64	0.00	96	197	273	55	482	20
HYD-65	0.00	96	197	283	60	548	20
HYD-66	0.00	96	197	283	57	520	20
HYD-67	0.00	96	197	283	71	671	20
HYD-68	0.00	94	197	283	87	1,227	20
HYD-69	0.00	99	197	273	59	506	20

2031 Maximum Day Demand Plus Fire Flow Modeling Results

ID	Static Demand (L/s)	Static Pressure (psi)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (psi)	Available Flow at Hydrant (L/s)	Available Flow Pressure (psi)
HYD-01	0.00	101	202	283	89	1,133	20
HYD-02	0.00	101	202	283	87	1,037	20
HYD-03	0.00	101	202	283	87	1,023	20
HYD-04	0.00	101	202	283	87	1,033	20
HYD-05	0.00	103	202	283	86	942	20
HYD-06	0.00	103	202	283	65	624	20
HYD-07	0.00	103	202	283	62	566	20
HYD-08	0.00	103	202	150	74	275	20
HYD-09	0.00	105	202	150	88	538	20
HYD-10	0.00	103	202	150	86	546	20
HYD-11	0.00	105	202	150	88	544	20
HYD-12	0.00	106	202	150	67	238	20
HYD-13	0.00	107	202	150	58	209	20
HYD-14	0.00	103	202	150	86	550	20
HYD-15	0.00	104	202	317	55	546	20
HYD-16	0.00	104	202	317	56	553	20
HYD-17	0.00	107	202	273	25	290	20
HYD-18	0.00	106	202	273	58	511	20
HYD-19	0.00	107	202	167	84	499	20
HYD-20	0.00	108	202	150	88	496	20
HYD-21	0.00	108	202	150	88	503	20
HYD-22	0.00	107	202	150	49	189	20
HYD-23	0.00	108	202	150	73	260	20
HYD-24	0.00	107	202	167	58	233	20
HYD-25	0.00	108	202	167	68	271	20
HYD-26	0.00	109	202	150	88	496	20
HYD-27	0.00	108	202	150	87	468	20
HYD-28	0.00	108	202	150	87	460	20
HYD-29	0.00	108	202	167	83	468	20
HYD-30	0.00	108	202	150	61	215	20
HYD-31	0.00	108	202	150	77	285	20
HYD-32	0.00	108	202	150	88	502	20
HYD-33	0.00	108	202	150	88	503	20
HYD-34	0.00	108	202	150	61	216	20
HYD-35	0.00	108	202	150	88	504	20
HYD-36	0.00	108	202	150	87	503	20
HYD-37	0.00	107	202	150	87	488	20
HYD-38	0.00	107	202	150	86	482	20
HYD-39	0.00	107	202	273	56	474	20
HYD-40	0.00	107	202	150	87	517	20
HYD-41	0.00	107	202	150	59	210	20

2031 Maximum Day Demand Plus Fire Flow Modeling Results

ID	Static Demand (L/s)	Static Pressure (psi)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (psi)	Available Flow at Hydrant (L/s)	Available Flow Pressure (psi)
HYD-42	0.00	104	202	317	54	528	20
HYD-43	0.00	103	202	283	43	389	20
HYD-44	0.00	103	202	283	23	293	20
HYD-45	0.00	104	202	283	23	293	20
HYD-46	0.00	104	202	283	57	527	20
HYD-47	0.00	103	202	283	39	362	20
HYD-48	0.00	102	202	283	41	376	20
HYD-49	0.00	106	202	283	58	528	20
HYD-50	0.00	106	202	150	83	414	20
HYD-51	0.00	105	202	167	68	286	20
HYD-52	0.00	106	202	167	69	290	20
HYD-53	0.00	106	202	150	80	363	20
HYD-54	0.00	107	202	150	83	406	20
HYD-55	0.00	106	202	273	58	518	20
HYD-56	0.00	107	202	273	60	535	20
HYD-57	0.00	106	202	150	80	359	20
HYD-58	0.00	107	202	150	86	508	20
HYD-59	0.00	106	202	150	79	342	20
HYD-60	0.00	107	202	167	82	479	20
HYD-61	0.00	108	202	167	83	479	20
HYD-62	0.00	106	202	150	55	204	20
HYD-63	0.00	106	202	150	60	214	20
HYD-64	0.00	103	202	273	56	510	20
HYD-65	0.00	103	202	283	62	572	20
HYD-66	0.00	103	202	283	58	541	20
HYD-67	0.00	103	202	283	73	696	20
HYD-68	0.00	101	202	283	90	1,229	20
HYD-69	0.00	105	202	273	59	530	20