

## **APPENDIX D**

### **UPDATED POLLUTANT LOADING ESTIMATES FOR MUNICIPAL STORM OUTFALLS**

Estimates Grouped by Practice Type, Showing:

1. Total Loadings without BMP
2. Total Loadings with BMP
3. Total Removal of Pollutants by BMP
4. Percent Removal of Pollutants
5. Amount of Pollutants Removed
6. Percent Removal of Pollutants per Acre
7. Practice Abbreviations



Table D-1. Total loadings without BMP

Practice Type MDE	Total Area, ac	Drainage Area, ac	BOD (lbs)	COD (lbs)	TDS (lbs)	Cd (lbs)	Cu (lbs)	Pb (lbs)	TKN (lbs)	TSS (lbs)	Diss P (lbs)	TP (lbs)	TN (lbs)	Zn (lbs)
Sum (BIO)	209.98	201.34	3413.50	10736.01	74247.58	0.31	7.47	3.62	810.12	11962.98	70.79	102.25	1415.74	50.65
Sum (BIO, EDSO)	72.30	72.30	897.19	2821.79	19514.82	0.08	1.96	0.95	212.93	3144.28	18.61	26.87	372.10	13.31
Sum (DP)	2066.66	1721.17	30299.36	95296.39	659046.07	2.79	66.32	32.11	7190.86	106187.40	628.33	907.58	12566.56	449.60
Sum (DP,IT)	8.20	4.20	216.23	680.08	4703.26	0.02	0.47	0.23	51.32	757.80	4.48	6.48	89.68	3.21
Sum (EDD)	117.52	117.52	2666.53	8386.66	58000.08	0.25	5.84	2.83	632.84	9345.14	55.30	79.87	1105.93	39.57
Sum (EDD,OTH)	38.90	38.90	482.72	1518.23	10499.67	0.04	1.06	0.51	114.56	1691.74	10.01	14.46	200.21	7.16
Sum (EDSD)	4180.43	3810.08	69643.86	219041.18	1514834.27	6.42	152.45	73.82	16528.38	244074.46	1444.23	2086.11	28884.55	1033.43
Sum (EDSD,OGS)	2.44	2.44	64.34	202.37	1399.51	0.01	0.14	0.07	15.27	225.49	1.33	1.93	26.69	0.95
Sum (EDSD,SM)	9.70	9.70	120.37	378.58	2618.17	0.01	0.26	0.13	28.57	421.85	2.50	3.61	49.92	1.79
Sum (EDSD,VEG)	36.00	36.00	446.73	1405.04	9716.92	0.04	0.98	0.47	106.02	1565.62	9.26	13.38	185.28	6.63
Sum (EDSD,UGS)	2.05	2.05	54.06	170.02	1175.82	0.00	0.12	0.06	12.83	189.45	1.12	1.62	22.42	0.80
Sum (EDSW)	3661.15	2381.64	62551.76	196735.37	1360572.81	5.77	136.92	66.30	14845.23	219219.41	1297.16	1873.67	25943.13	928.19
Sum (EDSW,SM)	1144.80	376.70	19594.76	61628.67	426208.53	1.81	42.89	20.77	4650.37	68671.95	406.34	586.94	8126.86	290.76
Sum (IB)	24.55	24.32	437.76	1376.82	9521.74	0.04	0.96	0.46	103.89	1534.17	9.08	13.11	181.56	6.50
Sum (IB,DP)	32.74	32.74	863.34	2715.34	18778.63	0.08	1.89	0.92	204.89	3025.67	17.90	25.86	358.07	12.81
Sum (IT)	350.90	249.58	5729.83	18021.25	124630.50	0.53	12.54	6.07	1359.85	20080.83	118.82	171.63	2376.43	85.02
Sum (IT,OGS)	7.04	7.04	185.64	583.87	4037.92	0.02	0.41	0.20	44.06	650.60	3.85	5.56	76.99	2.75
Sum (IT,OGS,UGS)	0.54	0.54	14.24	44.79	309.73	0.00	0.03	0.02	3.38	49.90	0.30	0.43	5.91	0.21
Sum (ITCE)	17.91	17.91	273.90	861.47	5957.69	0.03	0.60	0.29	65.00	959.92	5.68	8.20	113.60	4.06
Sum (ITCE,VEG)	1.90	1.90	36.84	115.87	801.31	0.00	0.08	0.04	8.74	129.11	0.76	1.10	15.28	0.55
Sum (ITWQE)	167.95	165.45	2527.96	7950.84	54986.01	0.23	5.53	2.68	599.95	8859.50	52.42	75.72	1048.46	37.51
Sum (OGS)	91.92	91.69	2051.78	6453.17	44628.51	0.19	4.49	2.17	486.94	7190.67	42.55	61.46	850.97	30.45
Sum (OGS,UNG)	2.82	2.82	44.63	140.36	970.68	0.00	0.10	0.05	10.59	156.40	0.93	1.34	18.51	0.66
Sum (OGS,UGS,VEG)	2.84	2.84	74.89	235.54	1628.93	0.01	0.16	0.08	17.77	262.46	1.55	2.24	31.06	1.11
Sum (OGS, UGS)	1.67	1.67	44.04	138.50	957.86	0.00	0.10	0.05	10.45	154.33	0.91	1.32	18.26	0.65
Sum (RTN)	73.10	73.10	1927.62	6062.66	41927.85	0.18	4.22	2.04	457.48	6755.54	39.97	57.74	799.47	28.60
Sum (SF)	139.80	139.80	2723.30	8565.21	59234.83	0.25	5.96	2.89	646.31	9544.09	56.47	81.57	1129.48	40.41
Sum (SF,EDSD)	20.26	20.26	461.30	1450.88	10033.90	0.04	1.01	0.49	109.48	1616.69	9.57	13.82	191.32	6.85
Sum (SF,SW)	7.95	7.95	154.15	484.81	3352.84	0.01	0.34	0.16	36.58	540.22	3.20	4.62	63.93	2.29
Sum (SF,UGS)	3.92	3.92	76.01	239.05	1653.23	0.01	0.17	0.08	18.04	266.37	1.58	2.28	31.52	1.13
Sum (SM)	651.64	586.51	11632.65	36586.56	253023.52	1.07	25.46	12.33	2760.74	40767.88	241.23	348.44	4824.60	172.61
Sum (SM,DP)	62.50	62.50	775.58	2439.31	16869.66	0.07	1.70	0.82	184.07	2718.09	16.08	23.23	321.67	11.51
Sum (SW)	17.17	13.64	315.05	990.87	6852.62	0.03	0.69	0.33	74.77	1104.11	6.53	9.44	130.66	4.67
Sum (UNG)	31.42	15.62	514.42	1617.95	11189.31	0.05	1.13	0.55	122.09	1802.85	10.67	15.41	213.36	7.63
Sum (UNG,IT)	0.34	0.34	6.59	20.73	143.39	0.00	0.01	0.01	1.56	23.10	0.14	0.20	2.73	0.10
Sum (VEG)	13.54	12.02	357.04	1122.96	7766.12	0.03	0.78	0.38	84.74	1251.30	7.40	10.69	148.08	5.30
Sum (VEG,SM,EDSD)	598.00	598.00	7420.71	23339.31	161408.88	0.68	16.24	7.87	1761.14	26006.66	153.89	222.28	3077.71	110.11
Sum (WP)	58.00	29.00	1529.43	4810.32	33266.96	0.14	3.35	1.62	362.98	5360.07	31.72	45.81	634.33	22.69
<b>Total</b>	<b>13,930.55</b>	<b>10,935.20</b>	<b>230,630.09</b>	<b>725,368.83</b>	<b>5,016,470.13</b>	<b>21.26</b>	<b>504.84</b>	<b>244.45</b>	<b>54,734.79</b>	<b>808,268.12</b>	<b>4,782.65</b>	<b>6,908.27</b>	<b>95,653.03</b>	<b>3,422.25</b>

Table D-2. Total loadings with BMP

Practice Type MDE	Total Area, ac	Drainage Area, ac	BOD (lbs)	COD (lbs)	TDS (lbs)	Cd (lbs)	Cu (lbs)	Pb (lbs)	TKN (lbs)	TSS (lbs)	Diss P (lbs)	TP (lbs)	TN (lbs)	Zn (lbs)
Sum (BIO)	209.98	201.34	1212.23	3812.65	74247.58	0.19	3.80	1.28	810.12	2751.51	44.90	28.44	461.89	16.04
Sum (BIO,EDSD)	72.30	72.30	296.07	931.19	19514.82	0.04	0.96	0.31	212.93	628.86	13.58	6.72	111.63	3.86
Sum (DP)	2066.66	1721.17	30555.55	96102.14	659046.07	1.52	60.72	20.44	7190.86	59499.46	628.33	562.26	9697.70	430.60
Sum (DP,IT)	8.20	4.20	144.24	453.66	4703.26	0.01	0.39	0.15	51.32	389.07	2.19	3.66	52.93	1.89
Sum (EDD)	117.52	117.52	1999.90	6290.00	58000.08	0.11	4.32	1.61	632.84	3738.06	61.38	63.90	884.75	29.28
Sum (EDD,OTH)	38.90	38.90	362.04	1138.67	10499.67	0.02	0.78	0.29	114.56	676.70	11.11	11.57	160.16	5.30
Sum (EDSD)	4180.43	3810.08	54268.47	170683.11	1514834.27	3.36	117.44	45.79	16528.38	114751.15	1584.52	1717.66	23783.04	796.15
Sum (EDSD,OGS)	2.44	2.44	48.26	151.77	1399.51	0.00	0.12	0.04	12.06	108.24	0.95	2.33	21.35	0.71
Sum (EDSD,SM)	9.70	9.70	90.28	283.94	2618.17	0.00	0.18	0.05	28.57	168.74	2.05	1.98	39.94	1.04
Sum (EDSD,VEG)	36.00	36.00	147.42	463.66	9716.92	0.02	0.48	0.16	106.02	313.12	6.76	3.35	55.58	1.92
Sum (EDSD,UGS)	2.05	2.05	40.54	127.51	1175.82	0.00	0.09	0.03	12.83	75.78	1.24	1.30	17.94	0.59
Sum (EDSW)	3661.15	2381.64	51336.75	161462.36	1360572.81	4.85	96.92	34.16	14845.23	131876.73	720.04	1313.78	22497.65	502.90
Sum (EDSW,SM)	1144.80	376.70	15291.76	48095.05	426208.53	1.49	35.72	16.21	4650.37	50665.59	370.38	442.66	6262.29	223.10
Sum (IB)	24.55	24.32	92.40	290.62	9521.74	0.01	0.25	0.12	103.89	96.90	9.08	2.12	38.32	1.69
Sum (IB,DP)	32.74	32.74	181.30	570.22	18778.63	0.02	0.47	0.23	204.89	151.28	17.90	3.88	71.61	3.20
Sum (IT)	350.90	249.58	2942.98	9256.15	124630.50	0.53	9.40	2.90	1359.85	6022.51	31.26	64.12	975.41	34.90
Sum (IT,OGS)	7.04	7.04	63.12	198.52	4037.92	0.02	0.31	0.06	34.81	84.58	0.00	3.11	15.40	0.55
Sum (IT,OGS,UGS)	0.54	0.54	4.84	15.23	309.73	0.00	0.02	0.00	2.67	6.49	0.00	0.24	1.18	0.04
Sum (ITCE)	17.91	17.91	93.13	292.90	5957.69	0.03	0.40	0.08	65.00	48.00	0.00	1.23	22.72	0.81
Sum (ITCE,VEG)	1.90	1.90	12.16	38.24	801.31	0.00	0.04	0.01	8.74	6.46	0.00	0.17	3.06	0.11
Sum (ITWQE)	167.95	165.45	878.40	2762.69	54986.01	0.23	2.89	2.68	599.95	1956.73	50.89	31.47	640.01	5.36
Sum (OGS)	91.92	91.69	2051.78	6453.17	44628.51	0.19	4.98	1.96	384.99	7764.23	25.58	86.58	723.70	25.29
Sum (OGS,UNG)	2.82	2.82	44.63	140.36	970.68	0.00	0.11	0.04	8.37	168.91	0.56	1.88	15.73	0.55
Sum (OGS,UGS,VEG)	2.84	2.84	24.71	77.73	1628.93	0.00	0.10	0.03	14.04	52.49	0.93	1.48	9.32	0.32
Sum (OGS,UGS)	1.67	1.67	44.04	138.50	957.86	0.00	0.11	0.04	8.26	166.68	0.55	1.86	15.52	0.54
Sum (RTN)	73.10	73.10	1060.19	3334.46	41927.85	0.14	1.77	0.55	457.48	2702.21	15.19	31.76	639.58	10.01
Sum (SF)	139.80	139.80	898.69	2826.52	59234.83	0.25	3.04	2.89	646.31	1908.82	54.78	32.63	677.69	4.85
Sum (SF,EDSD)	20.26	20.26	152.23	478.79	10033.90	0.02	0.51	0.28	109.48	323.34	10.33	5.53	114.79	0.82
Sum (SF,SW)	7.95	7.95	50.87	159.99	3352.84	0.01	0.17	0.05	36.58	108.04	1.98	1.15	19.18	0.27
Sum (SF,UGS)	3.92	3.92	25.08	78.89	1653.23	0.01	0.08	0.08	18.04	53.27	1.53	0.91	18.91	0.14
Sum (SM)	651.64	586.51	9499.18	29876.46	253023.52	0.43	18.12	5.55	2760.74	19405.12	180.13	211.50	3981.89	109.30
Sum (SM,DP)	62.50	62.50	620.46	1951.45	16869.66	0.02	1.14	0.30	184.07	1087.24	11.42	12.78	234.82	6.67
Sum (SW)	17.17	13.64	133.31	419.30	6852.62	0.02	0.39	0.14	74.77	343.64	4.40	3.34	51.92	1.82
Sum (UNG)	31.42	15.62	514.42	1617.95	11189.31	0.05	1.13	0.55	122.09	1802.85	10.67	15.41	213.36	7.63
Sum (UNG,IT)	0.34	0.34	2.24	7.05	143.39	0.00	0.01	0.00	1.56	1.16	0.00	0.03	0.55	0.02
Sum (VEG)	13.54	12.02	144.68	455.04	7766.12	0.02	0.43	0.15	84.74	362.64	4.91	3.57	56.06	1.96
Sum (VEG,SM,EDSD)	598.00	598.00	2448.83	7701.97	161408.88	0.21	7.96	2.60	1761.14	5201.33	112.34	55.57	923.31	31.93
Sum (WP)	58.00	29.00	1185.31	3728.00	33266.96	0.12	2.38	1.03	362.98	3752.05	21.88	35.50	570.89	15.32
<b>Total</b>	<b>13,930.55</b>	<b>10,935.20</b>	<b>178,962.49</b>	<b>562,865.91</b>	<b>5,016,470.13</b>	<b>13.94</b>	<b>378.13</b>	<b>142.83</b>	<b>54,611.52</b>	<b>419,219.96</b>	<b>4,013.73</b>	<b>4,767.44</b>	<b>74,081.81</b>	<b>2,277.49</b>

Table D-3. Total removal of pollutants by BMP

Practice Type MDE	Total Area, ac	Drainage Area, ac	BOD (lbs)	COD (lbs)	TDS (lbs)	Cd (lbs)	Cu (lbs)	Pb (lbs)	TKN (lbs)	TSS (lbs)	Diss P (lbs)	TP (lbs)	TN (lbs)	Zn (lbs)
Sum (BIO)	209.98	201.34	2201.27	6923.36	0.00	0.13	3.67	2.33	0.00	9211.47	25.89	73.81	953.85	34.61
Sum (BIO, EDSO)	72.30	72.30	601.11	1890.60	0.00	0.04	1.00	0.64	0.00	2515.43	5.02	20.16	260.47	9.45
Sum (DP)	2066.66	1721.17	-256.19	-805.76	0.00	1.28	5.61	11.68	0.00	46687.94	0.00	345.33	2868.85	19.01
Sum (DP,IT)	8.20	4.20	71.99	226.42	0.00	0.01	0.08	0.08	0.00	368.74	2.30	2.82	36.75	1.31
Sum (EDD)	117.52	117.52	666.63	2096.67	0.00	0.13	1.52	1.22	0.00	5607.08	-6.08	15.97	221.19	10.29
Sum (EDD,OTH)	38.90	38.90	120.68	379.56	0.00	0.02	0.27	0.22	0.00	1015.04	-1.10	2.89	40.04	1.86
Sum (EDSD)	4180.43	3810.08	15375.39	48358.08	0.00	3.06	35.00	28.03	0.00	129323.32	-140.29	368.44	5101.51	237.28
Sum (EDSD,OGS)	2.44	2.44	16.09	50.59	0.00	0.00	0.02	0.03	3.21	117.26	0.39	-0.40	5.34	0.25
Sum (EDSD,SM)	9.70	9.70	30.09	94.65	0.00	0.01	0.09	0.08	0.00	253.11	0.45	1.62	9.98	0.75
Sum (EDSD,VEG)	36.00	36.00	299.31	941.38	0.00	0.02	0.50	0.32	0.00	1252.49	2.50	10.04	129.70	4.71
Sum (EDSD,UGS)	2.05	2.05	13.51	42.50	0.00	0.00	0.03	0.02	0.00	113.67	-0.12	0.32	4.48	0.21
Sum (EDSW)	3661.15	2381.64	11215.01	35273.01	0.00	0.92	40.01	32.14	0.00	87342.68	577.12	559.89	3445.47	425.29
Sum (EDSW,SM)	1144.80	376.70	4303.00	13533.62	0.00	0.32	7.17	4.56	0.00	18006.35	35.96	144.28	1864.56	67.66
Sum (IB)	24.55	24.32	345.35	1086.20	0.00	0.03	0.71	0.34	0.00	1437.27	0.00	10.99	143.23	4.80
Sum (IB,DP)	32.74	32.74	682.04	2145.12	0.00	0.06	1.42	0.69	0.00	2874.38	0.00	21.98	286.45	9.61
Sum (IT)	350.90	249.58	2786.85	8765.10	0.00	0.00	3.14	3.18	0.00	14058.31	87.56	107.51	1401.02	50.13
Sum (IT,OGS)	7.04	7.04	122.52	385.36	0.00	0.00	0.09	0.14	9.25	566.02	3.85	2.45	61.60	2.20
Sum (IT,OGS,UGS)	0.54	0.54	9.40	29.56	0.00	0.00	0.01	0.01	0.71	43.42	0.30	0.19	4.72	0.17
Sum (ITCE)	17.91	17.91	180.78	568.57	0.00	0.00	0.20	0.21	0.00	911.92	5.68	6.97	90.88	3.25
Sum (ITCE,VEG)	1.90	1.90	24.68	77.63	0.00	0.00	0.04	0.03	0.00	122.65	0.76	0.94	12.22	0.44
Sum (ITWQE)	167.95	165.45	1649.56	5188.14	0.00	0.00	2.64	0.00	0.00	6902.77	1.53	44.25	408.45	32.15
Sum (OGS)	91.92	91.69	0.00	0.00	0.00	0.00	-0.49	0.22	101.96	-573.55	16.97	-25.12	127.27	5.16
Sum (OGS,UNG)	2.82	2.82	0.00	0.00	0.00	0.00	-0.01	0.00	2.22	-12.51	0.37	-0.55	2.78	0.11
Sum (OGS,UGS,VEG)	2.84	2.84	50.18	157.81	0.00	0.00	0.07	0.05	3.73	209.97	0.62	0.76	21.74	0.79
Sum (OGS, UGS)	1.67	1.67	0.00	0.00	0.00	0.00	-0.01	0.00	2.19	-12.35	0.37	-0.54	2.74	0.11
Sum (RTN)	73.10	73.10	867.43	2728.20	0.00	0.04	2.45	1.49	0.00	4053.32	24.78	25.98	159.89	18.59
Sum (SF)	139.80	139.80	1824.61	5738.69	0.00	0.00	2.92	0.00	0.00	7635.27	1.69	48.94	451.79	35.56
Sum (SF,EDSD)	20.26	20.26	309.07	972.09	0.00	0.02	0.49	0.21	0.00	1293.35	-0.77	8.29	76.53	6.02
Sum (SF,SW)	7.95	7.95	103.28	324.82	0.00	0.01	0.17	0.11	0.00	432.18	1.21	3.46	44.75	2.01
Sum (SF,UGS)	3.92	3.92	50.92	160.17	0.00	0.00	0.08	0.00	0.00	213.10	0.05	1.37	12.61	0.99
Sum (SM)	651.64	586.51	2133.47	6710.10	0.00	0.65	7.34	6.78	0.00	21362.76	61.10	136.94	842.71	63.32
Sum (SM,DP)	62.50	62.50	155.12	487.86	0.00	0.05	0.56	0.52	0.00	1630.85	4.66	10.45	86.85	4.83
Sum (SW)	17.17	13.64	181.73	571.58	0.00	0.01	0.30	0.19	0.00	760.48	2.14	6.09	78.75	2.86
Sum (UNG)	31.42	15.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum (UNG,IT)	0.34	0.34	4.35	13.68	0.00	0.00	0.00	0.00	0.00	21.95	0.14	0.17	2.19	0.08
Sum (VEG)	13.54	12.02	212.36	667.92	0.00	0.01	0.35	0.23	0.00	888.66	2.50	7.12	92.02	3.34
Sum (VEG,SM,EDSD)	598.00	598.00	4971.87	15637.34	0.00	0.47	8.28	5.27	0.00	20805.33	41.55	166.71	2154.40	78.18
Sum (WP)	58.00	29.00	344.12	1082.32	0.00	0.02	0.97	0.59	0.00	1608.02	9.83	10.31	63.43	7.38
<b>Total</b>	<b>13,930.55</b>	<b>10,935.20</b>	<b>51,667.60</b>	<b>162,502.92</b>	<b>0.00</b>	<b>7.32</b>	<b>126.71</b>	<b>101.61</b>	<b>123.28</b>	<b>389,048.16</b>	<b>768.92</b>	<b>2,140.83</b>	<b>21,571.23</b>	<b>1,144.76</b>

Table D-4. Percent removal of pollutants

Practice Type MDE	Total Area, ac	Drainage Area, ac	BOD (%)	COD (%)	TDS (%)	Cd (%)	Cu (%)	Pb (%)	TKN (%)	TSS (%)	Diss P (%)	TP (%)	TN (%)	Zn (%)	Average
Sum (BIO)	209.98	201.34	4.26%	4.26%	0.00%	1.74%	2.89%	2.30%	0.00%	2.37%	3.37%	3.45%	4.42%	3.02%	2.67%
Sum (BIO, EDSD)	72.30	72.30	1.16%	1.16%	0.00%	0.61%	0.79%	0.63%	0.00%	0.65%	0.65%	0.94%	1.21%	0.83%	0.72%
Sum (DP)	2066.66	1721.17	-0.50%	-0.50%	0.00%	17.43%	4.43%	11.49%	0.00%	12.00%	0.00%	16.13%	13.30%	1.66%	6.29%
Sum (DP,IT)	8.20	4.20	0.14%	0.14%	0.00%	0.08%	0.07%	0.08%	0.00%	0.09%	0.30%	0.13%	0.17%	0.11%	0.11%
Sum (EDD)	117.52	117.52	1.29%	1.29%	0.00%	1.81%	1.20%	1.20%	0.00%	1.44%	-0.79%	0.75%	1.03%	0.90%	0.84%
Sum (EDD,OTH)	38.90	38.90	0.23%	0.23%	0.00%	0.33%	0.22%	0.22%	0.00%	0.26%	-0.14%	0.14%	0.19%	0.16%	0.15%
Sum (EDSD)	4180.43	3810.08	29.76%	29.76%	0.00%	41.83%	27.62%	27.58%	0.00%	33.24%	-18.25%	17.21%	23.65%	20.73%	19.43%
Sum (EDSD,OGS)	2.44	2.44	0.03%	0.03%	0.00%	0.04%	0.02%	0.03%	2.60%	0.03%	0.05%	-0.02%	0.02%	0.02%	0.24%
Sum (EDSD,SM)	9.70	9.70	0.06%	0.06%	0.00%	0.10%	0.07%	0.08%	0.00%	0.07%	0.06%	0.08%	0.05%	0.07%	0.06%
Sum (EDSD,VEG)	36.00	36.00	0.58%	0.58%	0.00%	0.30%	0.39%	0.31%	0.00%	0.32%	0.33%	0.47%	0.60%	0.41%	0.36%
Sum (EDSD,UGS)	2.05	2.05	0.03%	0.03%	0.00%	0.04%	0.02%	0.02%	0.00%	0.03%	-0.02%	0.02%	0.02%	0.02%	0.02%
Sum (EDSW)	3661.15	2381.64	21.71%	21.71%	0.00%	12.56%	31.57%	31.63%	0.00%	22.45%	75.06%	26.15%	15.97%	37.15%	24.66%
Sum (EDSW,SM)	1144.80	376.70	8.33%	8.33%	0.00%	4.37%	5.66%	4.49%	0.00%	4.63%	4.68%	6.74%	8.64%	5.91%	5.15%
Sum (IB)	24.55	24.32	0.67%	0.67%	0.00%	0.41%	0.56%	0.34%	0.00%	0.37%	0.00%	0.51%	0.66%	0.42%	0.38%
Sum (IB,DP)	32.74	32.74	1.32%	1.32%	0.00%	0.82%	1.12%	0.68%	0.00%	0.74%	0.00%	1.03%	1.33%	0.84%	0.77%
Sum (IT)	350.90	249.58	5.39%	5.39%	0.00%	0.00%	2.48%	3.13%	0.00%	3.61%	11.39%	5.02%	6.49%	4.38%	3.94%
Sum (IT,OGS)	7.04	7.04	0.24%	0.24%	0.00%	0.00%	0.07%	0.14%	7.51%	0.15%	0.50%	0.11%	0.29%	0.19%	0.79%
Sum (IT,OGS,UGS)	0.54	0.54	0.02%	0.02%	0.00%	0.00%	0.01%	0.01%	0.58%	0.01%	0.04%	0.01%	0.02%	0.01%	0.06%
Sum (ITCE)	17.91	17.91	0.35%	0.35%	0.00%	0.00%	0.16%	0.20%	0.00%	0.23%	0.74%	0.33%	0.42%	0.28%	0.26%
Sum (ITCE,VEG)	1.90	1.90	0.05%	0.05%	0.00%	0.02%	0.03%	0.03%	0.00%	0.03%	0.10%	0.04%	0.06%	0.04%	0.04%
Sum (ITWQE)	167.95	165.45	3.19%	3.19%	0.00%	0.00%	2.08%	0.00%	0.00%	1.77%	0.20%	2.07%	1.89%	2.81%	1.43%
Sum (OGS)	91.92	91.69	0.00%	0.00%	0.00%	0.00%	-0.39%	0.21%	82.71%	-0.15%	2.21%	-1.17%	0.59%	0.45%	7.04%
Sum (OGS,UNG)	2.82	2.82	0.00%	0.00%	0.00%	0.00%	-0.01%	0.00%	1.80%	0.00%	0.05%	-0.03%	0.01%	0.01%	0.15%
Sum (OGS,UGS,VEG)	2.84	2.84	0.10%	0.10%	0.00%	0.04%	0.05%	0.05%	3.03%	0.05%	0.08%	0.04%	0.10%	0.07%	0.31%
Sum (OGS, UGS)	1.67	1.67	0.00%	0.00%	0.00%	0.00%	-0.01%	0.00%	1.78%	0.00%	0.05%	-0.03%	0.01%	0.01%	0.15%
Sum (RTN)	73.10	73.10	1.68%	1.68%	0.00%	0.58%	1.93%	1.47%	0.00%	1.04%	3.22%	1.21%	0.74%	1.62%	1.27%
Sum (SF)	139.80	139.80	3.53%	3.53%	0.00%	0.00%	2.31%	0.00%	0.00%	1.96%	0.22%	2.29%	2.09%	3.11%	1.59%
Sum (SF,EDSD)	20.26	20.26	0.60%	0.60%	0.00%	0.31%	0.39%	0.21%	0.00%	0.33%	-0.10%	0.39%	0.35%	0.53%	0.30%
Sum (SF,SW)	7.95	7.95	0.20%	0.20%	0.00%	0.08%	0.14%	0.11%	0.00%	0.11%	0.16%	0.16%	0.21%	0.18%	0.13%
Sum (SF,UGS)	3.92	3.92	0.10%	0.10%	0.00%	0.00%	0.06%	0.00%	0.00%	0.05%	0.01%	0.06%	0.06%	0.09%	0.04%
Sum (SM)	651.64	586.51	4.13%	4.13%	0.00%	8.83%	5.79%	6.68%	0.00%	5.49%	7.95%	6.40%	3.91%	5.53%	4.90%
Sum (SM,DP)	62.50	62.50	0.30%	0.30%	0.00%	0.67%	0.44%	0.51%	0.00%	0.42%	0.61%	0.49%	0.40%	0.42%	0.38%
Sum (SW)	17.17	13.64	0.35%	0.35%	0.00%	0.14%	0.24%	0.19%	0.00%	0.20%	0.28%	0.28%	0.37%	0.25%	0.22%
Sum (UNG)	31.42	15.62	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sum (UNG,IT)	0.34	0.34	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%
Sum (VEG)	13.54	12.02	0.41%	0.41%	0.00%	0.17%	0.28%	0.22%	0.00%	0.23%	0.32%	0.33%	0.43%	0.29%	0.26%
Sum (VEG,SM,EDSD)	598.00	598.00	9.62%	9.62%	0.00%	6.45%	6.54%	5.19%	0.00%	5.35%	5.40%	7.79%	9.99%	6.83%	6.06%
Sum (WP)	58.00	29.00	0.67%	0.67%	0.00%	0.23%	0.77%	0.58%	0.00%	0.41%	1.28%	0.48%	0.29%	0.64%	0.50%

Table D-5. Amount of pollutants removed (pounds per acre)														
Practice Type MDE	Total Area, ac	Drainage Area, ac	BOD (lbs/ac)	COD (lbs/ac)	TDS (lbs/ac)	Cd (lbs/ac)	Cu (lbs/ac)	Pb (lbs/ac)	TKN (lbs/ac)	TSS (lbs/ac)	Diss. Phos. (lbs/ac)	TP (lbs/ac)	TN (lbs/ac)	Zn (lbs/ac)
Sum (BIO)	209.98	201.34	10.93	34.39	0.00	0.00	0.02	0.01	0.00	45.75	0.13	0.37	4.74	0.17
Sum (BIO, EDSD)	72.30	72.30	8.31	26.15	0.00	0.00	0.01	0.01	0.00	34.79	0.07	0.28	3.60	0.13
Sum (DP)	2066.66	1721.17	-0.15	-0.47	0.00	0.00	0.00	0.01	0.00	27.13	0.00	0.20	1.67	0.01
Sum (DP,IT)	8.20	4.20	17.14	53.91	0.00	0.00	0.02	0.02	0.00	87.79	0.55	0.67	8.75	0.31
Sum (EDD)	117.52	117.52	5.67	17.84	0.00	0.00	0.01	0.01	0.00	47.71	-0.05	0.14	1.88	0.09
Sum (EDD,OTH)	38.90	38.90	3.10	9.76	0.00	0.00	0.01	0.01	0.00	26.09	-0.03	0.07	1.03	0.05
Sum (EDSD)	4180.43	3810.08	4.04	12.69	0.00	0.00	0.01	0.01	0.00	33.94	-0.04	0.10	1.34	0.06
Sum (EDSD,OGS)	2.44	2.44	6.59	20.73	0.00	0.00	0.01	0.01	1.31	48.06	0.16	-0.17	2.19	0.10
Sum (EDSD,SM)	9.70	9.70	3.10	9.76	0.00	0.00	0.01	0.01	0.00	26.09	0.05	0.17	1.03	0.08
Sum (EDSD,VEG)	36.00	36.00	8.31	26.15	0.00	0.00	0.01	0.01	0.00	34.79	0.07	0.28	3.60	0.13
Sum (EDSD,UGS)	2.05	2.05	6.59	20.73	0.00	0.00	0.02	0.01	0.00	55.45	-0.06	0.16	2.19	0.10
Sum (EDSW)	3661.15	2381.64	4.71	14.81	0.00	0.00	0.02	0.01	0.00	36.67	0.24	0.24	1.45	0.18
Sum (EDSW,SM)	1144.80	376.70	11.42	35.93	0.00	0.00	0.02	0.01	0.00	47.80	0.10	0.38	4.95	0.18
Sum (IB)	24.55	24.32	14.20	44.66	0.00	0.00	0.03	0.01	0.00	59.10	0.00	0.45	5.89	0.20
Sum (IB,DP)	32.74	32.74	20.83	65.52	0.00	0.00	0.04	0.02	0.00	87.79	0.00	0.67	8.75	0.29
Sum (IT)	350.90	249.58	11.17	35.12	0.00	0.00	0.01	0.01	0.00	56.33	0.35	0.43	5.61	0.20
Sum (IT,OGS)	7.04	7.04	17.40	54.74	0.00	0.00	0.01	0.02	1.31	80.40	0.55	0.35	8.75	0.31
Sum (IT,OGS,UGS)	0.54	0.54	17.40	54.74	0.00	0.00	0.01	0.02	1.31	80.40	0.55	0.35	8.75	0.31
Sum (ITCE)	17.91	17.91	10.09	31.75	0.00	0.00	0.01	0.01	0.00	50.92	0.32	0.39	5.07	0.18
Sum (ITCE,VEG)	1.90	1.90	12.99	40.86	0.00	0.00	0.02	0.01	0.00	64.55	0.40	0.49	6.43	0.23
Sum (ITWQE)	167.95	165.45	9.97	31.36	0.00	0.00	0.02	0.00	0.00	41.72	0.01	0.27	2.47	0.19
Sum (OGS)	91.92	91.69	0.00	0.00	0.00	0.00	-0.01	0.00	1.11	-6.26	0.19	-0.27	1.39	0.06
Sum (OGS,UNG)	2.82	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.79	-4.44	0.13	-0.19	0.98	0.04
Sum (OGS,UGS,VEG)	2.84	2.84	17.67	55.57	0.00	0.00	0.02	0.02	1.31	73.93	0.22	0.27	7.66	0.28
Sum (OGS, UGS)	1.67	1.67	0.00	0.00	0.00	0.00	-0.01	0.00	1.31	-7.39	0.22	-0.32	1.64	0.07
Sum (RTN)	73.10	73.10	11.87	37.32	0.00	0.00	0.03	0.02	0.00	55.45	0.34	0.36	2.19	0.25
Sum (SF)	139.80	139.80	13.05	41.05	0.00	0.00	0.02	0.00	0.00	54.62	0.01	0.35	3.23	0.25
Sum (SF,EDSD)	20.26	20.26	15.26	47.98	0.00	0.00	0.02	0.01	0.00	63.84	-0.04	0.41	3.78	0.30
Sum (SF,SW)	7.95	7.95	12.99	40.86	0.00	0.00	0.02	0.01	0.00	54.36	0.15	0.44	5.63	0.25
Sum (SF,UGS)	3.92	3.92	12.99	40.86	0.00	0.00	0.02	0.00	0.00	54.36	0.01	0.35	3.22	0.25
Sum (SM)	651.64	586.51	3.64	11.44	0.00	0.00	0.01	0.01	0.00	36.42	0.10	0.23	1.44	0.11
Sum (SM,DP)	62.50	62.50	2.48	7.81	0.00	0.00	0.01	0.01	0.00	26.09	0.07	0.17	1.39	0.08
Sum (SW)	17.17	13.64	13.32	41.90	0.00	0.00	0.02	0.01	0.00	55.75	0.16	0.45	5.77	0.21
Sum (UNG)	31.42	15.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum (UNG,IT)	0.34	0.34	12.80	40.25	0.00	0.00	0.01	0.01	0.00	64.55	0.40	0.49	6.43	0.23
Sum (VEG)	13.54	12.02	17.67	55.57	0.00	0.00	0.03	0.02	0.00	73.93	0.21	0.59	7.66	0.28
Sum (VEG,SM,EDSD)	598.00	598.00	8.31	26.15	0.00	0.00	0.01	0.01	0.00	34.79	0.07	0.28	3.60	0.13
Sum (WP)	58.00	29.00	11.87	37.32	0.00	0.00	0.03	0.02	0.00	55.45	0.34	0.36	2.19	0.25
<b>Total</b>	<b>13,930.55</b>	<b>10,935.20</b>	<b>357.75</b>	<b>1,125.19</b>	<b>0.00</b>	<b>0.02</b>	<b>0.59</b>	<b>0.42</b>	<b>8.47</b>	<b>1,758.76</b>	<b>5.94</b>	<b>10.22</b>	<b>148.33</b>	<b>6.56</b>

Table D-6. Percent removal of pollutants per acre

Practice Type MDE	Total Area, ac	Drainage Area, ac	BOD (lbs/ac)	COD (lbs/ac)	TDS (lbs/ac)	Cd (lbs/ac)	Cu (lbs/ac)	Pb (lbs/ac)	TKN (lbs/ac)	TSS (lbs/ac)	Diss. Phos. (lbs/ac)	TP (lbs/ac)	TN (lbs/ac)	Zn (lbs/ac)	Average
Sum (BIO)	209.98	201.34	3.06%	3.06%	0.00%	2.69%	3.08%	2.78%	0.00%	2.60%	2.17%	3.59%	3.19%	2.62%	2.40%
Sum (BIO, EDSD)	72.30	72.30	2.32%	2.32%	0.00%	2.63%	2.35%	2.11%	0.00%	1.98%	1.17%	2.73%	2.43%	1.99%	1.84%
Sum (DP)	2066.66	1721.17	-0.04%	-0.04%	0.00%	3.16%	0.55%	1.63%	0.00%	1.54%	0.00%	1.96%	1.12%	0.17%	0.84%
Sum (DP,IT)	8.20	4.20	4.79%	4.79%	0.00%	5.59%	3.32%	4.76%	0.00%	4.99%	9.21%	6.57%	5.90%	4.77%	4.56%
Sum (EDD)	117.52	117.52	1.59%	1.59%	0.00%	4.81%	2.19%	2.48%	0.00%	2.71%	-0.87%	1.33%	1.27%	1.33%	1.54%
Sum (EDD,OTH)	38.90	38.90	0.87%	0.87%	0.00%	2.63%	1.20%	1.36%	0.00%	1.48%	-0.48%	0.73%	0.69%	0.73%	0.84%
Sum (EDSD)	4180.43	3810.08	1.13%	1.13%	0.00%	3.42%	1.56%	1.76%	0.00%	1.93%	-0.62%	0.95%	0.90%	0.95%	1.09%
Sum (EDSD,OGS)	2.44	2.44	1.84%	1.84%	0.00%	5.59%	1.47%	2.88%	15.51%	2.73%	2.67%	-1.62%	1.47%	1.55%	3.00%
Sum (EDSD,SM)	9.70	9.70	0.87%	0.87%	0.00%	3.36%	1.52%	1.99%	0.00%	1.48%	0.78%	1.64%	0.69%	1.18%	1.20%
Sum (EDSD,VEG)	36.00	36.00	2.32%	2.32%	0.00%	2.63%	2.35%	2.11%	0.00%	1.98%	1.17%	2.73%	2.43%	1.99%	1.84%
Sum (EDSD,UGS)	2.05	2.05	1.84%	1.84%	0.00%	5.59%	2.54%	2.88%	0.00%	3.15%	-1.01%	1.55%	1.47%	1.55%	1.78%
Sum (EDSW)	3661.15	2381.64	1.32%	1.32%	0.00%	1.64%	2.84%	3.23%	0.00%	2.09%	4.08%	2.30%	0.98%	2.72%	1.88%
Sum (EDSW,SM)	1144.80	376.70	3.19%	3.19%	0.00%	3.62%	3.22%	2.90%	0.00%	2.72%	1.61%	3.75%	3.34%	2.74%	2.52%
Sum (IB)	24.55	24.32	3.97%	3.97%	0.00%	5.23%	4.93%	3.38%	0.00%	3.36%	0.00%	4.42%	3.97%	3.01%	3.02%
Sum (IB,DP)	32.74	32.74	5.82%	5.82%	0.00%	7.77%	7.33%	5.02%	0.00%	4.99%	0.00%	6.57%	5.90%	4.47%	4.47%
Sum (IT)	350.90	249.58	3.12%	3.12%	0.00%	0.00%	2.13%	3.05%	0.00%	3.20%	5.91%	4.21%	3.78%	3.06%	2.63%
Sum (IT,OGS)	7.04	7.04	4.86%	4.86%	0.00%	0.00%	2.25%	4.76%	15.51%	4.57%	9.21%	3.40%	5.90%	4.77%	5.01%
Sum (IT,OGS,UGS)	0.54	0.54	4.86%	4.86%	0.00%	0.00%	2.25%	4.76%	15.51%	4.57%	9.21%	3.40%	5.90%	4.77%	5.01%
Sum (ITCE)	17.91	17.91	2.82%	2.82%	0.00%	0.00%	1.93%	2.76%	0.00%	2.90%	5.34%	3.81%	3.42%	2.77%	2.38%
Sum (ITCE,VEG)	1.90	1.90	3.63%	3.63%	0.00%	3.20%	3.66%	3.50%	0.00%	3.67%	6.77%	4.83%	4.34%	3.51%	3.39%
Sum (ITWQE)	167.95	165.45	2.79%	2.79%	0.00%	0.00%	2.70%	0.00%	0.00%	2.37%	0.16%	2.62%	1.66%	2.96%	1.50%
Sum (OGS)	91.92	91.69	0.00%	0.00%	0.00%	0.00%	-0.91%	0.57%	13.13%	-0.36%	3.12%	-2.68%	0.94%	0.86%	1.22%
Sum (OGS,UNG)	2.82	2.82	0.00%	0.00%	0.00%	0.00%	-0.65%	0.40%	9.31%	-0.25%	2.21%	-1.90%	0.66%	0.61%	0.87%
Sum (OGS,UGS,VEG)	2.84	2.84	4.94%	4.94%	0.00%	4.35%	3.91%	4.49%	15.51%	4.20%	3.68%	2.63%	5.16%	4.24%	4.84%
Sum (OGS, UGS)	1.67	1.67	0.00%	0.00%	0.00%	0.00%	-1.07%	0.67%	15.51%	-0.42%	3.68%	-3.17%	1.11%	1.01%	1.44%
Sum (RTN)	73.10	73.10	3.32%	3.32%	0.00%	2.49%	5.67%	4.89%	0.00%	3.15%	5.71%	3.48%	1.47%	3.88%	3.11%
Sum (SF)	139.80	139.80	3.65%	3.65%	0.00%	0.00%	3.54%	0.00%	0.00%	3.11%	0.20%	3.42%	2.18%	3.88%	1.97%
Sum (SF,EDSD)	20.26	20.26	4.26%	4.26%	0.00%	4.83%	4.13%	2.49%	0.00%	3.63%	-0.64%	4.00%	2.55%	4.53%	2.84%
Sum (SF,SW)	7.95	7.95	3.63%	3.63%	0.00%	3.20%	3.66%	3.30%	0.00%	3.09%	2.57%	4.26%	3.80%	3.86%	2.92%
Sum (SF,UGS)	3.92	3.92	3.63%	3.63%	0.00%	0.00%	3.52%	0.00%	0.00%	3.09%	0.20%	3.41%	2.17%	3.86%	1.96%
Sum (SM)	651.64	586.51	1.02%	1.02%	0.00%	4.70%	2.12%	2.77%	0.00%	2.07%	1.75%	2.28%	0.97%	1.65%	1.70%
Sum (SM,DP)	62.50	62.50	0.69%	0.69%	0.00%	3.36%	1.52%	1.99%	0.00%	1.48%	1.26%	1.64%	0.94%	1.18%	1.23%
Sum (SW)	17.17	13.64	3.72%	3.72%	0.00%	3.28%	3.76%	3.38%	0.00%	3.17%	2.64%	4.37%	3.89%	3.19%	2.93%
Sum (UNG)	31.42	15.62	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sum (UNG,IT)	0.34	0.34	3.58%	3.58%	0.00%	0.00%	2.44%	3.50%	0.00%	3.67%	6.77%	4.83%	4.34%	3.51%	3.02%
Sum (VEG)	13.54	12.02	4.94%	4.94%	0.00%	4.35%	4.98%	4.49%	0.00%	4.20%	3.50%	5.79%	5.16%	4.24%	3.88%
Sum (VEG,SM,EDSD)	598.00	598.00	2.32%	2.32%	0.00%	3.36%	2.35%	2.11%	0.00%	1.98%	1.17%	2.73%	2.43%	1.99%	1.90%
Sum (WP)	58.00	29.00	3.32%	3.32%	0.00%	2.49%	5.67%	4.89%	0.00%	3.15%	5.71%	3.48%	1.47%	3.88%	3.11%

Practice Abbreviation	Practice Description
BIO	Bioretention
BIO, EDSO	Bioretention, Extended Dry Detention Pond
DP	Dry Pond
DP,IT	Dry Pond, Infiltration Trench
EDD	Extended Detention Device
EDD,OTH	Extended Detention Device, Other
EDSO	Extended Dry Detention Pond
EDSO,OGS	Extended Dry Detention Pond, Oil/Grit Separator
EDSO,SM	Extended Dry Detention Pond, Shallow Marsh
EDSO,UGS	Extended Dry Detention Pond, Underground Structure
EDSO,VEG	Extended Dry Detention Pond, Vegetative Filter
EDSW	Extended Wet Detention Pond
EDSW,SM	Extended Wet Detention Pond, Shallow Marsh
IB	Infiltration Basin
IB,DP	Infiltration Basin, Dry Pond
IT	Infiltration Trench
IT,OGS	Infiltration Trench, Oil/Grit Separator
IT,OGS,UGS	Infiltration Trench, Oil/Grit Separator, Underground Structure
ITCE	Complete Exfiltration
ITCE,VEG	Complete Exfiltration, Vegetative Filter
ITWQE	Water Quality Exfiltration
OGS	Oil/Grit Separator
OGS,UNG	Oil/Grit Separator, Underground Device
OGS,UGS,VEG	Oil/Grit Separator, Underground Structure, and Vegetative Filter
OGS,UGS	Oil/Grit Separator, Underground Structure
RTN	Retention
SF	Sand Filter
SF,EDSO	Sand Filter, Extended Dry Detention Pond
SF,SW	Sand Filter and Swale
SF,UGS	Sand Filter, Underground Structure
SM	Shallow Marsh
SM,DP	Shallow Marsh, Dry Pond
SW	Swale
UNG	Underground Device
UNG,IT	Underground Device, Infiltration Trench
VEG	Vegetative Filter
VEG,SM,EDSO	Vegetative Filter, Shallow Marsh, Extended Dry Detention Pond
WP	Wet Pond



## **APPENDIX E**

### **METHODS FOR ESTIMATING POLLUTANT LOADING IN PETER PAN RUN**



## Methods for Estimating Pollutant Loading in Peter Pan Run

Calculation factors used to estimate pollutant loadings at Peter Pan Run and at Pond R Outfall were determined as follows:

- Flow rate data (in cfs) used for loading determination were measured from October 1, 2008 to September 30, 2009, by an ISCO flowmeter. Stormflow and baseflow were separated by noting where the hydrograph increased due to rain and then decreased to a base level. Stormflows are considered flows that occurred during periods of elevated level due to rain. Baseflows are the flows measured at all other times. The average stormflow rate and baseflow rate were calculated for each month. Those averages were combined together to obtain a stormflow grand average and baseflow grand average for the period of record. The proportion of discharge characterized as baseflow and stormflow are given in Table E-1. Note: the calculated number of days of baseflow also includes time periods where no flow (*i.e.*, zero flow rate) was recorded at Pond R.

Table E-1. Proportion of discharge characterized as baseflow and stormflow at both Peter Pan Run stations.						
Location	Percent Baseflow	Percent Stormflow	Days Baseflow	Days Stormflow	Volume Baseflow (acre ft)	Volume Stormflow (acre ft)
Outfall	84	16	306	59	0	67
Instream	70	30	254	111	796	1,405

- With the total volume of water calculated, and the concentrations given, the total pollutant loads were calculated.
- Some pollutant concentrations were below the detection limit for the method used to analyze the pollutant in the sample. In these cases a range of values are offered. The lower value was calculated assuming the pollutant concentration was zero. The higher value was calculated assuming the pollutant concentration was the concentration of the detection limit.

