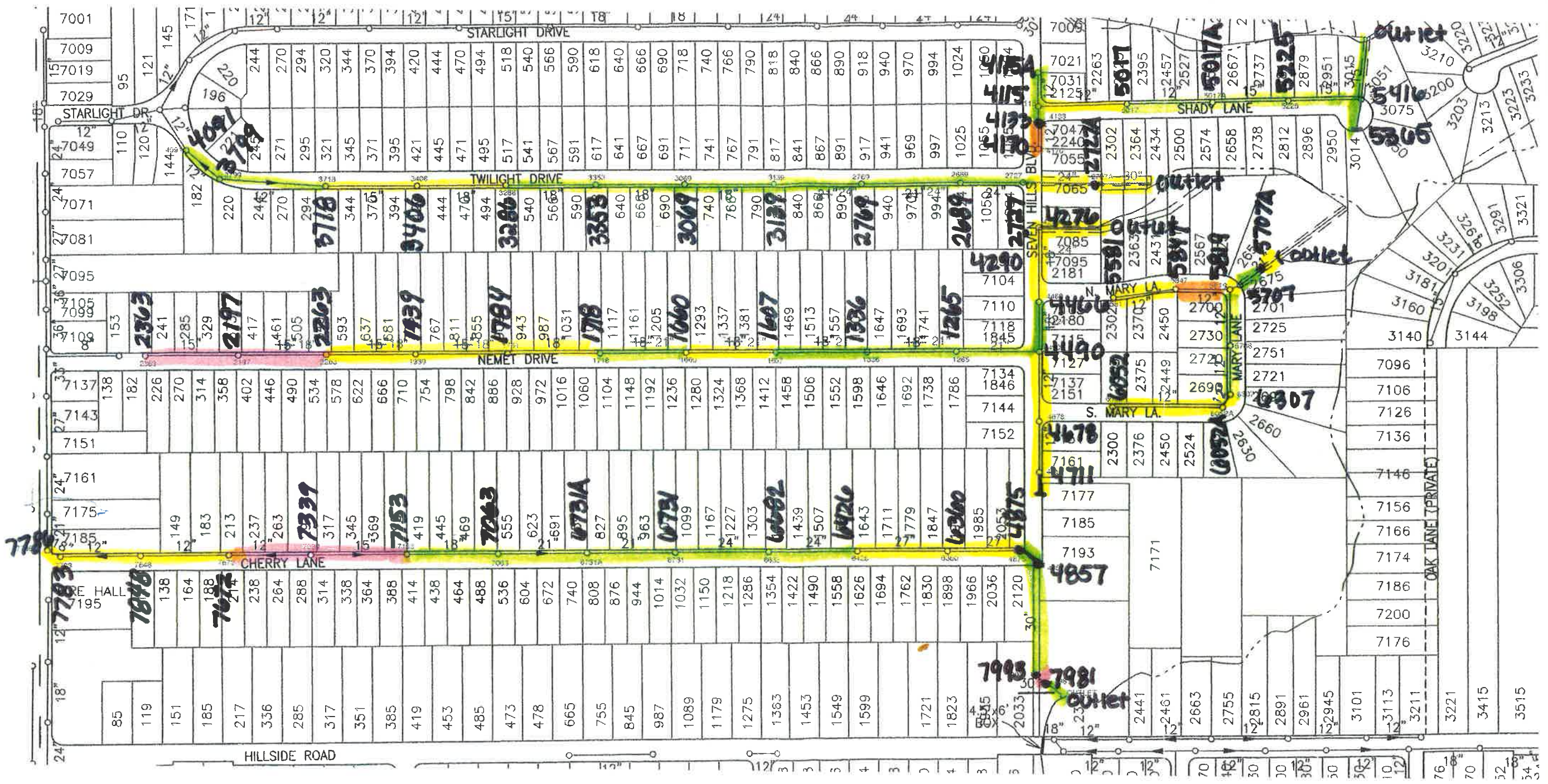


APPENDIX J

Water Quality Calculations

Green - replace
orange/red - debris



**Hemlock Creek
Storm Sewer Drainage Area and Water Quality Calculations**

CB #	Drainage Area (Ac.)	To storm sewer	Water Quality Volume (cf)	Re-development WQv (CF)	Bioretention Area (SF)	Length Required for an 8' wide basin (FT)	Length Required for a 12' wide basin (FT)	Water Quality Flow WQF (cfs)	Re-development WQF (cfs)	8' wide Bio-retention cell cost \$100/LF	12' wide Bio-retention cell cost \$150/LF	Enhanced Bankfull Width (FT)
Mary Lane												
5530	0.37		302.20	60.44	61	8	5	0.07	0.014	\$800	\$750	2.1
5581	0.66	1.03	539.06	107.81	108	14	9	0.13	0.026	\$1,400	\$1,350	2.6
5847	1.82		1486.49	297.30	296	37	25	0.35	0.071	\$3,700	\$3,750	3.8
5847A	0.79	2.61	645.23	129.05	130	16	11	0.15	0.031	\$1,600	\$1,650	2.8
5819	2.06	2.85	1662.51	336.50	338	42	28	0.40	0.080	\$4,200	\$4,200	3.9
6062	0.28		228.69	45.74	46	6	4	0.05	0.011	\$600	\$600	1.9
6223	1.05	1.33	857.59	171.52	172	22	14	0.20	0.041	\$2,200	\$2,100	3.1
5953	5.91	6.96	4826.99	965.40	969	121	81	1.15	0.230	\$12,100	\$12,150	5.7
6052A	0.69	6.6	563.56	112.71	113	14	9	0.13	0.027	\$1,400	\$1,350	2.7
5786	0.68	1.37	555.39	111.08	112	14	9	0.13	0.027	\$1,400	\$1,350	2.7
5769	1.26	1.94	1029.11	205.82	207	26	17	0.25	0.049	\$2,600	\$2,550	3.3
5707	1.41	2.67	1151.62	230.32	231	29	19	0.27	0.055	\$2,900	\$2,850	3.4
Shady Lane												
5017	0.58	0.58	473.72	94.74	95	12	8	0.11	0.023	\$1,200	\$1,200	2.5
5017A	0.65		530.89	106.18	107	13	9	0.13	0.025	\$1,300	\$1,350	2.6
5094	1.58	2.23	1290.47	258.09	259	32	22	0.31	0.062	\$3,200	\$3,300	3.6
5225	0.62		506.39	101.28	102	13	8	0.12	0.024	\$1,300	\$1,200	2.6
5206	0.72	1.34	588.06	117.61	118	15	10	0.14	0.028	\$1,500	\$1,500	2.7
5416	1.74	1.74	1421.15	284.23	285	36	24	0.34	0.068	\$3,600	\$3,600	3.7
Twilight Drive												
3922	1.27		1037.27	207.45	208	26	17	0.25	0.050	\$2,600	\$2,550	3.3
3718	1.16	2.43	947.43	189.49	190	24	16	0.23	0.045	\$2,400	\$2,400	3.2
3496	1.5	4.8	1225.13	245.03	246	31	21	0.29	0.059	\$3,100	\$3,150	3.5
3406	3.3		2695.28	539.06	541	68	45	0.64	0.129	\$6,800	\$6,750	4.7
3225	1.12		914.76	182.95	184	23	15	0.22	0.044	\$2,300	\$2,250	3.2
3286	4.14	5.26	3381.35	676.27	679	85	57	0.81	0.161	\$8,500	\$8,550	5.0
3165	1.11		906.59	181.32	182	23	15	0.22	0.043	\$2,300	\$2,250	3.2
3353	2.59	3.7	2115.38	423.08	425	53	35	0.51	0.101	\$5,300	\$5,300	4.3
3000	3.00		914.76	182.95	184	23	15	0.22	0.044	\$2,300	\$2,250	3.2
3069	2.8	3.92	2286.90	457.38	459	57	38	0.55	0.109	\$5,700	\$5,700	4.4
2942	1.09		890.26	178.05	179	22	15	0.21	0.043	\$2,200	\$2,250	3.1
3139	2.86	3.95	2335.91	467.18	469	59	39	0.56	0.112	\$5,900	\$5,850	4.4
2863	1.19		971.93	194.39	195	24	16	0.23	0.046	\$2,400	\$2,400	3.2
2769	2.57	3.76	2099.05	419.81	421	53	35	0.50	0.100	\$5,300	\$5,250	4.3
2657	1.22		996.44	199.29	200	25	17	0.24	0.048	\$2,500	\$2,550	3.3
2689	2.89	4.11	2360.41	472.08	474	59	39	0.56	0.113	\$5,900	\$5,850	4.4
2614	0.68		555.39	111.08	112	14	9	0.13	0.027	\$1,400	\$1,350	2.7
2727	0.65	1.33	530.89	106.18	107	13	9	0.13	0.025	\$1,300	\$1,350	2.6

**Hemlock Creek
Storm Sewer Drainage Area and Water Quality Calculations**

CB #	Drainage Area (Ac.)	To storm sewer	Water Quality Volume (cf)	Re-development WQv (CF)	Bioretention Area (SF)	Length Required for an 8' wide basin (FT)	Length Required for a 12' wide basin (FT)	Water Quality Flow WQF (cfs)	Re-development WQF (cfs)	8' wide Bio-retention cell cost \$100/LF	12' wide Bio-retention cell cost \$150/LF	Enhanced Bankfull Width (FT)
Nemet Drive												
2332	1.33		1086.28	217.26	218	27	18	0.26	0.062	\$2,700	\$2,700	3.4
2363	0.79	2.12	645.23	129.05	130	16	11	0.15	0.031	\$1,650	\$1,650	2.8
2197	0.87		710.57	142.11	143	18	12	0.17	0.034	\$1,800	\$1,800	2.9
2167	1.97	2.84	1609.00	321.80	323	40	27	0.38	0.077	\$4,000	\$4,050	3.9
2263							0	0.00	0.000			
1939	1.1		898.43	179.69	180	23	15	0.21	0.043	\$2,300	\$2,250	3.1
2040	3.1	4.2	2531.93	506.39	508	64	42	0.60	0.121	\$6,400	\$6,300	4.6
1784	1.31		1069.94	213.99	215	27	18	0.26	0.051	\$2,700	\$2,700	3.4
1810	2.99	4.3	2442.08	488.42	490	61	41	0.58	0.117	\$6,100	\$6,150	4.5
1718	1.24		1012.77	202.55	203	25	17	0.24	0.048	\$2,500	\$2,550	3.3
1872	1.95	3.19	1592.66	318.53	320	40	27	0.38	0.076	\$4,000	\$4,050	3.9
1660	1.03		841.25	168.25	169	21	14	0.20	0.040	\$2,100	\$2,100	3.1
1526	5.14	6.17	4198.10	839.62	843	105	70	1.00	0.200	\$10,500	\$10,500	5.5
1607	1.17		955.60	191.12	192	24	16	0.23	0.046	\$2,400	\$2,400	3.2
1468	2.74	3.91	2237.90	447.58	449	56	37	0.53	0.107	\$5,600	\$5,550	4.4
1336	1.71		1396.64	279.33	280	35	23	0.33	0.067	\$3,500	\$3,450	3.7
1431	3.07	4.78	2507.42	501.48	503	63	42	0.60	0.120	\$6,300	\$6,300	4.5
1265	1.2		980.10	196.02	197	25	16	0.23	0.047	\$2,500	\$2,400	3.2
1192	3.32	4.52	2711.61	542.32	545	68	45	0.65	0.129	\$6,800	\$6,750	4.7
Cherry Lane												
7469	3		2450.25	490.05	492	62	41	0.59	0.117	\$6,200	\$6,150	4.5
7339	1.32	4.32	1078.11	215.62	216	27	18	0.26	0.051	\$2,700	\$2,700	3.4
7195	3.4		2776.95	555.39	558	70	46	0.66	0.133	\$7,000	\$6,900	4.7
7153	1.23	4.63	1004.60	200.92	202	25	17	0.24	0.048	\$2,500	\$2,550	3.3
7264	3.32		2711.61	542.32	545	68	45	0.65	0.129	\$6,800	\$6,750	4.7
7063	1.16	4.48	947.43	189.49	190	24	16	0.23	0.045	\$2,400	\$2,400	3.2
7045	0.91		743.24	148.65	149	19	12	0.18	0.035	\$1,900	\$1,800	2.9
6731	0.85	1.76	694.24	138.85	139	17	12	0.17	0.033	\$1,700	\$1,800	2.9
6601	1.26		1029.11	205.82	207	26	17	0.25	0.049	\$2,600	\$2,550	3.3
6682	1.37	2.63	1118.95	223.79	225	28	19	0.27	0.053	\$2,800	\$2,850	3.4
6467	1.17		955.60	191.12	192	24	16	0.23	0.046	\$2,400	\$2,400	3.2
6426	1.3	2.47	1061.78	212.36	213	27	18	0.25	0.051	\$2,700	\$2,700	3.3
6528	1.15		939.26	187.85	189	24	16	0.22	0.045	\$2,400	\$2,400	3.2
6360	1.15	2.3	939.26	187.85	189	24	16	0.22	0.045	\$2,400	\$2,400	3.2
6236	1.36		1110.78	222.16	223	28	19	0.27	0.053	\$2,800	\$2,850	3.4
4875	1.38	2.74	1127.12	225.42	226	28	19	0.27	0.054	\$2,800	\$2,850	3.4

**Hemlock Creek
Storm Sewer Drainage Area and Water Quality Calculations**

CB #	Drainage Area (Ac.)	To storm sewer	Water Quality Volume (cf)	Re-development WQv (CF)	Bioretention Area (SF)	Length Required for an 8' wide basin (FT)	Length Required for a 12' wide basin (FT)	Water Quality Flow WQF (cfs)	Re-development WQF (cfs)	Bio-retention cell		Enhanced Bankfull Width (FT)
										cost	cost	
Seven Hills Blvd Cherry Lane drains into 4857												
4857	2.61	2.61	2131.72	426.34	428	54	36	0.51	0.102	\$5,400	\$5,400	4.3
7993	0.22	0.22	179.69	35.94	36	5	3	0.04	0.009	\$500	\$450	1.8
7981	0.27	0.27	220.52	44.10	44	6	4	0.05	0.011	\$600	\$600	1.9
Seven Hills Blvd												
4711	0.55	0.55	449.21	89.84	90	11	8	0.11	0.021	\$1,100	\$1,200	2.5
4779	1.85	1.85	1510.99	302.20	303	38	25	0.36	0.072	\$3,800	\$3,750	3.8
4678	0.08	0.08	65.34	13.07	13	2	1	0.02	0.003	\$200	\$150	1.2
4526	2.76	2.76	2254.23	450.85	453	57	38	0.54	0.108	\$5,700	\$5,700	4.4
Seven Hills Blvd Nemet Drive drains into 4490												
4490	0.76	0.76	620.73	124.15	125	16	10	0.15	0.030	\$1,600	\$1,500	2.8
4601	0.44	0.44	359.37	71.87	72	9	6	0.09	0.017	\$900	\$900	2.3
4466	0.31	0.31	253.19	50.64	51	6	4	0.06	0.012	\$600	\$600	2.0
4290	3.1	3.1	2531.93	506.39	508	64	42	0.60	0.121	\$6,400	\$6,300	4.6
4276	0.31	0.31	253.19	50.64	51	6	4	0.06	0.012	\$600	\$600	2.0
Seven Hills Blvd Drains into Shady Lane												
4170	0.43	0.43	351.20	70.24	71	9	6	0.08	0.017	\$900	\$900	2.3
4133	0.08	0.08	65.34	13.07	13	2	1	0.02	0.003	\$200	\$150	1.2
4398	0.8	0.8	653.40	130.68	131	16	11	0.16	0.031	\$1,600	\$1,650	2.8
4115	0.04	0.99	32.67	6.53	7	1	1	0.01	0.002	\$100	\$150	1.0
4115A	0.15		122.51	24.50	25	3	2	0.03	0.006	\$300	\$300	1.5
Total:	132.25					2716	1805		5	\$271,600	\$270,750	

Computer Drainage Modeling



LEGEND

- GIS contours for SWMM
- RIGHTOFWAY
- Subcatchments
- Conduits
- ▲ Outfalls
- Junctions



BMP Treatment

% Reduction – Annual Basis

Parameter	Reduction
Runoff Volume (ac-ft)	7%
Total Suspended Solids (lbs)	73%
Phosphorous (lbs)	46%
Nitrogen(lbs)	33%