

Table B-1
 Summary of Stormwater Modeling Results for the
 Total Cub Run and Bull Run Watershed Study Area

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm				
Total Flow (cfs)	5,996	5,540	6,954	6,190
Average velocity (fps) *	4.55	4.49	4.54	4.48
Total Phosphorus				
Tons/year	9.9	8.1	14.0	11.5
Lbs/acre/year	0.5	0.4	0.7	0.6
Dissolved Phosphorus				
Tons/year	7.1	6.3	10.6	10.2
Lbs/acre/year	0.35	0.31	0.53	0.51
Total Nitrogen				
Tons/year	106.5	94.9	142.3	126
Lbs/acre/year	5.3	4.7	7.1	6.3
Total Kjeldahl Nitrogen				
Tons/year	61.6	56.3	88.4	82.6
Lbs/acre/year	3.1	2.8	4.4	4.1
Nitrate Nitrogen				
Tons/year	46.9	44.4	60.4	58.8
Lbs/acre/year	2.3	2.2	3.0	2.9
BOD5				
Tons/year	397.7	359.6	548.1	499.2
Lbs/acre/year	19.7	17.9	27.2	24.8
Total Suspended Solids				
Tons/year	2,078	1,403	2,169	1,304
Lbs/acre/year	103	69.6	108	64.7
Zinc				
Tons/year	3.6	2.9	6.0	4.3
Lbs/acre/year	0.2	0.1	0.3	0.2
Lead				
Tons/year	0.9	0.6	1.2	0.6
Lbs/acre/year	0.1	0.03	0.1	0.03
Copper				
Tons/year	0.4	0.4	0.7	0.5
Lbs/acre/year	0.02	0.02	0.03	0.02
Cadmium				
Tons/year	0.037	0.028	0.059	0.042
Lbs/acre/year	0.0018	0.0014	0.0029	0.0021

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-2
Summary of Stormwater Modeling Results for the
Cub Run Watershed

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm Total Flow (cfs)	5,996	5,540	6,954	6,190
Average velocity (fps) *	4.55	4.49	4.54	4.48
Total Phosphorus				
Tons/year	9.1	7.3	12.4	10.0
Lbs/acre/year	0.5	0.4	0.7	0.6
Dissolved Phosphorus				
Tons/year	6.5	5.7	9.5	9.1
Lbs/acre/year	0.38	0.33	0.56	0.5
Total Nitrogen				
Tons/year	95.6	84.4	126.7	110.3
Lbs/acre/year	5.6	5.0	7.4	6.5
Total Kjeldahl Nitrogen				
Tons/year	55.8	50.8	78.6	73.0
Lbs/acre/year	3.3	3.0	4.6	4.3
Nitrate Nitrogen				
Tons/year	41.4	49.0	54.1	52.6
Lbs/acre/year	2.4	2.3	3.2	3.1
BOD5				
Tons/year	362.0	325.0	496.5	447.9
Lbs/acre/year	21.2	19.1	29.1	26.3
Total Suspended Solids				
Tons/year	1,917	1,265	1,990	1,130
Lbs/acre/year	113	74.3	116.8	66.3
Zinc				
Tons/year	3.4	2.6	5.7	4.0
Lbs/acre/year	0.2	0.15	0.3	0.2
Lead				
Tons/year	0.9	0.6	1.1	0.6
Lbs/acre/year	0.05	0.03	0.1	0.03
Copper				
Tons/year	0.4	0.3	0.6	0.4
Lbs/acre/year	0.02	0.02	0.04	0.02
Cadmium				
Tons/year	0.036	0.027	0.057	0.040
Lbs/acre/year	0.0021	0.0016	0.0034	0.0024

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-3
Summary of Stormwater Modeling Results for
the Upper Cub Run Subwatershed

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm				
Total Flow (cfs)	1,824	1,817	2,787	1,743
Average velocity (fps) *	3.56	3.53	3.65	3.47
Total Phosphorus				
Tons/year	3.1	2.7	5.2	3.5
Lbs/acre/year	0.58	0.51	0.97	0.65
Dissolved Phosphorus				
Tons/year	2.2	2.0	3.7	3.5
Lbs/acre/year	0.41	0.38	0.70	0.65
Total Nitrogen				
Tons/year	33.9	31.4	52.7	40.9
Lbs/acre/year	6.4	5.9	9.9	7.7
Total Kjeldahl Nitrogen				
Tons/year	19.2	18.1	30.5	26.6
Lbs/acre/year	3.6	3.4	5.7	5.0
Nitrate Nitrogen				
Tons/year	15.1	14.3	23.1	22.1
Lbs/acre/year	2.8	2.7	4.3	4.2
BOD5				
Tons/year	128	119	213	178
Lbs/acre/year	24.0	22.3	40.0	33.5
Total Suspended Solids				
Tons/year	591	468	892	297
Lbs/acre/year	111	88	168	56
Zinc				
Tons/year	1.7	1.4	3.4	2.0
Lbs/acre/year	0.32	0.26	0.63	0.38
Lead				
Tons/year	0.36	0.28	0.57	0.18
Lbs/acre/year	0.07	0.05	0.11	0.03
Copper				
Tons/year	0.20	0.17	0.36	0.21
Lbs/acre/year	0.04	0.03	0.07	0.04
Cadmium				
Tons/year	0.0165	0.0140	0.0323	0.0189
Lbs/acre/year	0.0031	0.0026	0.0061	0.0036

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-4
Summary of Stormwater Modeling Results for the
Ellick Run Subwatershed

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm				
Total Flow (cfs)	1,424	1,321	1,468	1,326
Average velocity (fps) *	3.94	3.92	3.91	3.90
Total Phosphorus				
Tons/year	1.02	0.72	2.15	1.84
Lbs/acre/year	0.28	0.20	0.58	0.50
Dissolved Phosphorus				
Tons/year	0.73	0.52	1.78	1.77
Lbs/acre/year	0.20	0.14	0.48	0.48
Total Nitrogen				
Tons/year	11.6	10.0	20.4	18.4
Lbs/acre/year	3.1	2.7	5.5	5.0
Total Kjeldahl Nitrogen				
Tons/year	6.7	5.7	14.2	13.5
Lbs/acre/year	1.8	1.5	3.8	3.7
Nitrate Nitrogen				
Tons/year	5.6	5.0	7.9	7.9
Lbs/acre/year	1.5	1.4	2.1	2.1
BOD5				
Tons/year	46.2	39.9	76.9	71.8
Lbs/acre/year	12.5	10.8	20.8	19.4
Total Suspended Solids				
Tons/year	261	150	295	168
Lbs/acre/year	71	41	80	45
Zinc				
Tons/year	0.19	0.14	0.44	0.33
Lbs/acre/year	0.05	0.04	0.12	0.09
Lead				
Tons/year	0.08	0.04	0.11	0.06
Lbs/acre/year	0.02	0.01	0.03	0.02
Copper				
Tons/year	0.03	0.02	0.05	0.03
Lbs/acre/year	0.01	0.01	0.01	0.01
Cadmium				
Tons/year	0.0019	0.0010	0.0045	0.0031
Lbs/acre/year	0.0005	0.0003	0.0012	0.0008

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-5
Summary of Stormwater Modeling Results for the
Flatlick Branch Subwatershed

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm				
Total Flow (cfs)	1,338	1,118	1,218	1,120
Average velocity (fps) *	5.90	5.81	5.83	5.81
Total Phosphorus				
Tons/year	1.60	1.25	1.77	1.55
Lbs/acre/year	0.63	0.49	0.70	0.61
Dissolved Phosphorus				
Tons/year	1.14	1.01	1.40	1.31
Lbs/acre/year	0.45	0.40	0.56	0.52
Total Nitrogen				
Tons/year	16.3	13.9	18.7	17.3
Lbs/acre/year	6.4	5.5	7.4	6.8
Total Kjeldahl Nitrogen				
Tons/year	9.6	8.7	11.5	10.9
Lbs/acre/year	3.8	3.4	4.5	4.3
Nitrate Nitrogen				
Tons/year	6.8	6.5	8.5	8.1
Lbs/acre/year	2.7	2.6	3.4	3.2
BOD5				
Tons/year	60.6	53.6	72.9	68.0
Lbs/acre/year	24.0	21.3	28.9	26.8
Total Suspended Solids				
Tons/year	338	209	287	211
Lbs/acre/year	134	83	114	83
Zinc				
Tons/year	0.53	0.39	0.81	0.65
Lbs/acre/year	0.21	0.15	0.32	0.26
Lead				
Tons/year	0.14	0.09	0.15	0.10
Lbs/acre/year	0.06	0.03	0.06	0.04
Copper				
Tons/year	0.06	0.05	0.09	0.07
Lbs/acre/year	0.02	0.02	0.03	0.03
Cadmium				
Tons/year	0.0060	0.0043	0.0081	0.0067
Lbs/acre/year	0.0024	0.0017	0.0032	0.0026

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-6
Summary of Stormwater Modeling Results for the
Big Rocky Run and Round Lick Branch Subwatershed

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm Total Flow (cfs)	2,016	1,477	1,503	1,495
Average velocity (fps) *	5.14	4.99	5.00	4.99
Total Phosphorus				
Tons/year	2.6	2.0	2.4	2.2
Lbs/acre/year	0.74	0.56	0.7	0.6
Dissolved Phosphorus				
Tons/year	1.8	1.6	1.9	1.8
Lbs/acre/year	0.52	0.45	0.54	0.5
Total Nitrogen				
Tons/year	25.3	21.4	25.5	24.4
Lbs/acre/year	7.2	6.1	7.2	7.0
Total Kjeldahl Nitrogen				
Tons/year	15.4	13.6	16.5	16.0
Lbs/acre/year	4.4	3.9	4.7	4.6
Nitrate Nitrogen				
Tons/year	10.2	9.5	10.6	10.4
Lbs/acre/year	2.9	2.7	3.0	3.0
BOD5				
Tons/year	96.6	83.9	99.7	96.0
Lbs/acre/year	27.4	23.8	28.3	27.3
Total Suspended Solids				
Tons/year	560	325	386	325
Lbs/acre/year	159	92	110	93
Zinc				
Tons/year	0.75	0.54	0.83	0.75
Lbs/acre/year	0.21	0.15	0.24	0.21
Lead				
Tons/year	0.22	0.12	0.18	0.15
Lbs/acre/year	0.06	0.03	0.05	0.04
Copper				
Tons/year	0.09	0.07	0.10	0.09
Lbs/acre/year	0.03	0.02	0.03	0.03
Cadmium				
Tons/year	0.0095	0.0066	0.0102	0.0093
Lbs/acre/year	0.0027	0.0019	0.0029	0.0027

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-7
Summary of Stormwater Modeling Results for
the Lower Cub Run Subwatershed

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm Total Flow (cfs)	4,427	4,470	5,612	4,865
Average velocity (fps) *	3.81	3.80	3.85	3.81
Total Phosphorus				
Tons/year	0.79	0.66	0.88	0.87
Lbs/acre/year	0.40	0.34	0.45	0.44
Dissolved Phosphorus				
Tons/year	0.57	0.56	0.71	0.71
Lbs/acre/year	0.29	0.28	0.36	0.36
Total Nitrogen				
Tons/year	8.6	7.7	9.4	9.3
Lbs/acre/year	4.4	3.9	4.8	4.7
Total Kjeldahl Nitrogen				
Tons/year	5.0	4.7	6.0	6.0
Lbs/acre/year	2.6	2.4	3.0	3.0
Nitrate Nitrogen				
Tons/year	3.8	3.7	4.1	4.1
Lbs/acre/year	1.9	1.9	2.1	2.1
BOD5				
Tons/year	31.0	28.8	34.5	34.4
Lbs/acre/year	15.7	14.6	17.5	17.5
Total Suspended Solids				
Tons/year	167	114	131	128
Lbs/acre/year	85	58	67	65
Zinc				
Tons/year	0.19	0.16	0.22	0.22
Lbs/acre/year	0.10	0.08	0.11	0.11
Lead				
Tons/year	0.06	0.05	0.06	0.06
Lbs/acre/year	0.03	0.02	0.03	0.03
Copper				
Tons/year	0.02	0.02	0.03	0.03
Lbs/acre/year	0.01	0.01	0.01	0.01
Cadmium				
Tons/year	0.0019	0.0014	0.0021	0.0021
Lbs/acre/year	0.0010	0.0007	0.0011	0.0010

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-8
Summary of Stormwater Modeling Results for the
Bull Run East Subwatershed

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm Total Flow (cfs)	461	264	301	283
Average velocity (fps) *	8.61	8.69	8.68	8.69
Total Phosphorus				
Tons/year	0.32	0.27	0.35	0.34
Lbs/acre/year	0.53	0.45	0.58	0.56
Dissolved Phosphorus				
Tons/year	0.23	0.22	0.29	0.29
Lbs/acre/year	0.38	0.37	0.47	0.47
Total Nitrogen				
Tons/year	3.5	3.1	3.8	3.7
Lbs/acre/year	5.7	5.1	6.2	6.1
Total Kjeldahl Nitrogen				
Tons/year	2.0	1.9	2.4	2.4
Lbs/acre/year	3.4	3.1	4.0	43.9
Nitrate Nitrogen				
Tons/year	1.48	1.45	1.62	1.62
Lbs/acre/year	2.44	2.39	2.67	2.67
BOD5				
Tons/year	12.5	11.5	14.2	14.0
Lbs/acre/year	20.5	18.9	23.4	23.0
Total Suspended Solids				
Tons/year	66	44	55	50.1
Lbs/acre/year	108	72	91	82.4
Zinc				
Tons/year	0.10	0.09	0.12	0.12
Lbs/acre/year	0.17	0.15	0.20	0.20
Lead				
Tons/year	0.03	0.02	0.03	0.03
Lbs/acre/year	0.05	0.04	0.05	0.04
Copper				
Tons/year	0.01	0.01	0.02	0.02
Lbs/acre/year	0.02	0.02	0.03	0.02
Cadmium				
Tons/year	0.0011	0.0009	0.0014	0.0013
Lbs/acre/year	0.0019	0.0015	0.0022	0.0022

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.

Table B-9
Summary of Stormwater Modeling Results for the
Bull Run West Watershed Study Area

Parameter	Existing without Stormwater Controls	Existing with Stormwater Controls	Future with Existing Stormwater Controls	Future with Future Stormwater Controls **
Peak 2-Year Storm				
Total Flow (cfs)	807	807	1,041	1,042
Average velocity (fps) *	4.04	4.04	4.09	4.09
Total Phosphorus				
Tons/year	0.51	0.51	1.15	1.15
Lbs/acre/year	0.20	0.20	0.46	0.46
Dissolved Phosphorus				
Tons/year	0.37	0.37	0.82	0.82
Lbs/acre/year	0.15	0.15	0.33	0.33
Total Nitrogen				
Tons/year	7.4	7.4	11.8	11.8
Lbs/acre/year	3.0	2.9	4.7	4.7
Total Kjeldahl Nitrogen				
Tons/year	3.7	3.7	7.3	7.3
Lbs/acre/year	1.5	1.5	2.9	2.9
Nitrate Nitrogen				
Tons/year	4.0	4.0	4.7	4.7
Lbs/acre/year	1.6	1.6	1.9	1.9
BOD5				
Tons/year	23.2	23.2	37.4	37.4
Lbs/acre/year	9.3	9.3	14.9	14.9
Total Suspended Solids				
Tons/year	94.9	93.7	123.9	123.9
Lbs/acre/year	37.9	37.5	49.5	49.5
Zinc				
Tons/year	0.12	0.12	0.18	0.18
Lbs/acre/year	0.05	0.05	0.07	0.07
Lead				
Tons/year	0.04	0.04	0.05	0.05
Lbs/acre/year	0.02	0.02	0.02	0.02
Copper				
Tons/year	0.02	0.02	0.02	0.02
Lbs/acre/year	0.01	0.01	0.01	0.01
Cadmium				
Tons/year	0.0001	0.0001	0.0002	0.0002
Lbs/acre/year	0.0000	0.0000	0.0001	0.0001

* Average velocity within modeled stream segments

** Includes controls required by Loudoun and Fairfax Counties. Does not include watershed plan recommendations.