



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 3	2,500	—	2,500	200 persons/ha	499,600 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
1	2.94				2.94		590	0.001		0.001	4.8	0.005		0.001	0.006	200	200.00	4.5	0.61	0.019	37.00	34.80	
2	8.49	11.43			8.49	11.43	2,290	0.005		0.005	4.8	0.024		0.001	0.025	250	165.00	3.5	0.62	0.031	37.00	33.85	
3	5.88	17.31			5.88	17.31	3,460	0.008		0.008	4.8	0.038		0.002	0.040	300	280.00	2.8	0.63	0.044	37.00	33.27	
4	4.30	21.61			4.30	21.61	4,320	0.010		0.010	4.8	0.048		0.002	0.050	350	280.00	2.2	0.62	0.059	37.00	33.22	
5	11.14	32.75			11.14	32.75	6,550	0.015		0.015	4.5	0.068		0.003	0.071	400	380.00	1.9	0.63	0.079	37.00	32.44	
6	14.70	47.45			14.70	47.45	9,490	0.022		0.022	4.2	0.092		0.004	0.096	450	380.00	1.6	0.62	0.099	37.00	32.39	
7	8.79	56.24			8.79	56.24	11,250	0.026		0.026	4.0	0.104		0.005	0.109	500	300.00	1.4	0.62	0.122	37.00	31.77	
P 3-1																					37.00	31.72	Pumping Station
8	46.92	103.16			46.92	103.16	20,630	0.048		0.048	3.6	0.173		0.009	0.182	600	350.00	1.2	0.65	0.184	37.00	31.00	
9	61.18	164.34			61.18	164.34	32,870	0.076		0.076	3.3	0.251		0.014	0.265	800	55.00	0.8	0.65	0.324	37.00	30.95	
10	8.17	172.51			8.17	172.51	34,500	0.080		0.080	3.3	0.264		0.015	0.279	800	175.00	0.8	0.65	0.324	37.00	30.90	
11	5.51	178.02			5.51	178.02	35,600	0.083		0.083	3.2	0.266		0.016	0.282	800	90.00	0.8	0.65	0.324	37.00	30.85	
12	14.42	192.44			14.42	192.44	38,490	0.090		0.090	3.2	0.288		0.017	0.305	800	275.00	0.8	0.65	0.324	37.00	30.43	
13	5.22	197.66			5.22	197.66	39,530	0.092		0.092	3.2	0.294		0.017	0.311	800	40.00	0.8	0.65	0.324	37.00	30.40	
14	4.39	202.05			4.39	202.05	40,410	0.094		0.094	3.2	0.301		0.018	0.319	800	50.00	0.8	0.65	0.324	37.00	33.98	
15	10.93	212.98			10.93	212.98	42,600	0.099		0.099	3.1	0.307		0.019	0.326	900	80.00	0.8	0.70	0.444	37.00	33.78	
16	5.63	218.61			5.63	218.61	43,720	0.102		0.102	3.1	0.316		0.020	0.336	900	160.00	0.8	0.70	0.444	37.00	33.73	
17	5.44	224.05			5.44	224.05	44,810	0.104		0.104	3.1	0.322		0.020	0.342	900	120.00	0.8	0.70	0.444	37.00	33.73	
18	26.24	250.29			26.24	250.29	50,060	0.116		0.116	3.1	0.360		0.022	0.382	900	200.00	0.8	0.70	0.444	37.00	33.59	
19	210.09	460.38			210.09	460.38	92,080	0.216		0.216	2.7	0.583		0.040	0.583	1100	355.00	0.6	0.73	0.828	37.00	33.59	

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 3	2,500	—	2,500	200 persons/ha	499,600 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s	Peak Flow	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		mm	m	‰	m/s	m <sup>3</sup> /s		m	m
20	36.85	497.23			36.85	497.23	99,450	0.231		0.231	2.7	0.624		0.044	0.624	Ø 1100	370.00	0.6	0.73	0.828	37.00	32.27	
																						32.05	
21	43.40	540.63			43.40	540.63	108,130	0.252		0.252	2.7	0.680		0.048	0.728	Ø 1200	280.00	0.6	0.73	0.828	37.00	31.95	
																						31.78	
22	71.78	612.41			71.78	612.41	122,480	0.285		0.285	2.6	0.741		0.054	0.795	Ø 1200	50.00	0.6	0.73	0.828	37.00	31.78	
																						31.75	
23	83.07	695.48			83.07	695.48	139,100	0.324		0.324	2.5	0.810		0.061	0.871	Ø 1350	335.00	0.5	0.72	1.034	37.00	31.60	
																						31.43	
24	235.90	931.38			235.90	931.38	186,280	0.433		0.433	2.4	1.039		0.082	1.121	Ø 1500	440.00	0.5	0.78	1.370	37.00	31.28	
																						31.06	
25	23.69	955.07			23.69	955.07	191,010	0.444		0.444	2.4	1.066		0.084	1.150	Ø 1500	755.00	0.5	0.78	1.370	37.00	31.06	
																						30.68	
26	45.87	1000.94			45.87	1000.94	200,190	0.466		0.466	2.3	1.072		0.088	1.160	Ø 1500	515.00	0.5	0.78	1.370	37.00	30.68	
																						30.68	
27	119.26	1120.20			119.26	1120.20	224,040	0.521		0.521	2.3	1.198		0.099	1.297	Ø 1500	40.00	0.5	0.78	1.370	37.00	30.42	
																						30.42	
28	84.71	1204.91			84.71	1204.91	240,980	0.561		0.561	2.3	1.290		0.106	1.396	Ø 1650	210.00	0.4	0.74	1.580	37.00	30.42	
																						30.40	
29	3.51	1208.42			3.51	1208.42	241,680	0.562		0.562	2.3	1.293		0.106	1.399	Ø 1650	55.00	0.4	0.74	1.580	37.00	30.25	
																						30.17	
	to	52																				30.17	
																						30.15	
30	11.20				11.20		2,240	0.005		0.005	4.8	0.024		0.001	0.025	Ø 250	450.00	3.3	0.62	0.031	37.00	34.75	
																						33.18	
31	9.90	21.10			9.90	21.10	4,220	0.010		0.010	4.8	0.048		0.002	0.050	Ø 350	285.00	2.2	0.62	0.059	37.00	33.08	
																						32.45	
32	12.73	33.83			12.73	33.83	6,770	0.016		0.016	4.4	0.070		0.003	0.073	Ø 400	360.00	1.9	0.63	0.079	37.00	32.40	
																						31.71	
33	22.35	56.18			22.35	56.18	11,240	0.026		0.026	4.0	0.104		0.005	0.109	Ø 500	290.00	1.4	0.62	0.122	37.00	31.61	
																						31.20	
34	5.45	61.63			5.45	61.63	12,330	0.029		0.029	3.9	0.113		0.005	0.118	Ø 500	170.00	1.4	0.62	0.122	37.00	31.20	
																						30.96	
35	8.97	70.60			8.97	70.60	14,120	0.033		0.033	3.8	0.125		0.006	0.131	Ø 600	30.00	1.2	0.65	0.184	37.00	30.86	
																						30.82	
36	22.09	92.69			22.09	92.69	18,540	0.043		0.043	3.6	0.155		0.008	0.163	Ø 600	440.00	1.2	0.65	0.184	37.00	30.82	
																						30.29	
37	28.19	120.88			28.19	120.88	24,180	0.056		0.056	3.4	0.190		0.011	0.201	Ø 700	240.00	1.0	0.66	0.254	37.00	30.19	
																						29.95	
P 3-2																						Pumping Station	

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 3	2,500	—	2,500	200 persons/ha	499,600 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
38	27.52	148.40			27.52	148.40	29,680	0.069		0.069	3.3	0.228		0.031	0.241	700	465.00	1.0	0.66	0.254	37.00	34.30	
39	48.99	197.39			48.99	197.39	39,480	0.092		0.092	3.2	0.294		0.017	0.311	800	490.00	0.8	0.65	0.324	37.00	33.84	
40	163.00	360.39			163.00	360.39	72,080	0.168		0.168	2.9	0.487		0.032	0.519	1100	30.00	0.6	0.69	0.656	37.00	33.74	
41	77.45	437.84			77.45	437.84	87,570	0.204		0.204	2.8	0.571		0.039	0.610	1100	730.00	0.6	0.69	0.656	37.00	33.34	
42	46.59	484.43			46.59	484.43	96,890	0.225		0.225	2.7	0.608		0.043	0.651	1100	360.00	0.6	0.69	0.656	37.00	33.04	
43	35.33	519.76			35.33	519.76	103,950	0.242		0.242	2.7	0.653		0.046	0.699	1200	380.00	0.6	0.73	0.828	37.00	33.02	
44	62.07	581.83			62.07	581.83	116,370	0.271		0.271	2.6	0.765		0.051	0.756	1200	560.00	0.6	0.73	0.828	37.00	32.58	
45	15.79	597.62			15.79	597.62	119,520	0.278		0.278	2.6	0.723		0.053	0.776	1200	400.00	0.6	0.73	0.828	37.00	32.36	
46	190.80	788.42			190.80	788.42	157,680	0.367		0.367	2.4	0.881		0.069	0.950	1350	380.00	0.6	0.73	0.828	37.00	32.26	
47	53.26	841.68			53.26	841.68	168,340	0.392		0.392	2.4	0.941		0.074	1.015	1350	410.00	0.5	0.72	1.034	37.00	32.03	
48	10.80	852.48			10.80	852.48	170,500	0.397		0.397	2.4	0.953		0.075	1.028	1350	100.00	0.5	0.72	1.034	37.00	32.03	
49	25.38	877.86			25.38	877.86	175,570	0.408		0.408	2.4	0.979		0.077	1.056	1500	240.00	0.5	0.72	1.034	37.00	31.69	
50	44.32	922.18			44.32	922.18	184,440	0.429		0.429	2.4	1.030		0.081	1.111	1500	260.00	0.5	0.78	1.370	37.00	31.69	
51	78.55	1000.73			78.55	1000.73	200,150	0.466		0.466	2.3	1.072		0.088	1.166	1500	250.00	0.5	0.78	1.370	37.00	31.45	
52	290.85	2500.00			290.85	2500.00	500,000	1.163		1.163	2.1	2.442		0.220	2.662	2100	450.00	0.5	0.78	1.370	37.00	31.30	
		to Treatment Facilities																			37.00	31.10	
																					37.00	31.10	
																					37.00	31.05	
																					37.00	31.05	
																					37.00	30.93	
																					37.00	30.78	
																					37.00	30.65	
																					37.00	30.65	
																					37.00	30.53	
																					37.00	30.53	
																					37.00	30.31	
																					37.00	29.71	
																					37.00	29.69	



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 6	2,600	—	2,600	95 persons/ha	245,600 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
1	36.14				36.11		3,430	0.008		0.008	4.8	0.038		0.003	0.041	300	890.00	2.8	0.63	0.044	37.00	34.70	
2	48.26	84.37			48.26	84.37	8,020	0.019		0.019	4.2	0.080		0.007	0.087	450	870.00	1.6	0.62	0.099	37.00	32.24	
3	46.04	130.41			46.04	130.41	12,390	0.029		0.029	3.9	0.113		0.011	0.124	600	630.00	1.2	0.65	0.184	37.00	30.85	
P 6-1																					37.00	30.70	
4	44.53	174.94			44.53	174.94	16,620	0.039		0.039	3.7	0.144		0.015	0.159	600	340.00	1.2	0.65	0.184	37.00	29.94	Pumping Station
5	77.97	252.91			77.97	252.91	24,030	0.056		0.056	3.4	0.190		0.022	0.212	700	390.00	1.0	0.66	0.254	37.00	34.40	
6	144.50	397.41			144.50	397.41	37,750	0.088		0.088	3.2	0.282		0.035	0.317	800	1280.00	0.8	0.65	0.324	37.00	33.99	
7	64.19	461.60			64.19	461.60	43,850	0.102		0.102	3.1	0.316		0.041	0.357	900	840.00	0.8	0.70	0.444	37.00	33.89	
8	140.68	602.28			140.68	602.28	57,220	0.133		0.133	2.9	0.386		0.053	0.439	900	1340.00	0.8	0.70	0.444	37.00	33.50	
to	(27)																				37.00	33.40	
9	32.78				32.78		3,110	0.007		0.007	4.8	0.034		0.003	0.037	300	960.00	2.8	0.63	0.044	37.00	32.38	
10	57.15	89.93			57.15	89.93	8,540	0.020		0.020	4.2	0.084		0.008	0.092	450	570.00	1.6	0.62	0.099	37.00	32.28	
11	88.79	178.72			88.79	178.72	16,980	0.040		0.040	3.7	0.148		0.016	0.164	600	640.00	1.2	0.65	0.184	37.00	31.61	
P 6-2																					37.00	31.61	
12	64.00	242.72			64.00	242.72	23,060	0.054		0.054	3.4	0.184		0.021	0.205	700	1700.00	1.0	0.66	0.254	37.00	30.54	Pumping Station
to	(16)																				37.00	34.70	
13	87.49				87.49		8,310	0.019		0.019	4.2	0.080		0.008	0.088	450	870.00	1.6	0.62	0.099	37.00	32.01	
14	53.55	141.04			53.55	141.04	13,400	0.031		0.031	3.8	0.118		0.012	0.130	600	280.00	1.2	0.65	0.184	37.00	31.86	
15	164.09	305.13			164.09	250.13	23,780	0.055		0.055	3.4	0.187		0.022	0.209	700	1560.00	1.0	0.66	0.254	37.00	30.95	
16	234.45	782.30			234.45	782.30	74,320	0.173		0.173	2.8	0.484		0.069	0.553	1100	730.00	0.6	0.69	0.656	37.00	30.80	
																					37.00	30.03	
																					37.00	34.30	
																					37.00	32.60	
																					37.00	34.55	
																					37.00	33.16	
																					37.00	33.01	
																					37.00	32.67	
																					37.00	32.57	
																					37.00	31.01	
																					37.00	30.61	
																					37.00	30.17	

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ZONE 6	2,600	—	2,600	95 persons/ha	245,600 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Ground Surface Elevation	Sewer Invert Elevation	Remarks
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)			
	Increment	Total	Increment	Total																			
(17)	158.18	940.48			158.18	940.48	89,350	0.208		0.208	2.7	0.562		0.083	0.645	Ø 1100	1750.00	0.6	0.69	0.656	37.00	30.17	
	to	(27)																				29.12	
(18)	34.67				34.64		3,290	0.008		0.008	4.8	0.038		0.003	0.041	Ø 300	840.00	2.8	0.63	0.044		34.70	
																						32.35	
(19)	172.67	207.31			172.67	207.31	19,690	0.046		0.046	3.5	0.161		0.018	0.179	Ø 600	780.00	1.2	0.65	0.184		32.05	
																						31.11	
(20)	89.17	296.48			89.17	296.48	28,170	0.066		0.066	3.3	0.218		0.026	0.244	Ø 700	740.00	1.0	0.66	0.254		31.01	
																						30.27	
(P 6-3)																							Pumping Station
(21)	84.28	380.76			84.28	380.76	36,170	0.084		0.084	3.2	0.269		0.033	0.302	Ø 800	710.00	0.8	0.65	0.324		34.20	
																						32.63	
(22)	115.88	496.64			115.88	496.64	47,180	0.110		0.110	3.1	0.341		0.044	0.385	Ø 900	960.00	0.8	0.70	0.444		33.53	
	to	(26)																				32.76	
(23)	46.49				46.49		4,420	0.010		0.010	4.8	0.048		0.004	0.052	Ø 350	920.00	2.2	0.62	0.059		34.65	
																						32.63	
(24)	138.75	185.24			138.75	185.24	17,600	0.041		0.041	3.6	0.148		0.016	0.164	Ø 600	1350.00	1.2	0.65	0.184		32.38	
																						30.76	
(25)	98.15	283.39			98.15	283.39	26,920	0.063		0.063	3.3	0.208		0.025	0.233	Ø 700	670.00	1.0	0.66	0.254		30.66	
																						29.99	
(26)	277.21	1057.24			277.21	1057.24	100,440	0.234		0.234	2.6	0.608		0.093	0.701	Ø 1200	1190.00	0.6	0.73	0.828		29.49	
																						28.78	
(27)	0.00	2600.00			0.00	2600.00	247,000	0.575		0.575	2.2	1.265		0.229	1.494	Ø 1650	40.00	0.4	0.74	1.580		28.33	
	to	Treatment Facilities																				28.31	

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 7	6,400	—	6,400	116 persons/ha	742,200 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
1	45.61				45.61		5,290	0.012		0.012	4.7	0.056		0.001	0.057	350	570.00	2.2	0.62	0.062	37.00	34.65	
2	286.99	332.60			286.99	332.60	38,580	0.090		0.090	3.2	0.288		0.003	0.291	800	770.00	0.8	0.65	0.324	37.00	33.40	
3	22.43	355.03			22.43	355.03	41,180	0.096		0.096	3.1	0.298		0.005	0.303	800	970.00	0.8	0.65	0.324	37.00	32.95	
P 7-1																					37.00	32.33	
4	202.60	577.63			202.60	577.63	64,690	0.150		0.150	2.9	0.435		0.032	0.467	1000	1040.00	0.6	0.65	0.509	37.00	31.55	
5	242.68	800.31			242.68	800.31	92,840	0.216		0.216	2.7	0.583		0.070	0.653	1100	1560.00	0.6	0.69	0.656	37.00	34.00	
6	189.74	990.05			189.74	990.05	114,850	0.267		0.267	2.6	0.694		0.087	0.781	1200	820.00	0.6	0.73	0.828	37.00	33.38	
7	126.85	1116.90			126.85	1116.90	129,560	0.301		0.301	2.5	0.753		0.098	0.851	1350	1710.00	0.5	0.72	1.034	37.00	33.28	
8	167.22	1284.12			167.22	1284.12	148,960	0.347		0.347	2.4	0.833		0.113	0.946	1350	300.00	0.5	0.72	1.034	37.00	32.34	
P 7-2																					37.00	31.80	
9	136.20	1420.32			136.20	1420.32	164,760	0.383		0.383	2.4	0.919		0.125	1.044	1500	1700.00	0.5	0.78	1.370	37.00	31.31	
10	180.56	1600.88			180.56	1600.88	185,700	0.432		0.432	2.3	0.994		0.141	1.135	1500	560.00	0.5	0.78	1.370	37.00	31.16	
11	193.19	1794.07			193.19	1794.07	208,110	0.484		0.484	2.3	1.113		0.158	1.271	1500	1350.00	0.5	0.78	1.370	37.00	30.31	
12	229.33	2023.40			229.33	2023.40	234,110	0.546		0.546	2.2	1.201		0.178	1.379	1650	380.00	0.4	0.74	1.580	37.00	30.16	
to 30																					37.00		
13	52.05				52.05		6,040	0.014		0.014	4.6	0.064		0.005	0.069	400	1370.00	1.9	0.63	0.079	37.00	33.50	
14	128.98	181.03			128.98	181.03	21,000	0.049		0.049	3.5	0.172		0.016	0.188	700	590.00	1.0	0.66	0.254	37.00	32.65	
15	77.01	258.04			77.01	258.04	29,930	0.070		0.070	3.3	0.231		0.023	0.254	700	820.00	1.0	0.66	0.254	37.00	32.65	
16	361.62	619.66			361.62	619.66	71,880	0.167		0.167	2.8	0.468		0.055	0.523	1100	420.00	0.6	0.69	0.656	37.00	32.37	
17	170.22	789.88			170.22	789.88	91,630	0.213		0.213	2.7	0.575		0.069	0.644	1100	630.00	0.6	0.69	0.656	37.00	32.37	
																					37.00	31.70	
																					37.00	31.11	
																					37.00	31.11	
																					37.00	30.29	
																					37.00	29.90	
																					37.00	29.64	
																					37.00	29.64	
																					37.00	29.26	



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 7	6,400	—	6,400	116 persons/ha	742,200 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks				
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation		
	Increment	Total	Increment	Total																				ha	ha
(P 7-3)																							Pumping Station		
(18)	200.72	990.60			200.72	990.60	114,910	0.267		0.267	2.6	0.694		0.087	0.781	⊙ 1200	2050.00	0.6	0.73	0.628			33.80		
(19)	713.55	1704.15			713.55	1704.15	197,680	0.460		0.460	2.3	1.058		0.150	1.208	⊙ 1500	1060.00	0.5	0.78	1.370			32.27		
(20)	351.52	2055.67			351.52	2055.67	238,460	0.555		0.555	2.2	1.221		0.181	1.402	⊙ 1650	810.00	0.4	0.74	1.580			31.74		
(21)	270.15	2325.82			270.15	2325.82	269,800	0.628		0.628	2.2	1.382		0.205	1.587	⊙ 1800	1140.00	0.4	0.78	1.992			31.59		
	to	(28)																							
(22)	83.28				83.28		9,660	0.022		0.022	4.1	0.090		0.007	0.097	⊙ 450	1500.00	1.6	0.62	0.099			31.27		
(23)	61.58	144.86			61.58	144.86	16,800	0.039		0.039	3.7	0.144		0.013	0.157	⊙ 600	1030.00	1.2	0.65	0.184			30.66		
(24)	123.10	267.96			123.10	267.96	31,080	0.072		0.072	3.2	0.230		0.024	0.254	⊙ 700	910.00	1.0	0.66	0.254			30.66		
(P 7-4)																							Pumping Station		
(25)	220.25	488.21			220.25	488.21	36,630	0.132		0.132	2.9	0.383		0.043	0.426	⊙ 900	820.00	0.8	0.70	0.444			29.75		
(26)	190.66	678.87			190.66	678.87	78,750	0.183		0.183	2.7	0.494		0.060	0.554	⊙ 1100	1140.00	0.6	0.69	0.656			34.55		
(27)	87.79	766.66			87.79	766.66	88,930	0.207		0.207	2.7	0.559		0.067	0.626	⊙ 1100	1240.00	0.6	0.69	0.656			32.15		
(28)	211.81	3304.29			211.81	3304.29	383,300	0.892		0.892	2.1	1.873		0.291	2.164	⊙ 1900	920.00	0.4	0.81	2.301			32.00		
(29)	96.34	3400.63			96.34	3400.63	394,470	0.918		0.918	2.0	1.836		0.299	2.135	⊙ 1900	1060.00	0.4	0.81	2.301			30.76		
(30)	30.29	5454.32			30.29	5454.32	632,700	1.472		1.472	1.9	2.797		0.480	3.277	⊙ 2200	280.00	0.4	0.90	3.402			30.66		
	to	(37)																							
(31)	51.74				51.74		6,000	0.014		0.014	4.6	0.064		0.005	0.069	⊙ 400	300.00	1.9	0.63	0.079			34.60		
(32)	94.67	146.41			94.67	146.41	16,980	0.040		0.040	3.7	0.237		0.013	0.250	⊙ 700	760.00	1.0	0.66	0.254			34.03		
(33)	127.90	274.31			127.90	274.31	31,820	0.074		0.074	3.2	0.237		0.024	0.261	⊙ 800	110.00	0.8	0.65	0.324			33.73		
																								32.97	
																								32.87	
																								31.98	



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 8	4,195	5	4,200	80 persons/ha	336,700 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Ground Surface Elevation	Sewer Invert Elevation	Remarks
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)			
	Increment	Total	Increment	Total																			
1	17.72		5.00		22.72		1,820	0.004	0.007	0.011	4.8	0.052		0.002	0.054	37.00	34.65						
2	57.28	75.00		5.00	57.28	80.00	6,400	0.015	0.007	0.022	4.2	0.092		0.007	0.099	37.00	33.62						
3	73.63	148.63		5.00	73.63	153.63	12,290	0.029	0.007	0.036	3.7	0.133		0.014	0.147	37.00	33.52						
4	60.36	208.99		5.00	60.36	213.99	17,120	0.040	0.007	0.047	3.6	0.169		0.019	0.188	37.00	32.45						
5	177.37	386.36		5.00	177.37	391.36	31,310	0.073	0.007	0.080	3.3	0.264		0.034	0.298	37.00	32.30						
P 8-1																37.00	31.35						
6	132.14	518.50		5.00	132.14	523.50	41,880	0.097	0.007	0.104	3.1	0.322		0.046	0.368	37.00	31.25						
7	569.42	1087.92		5.00	569.42	1092.92	87,430	0.203	0.007	0.210	2.7	0.567		0.096	0.663	37.00	30.80						
8	340.79	1428.71		5.00	340.79	1433.71	114,700	0.267	0.007	0.274	2.6	0.712		0.126	0.838	37.00	30.70						
9	93.91	1522.62		5.00	93.91	1527.62	122,210	0.284	0.007	0.291	2.6	0.757		0.134	0.891	37.00	29.81						
10	329.56	1852.18		5.00	329.56	1857.18	148,570	0.346	0.007	0.353	2.4	0.847		0.163	1.010	37.00		Pumping Station					
11	639.94	2492.12		5.00	639.94	2497.12	199,770	0.465	0.007	0.472	2.3	1.086		0.220	1.306	37.00	34.10						
to 19																37.00	33.48						
12	43.99				43.99		3,520	0.008		0.008	4.8	0.038		0.004	0.042	37.00	33.18						
13	88.27	132.26			88.27	132.26	10,580	0.025		0.025	4.0	0.100		0.012	0.112	37.00	32.30						
14	167.73	299.99			167.73	299.99	24,000	0.056		0.056	3.4	0.190		0.026	0.216	37.00	32.15						
15	285.01	585.00			285.01	585.00	46,800	0.109		0.109	3.1	0.338		0.041	0.379	37.00	31.65						
P 8-2																37.00	31.65						
16	73.21	658.21			73.21	658.21	52,660	0.123		0.123	3.0	0.369		0.058	0.427	37.00	31.16						
17	237.55	895.76			237.55	895.76	71,660	0.167		0.167	2.8	0.468		0.079	0.468	37.00	30.65						

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 8	4,195	5	4,200	80 persons/ha	336,700 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Ground Surface Elevation	Sewer Invert Elevation	Remarks
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)			
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		mm	m	‰	m/s	m <sup>3</sup> /s			
18	387.93	1283.69			387.93	1283.69	102,700	0.239		0.239	2.7	0.645		0.113	0.758	Ø 1200	1030.00	0.6	0.73	0.828	37.00	32.18	
19	43.66	3819.47		5.00	43.66	3824.47	305,960	0.712	0.007	0.719	2.2	1.582		0.336	1.918	Ø 1800	690.00	0.4	0.79	1.992		31.56	
20	375.53	4195.00		5.00	375.53	4200.00	336,000	0.782	0.007	0.789	2.1	1.657		0.369	2.026	Ø 1900	410.00	0.4	0.81	2.301		29.25	
	to Treatment Facilities																					28.97	
																						28.87	
																						28.71	





Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 10	5,355	145	5,500	197 persons/ha	1,085,000 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Ground Surface Elevation	Sewer Invert Elevation	Remarks
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)			
	Increment	Total	Increment	Total																			
1	61.36				61.36		12,090	0.028		0.028	3.9	0.109		0.005	0.114	Ø 500	1200.00	1.4	0.62	0.122	37.00	34.50	
2	89.05	150.41			89.05	150.41	29,630	0.069		0.069	3.3	0.228		0.013	0.241	Ø 700	800.00	1.0	0.66	0.254		32.82	
3	86.23	236.64			86.23	236.64	46,620	0.108		0.108	3.1	0.335		0.021	0.356	Ø 900	650.00	0.8	0.70	0.444		32.62	
4	68.33	304.97			68.33	304.97	60,080	0.140		0.140	2.9	0.406		0.030	0.436	Ø 900	680.00	0.8	0.70	0.444		31.82	
5	76.11	381.08			76.11	381.08	75,070	0.175		0.175	2.8	0.490		0.034	0.514	Ø 1100	380.00	0.6	0.69	0.656		31.62	
6	281.65	662.73			281.65	662.73	130,560	0.304		0.304	2.5	0.760		0.058	0.818	Ø 1200	1020.00	0.6	0.73	0.828		31.10	
7	112.93	775.66			112.93	775.66	152,810	0.355		0.355	2.4	0.852		0.068	0.920	Ø 1350	860.00	0.5	0.72	1.034		31.10	
P 10-1																						30.56	
8	156.62	932.28			156.62	932.28	183,660	0.427		0.427	2.3	0.982		0.082	1.064	Ø 1500	1340.00	0.5	0.78	1.370		30.36	
9	216.96	1149.24			216.96	1149.24	226,400	0.527		0.527	2.2	1.159		0.101	1.260	Ø 1500	260.00	0.5	0.78	1.370		30.13	
10	209.55	1358.79			209.55	1358.79	267,680	0.623		0.623	2.2	1.371		0.120	1.491	Ø 1650	1300.00	0.4	0.74	1.580		30.03	
11	79.80	1438.59			79.80	1438.59	283,400	0.659		0.659	2.1	1.384		0.127	1.511	Ø 1650	680.00	0.4	0.74	1.580		29.42	
12	133.06	1571.65			133.06	1571.65	309,620	0.720		0.720	2.1	1.512		0.138	1.650	Ø 1800	1220.00	0.4	0.78	1.992		29.27	
to 16																						28.84	
13	24.41				24.41		4,810	0.011		0.011	4.7	0.053		0.002	0.055	Ø 350	560.00	2.2	0.62	0.059		37.00	
14	118.64	143.05			118.64	143.05	28,180	0.066		0.066	3.3	0.218		0.013	0.231	Ø 700	550.00	1.0	0.66	0.254		33.50	
15	50.94	193.99			50.94	193.99	38,220	0.089		0.089	3.2	0.285		0.017	0.302	Ø 800	1020.00	0.8	0.65	0.324		32.83	
16	50.57	1816.21			50.57	1816.21	357,790	0.832		0.832	2.1	1.747		0.160	1.907	Ø 1800	990.00	0.4	0.78	1.992		32.83	
17	364.32	2180.53			364.32	2180.53	429,560	0.999		0.999	2.1	2.098		0.192	2.290	Ø 1900	1380.00	0.4	0.81	2.301	32.70		
18	190.17	2370.70			190.17	2370.70	467,030	1.086		1.086	2.0	2.172		0.209	2.381	Ø 2000	1480.00	0.4	0.84	2.639	32.55		
																					32.03		
																					31.76		
																					31.61		
																					31.12		
																					34.65		
																					33.42		
																					33.07		
																					32.52		
																					32.42		
																					31.60		
																					30.60		
																					30.20		
																					30.10		
																					29.55		
																					29.45		
																					28.86		

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE IO	5,355	145	5,500	197 persons/ha	1,085,000 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks			
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation	
	Increment	Total	Increment	Total																				ha
19	101.97	2472.67			101.97	2472.67	487,120	1.133		1.133	2.0	2.266		0.218	2.484	2000	1160.00	0.4	0.84	2.639	37.00	28.86		
	to	38																					28.40	
20	70.03				70.03		13,800	0.032		0.032	3.8	0.122		0.006	0.128	600	860.00	1.2	0.65	0.184			34.40	
21	55.19	125.22			55.19	125.22	24,670	0.057		0.057	3.4	0.194		0.011	0.205	700	870.00	1.0	0.66	0.254			33.37	
22	90.57	215.79			90.57	215.79	42,510	0.099		0.099	3.1	0.307		0.019	0.326	900	410.00	0.8	0.70	0.444			33.27	
23	78.59	294.38	82.61		161.20	376.99	74,270	0.173	0.111	0.284	2.5	0.710		0.033	0.743	1200	1050.00	0.6	0.73	0.828			32.40	
24	88.13	382.51	48.50	131.11	136.63	513.62	101,180	0.235	0.176	0.411	2.3	0.945		0.045	0.990	1350	1570.00	0.5	0.72	1.034			32.20	
25	290.50	673.01	13.89	145.00	304.39	818.01	161,150	0.375	0.195	0.570	2.2	1.254		0.072	1.326	1500	900.00	0.5	0.78	1.370			31.87	
26	157.59	830.60		145.00	157.59	975.60	192,190	0.447	0.195	0.642	2.2	1.412		0.086	1.498	1650	1340.00	0.4	0.74	1.580			31.57	
27	85.18	915.78		145.00	85.18	1060.78	208,970	0.486	0.195	0.681	2.1	1.430		0.093	1.523	1650	1130.00	0.4	0.74	1.580			30.94	
28	155.70	1071.48		145.00	155.70	1216.48	239,650	0.558	0.195	0.753	2.1	1.581		0.107	1.688	1800	1150.00	0.4	0.78	1.992			30.79	
	to	38																					30.01	
29	50.98				50.98		10,040	0.023		0.023	4.1	0.094		0.004	0.098	450	710.00	1.6	0.62	0.099			29.86	
30	67.76	118.74			67.76	118.74	23,390	0.054		0.054	3.4	0.184		0.010	0.194	700	510.00	1.0	0.66	0.254			29.41	
31	92.41	211.15			92.41	211.15	41,600	0.097		0.097	3.1	0.301		0.019	0.320	800	770.00	0.8	0.65	0.324			29.26	
32	96.33	307.48			96.33	307.48	60,570	0.141		0.141	2.9	0.409		0.027	0.436	900	720.00	0.8	0.70	0.444			28.72	
33	170.28	477.76			170.28	477.76	94,120	0.219		0.219	2.7	0.591		0.042	0.633	1100	800.00	0.6	0.69	0.656			28.72	
34	459.64	937.40			459.64	937.40	184,670	0.430		0.430	2.3	0.989		0.082	1.071	1500	1150.00	0.5	0.78	1.370			28.27	
35	166.48	1103.88			166.48	1103.88	217,460	0.506		0.506	2.2	1.113		0.097	1.210	1500	880.00	0.5	0.78	1.370			28.12	
36	270.17	1374.05			270.17	1374.05	270,690	0.630		0.630	2.2	1.386		0.121	1.507	1650	1080.00	0.4	0.74	1.580			27.66	
																							34.55	
																							33.41	
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																							28.58	



