APPENDIX A:
Discharge Monitoring Report Data

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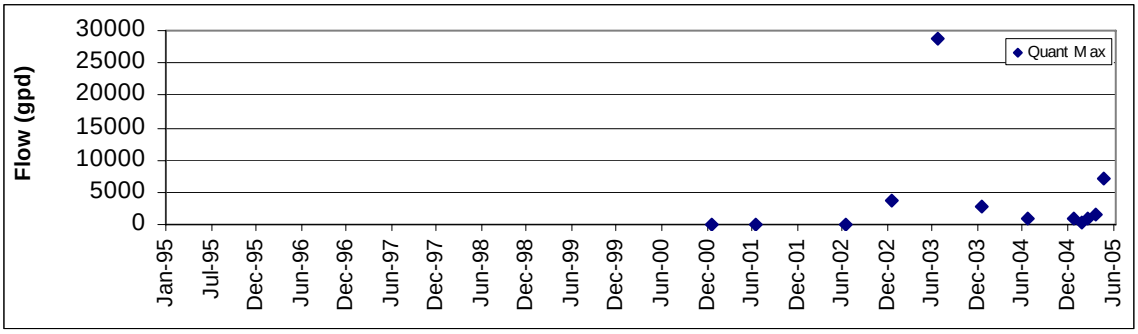

Figure A-1: Adaptive Concrete Flow Outfall 1

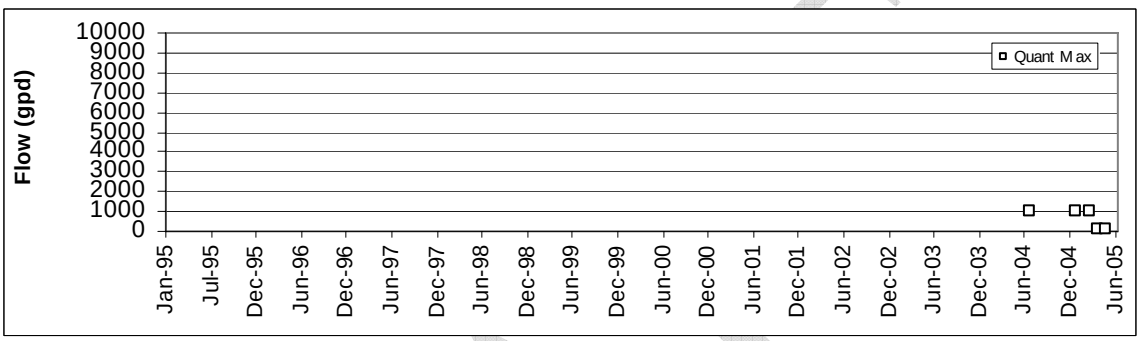

Figure A-2: Adaptive Concrete Flow Outfall 2

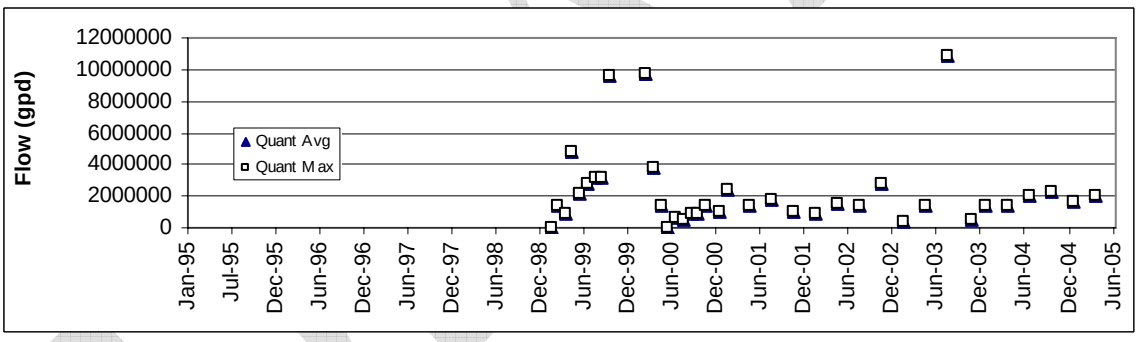

Figure A-3: Atlantic Research Flow Outfall 1

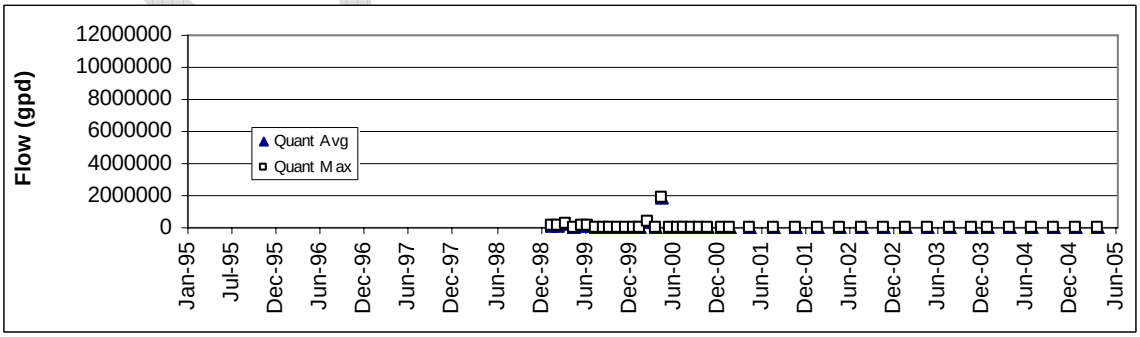

Figure A-4: Atlantic Research Flow Outfall 2

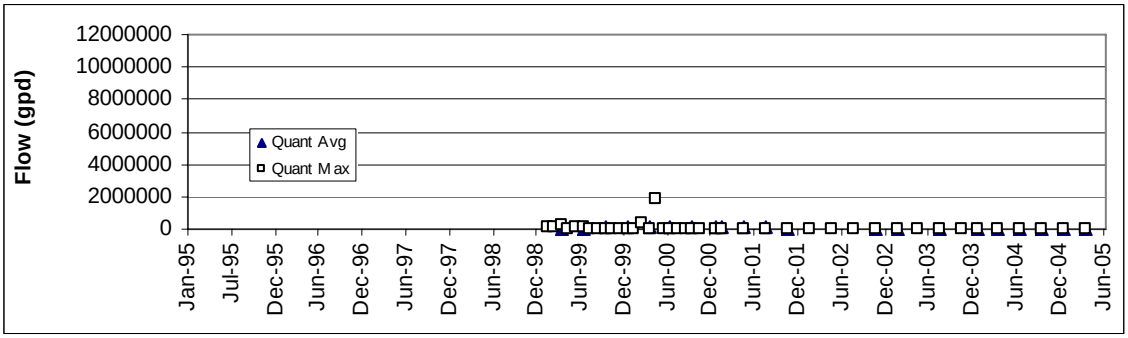

Figure A-5: Atlantic Research Flow Outfall 101

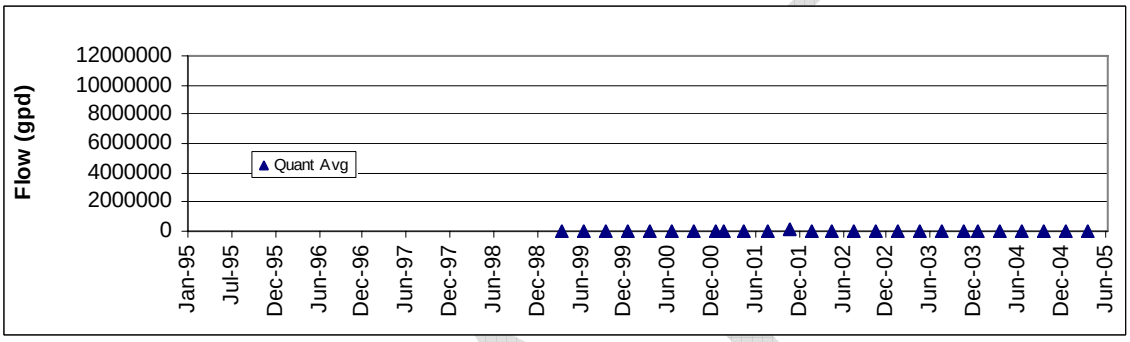

Figure A-6: Atlantic Research Flow Outfall 102

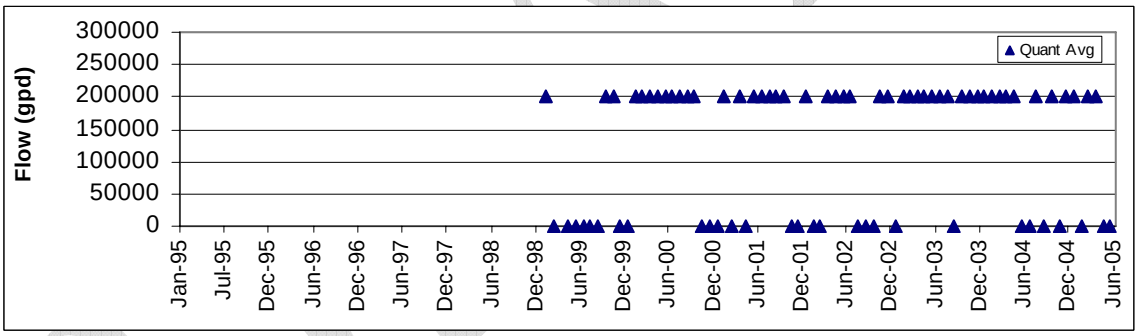

Figure A-7: Balls Ford Composting Flow Outfall 1

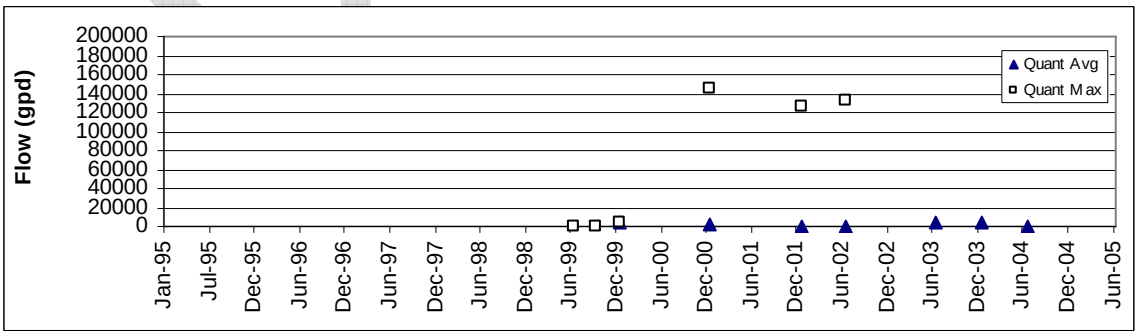

Figure A-8: Colonial Pipeline Flow Outfall 1

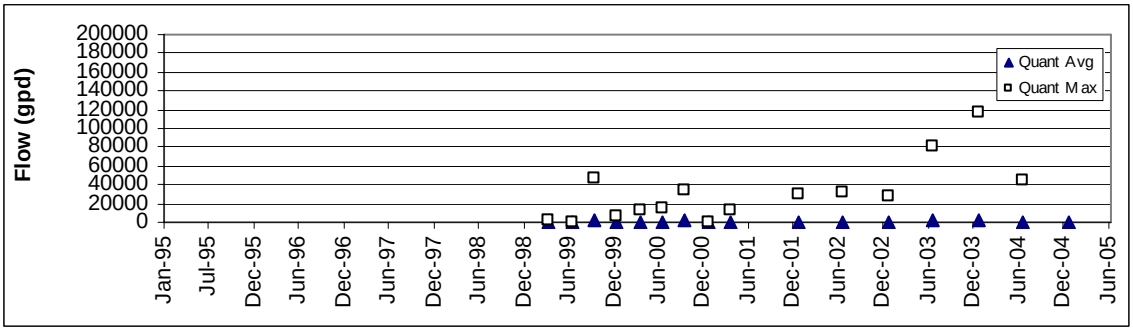

Figure A-9: Colonial Pipeline Flow Outfall 2

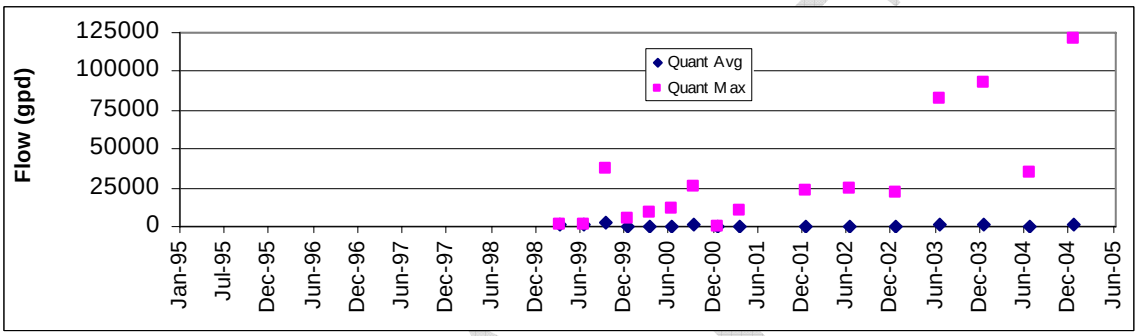

Figure A-10: Colonial Pipeline Bull Run Flow Outfall 1

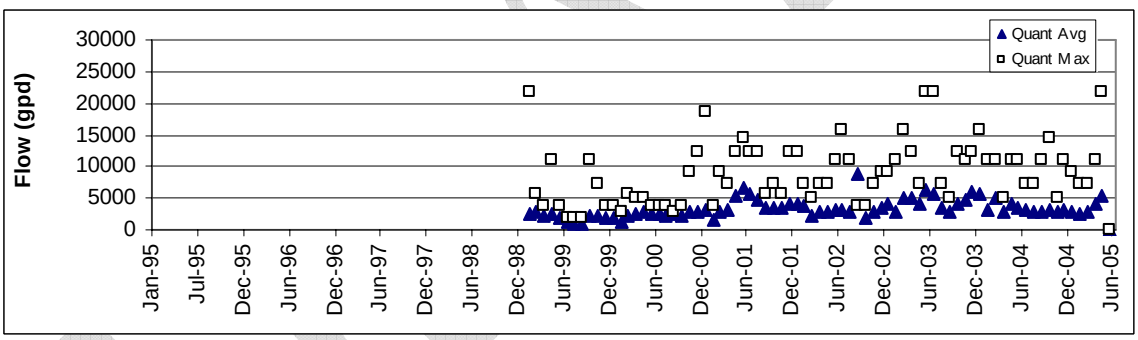

Figure A-11: Evergreen Country Club Flow Outfall 1

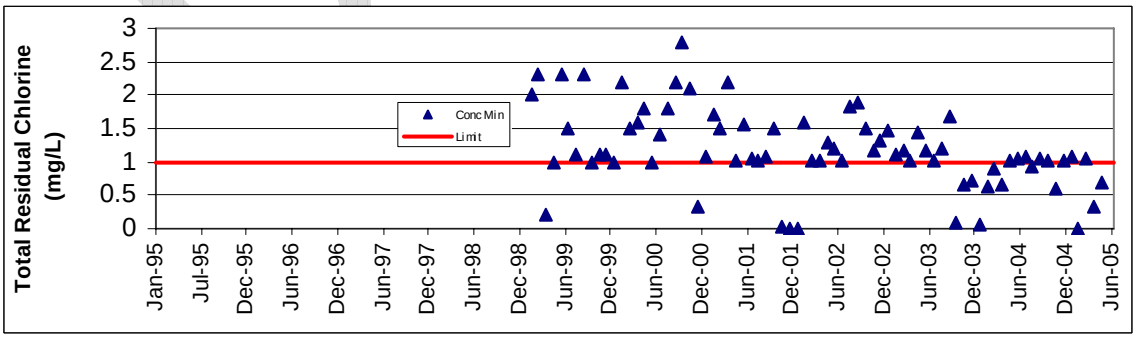

Figure A-12: Evergreen Country Club Total Residual Chlorine Outfall 1

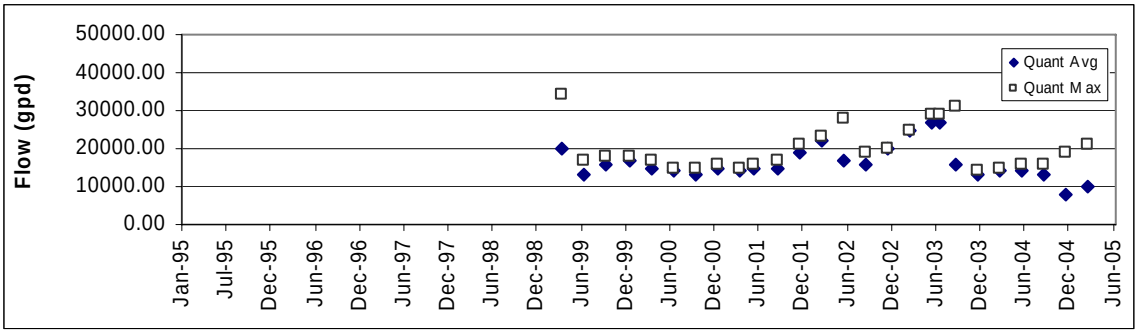

Figure A-13: IBM Corporation Flow Values from Outfall 1

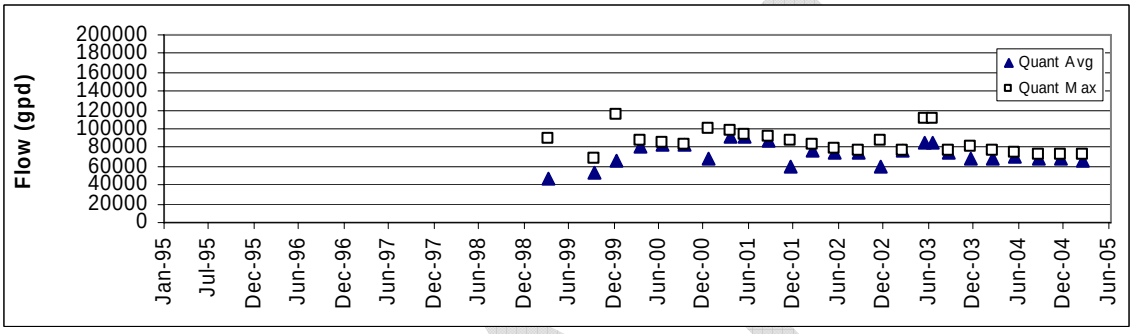

Figure A-14: IBM Corporation Flow Values from Outfall 2

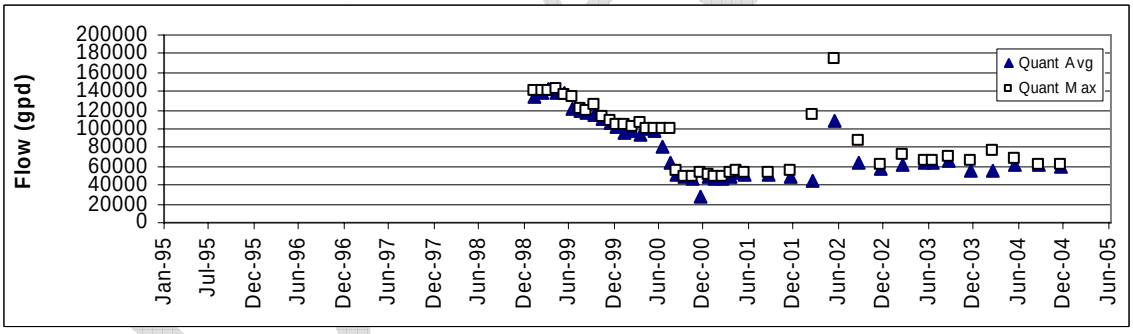

Figure A-15: IBM Corporation Flow Values from Outfall 3

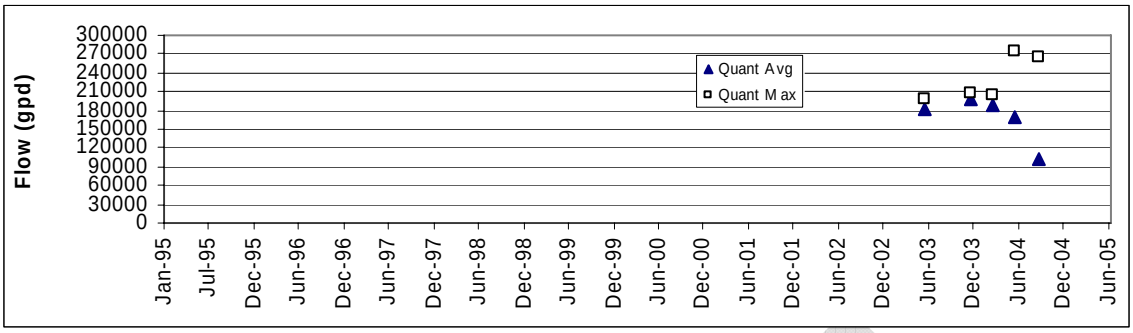

Figure A-16: IBM Corporation Flow Values from Outfall 4

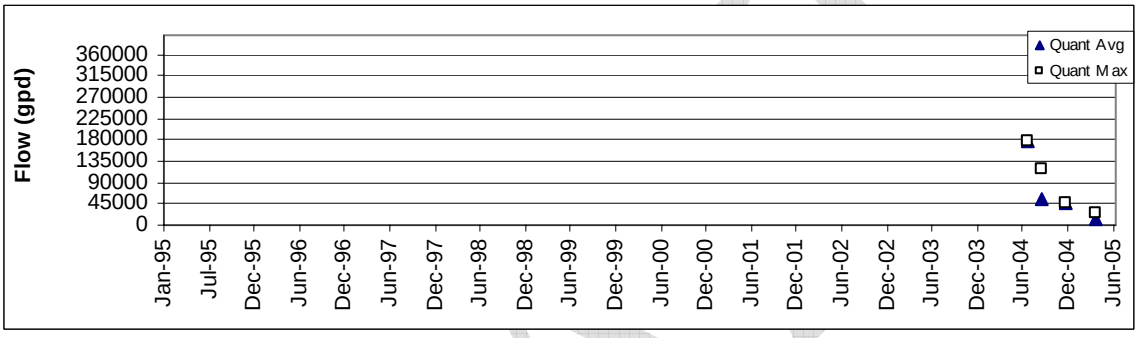

Figure A-17: Loudoun Composting Flow Outfall 1

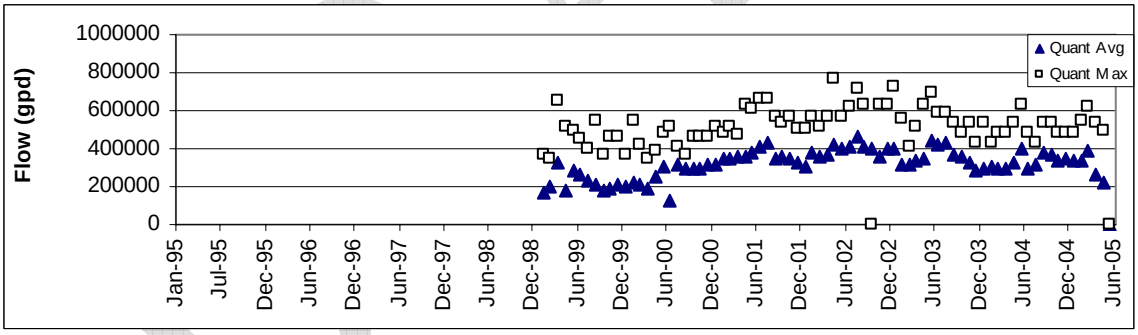

Figure A-18: Man City Flow Outfall 1

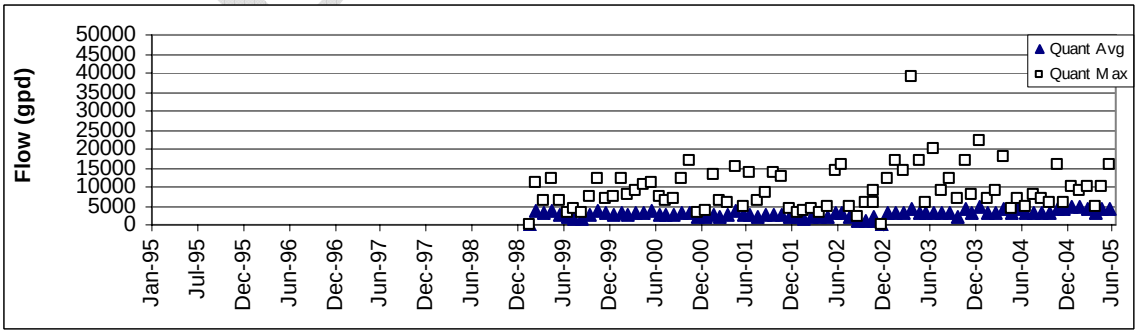

Figure A-19: New Baltimore Shell Flow Outfall 1

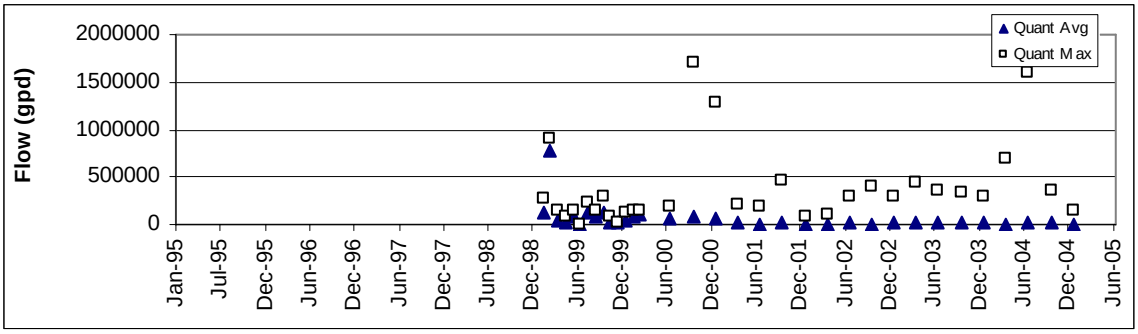

Figure A-20: Sunoco Manassas Flow Outfall 1

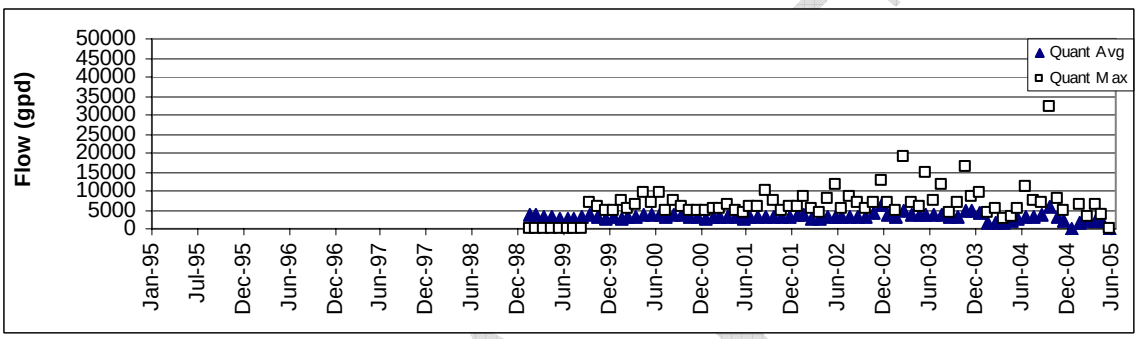

Figure A-21: Town & Country Flow Outfall 1

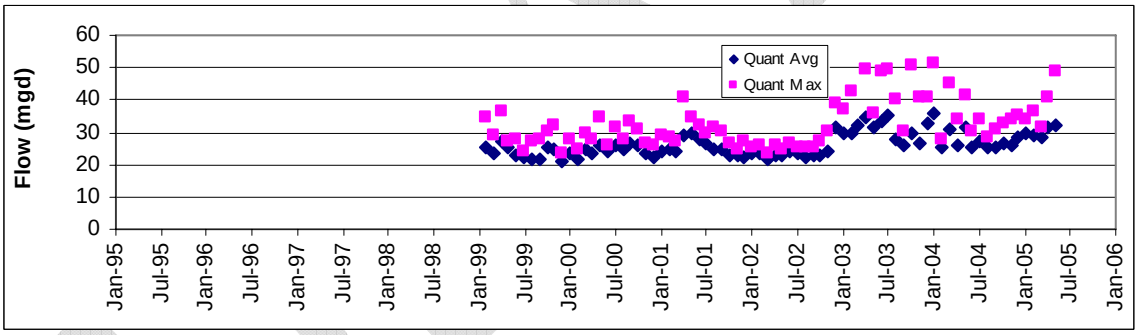

Figure A-22: UOSA Flow Outfall 1

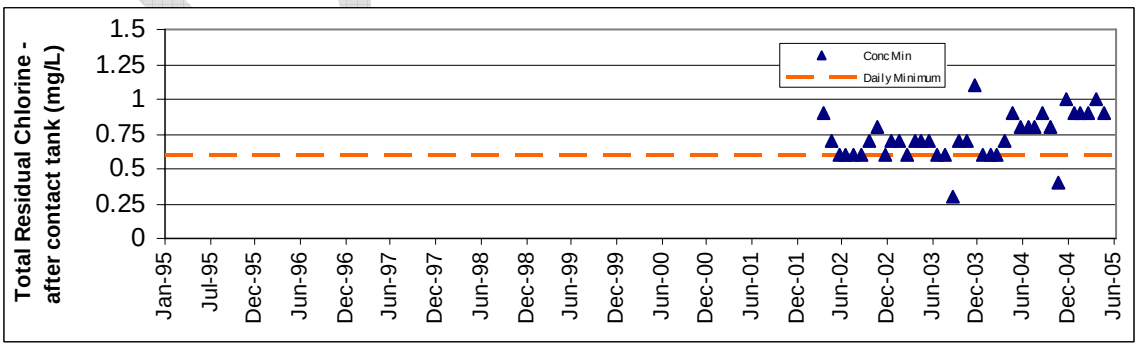

Figure A-23: UOSA Total Residual Chlorine Outfall 1

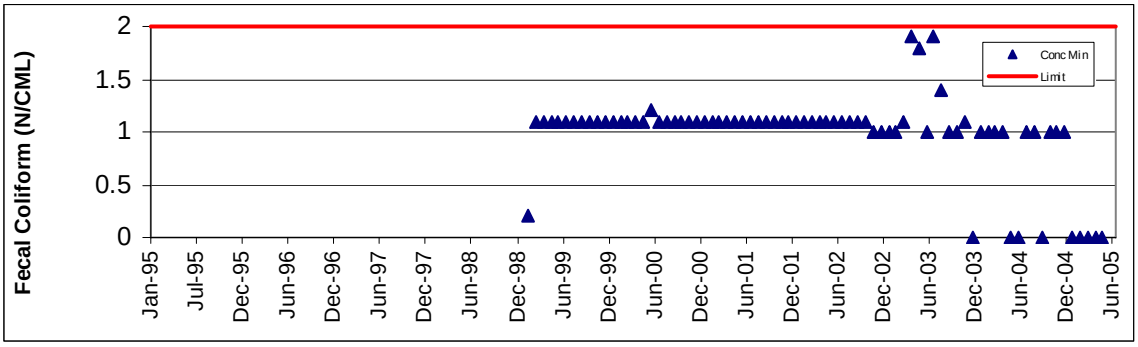

Figure A-24: UOSA Fecal Coliform Outfall 1

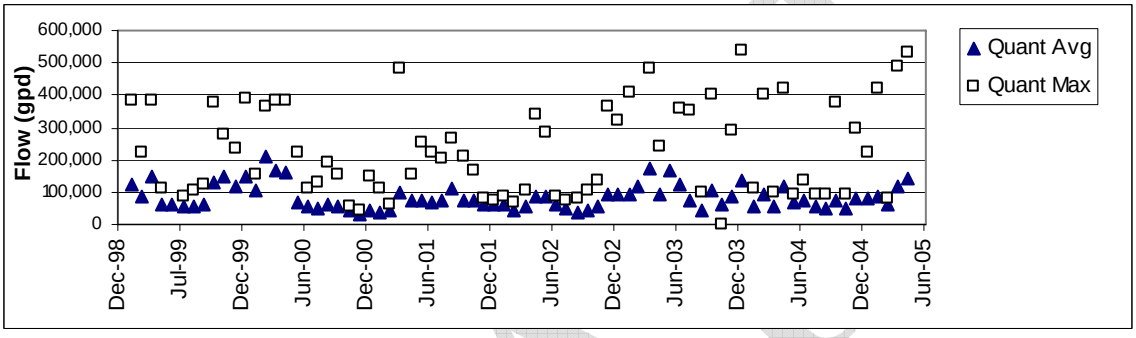

Figure A-25: Vint Hills DMR Flow

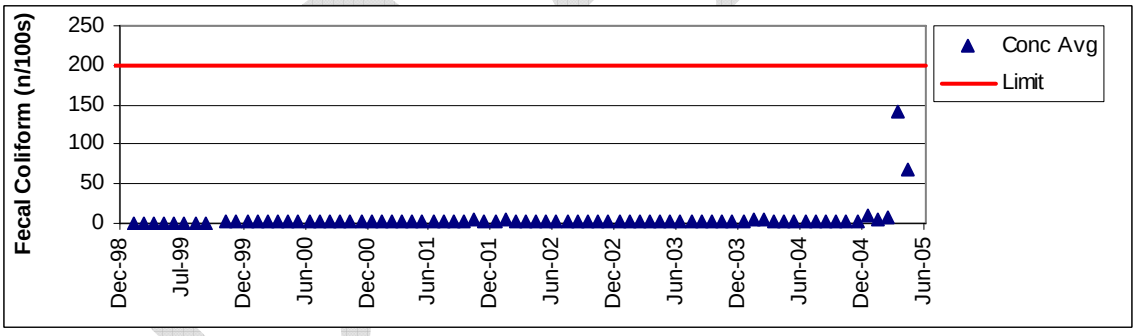

Figure A-26: Vint Hills Fecal Coliform

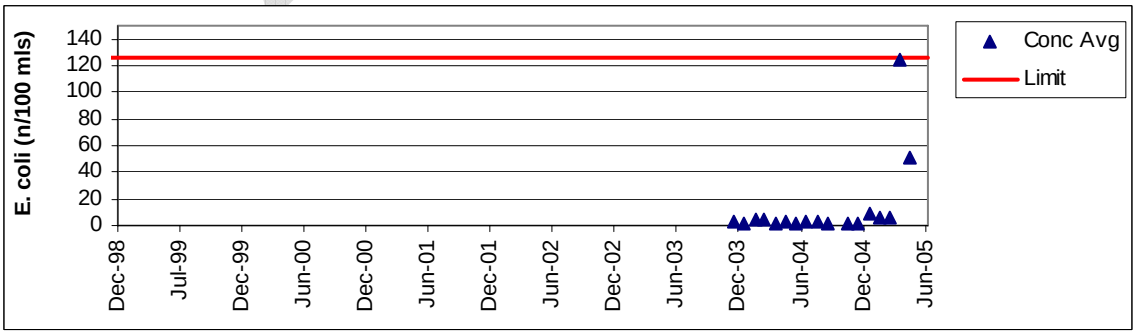

Figure A-27: Vint Hills E. Coli

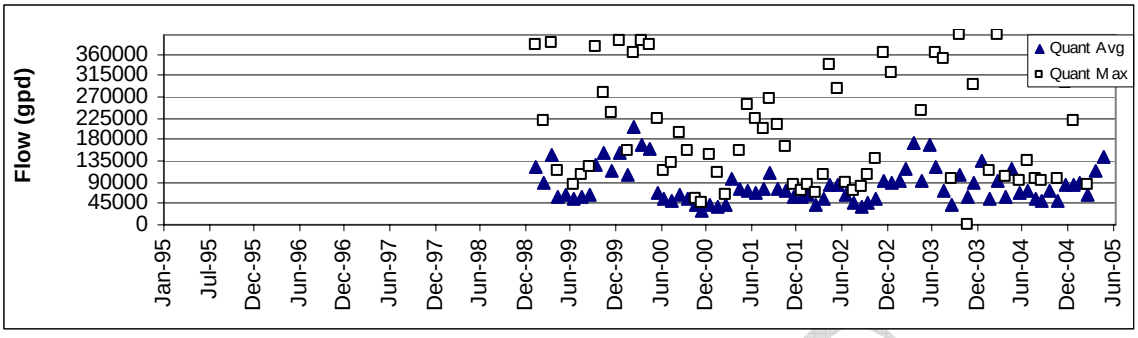

Figure A-28: Woodbridge MHP Flow

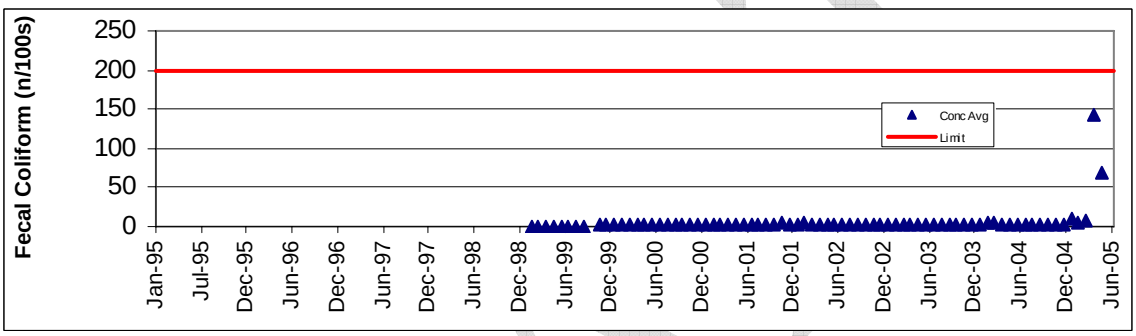

Figure A-29: Woodbridge MHP Fecal Coliform

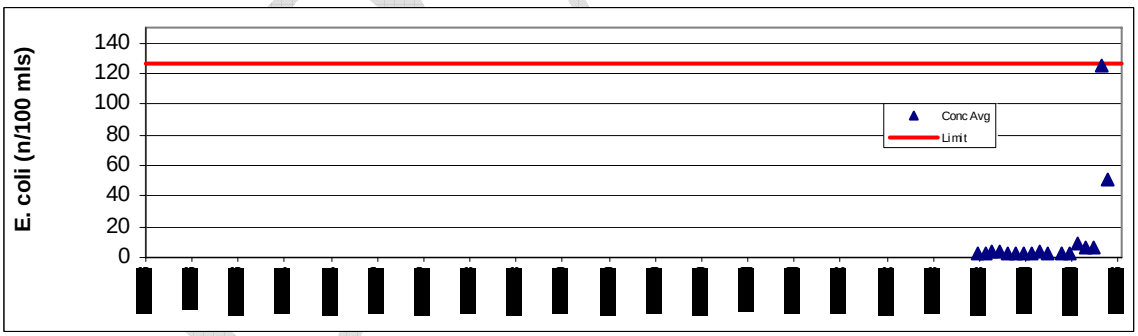

Figure A-30: Woodbridge MHP E. Coli

Appendix B

Model Representation of Stream Reach Networks

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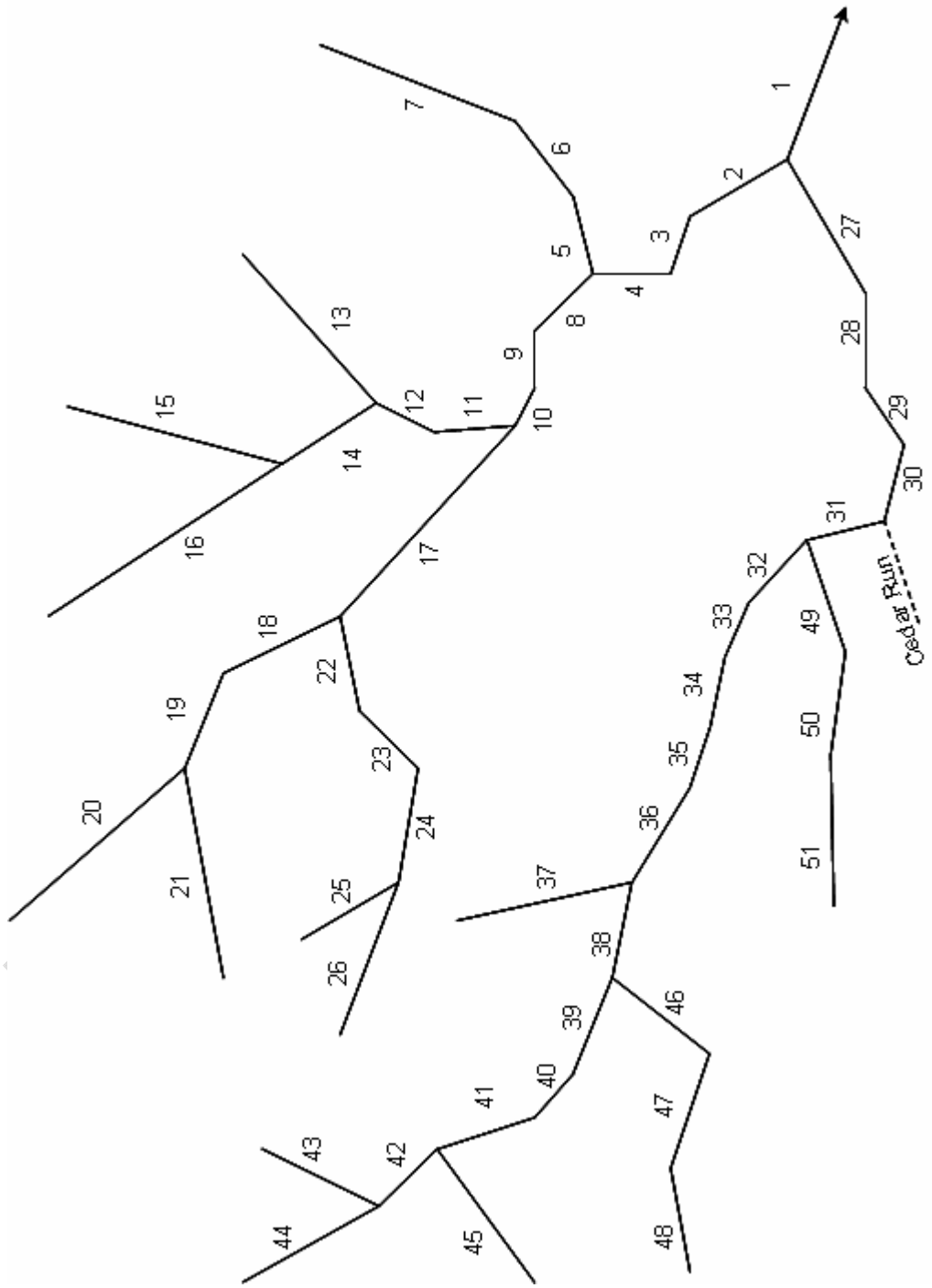

Model representation of Occoquan River Model Stream Network

Appendix C

Monthly Fecal Coliform Build-up Rates

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Table C-1: Monthly Build-up Rates cfu/ac/day (January to June)

Land use	Jan	Feb	Mar	Apr	May	Jun
Forest	2.50E+07	2.50E+07	2.50E+07	2.50E+07	2.50E+07	2.50E+07
Cropland	3.30E+08	8.40E+08	4.80E+08	9.90E+08	5.20E+08	1.90E+07
Pasture	1.30E+09	1.40E+09	1.30E+09	1.40E+09	1.30E+09	1.20E+09
Low Intensity Residential	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09
Commercial/Industrial /Transportation	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08
Other Urban	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08
High Intensity Residential	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09

Table C-2: Monthly Build-up Rates cfu/ac/day (July to December)

Land Use	Jul	Aug	Sep	Oct	Nov	Dec
Forest	2.50E+07	2.50E+07	2.50E+07	2.50E+07	2.50E+07	2.50E+07
Cropland	1.90E+07	5.30E+08	4.80E+08	9.90E+08	3.30E+08	8.40E+08
Pasture	1.20E+09	1.30E+09	1.30E+09	1.40E+09	1.30E+09	1.40E+09
Low Intensity Residential	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09
Commercial/Industrial /Transportation	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08
Other Urban	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08	5.59E+08
High Intensity Residential	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09	3.52E+09

Table C-3: Broad Run (VAN-A19R-01) Monthly Direct Deposition Rates (cfu/ac/day)

Month	Direct Cattle	Direct Septic	Direct Wildlife
1	1.56E+12	2.97E+09	3.49E+11
2	2.19E+12	2.68E+09	3.16E+11
3	3.3E+12	2.97E+09	3.49E+11
4	3.19E+12	2.87E+09	3.38E+11
5	4.17E+12	2.97E+09	3.49E+11
6	4.04E+12	2.87E+09	3.38E+11
7	4.17E+12	2.97E+09	3.49E+11
8	3.3E+12	2.97E+09	3.49E+11
9	2.35E+12	2.87E+09	3.38E+11
10	2.43E+12	2.97E+09	3.49E+11
11	1.51E+12	2.87E+09	3.38E+11
12	1.56E+12	2.97E+09	3.49E+11

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Table C-4: Broad Run (VAN-A19R-02) Monthly Direct Deposition Rates (cfu/ac/day)

Month	Direct Cattle	Direct Septic	Direct Wildlife
1	3.79E+11	4.25E+09	6.46E+11
2	5.33E+11	3.83E+09	5.83E+11
3	8.03E+11	4.25E+09	6.46E+11
4	7.76E+11	4.11E+09	6.25E+11
5	1.01E+12	4.25E+09	6.46E+11
6	9.79E+11	4.11E+09	6.25E+11
7	1.01E+12	4.25E+09	6.46E+11
8	8.03E+11	4.25E+09	6.46E+11
9	5.71E+11	4.11E+09	6.25E+11
10	5.91E+11	4.25E+09	6.46E+11
11	3.67E+11	4.11E+09	6.25E+11
12	3.79E+11	4.25E+09	6.46E+11

Table C-5: Bull Run Monthly Direct Deposition Rates (cfu/ac/day)

Month	Direct Cattle	Direct Septic	Direct Wildlife
1	5.93E+12	2.09E+10	5.43E+12
2	8.18E+12	1.89E+10	4.97E+12
3	1.22E+13	2.09E+10	5.5E+12
4	1.18E+13	2.02E+10	5.33E+12
5	1.53E+13	2.09E+10	5.5E+12
6	1.48E+13	2.02E+10	5.33E+12
7	1.53E+13	2.09E+10	5.5E+12
8	1.22E+13	2.09E+10	5.5E+12
9	8.75E+12	2.02E+10	5.33E+12
10	9.04E+12	2.09E+10	5.5E+12
11	5.74E+12	2.02E+10	5.33E+12
12	5.93E+12	2.09E+10	5.5E+12

Table C-6: Kettle Run Monthly Direct Deposition Rates (cfu/ac/day)

Month	Direct Cattle	Direct Septic	Direct Wildlife
1	3.07E+11	2.9E+09	1.03E+11
2	4.82E+11	2.61E+09	9.25E+10
3	7.6E+11	2.9E+09	1.03E+11
4	7.36E+11	2.8E+09	9.91E+10
5	9.89E+11	2.9E+09	1.03E+11
6	9.55E+11	2.8E+09	9.91E+10
7	9.89E+11	2.9E+09	1.03E+11
8	7.6E+11	2.9E+09	1.03E+11
9	5.17E+11	2.8E+09	9.91E+10
10	5.34E+11	2.9E+09	1.03E+11
11	2.96E+11	2.8E+09	9.91E+10
12	3.07E+11	2.9E+09	1.03E+11

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Table C-7: Little Bull Run Monthly Direct Deposition Rates (cfu/ac/day)

Month	Direct Cattle	Direct Septic	Direct Wildlife
1	3.2E+11	7.59E+08	1.23E+11
2	4.34E+11	6.86E+08	1.11E+11
3	6.42E+11	7.59E+08	1.23E+11
4	6.21E+11	7.35E+08	1.19E+11
5	8.03E+11	7.59E+08	1.23E+11
6	7.76E+11	7.35E+08	1.19E+11
7	8.03E+11	7.59E+08	1.23E+11
8	6.42E+11	7.59E+08	1.23E+11
9	4.66E+11	7.35E+08	1.19E+11
10	4.81E+11	7.59E+08	1.23E+11
11	3.1E+11	7.35E+08	1.19E+11
12	3.2E+11	7.59E+08	1.23E+11

Table C-8: Occoquan River Monthly Direct Deposition Rates (cfu/ac/day)

Month	Direct Cattle	Direct Septic	Direct Wildlife
1	1.88E+10	2.36E+09	2.38E+11
2	2.77E+10	2.13E+09	2.15E+11
3	4.26E+10	2.36E+09	2.38E+11
4	4.12E+10	2.28E+09	2.31E+11
5	5.45E+10	2.36E+09	2.38E+11
6	5.28E+10	2.28E+09	2.31E+11
7	5.45E+10	2.36E+09	2.38E+11
8	4.26E+10	2.36E+09	2.38E+11
9	2.98E+10	2.28E+09	2.31E+11
10	3.07E+10	2.36E+09	2.38E+11
11	1.82E+10	2.28E+09	2.31E+11
12	1.88E+10	2.36E+09	2.38E+11

Table C-9: Popes Head Monthly Direct Deposition Rates (cfu/ac/day)

Month	Direct Cattle	Direct Septic	Direct Wildlife
1	1.37E+10	1.33E+09	2.12E+11
2	1.93E+10	1.21E+09	1.92E+11
3	2.9E+10	1.33E+09	2.12E+11
4	2.81E+10	1.29E+09	2.06E+11
5	3.69E+10	1.33E+09	2.12E+11
6	3.57E+10	1.29E+09	2.06E+11
7	3.69E+10	1.33E+09	2.12E+11
8	2.9E+10	1.33E+09	2.12E+11
9	2.07E+10	1.29E+09	2.06E+11
10	2.13E+10	1.33E+09	2.12E+11
11	1.32E+10	1.29E+09	2.06E+11
12	1.37E+10	1.33E+09	2.12E+11

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Table C-10: South Run Monthly Direct Deposition Rates (cfu/ac/day)			
Month	**Direct Cattle**	**Direct Septic**	**Direct Wildlife**
1	4.72E+10	1.62E+09	4.91E+10
2	6.4E+10	1.47E+09	4.44E+10
3	9.44E+10	1.62E+09	4.91E+10
4	9.14E+10	1.57E+09	4.76E+10
5	1.18E+11	1.62E+09	4.91E+10
6	1.14E+11	1.57E+09	4.76E+10
7	1.18E+11	1.62E+09	4.91E+10
8	9.44E+10	1.62E+09	4.91E+10
9	6.85E+10	1.57E+09	4.76E+10
10	7.08E+10	1.62E+09	4.91E+10
11	4.57E+10	1.57E+09	4.76E+10
12	4.72E+10	1.62E+09	4.91E+10

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Appendix D

Water Quality Calibration and Validation Plots

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D.1 Broad Run (Segment VAN-A19R-01)

Figure D-1: Fecal Coliform Calibration Broad Run (Segment VAN-A19R-01)

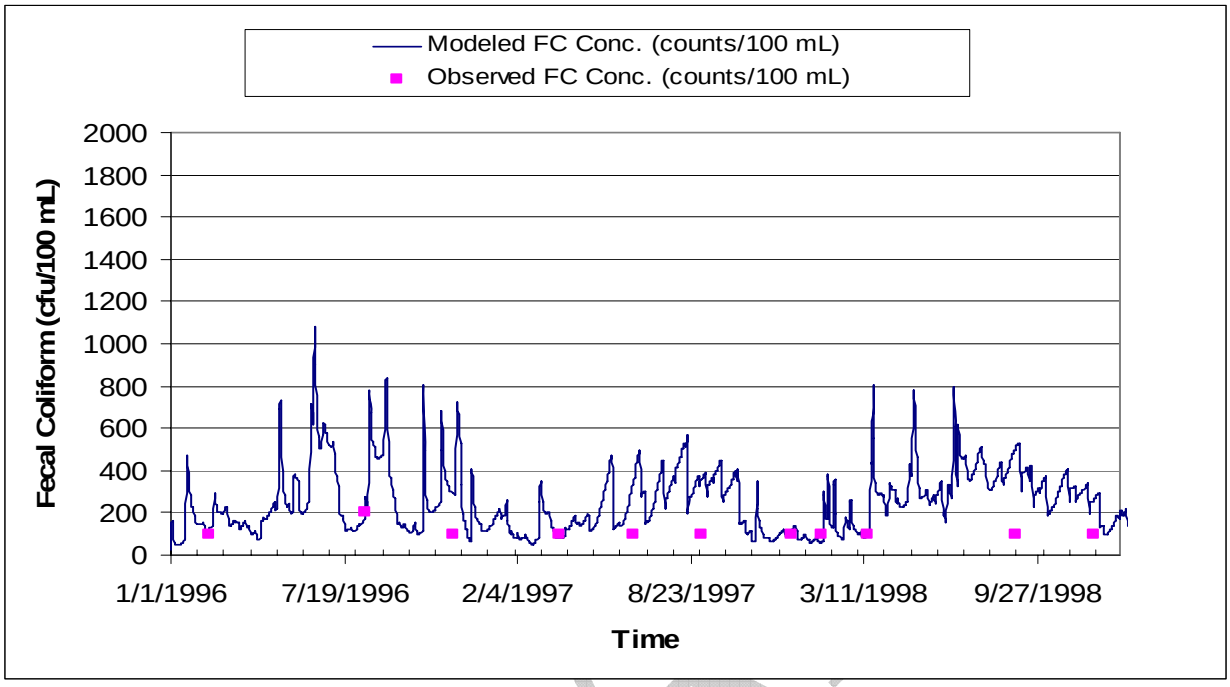
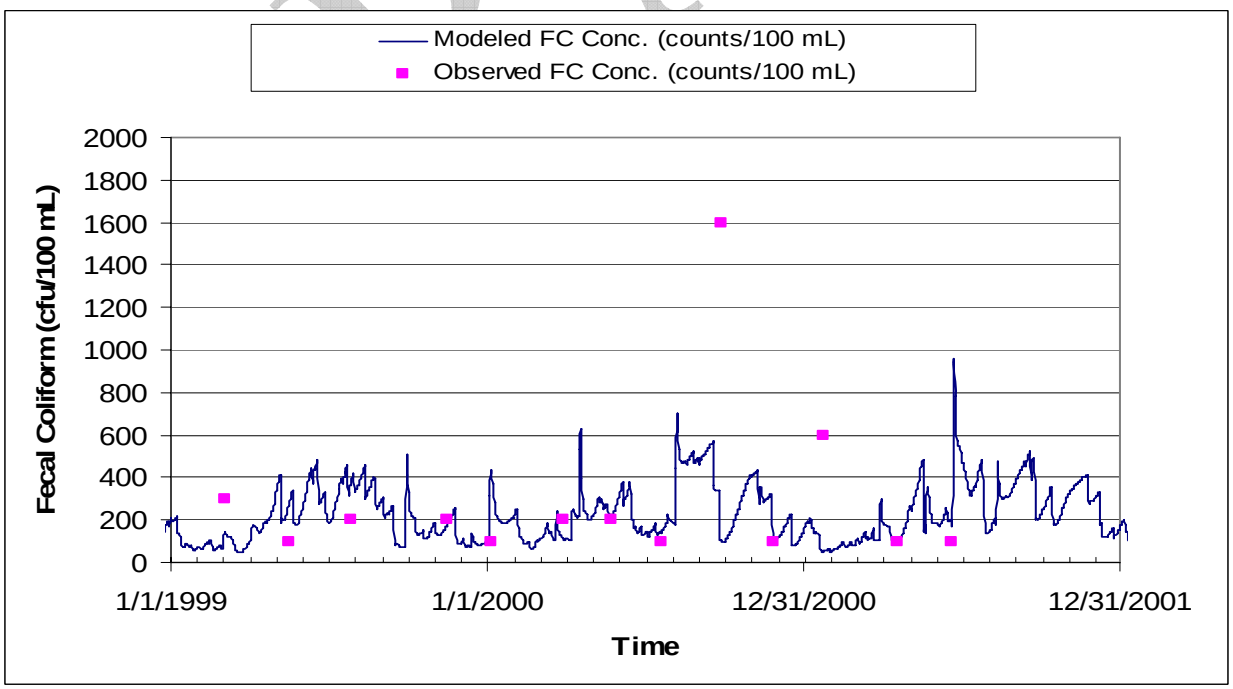


Figure D-2: Fecal Coliform Validation Broad Run (Segment VAN-A19R-01)



D.2 Broad Run (Segment VAN-A19R-02)

Figure D-3: Fecal Coliform Calibration Broad Run (Segment VAN-A19R-02)

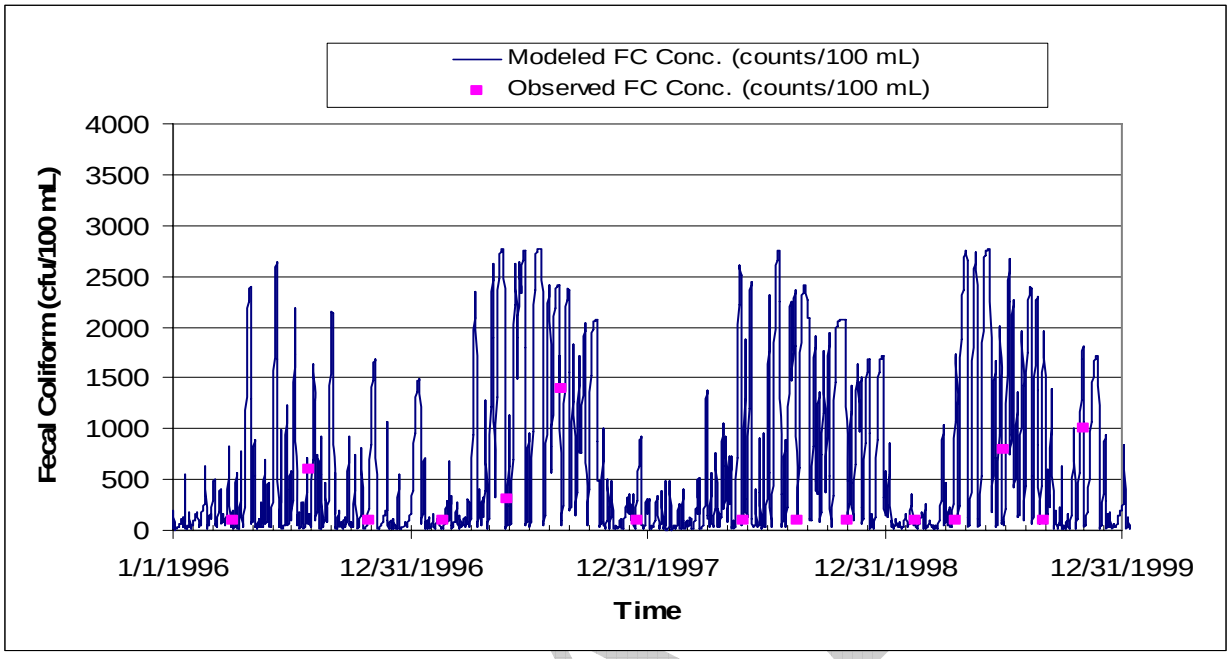
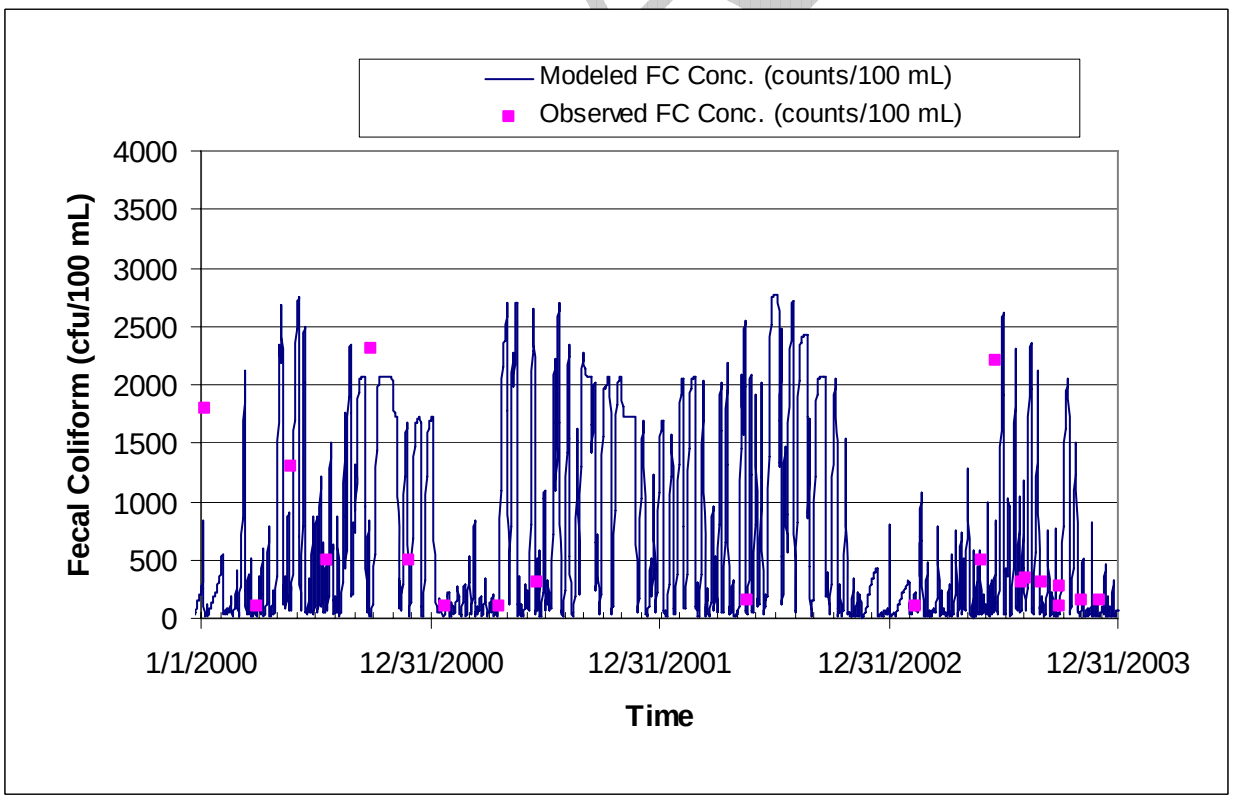


Figure D-4: Fecal Coliform Validation Broad Run (Segment VAN-A19R-02)



D.3 Bull Run (Segment VAN-A23R-01)

Figure D-5: Fecal Coliform Calibration Bull Run (Segment VAN-A23R-01)

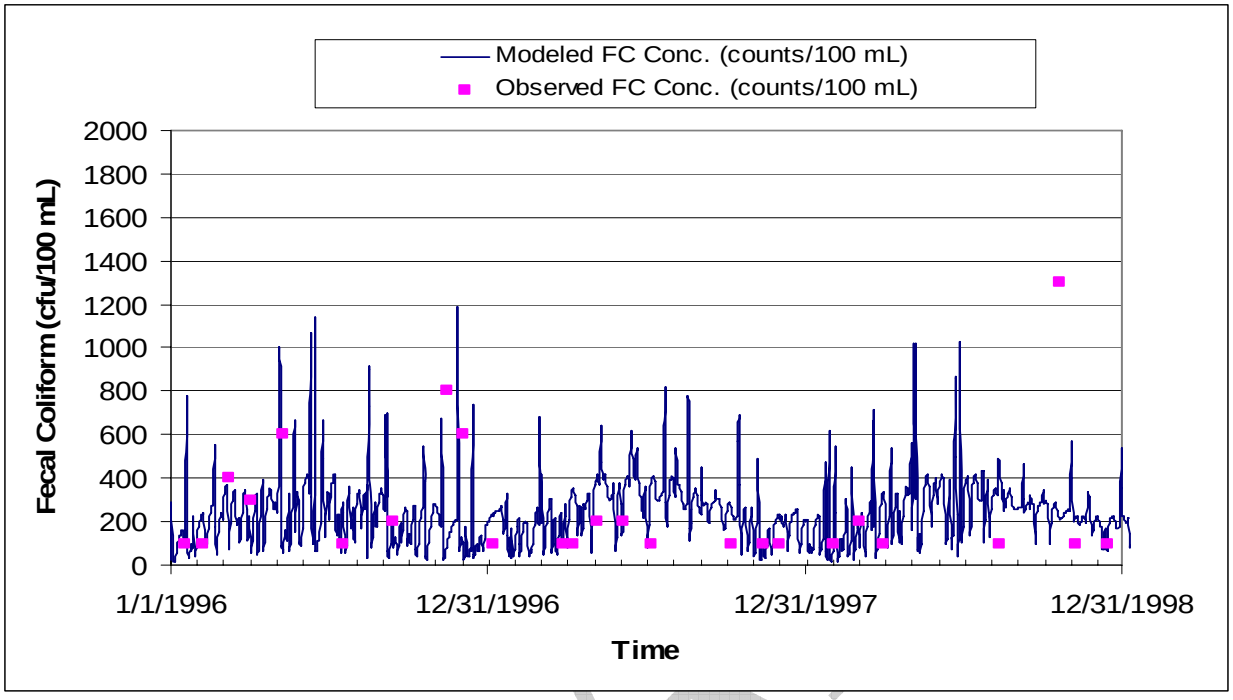
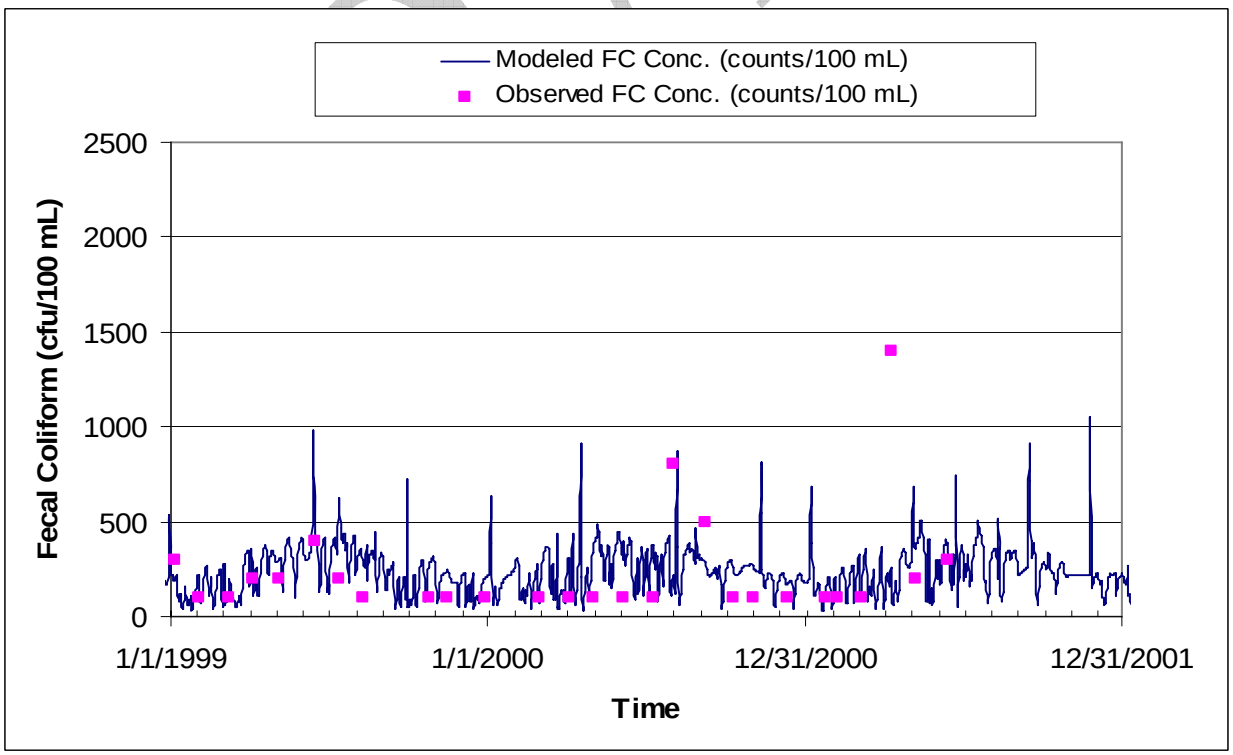


Figure D-6: Fecal Coliform Validation Bull Run (Segment VAN-A23R-01)



D.4 Kettle Run (Segment VAN-A19R-03)

Figure D-7: Fecal Coliform Calibration Kettle Run (Segment VAN-A19R-03)

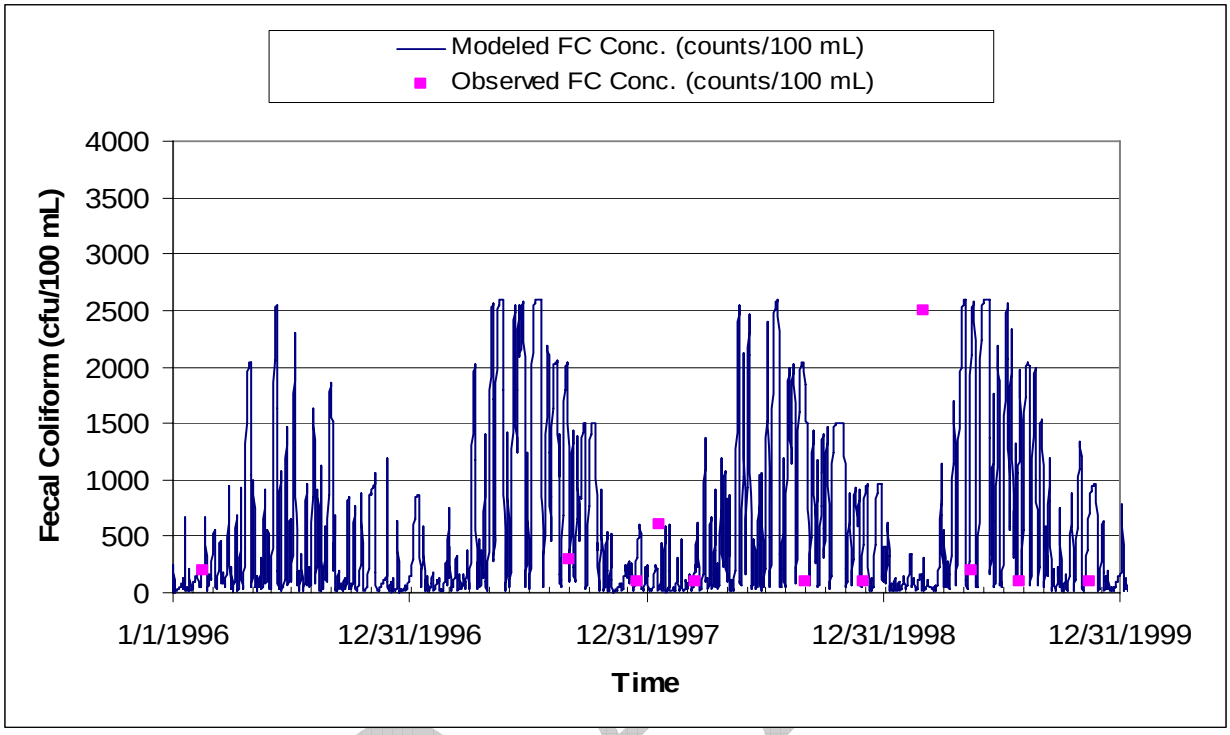
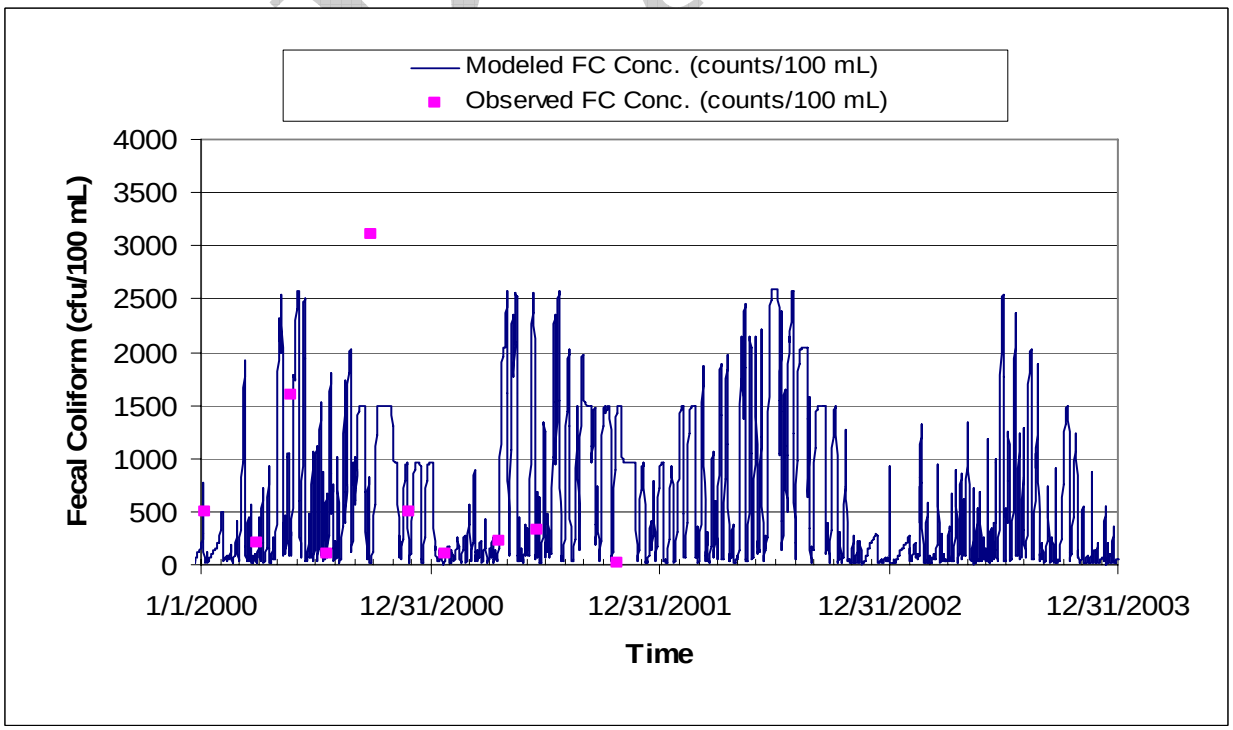


Figure D-8: Fecal Coliform Validation Kettle Run (Segment VAN-A19R-03)



D.5 Little Bull Run (Segment VAN-A21R-01)

Figure D-9: Fecal Coliform Calibration Little Bull Run (Segment VAN-A21R-01)

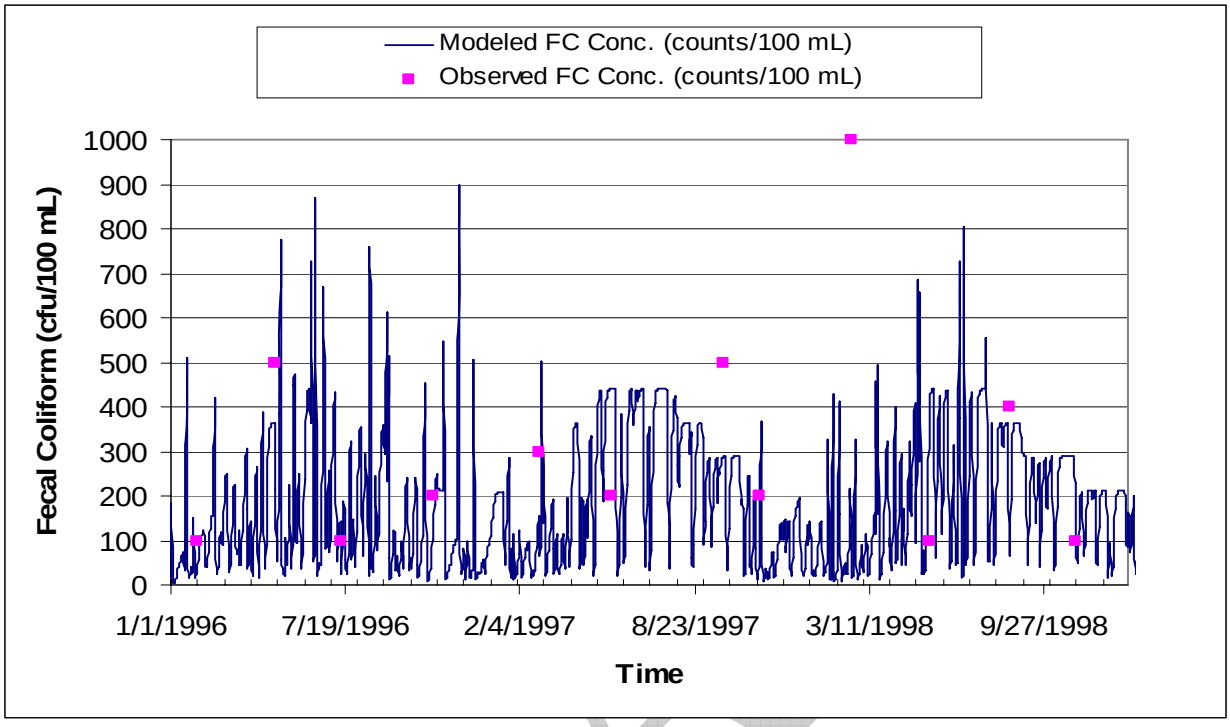
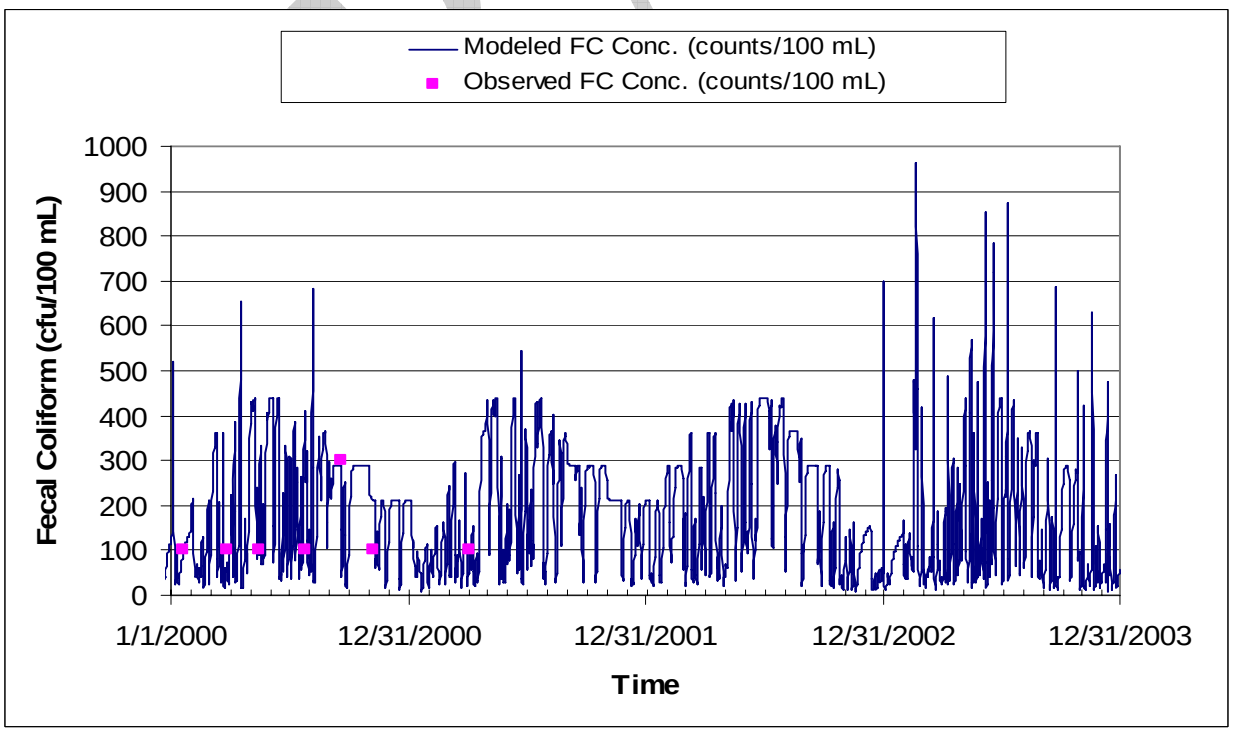


Figure D-10: Fecal Coliform Validation Little Bull Run (Segment VAN-A21R-01)



D.6 Occoquan River (Segment VAN-A20R-01)

Figure D-11: Fecal Coliform Calibration Occoquan River (Segment VAN-A20R-01)

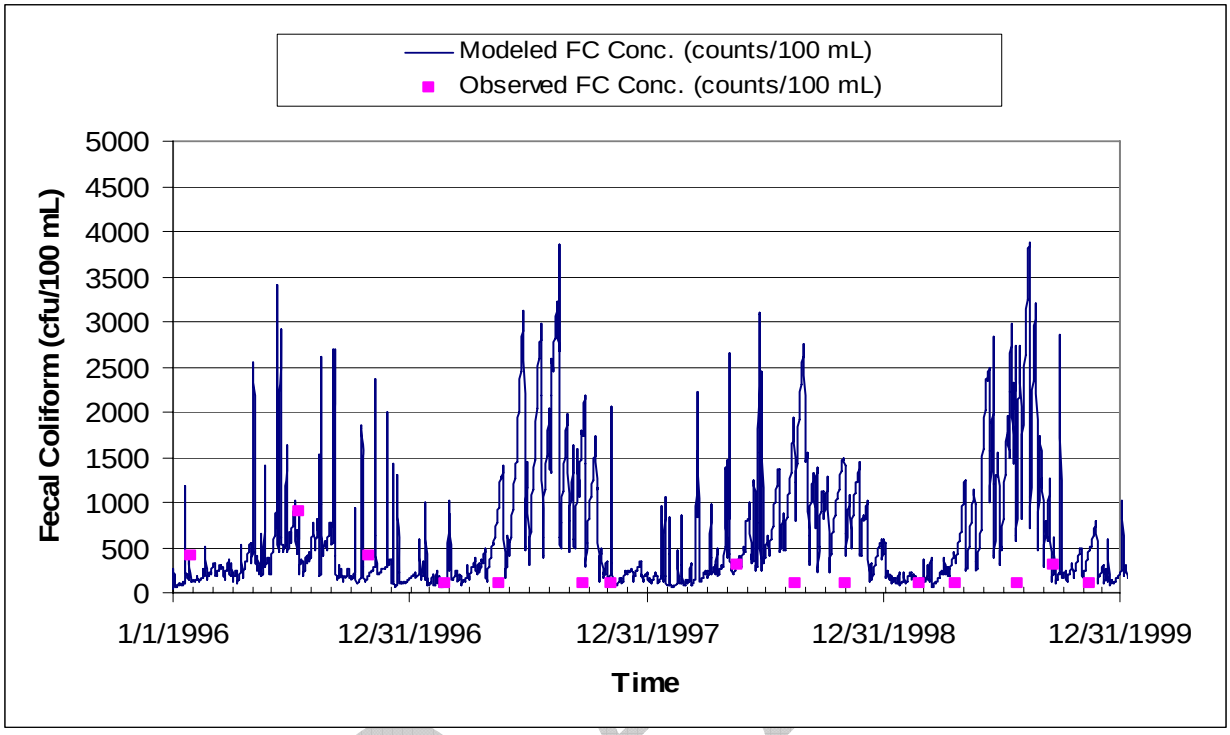
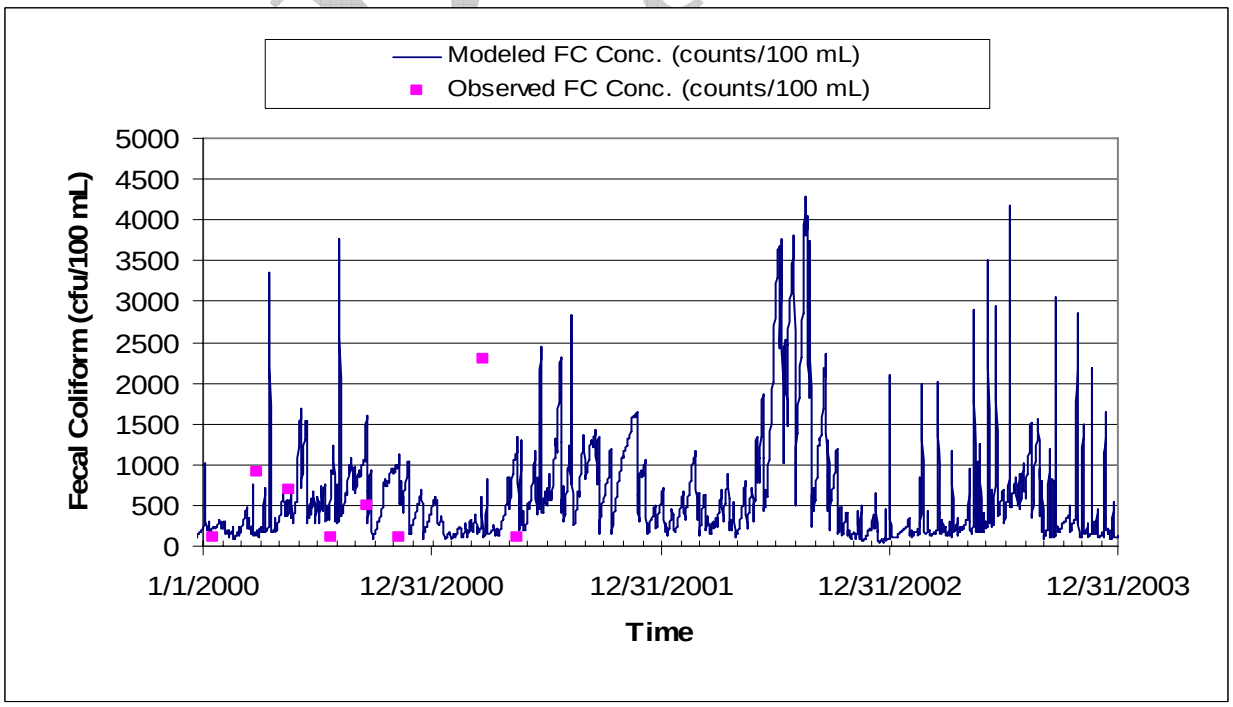


Figure D-12: Fecal Coliform Validation Occoquan River (Segment VAN-A20R-01)



D.7 Popes Head Creek (Segment VAN-A23R-02)

Figure D-13: Fecal Coliform Calibration Popes Head Creek (Segment VAN-A23R-02)

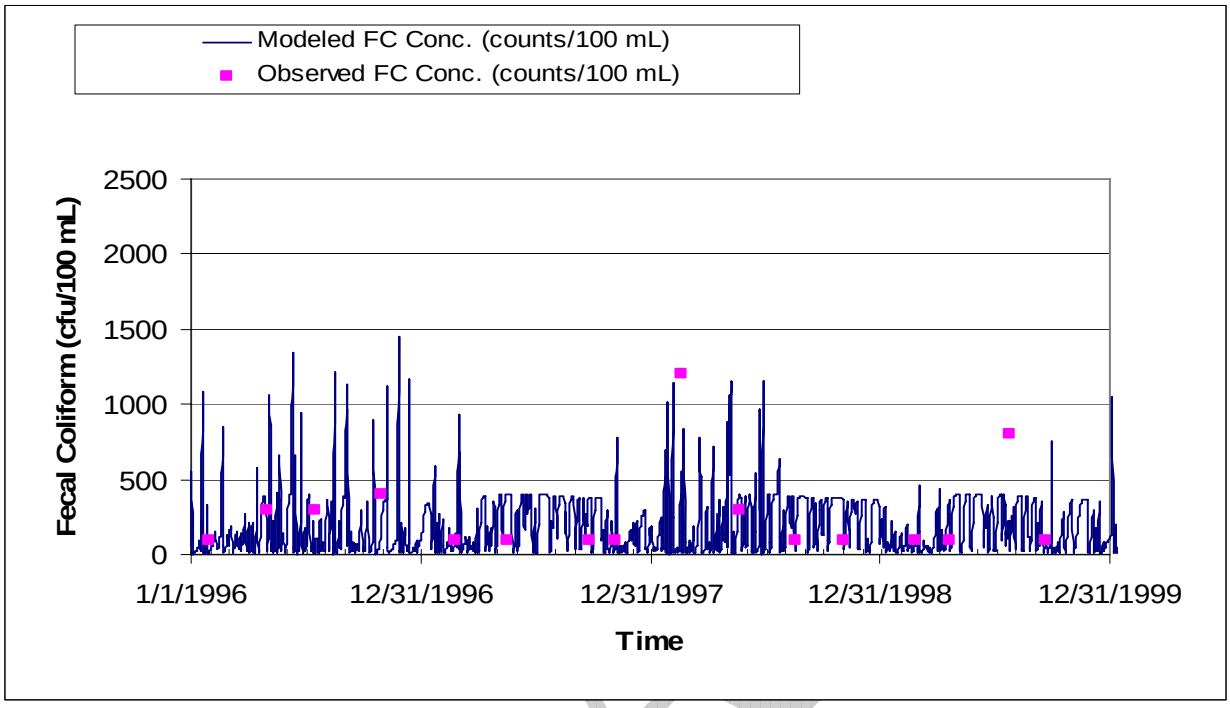
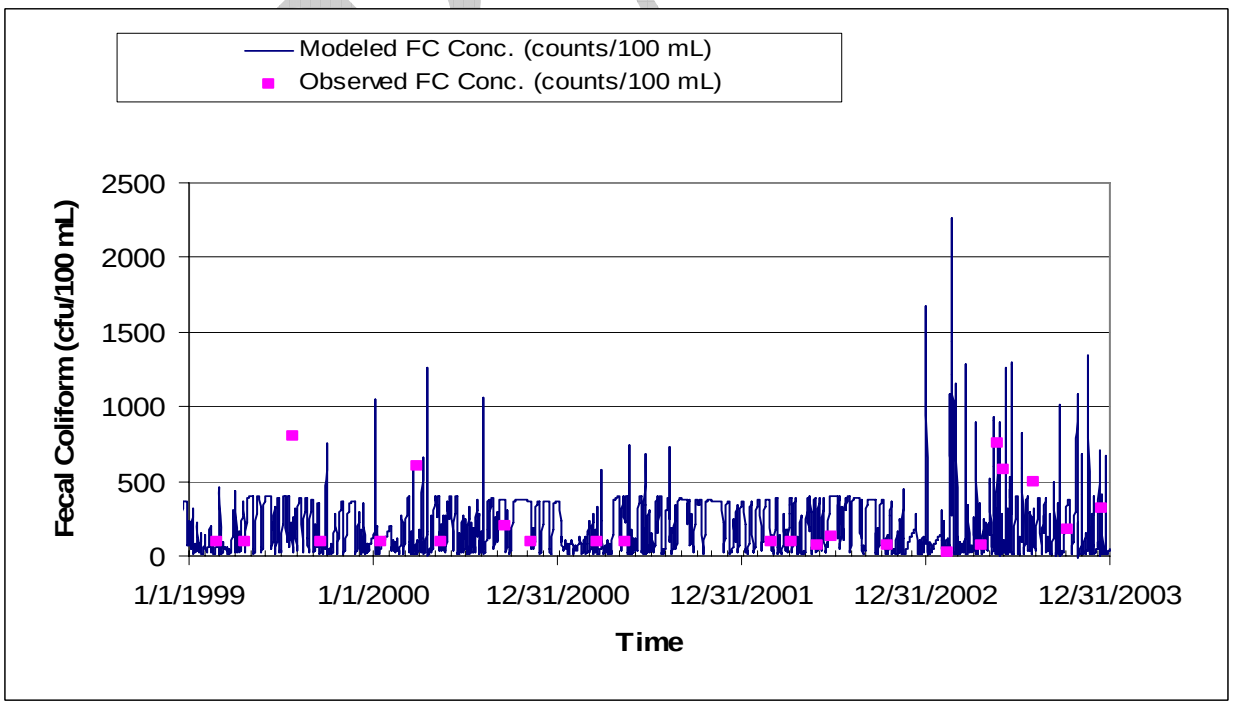


Figure D-14: Fecal Coliform Validation Popes Head Creek (Segment VAN-A23R-02)



D.8 South Run (Segment VAN-A19R-04)

Figure D-15: Fecal Coliform Calibration South Run (Segment VAN-A19R-04)

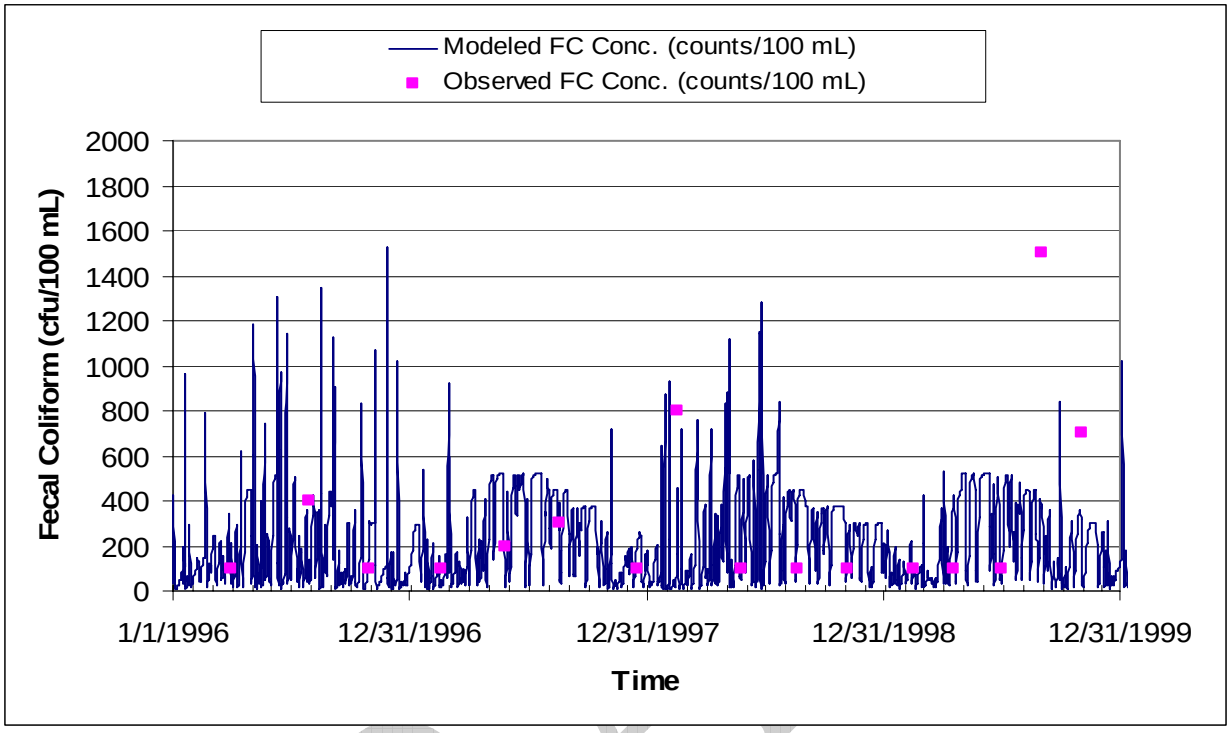
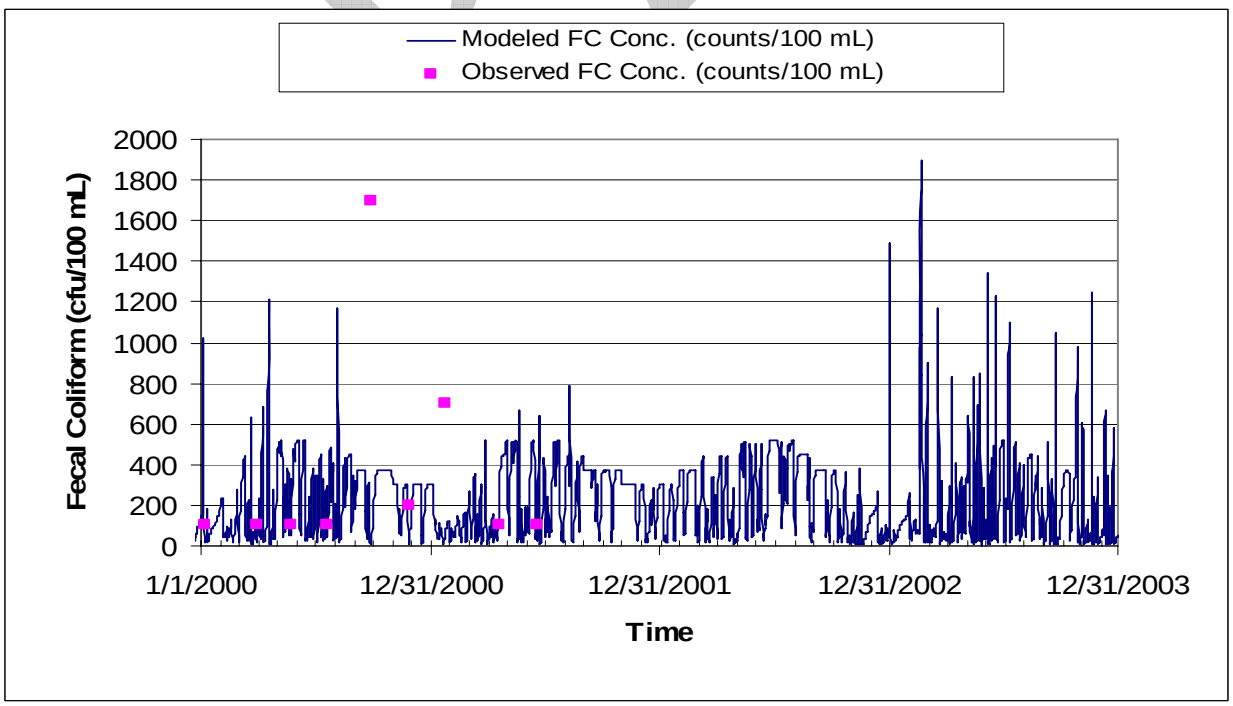


Figure D-16: Fecal Coliform Validation South Run (Segment VAN-A19R-04)



Appendix E

Fecal Coliform and E. coli Geometric Mean and Instantaneous Concentrations under Existing Conditions

DRAFT

E.1 Broad Run (Segment VAN-A19R-01)

Figure E-1: Broad Run (Segment VAN-A19R-01) Fecal Coliform Geometric Mean Existing Conditions

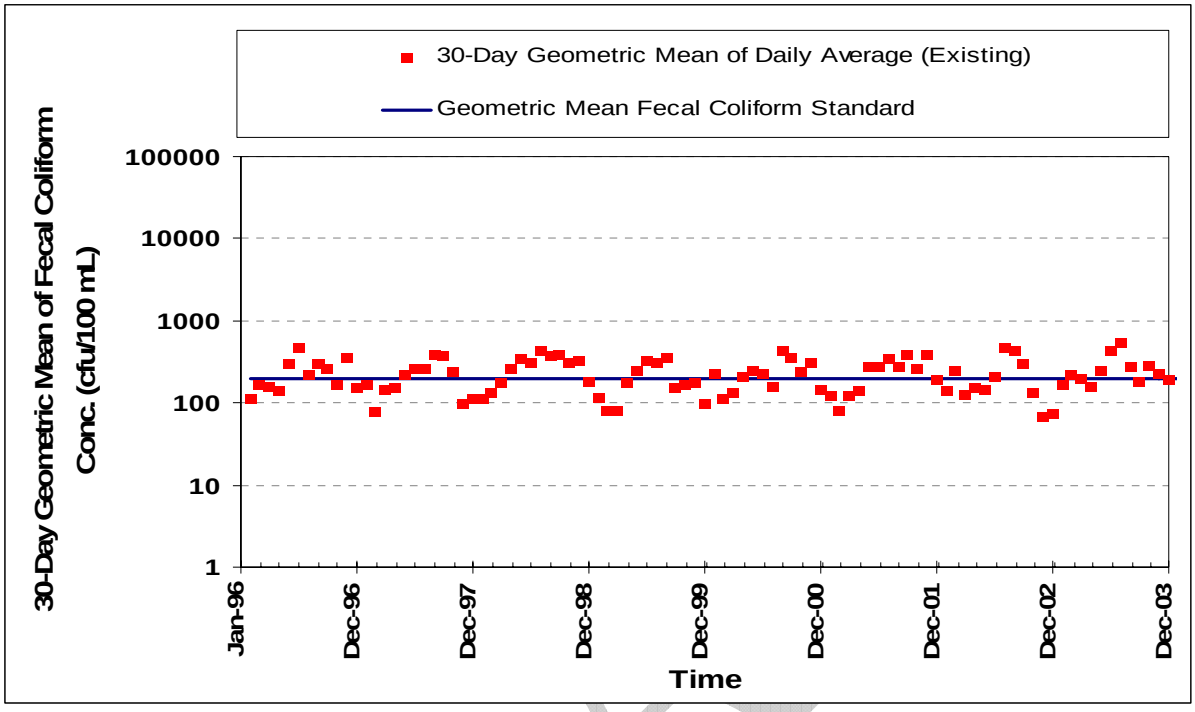


Figure E-2: Broad Run (Segment VAN-A19R-01) E. coli Geometric Mean Existing Conditions

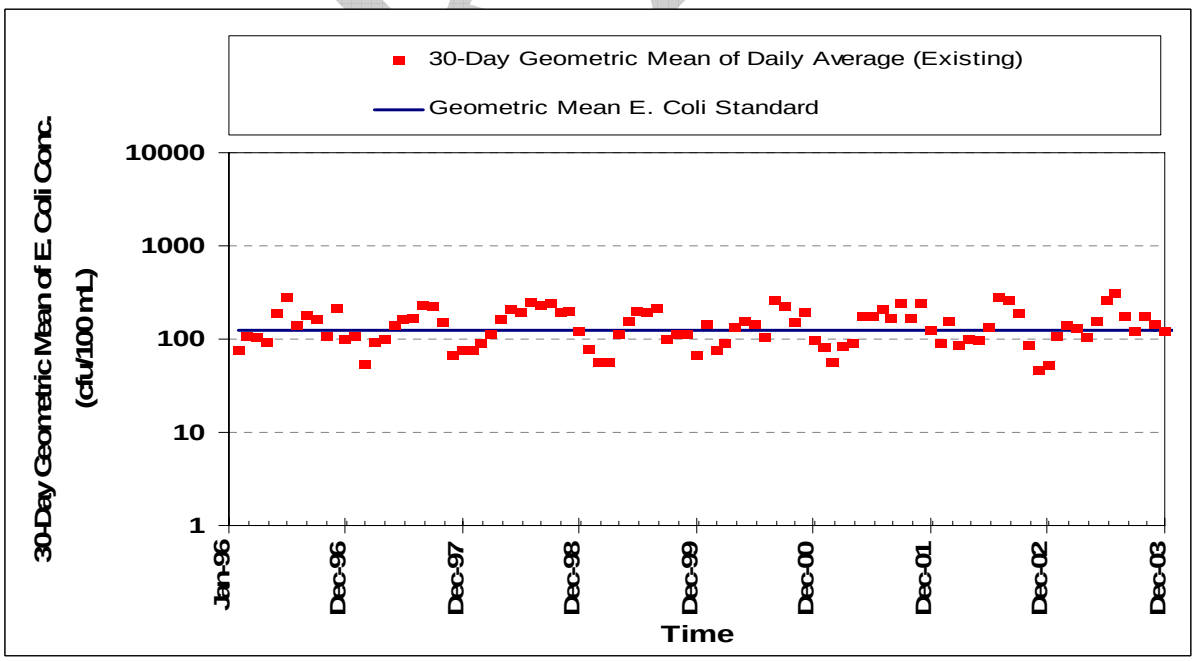


Figure E-3: Broad Run (Segment VAN-A19R-01) Fecal Coliform Instantaneous Existing Conditions

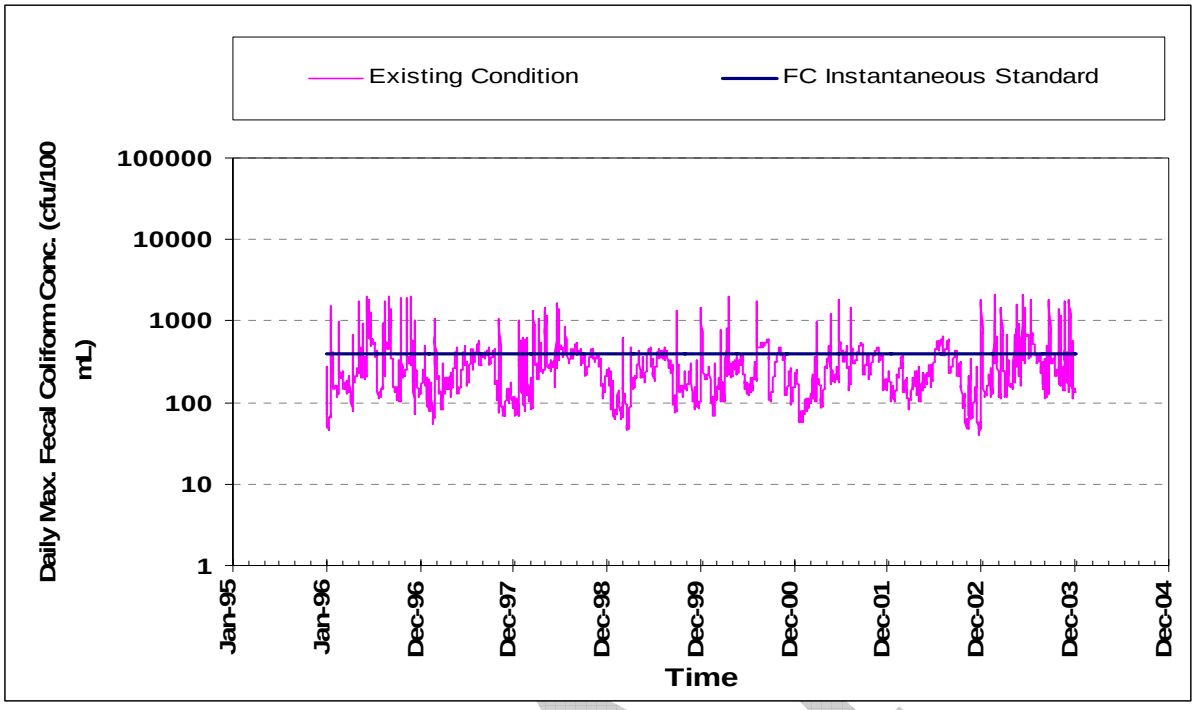
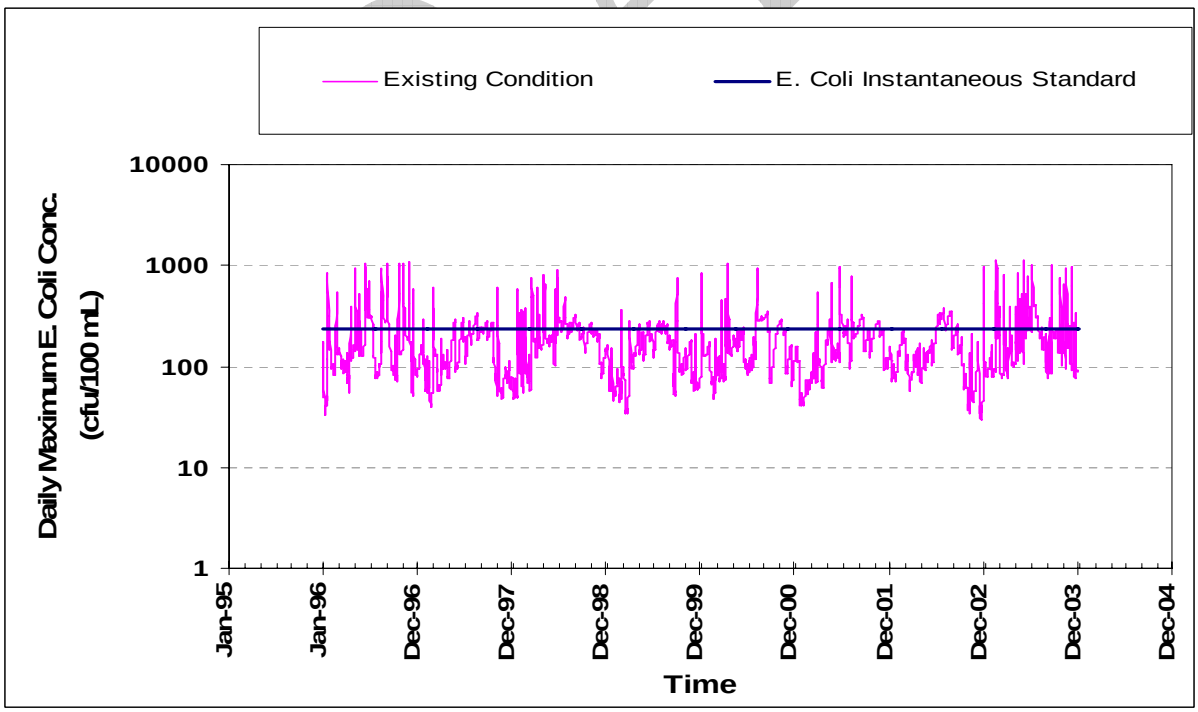


Figure E-4: Broad Run (Segment VAN-A19R-01) E. coli Instantaneous Existing Conditions



E.2 Broad Run (Segment VAN-A19R-02)

Figure E-5: Broad Run (Segment VAN-A19R-02) Fecal Coliform Geometric Mean Existing Conditions

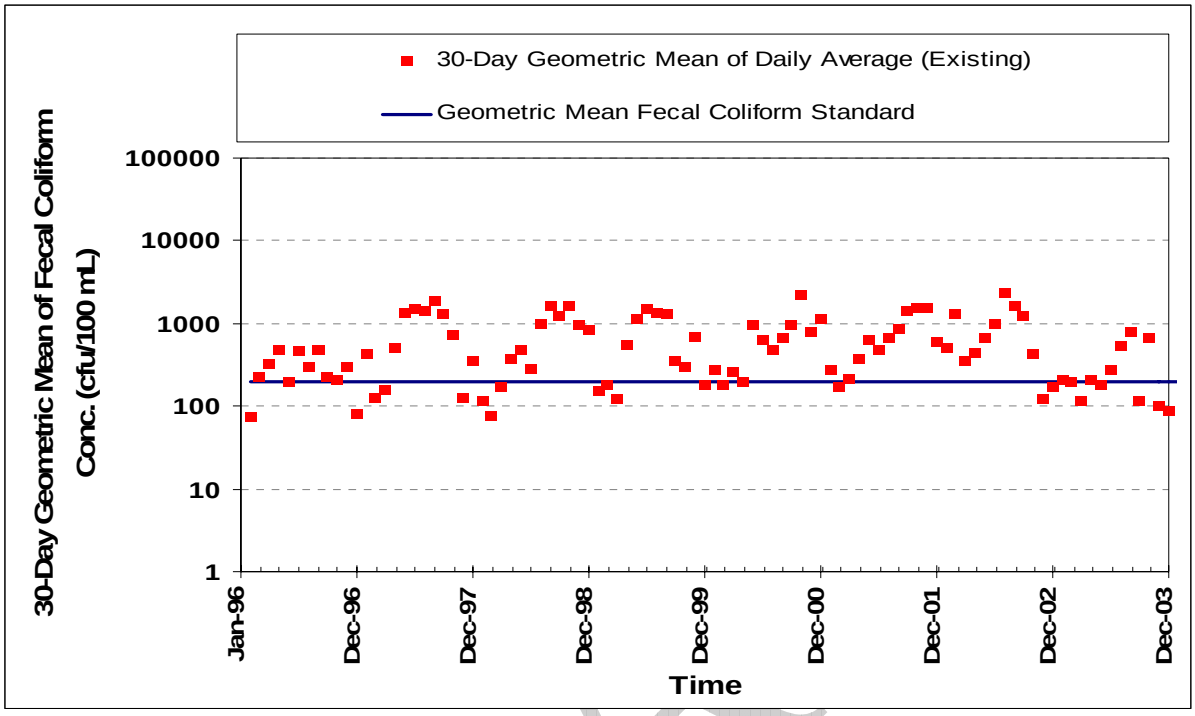


Figure E-6: Broad Run (Segment VAN-A19R-02) E. coli Geometric Mean Existing Conditions

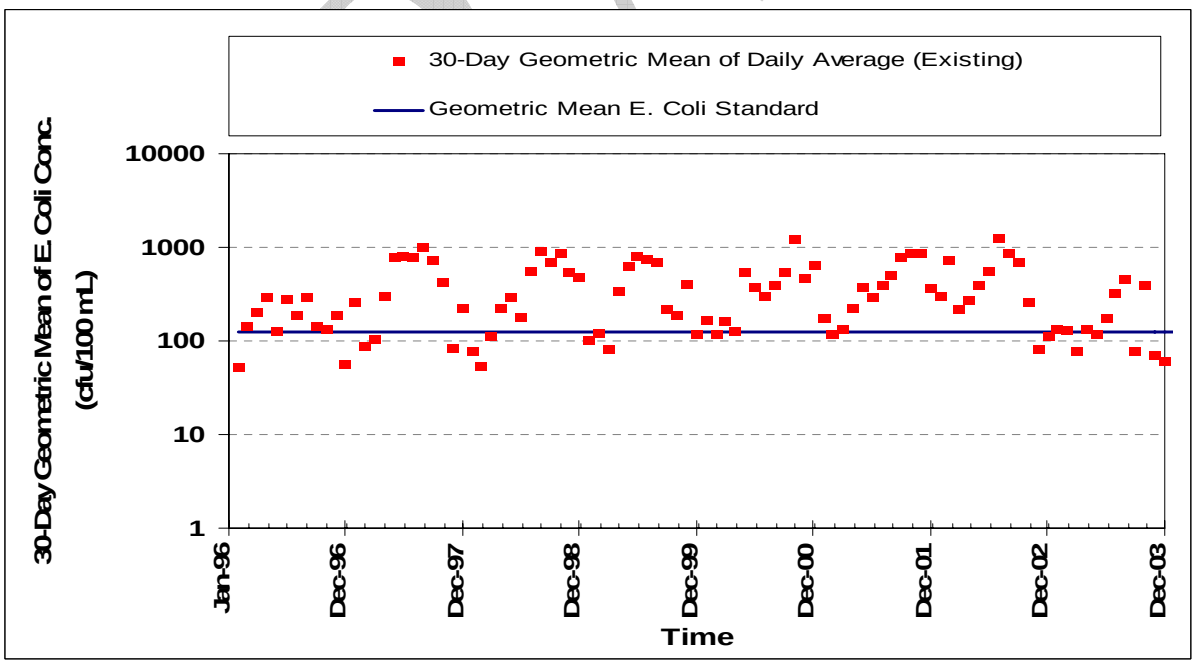


Figure E-7: Broad Run (Segment VAN-A19R-02) Fecal Coliform Instantaneous Existing Conditions

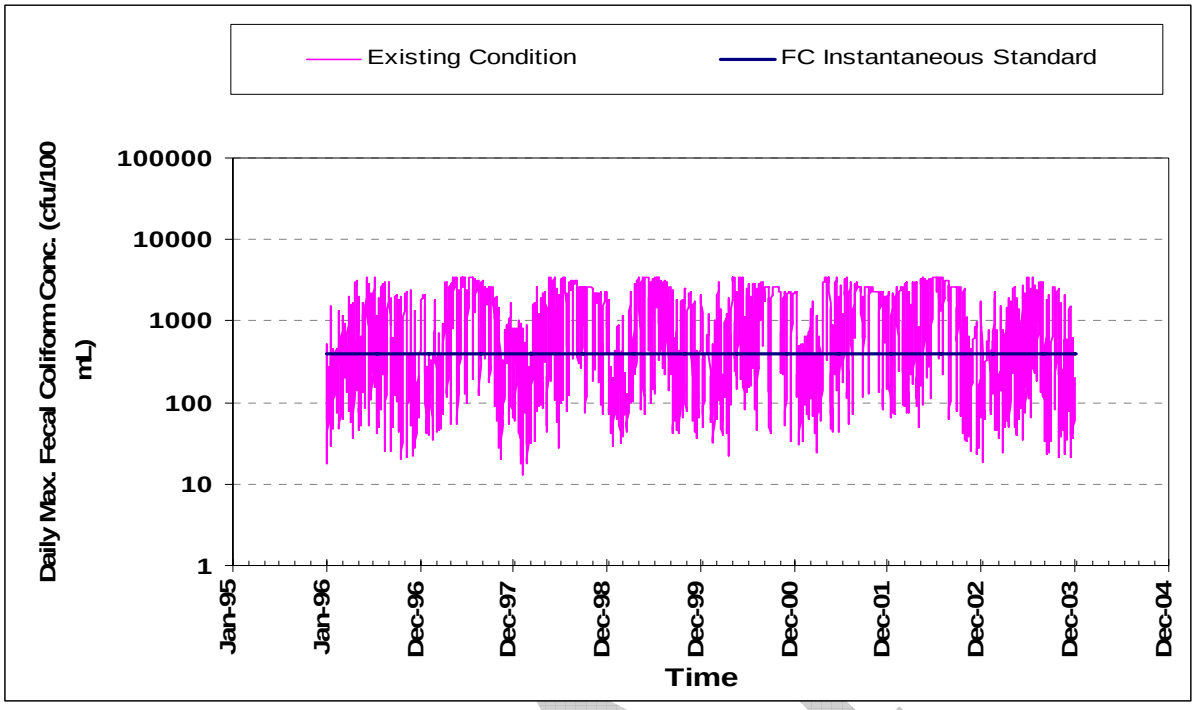
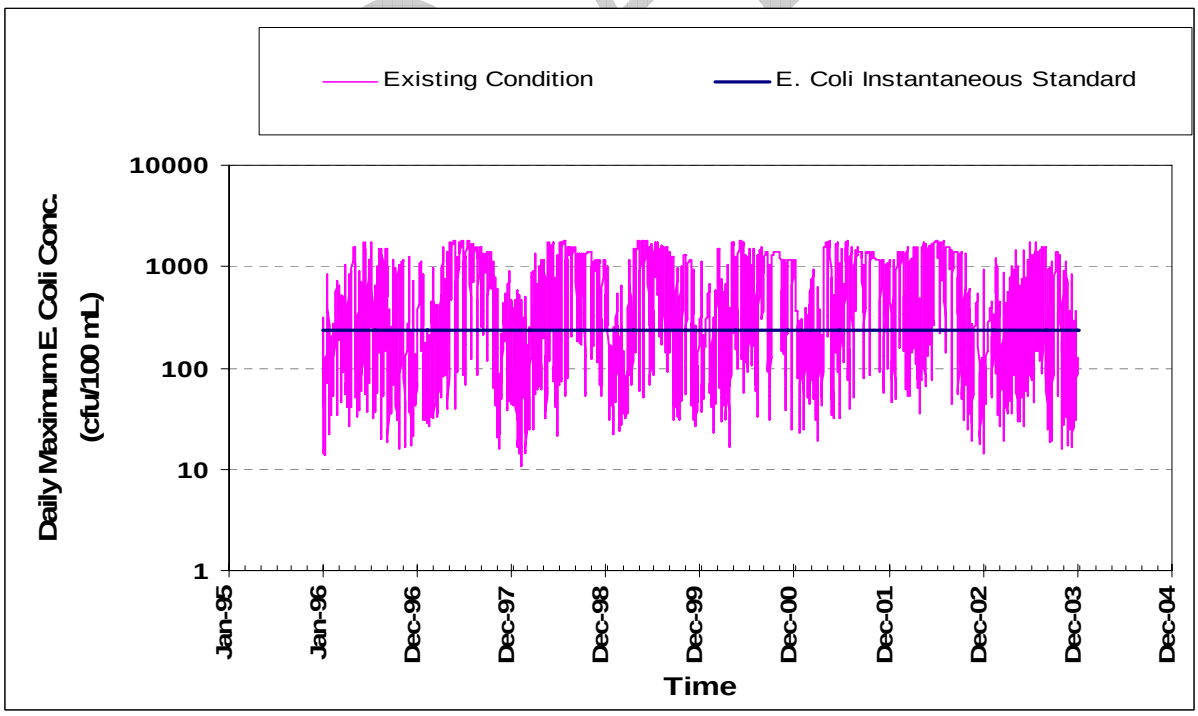


Figure E-8: Broad Run (Segment VAN-A19R-02) E. coli Instantaneous Existing Conditions



E.3 Broad Run (Segment VAN-A19R-05)

Figure E-9: Broad Run (Segment VAN-A19R-05) Fecal Coliform Geometric Mean Existing Conditions

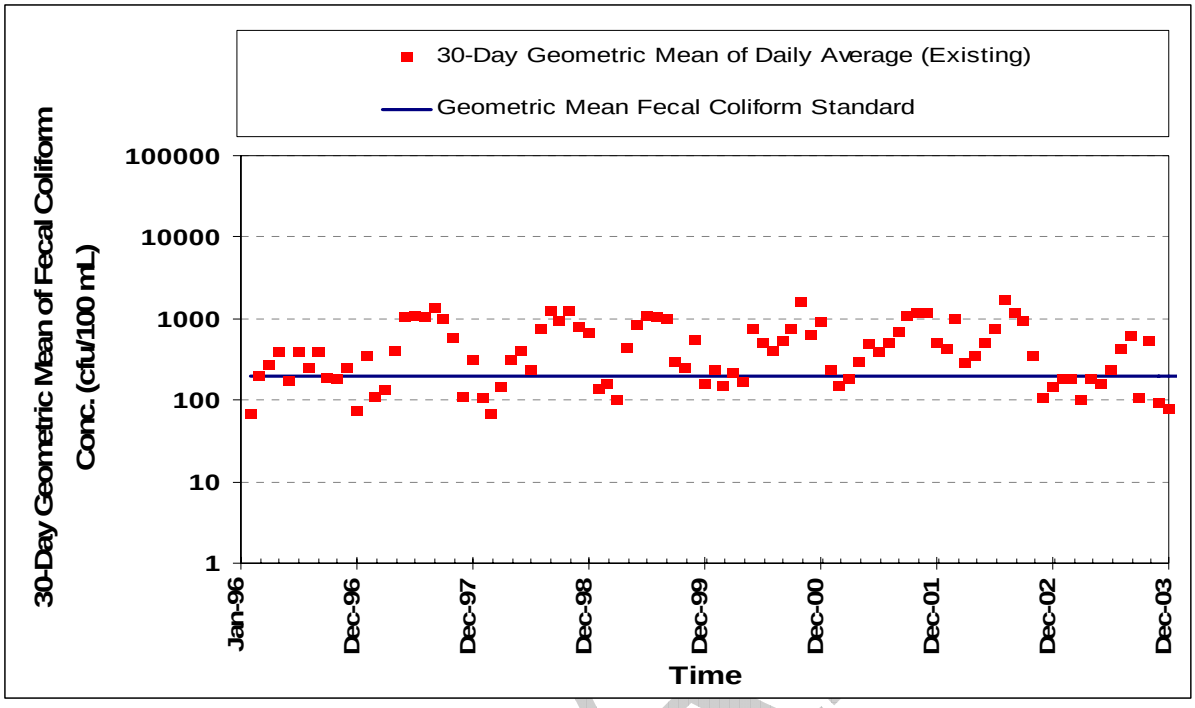


Figure E-10: Broad Run (Segment VAN-A19R-05) E. coli Geometric Mean Existing Conditions

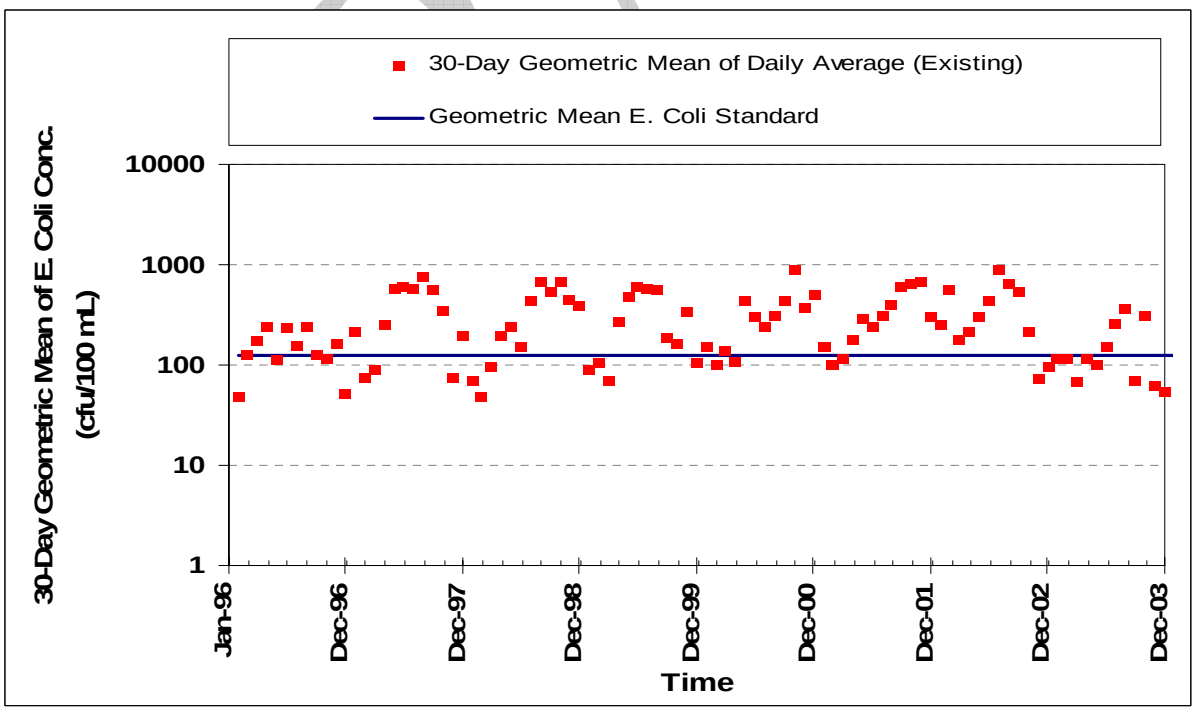


Figure E-11: Broad Run (Segment VAN-A19R-05) Fecal Coliform Instantaneous Existing Conditions

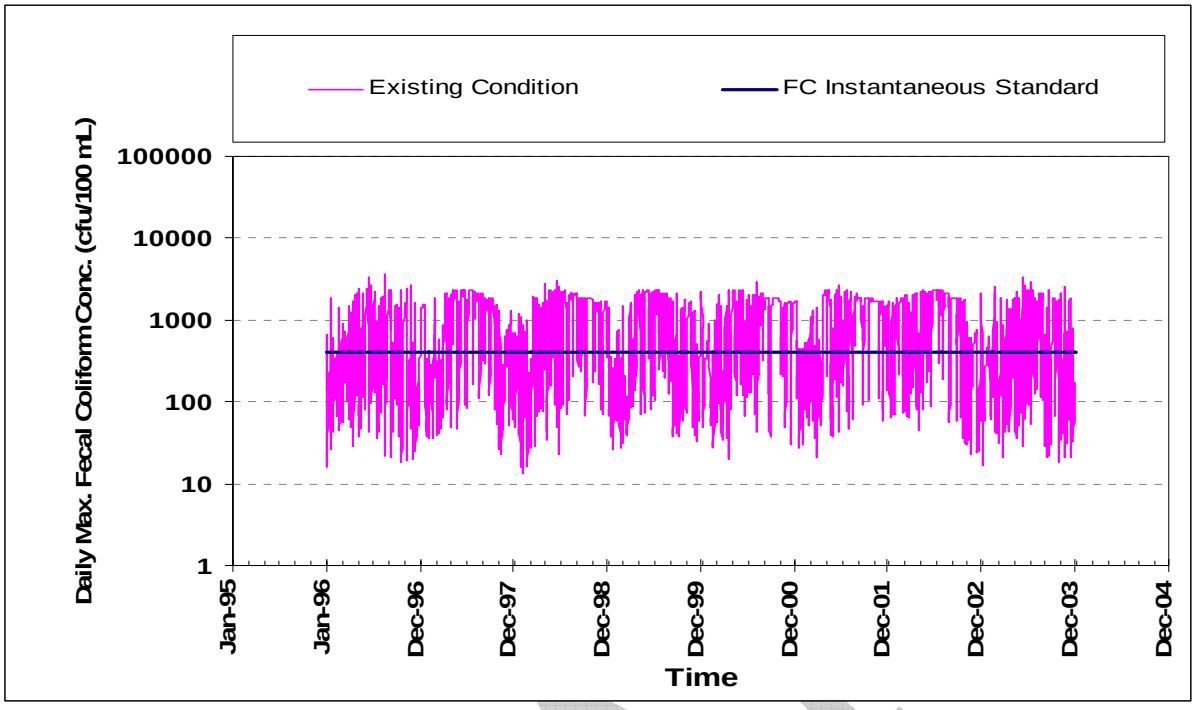
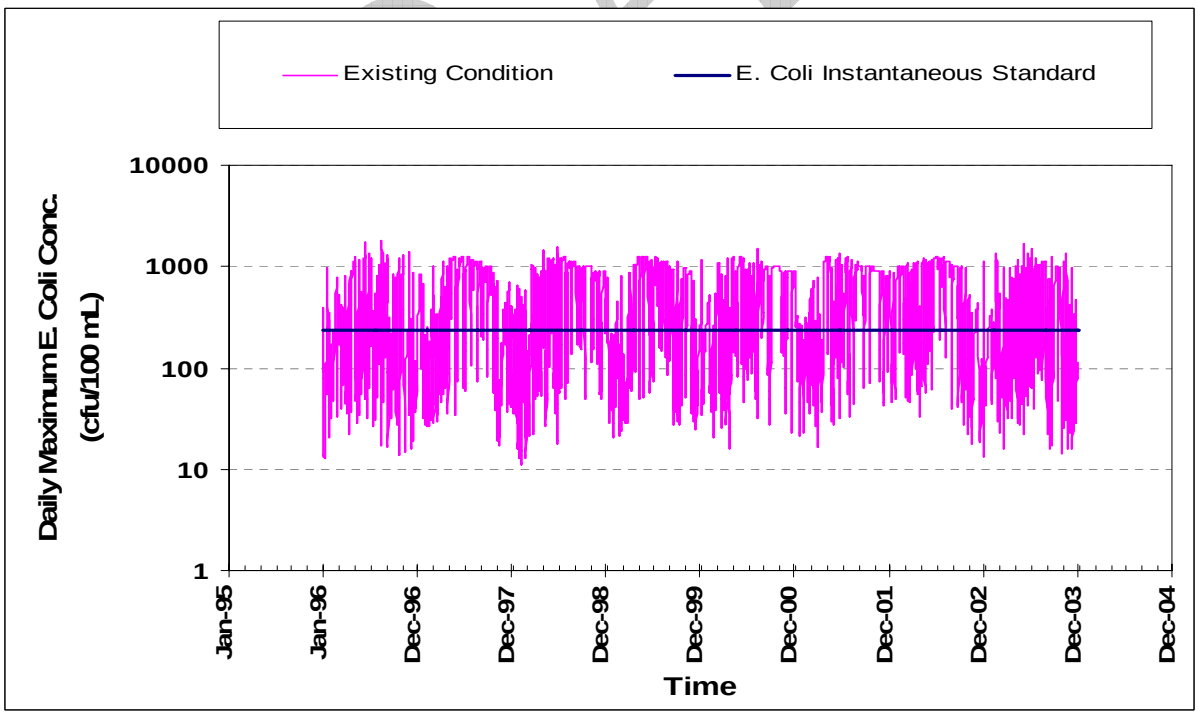


Figure E-12: Broad Run (Segment VAN-A19R-05) E. coli Instantaneous Existing Conditions



E.4 Bull Run (Segment VAN-A23R-01)

Figure E-13: Bull Run (Segment VAN-A23R-01) Fecal Coliform Geometric Mean Existing Conditions

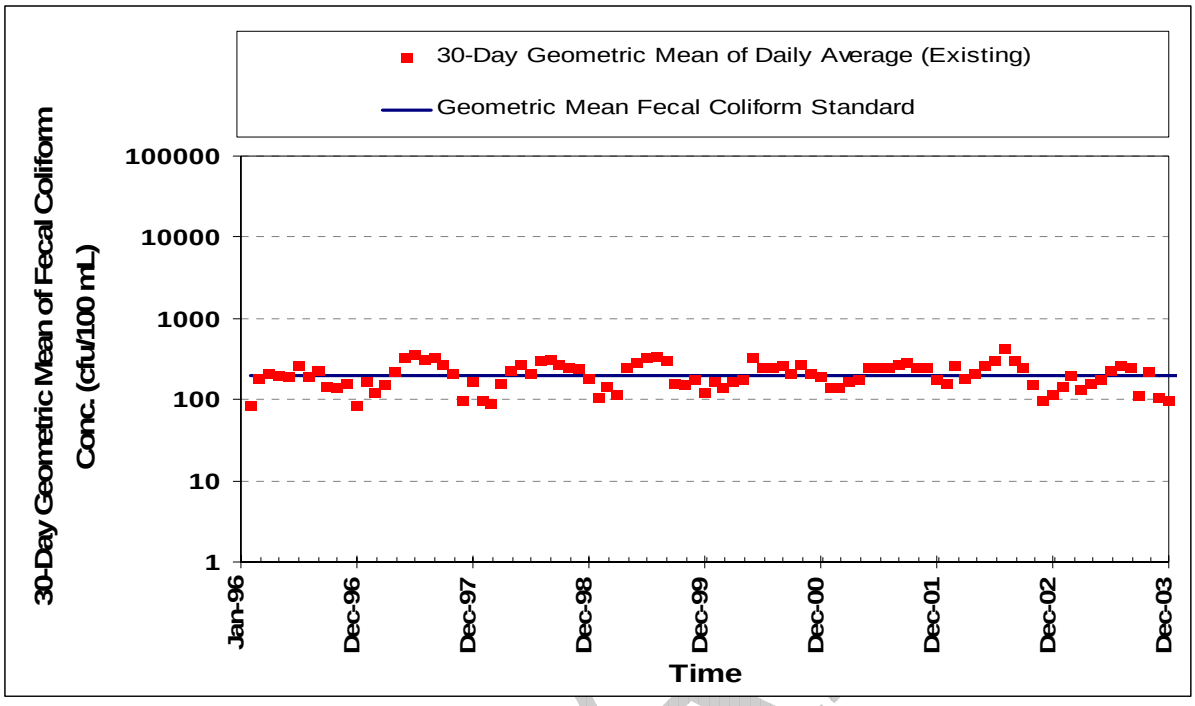


Figure E-14: Bull Run (Segment VAN-A23R-01) E. coli Geometric Mean Existing Conditions

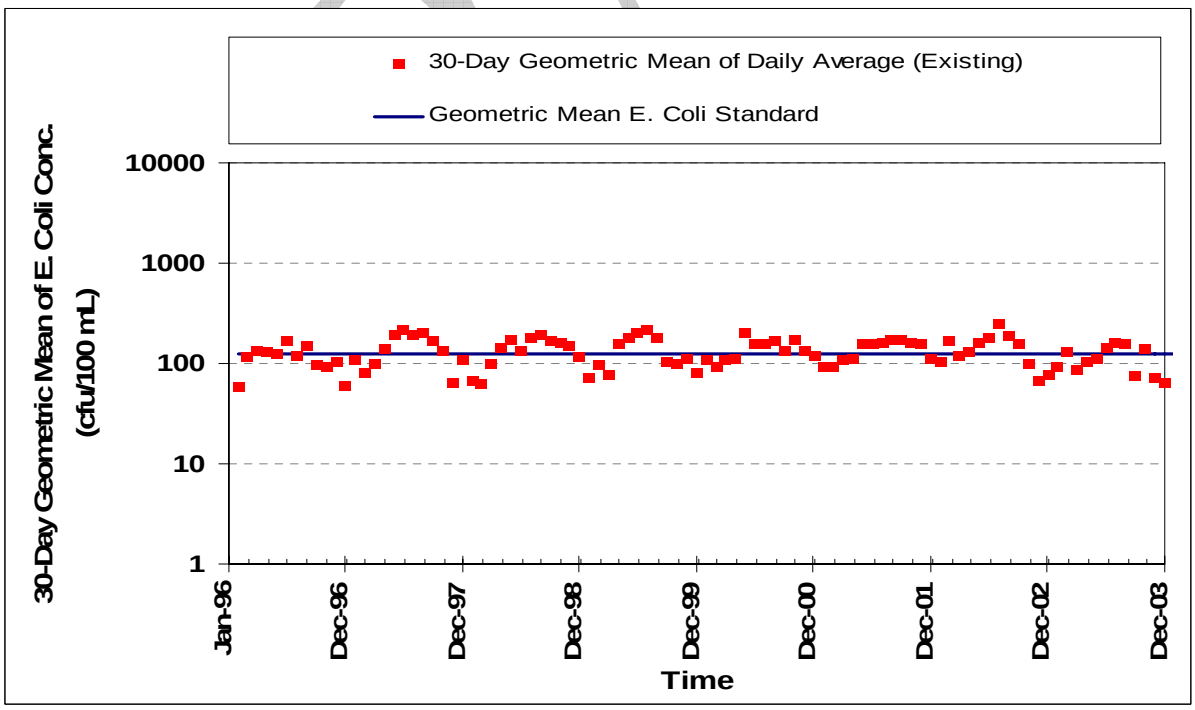


Figure E-15: Bull Run (Segment VAN-A23R-01) Fecal Coliform Instantaneous Existing Conditions

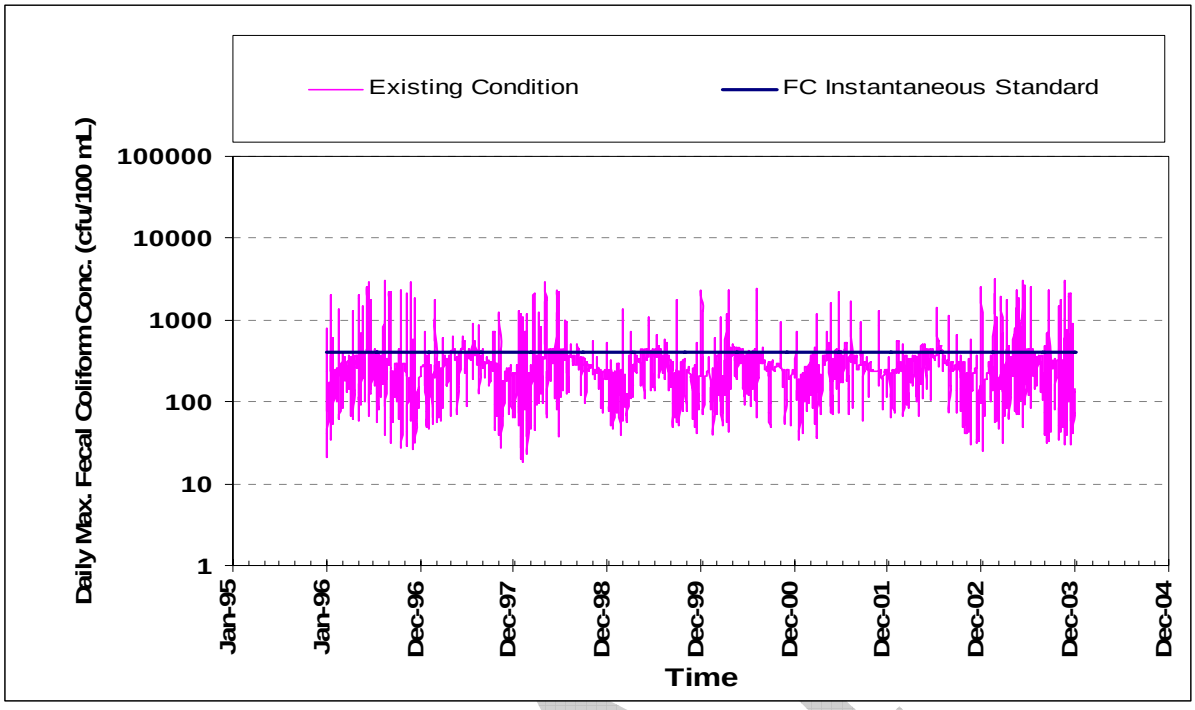
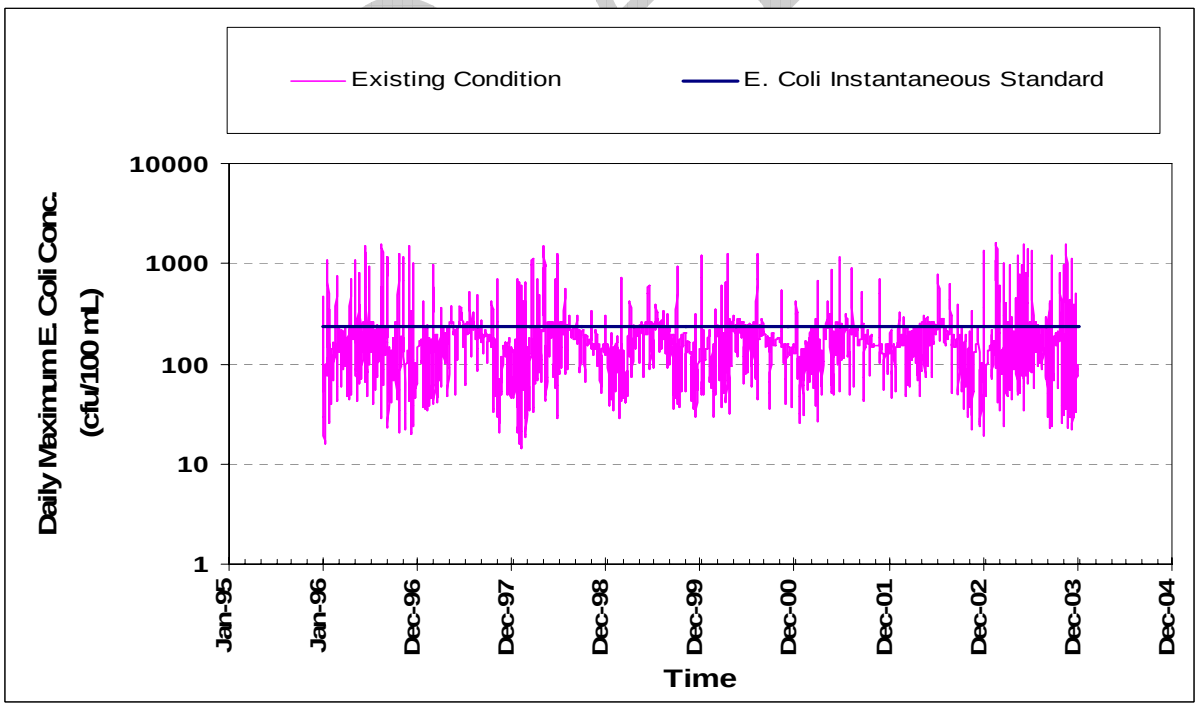


Figure E-16: Bull Run (Segment VAN-A23R-01) E. coli Instantaneous Existing Conditions



E.5 Kettle Run (Segment VAN-A19R-03)

Figure E-17: Kettle Run (Segment VAN-A19R-03) Fecal Coliform Geometric Mean Existing Conditions

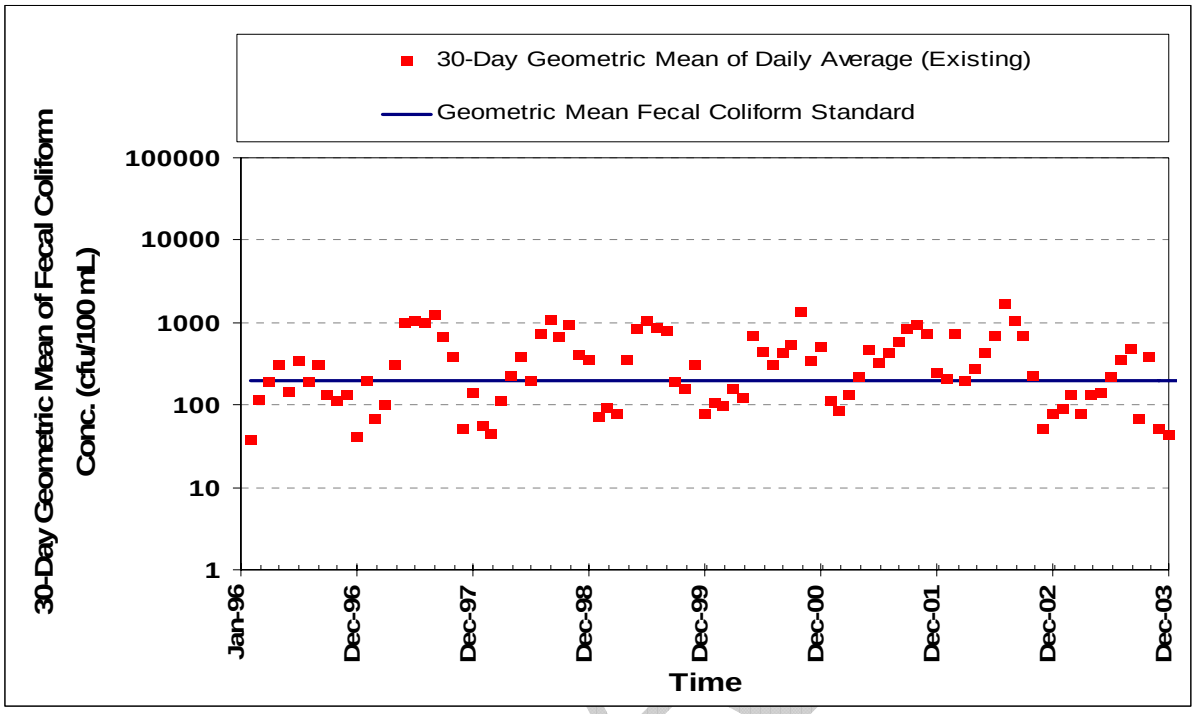


Figure E-18: Kettle Run (Segment VAN-A19R-03) E. coli Geometric Mean Existing Conditions

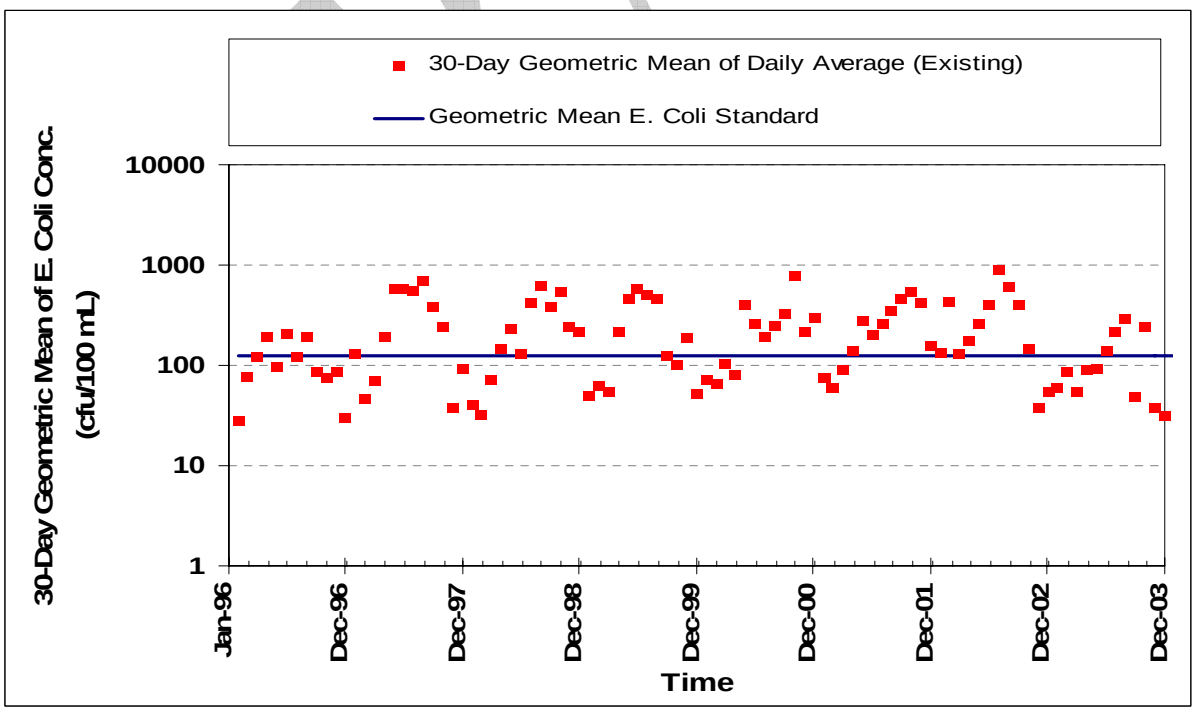


Figure E-19: Kettle Run (Segment VAN-A19R-03) Fecal Coliform Instantaneous Existing Conditions

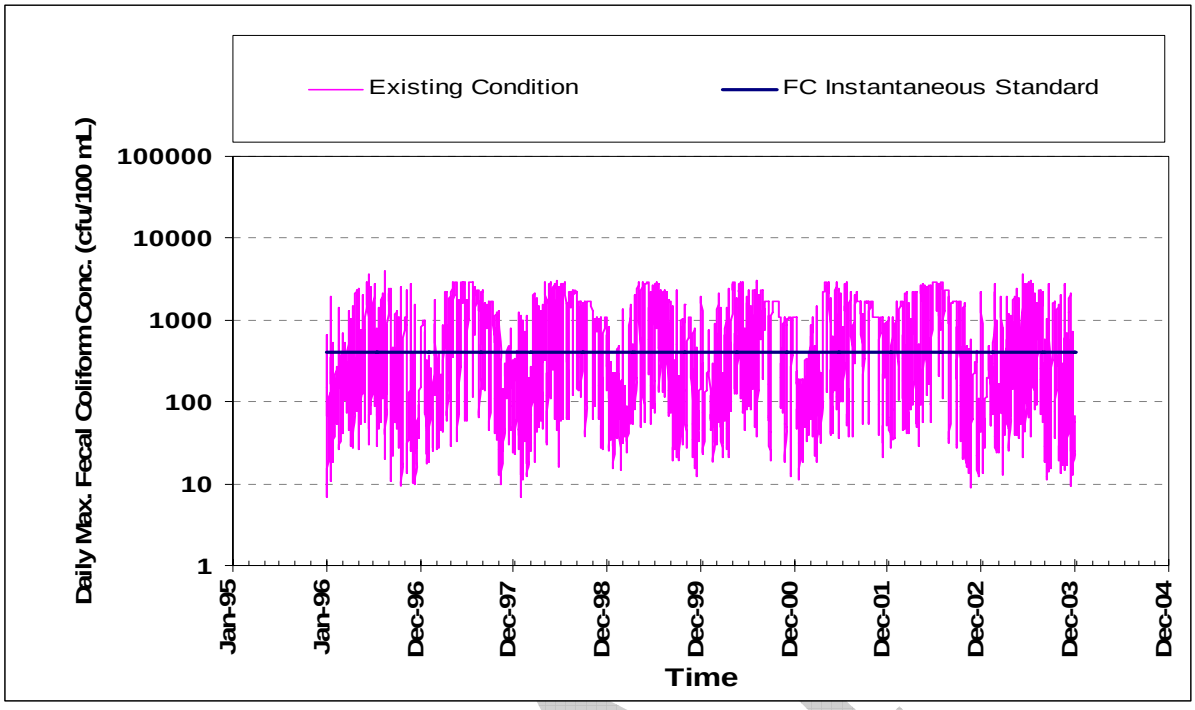
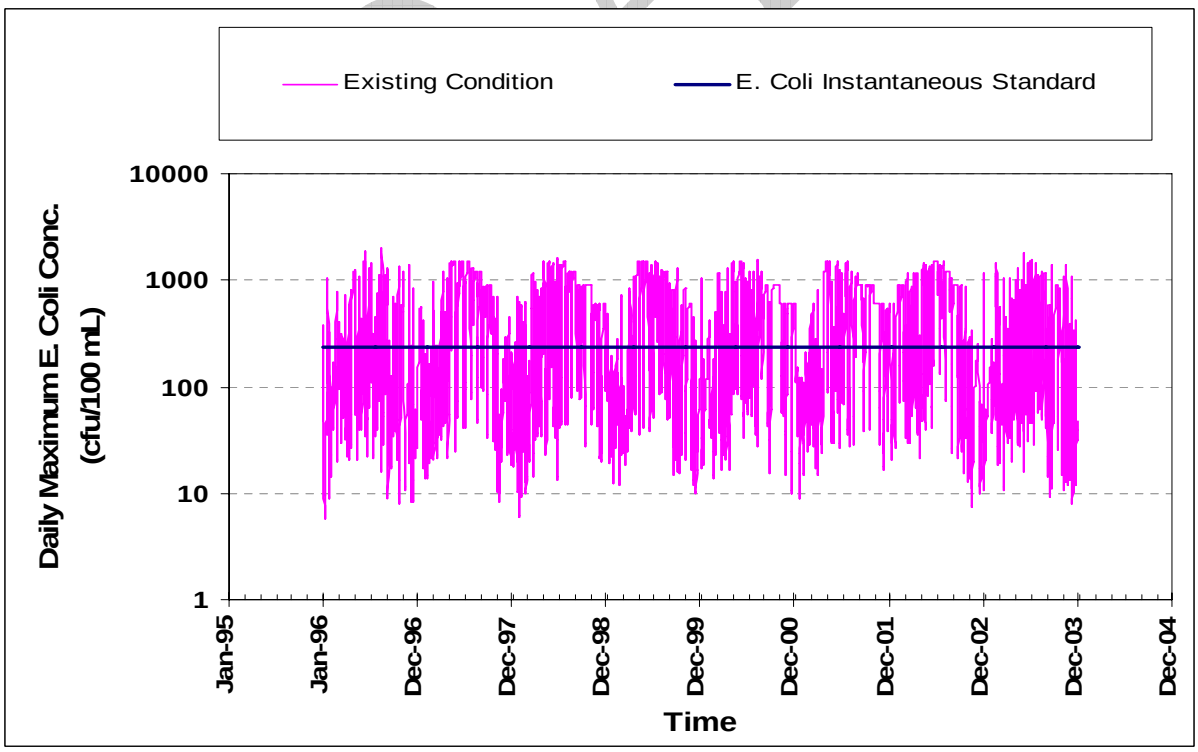


Figure E-20: Kettle Run (Segment VAN-A19R-03) E. coli Instantaneous Existing Conditions



E.6 Little Bull Run (Segment VAN-A21R-01)

Figure E-21: Little Bull Run (Segment VAN-A21R-01) Fecal Coliform Geometric Mean Existing Conditions

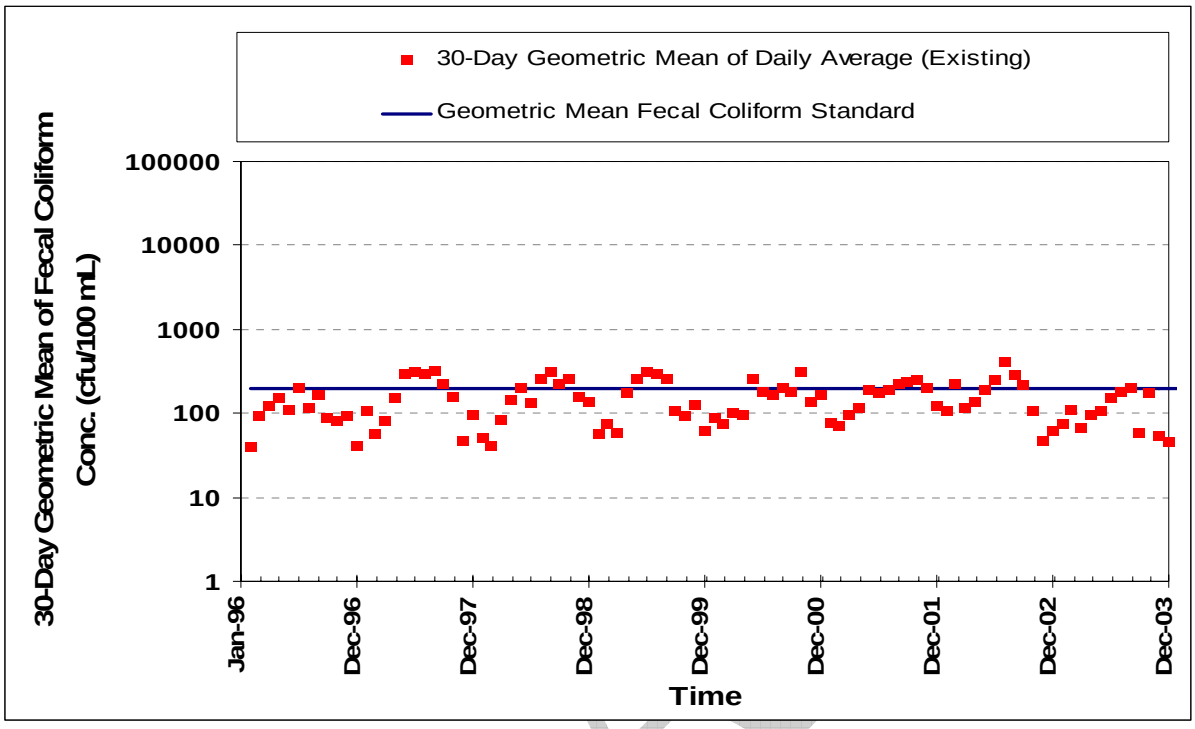


Figure E-22: Little Bull Run (Segment VAN-A21R-01) E. coli Geometric Mean Existing Conditions

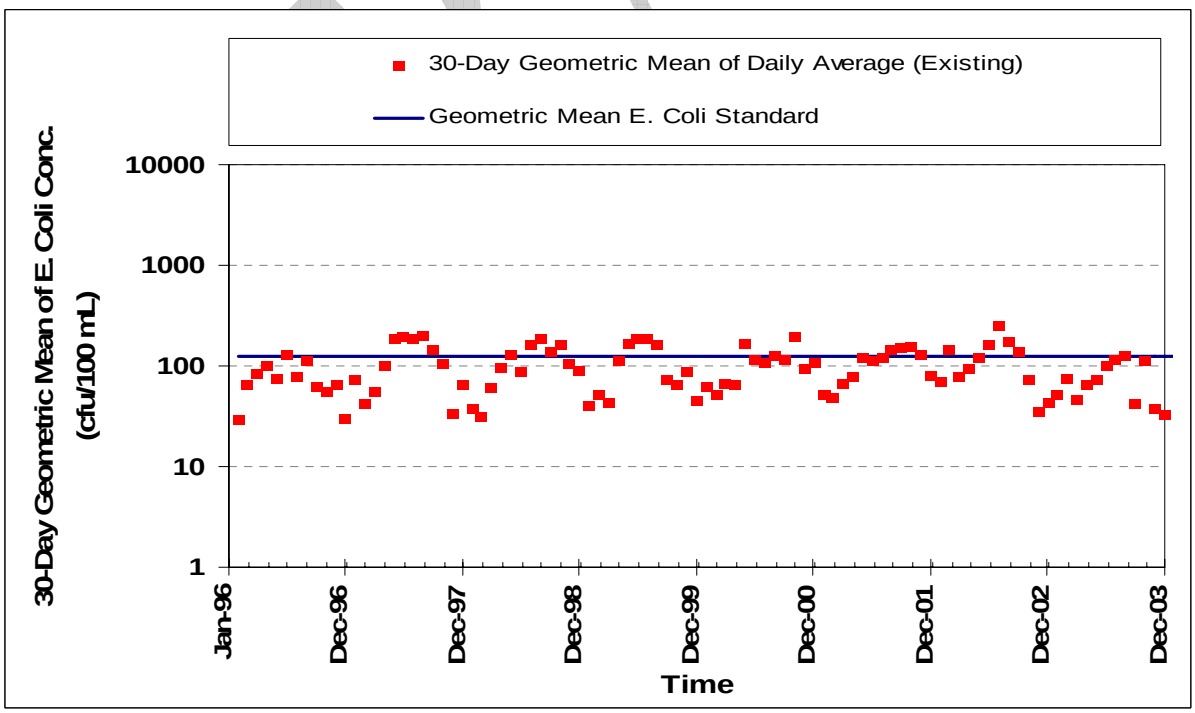


Figure E-23: Little Bull Run (Segment VAN-A21R-01) Fecal Coliform Instantaneous Existing Conditions

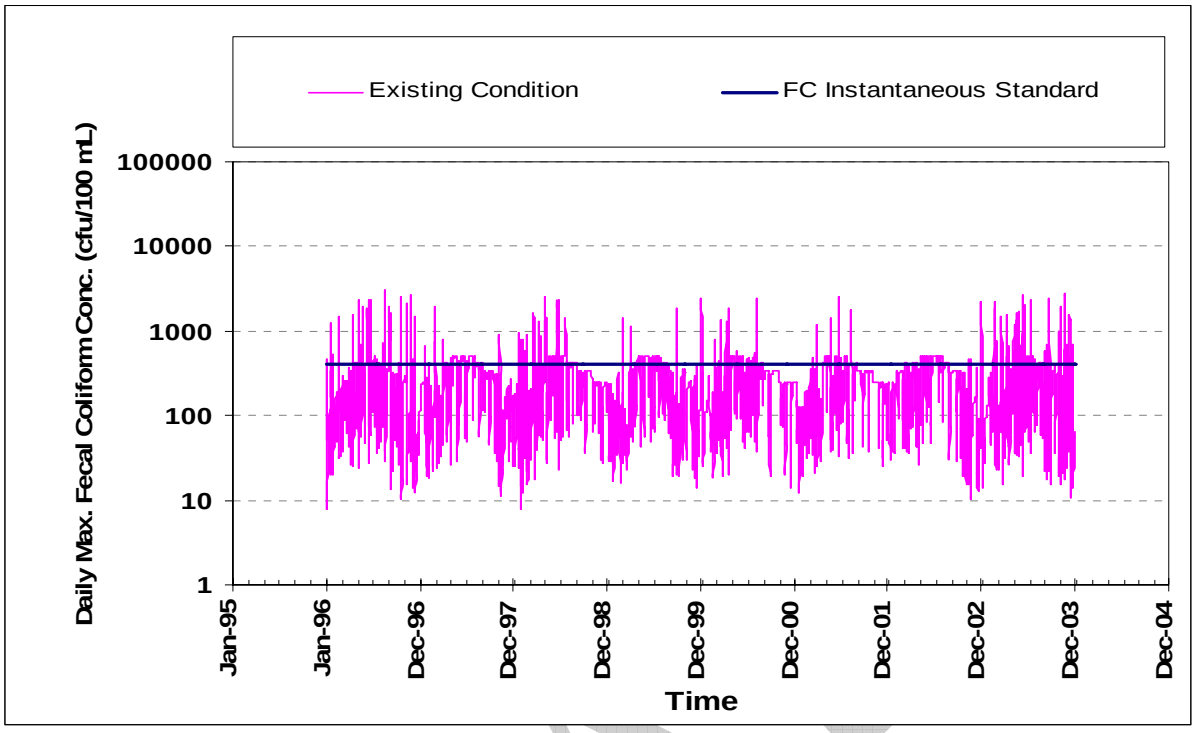
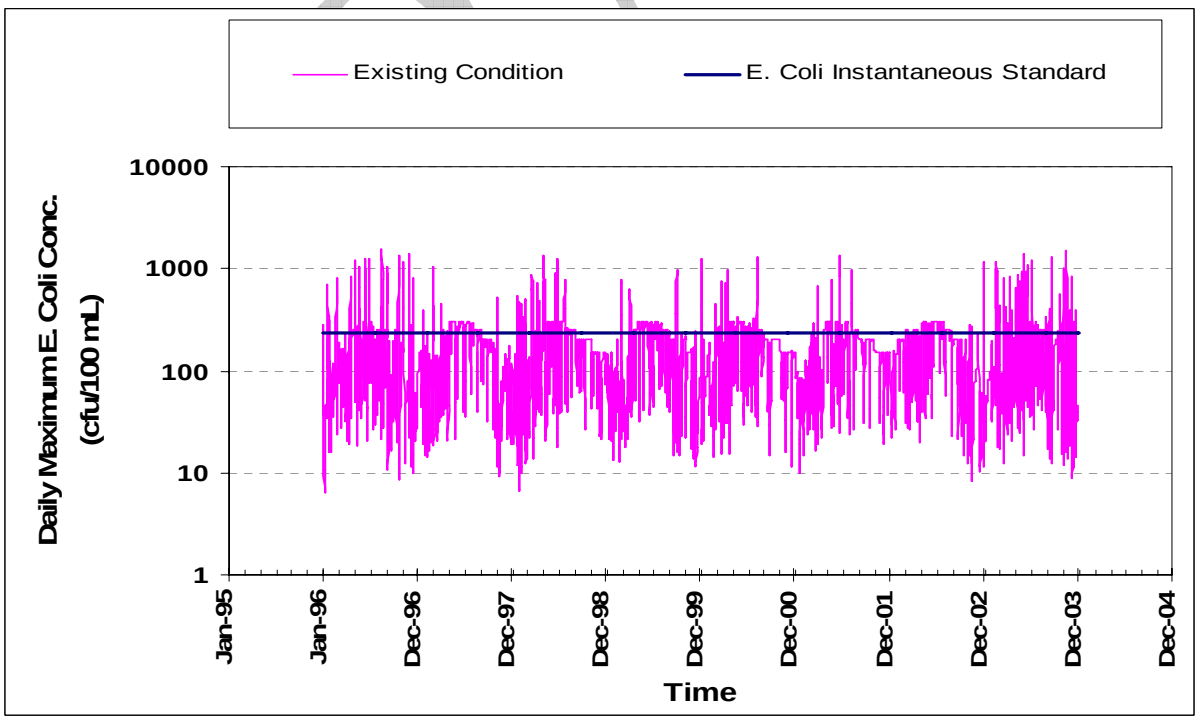


Figure E-24: Little Bull Run (Segment VAN-A21R-01) E. coli Instantaneous Existing Conditions



E.7 Occoquan River (Segment VAN-A20R-01)

Figure E-25: Occoquan River (Segment VAN-A20R-01) Fecal Coliform Geometric Mean Existing Conditions

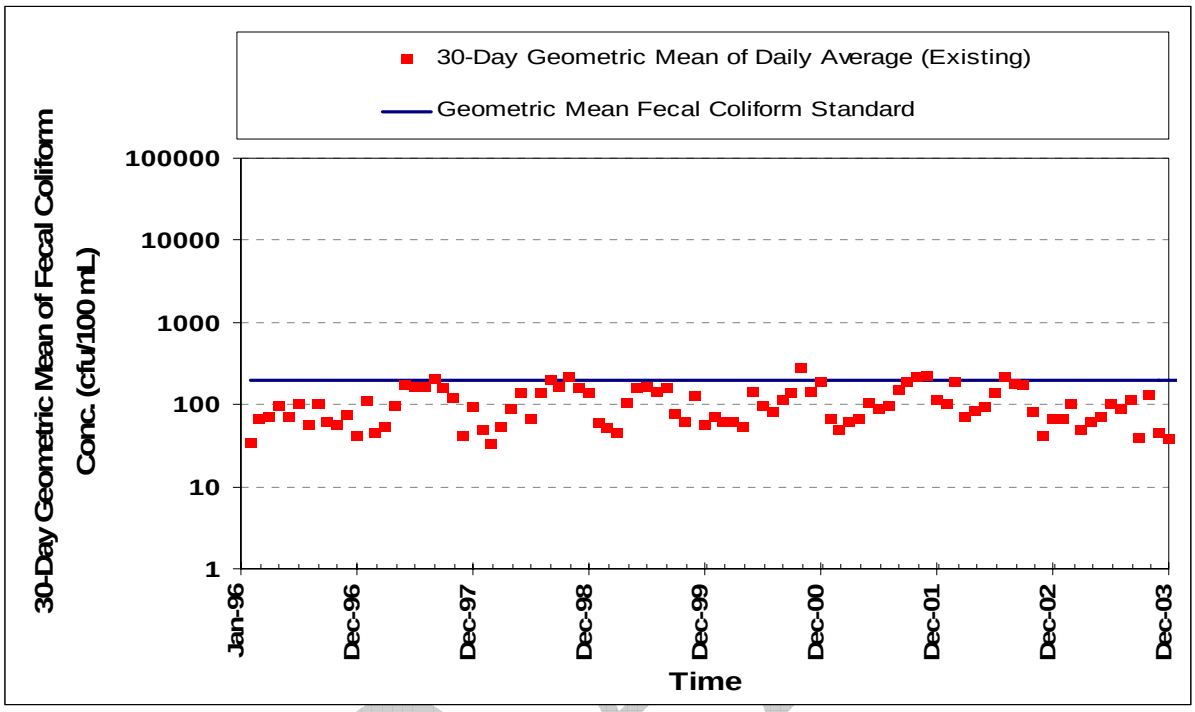


Figure E-26: Occoquan River (Segment VAN-A20R-01) E. coli Geometric Mean Existing Conditions

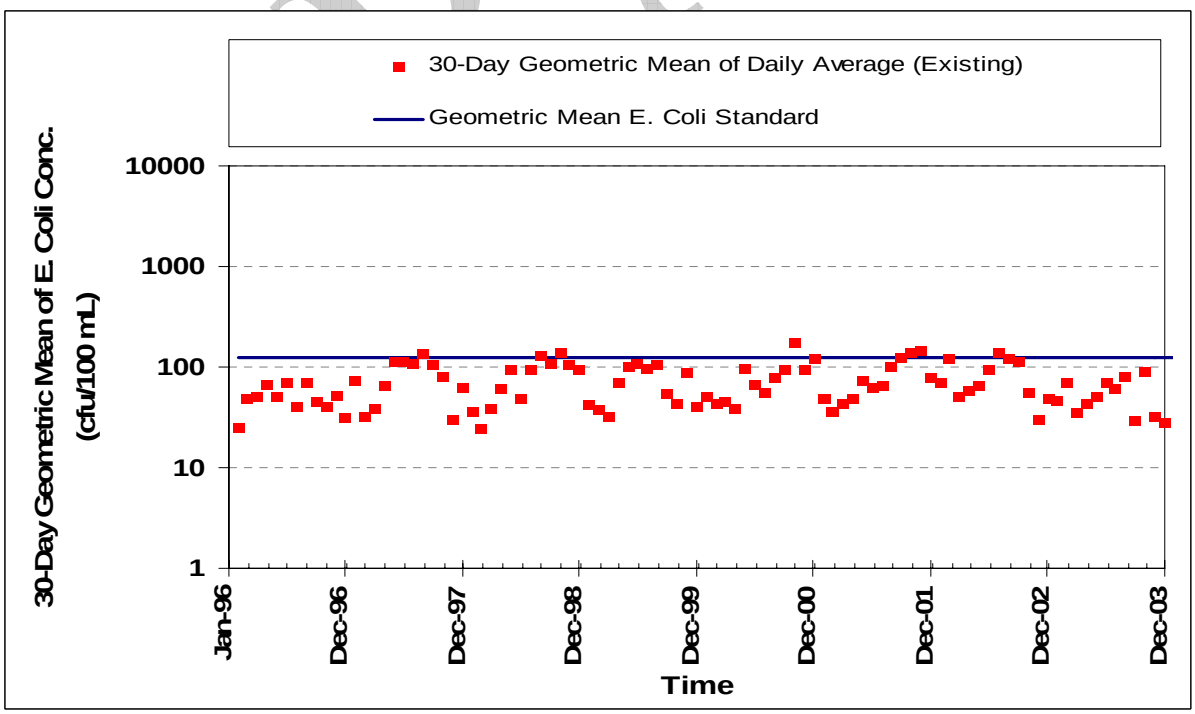


Figure E-27: Occoquan River (Segment VAN-A20R-01) Fecal Coliform Instantaneous Existing Conditions

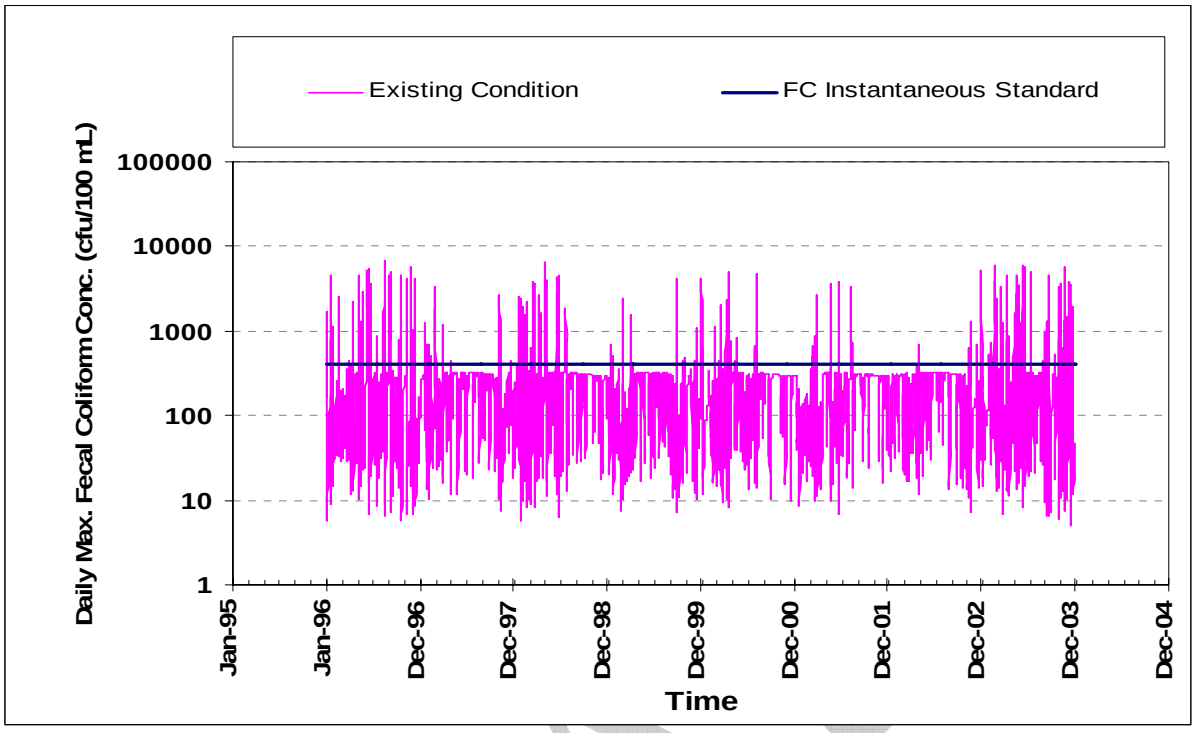
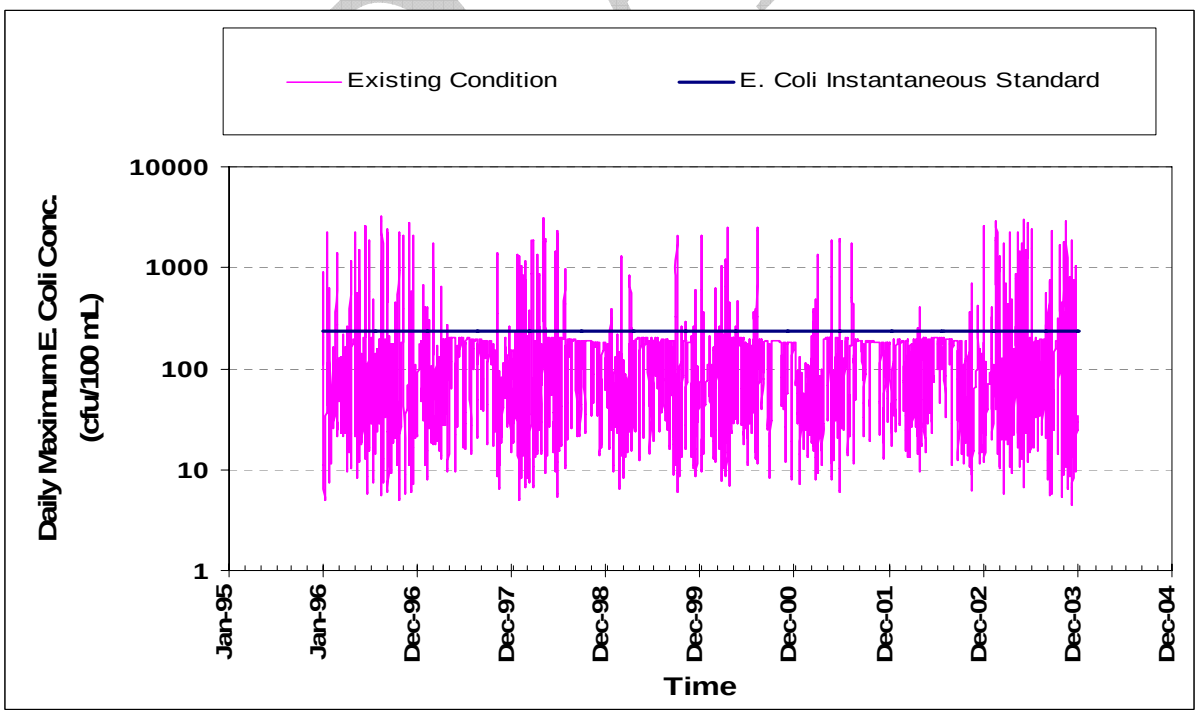


Figure E-28: Occoquan River (Segment VAN-A20R-01) E. coli Instantaneous Existing Conditions



E.8 Popes Head Creek (Segment VAN-A23R-02)

Figure E-29: Popes Head Creek (Segment VAN-A23R-02) Fecal Coliform Geometric Mean Existing Conditions

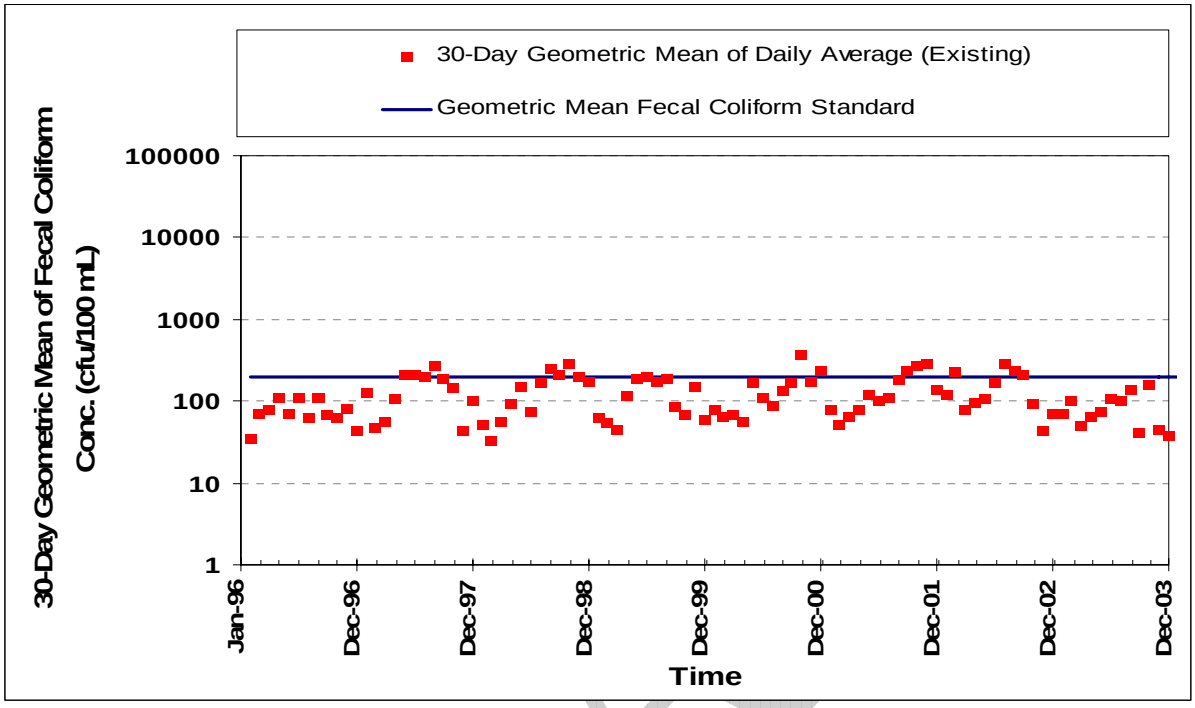


Figure E-30: Popes Head Creek (Segment VAN-A23R-02) E. coli Geometric Mean Existing Conditions

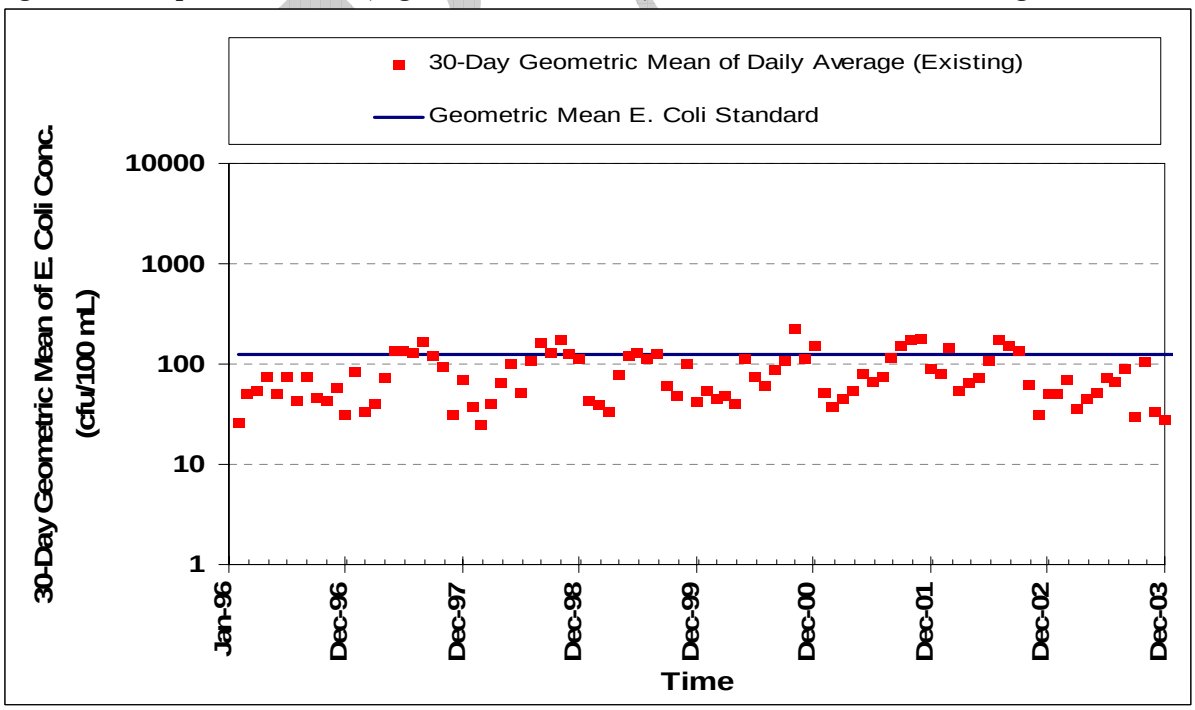


Figure E-31: Popes Head Creek (Segment VAN-A23R-02) Fecal Coliform Instantaneous Existing Conditions

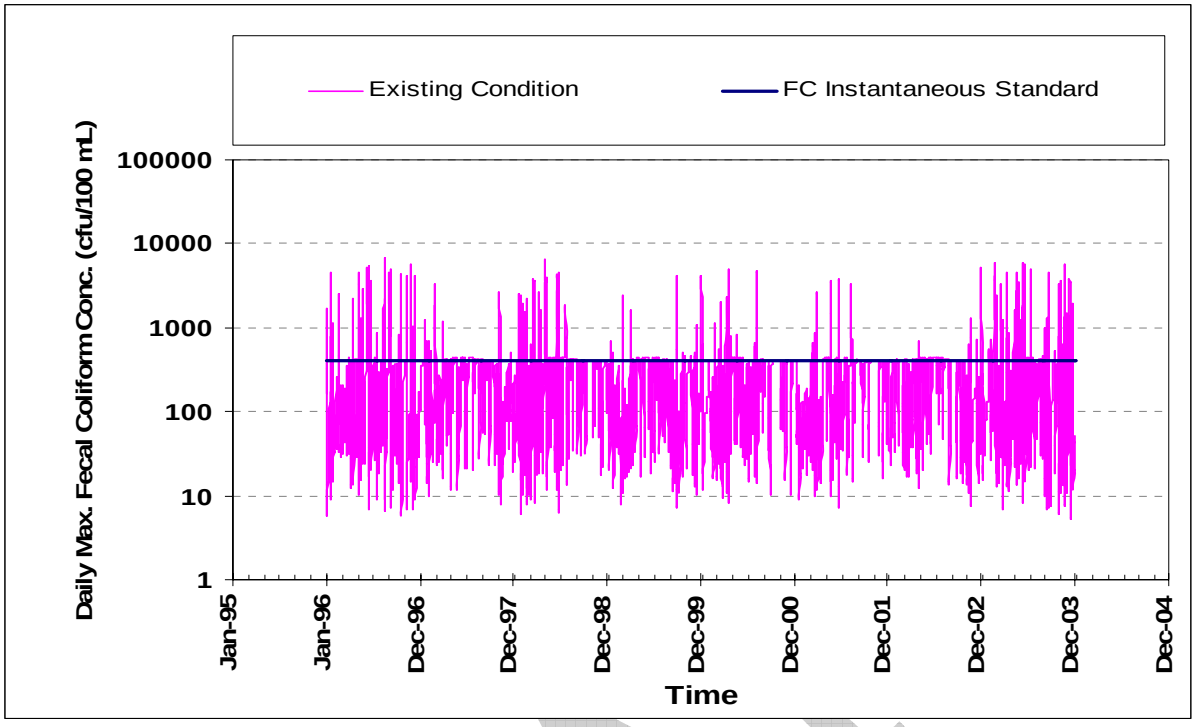
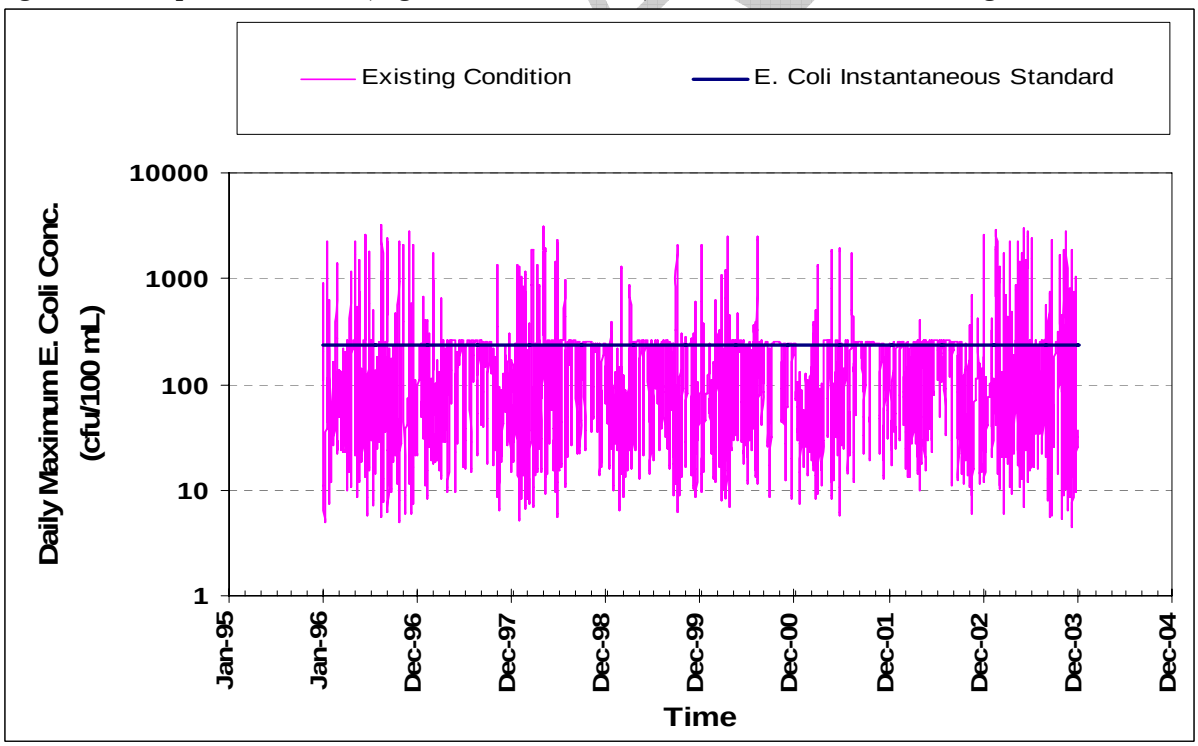


Figure E-32: Popes Head Creek (Segment VAN-A23R-02) E. coli Instantaneous Existing Conditions



E.9 South Run (Segment VAN-A19R-04)

Figure E-33: South Run (Segment VAN-A19R-04) Fecal Coliform Geometric Mean Existing Conditions

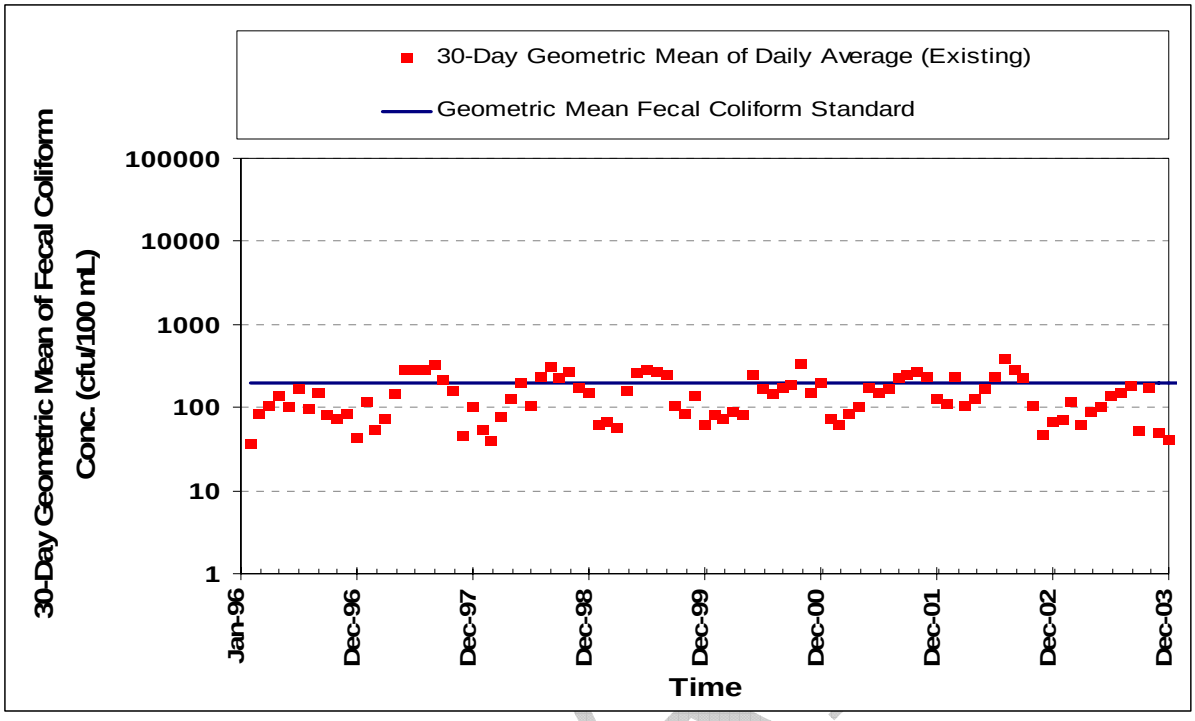


Figure E-34: South Run (Segment VAN-A19R-04) E. coli Geometric Mean Existing Conditions

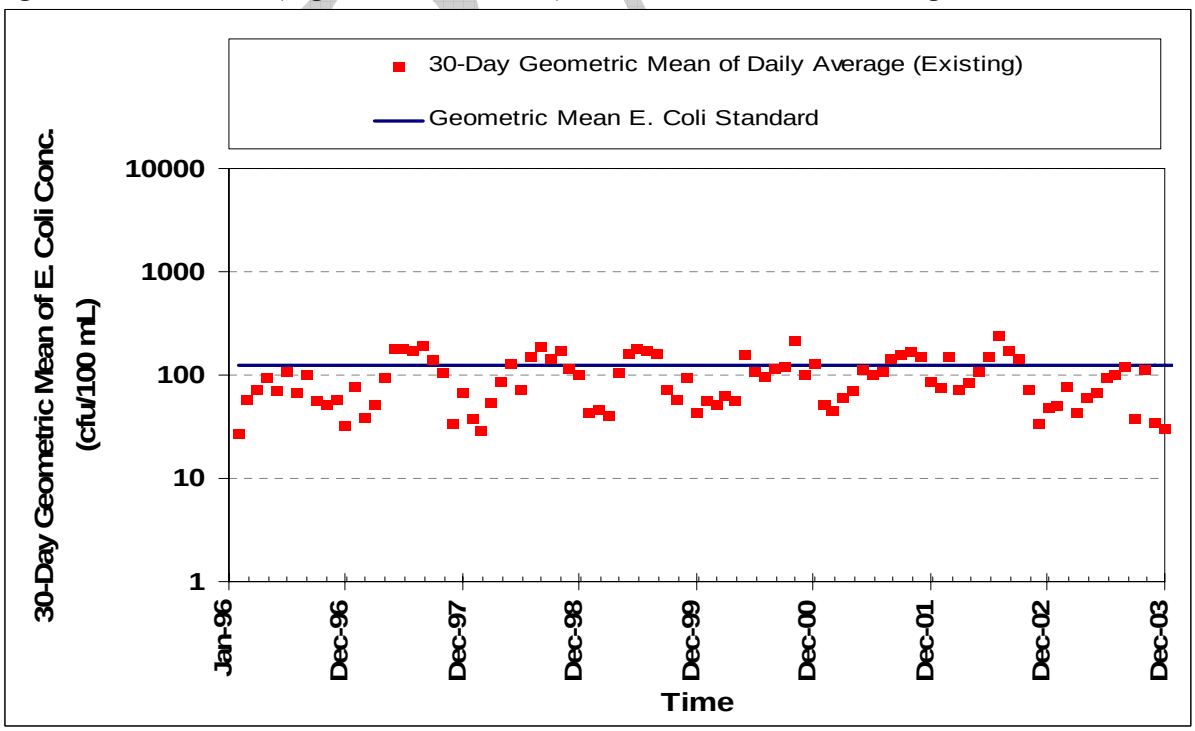


Figure E-35: South Run (Segment VAN-A19R-04) Fecal Coliform Instantaneous Existing Conditions

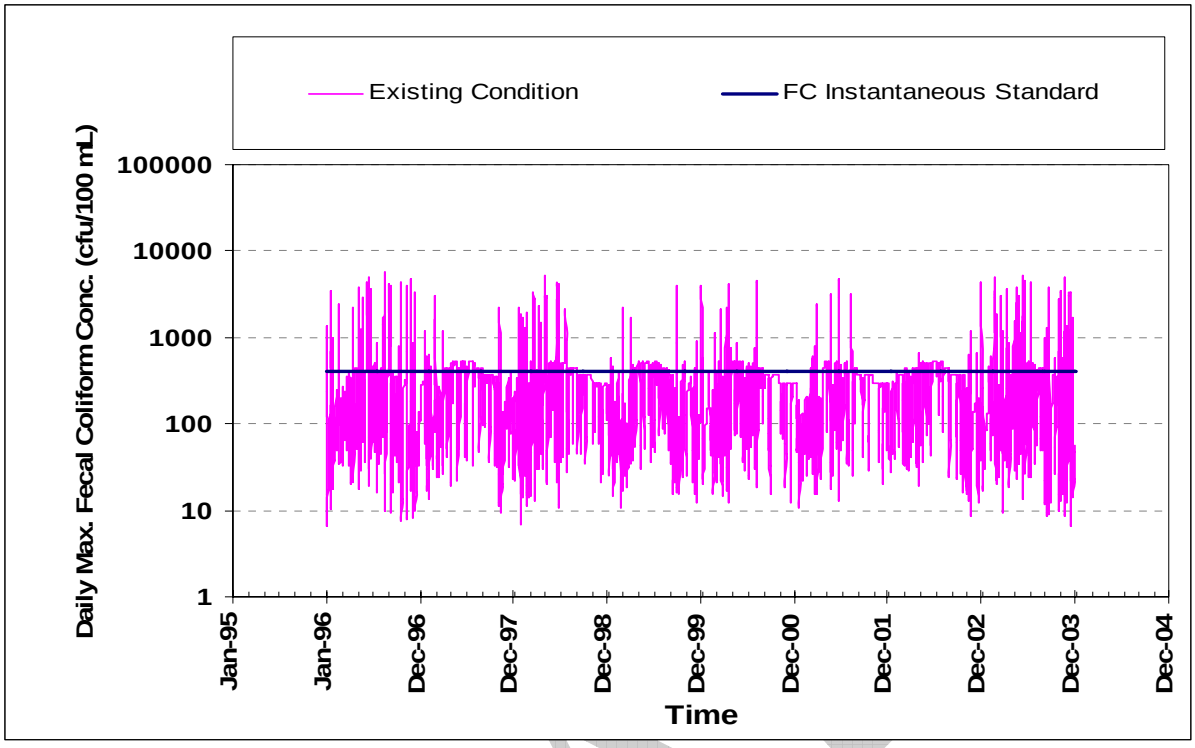
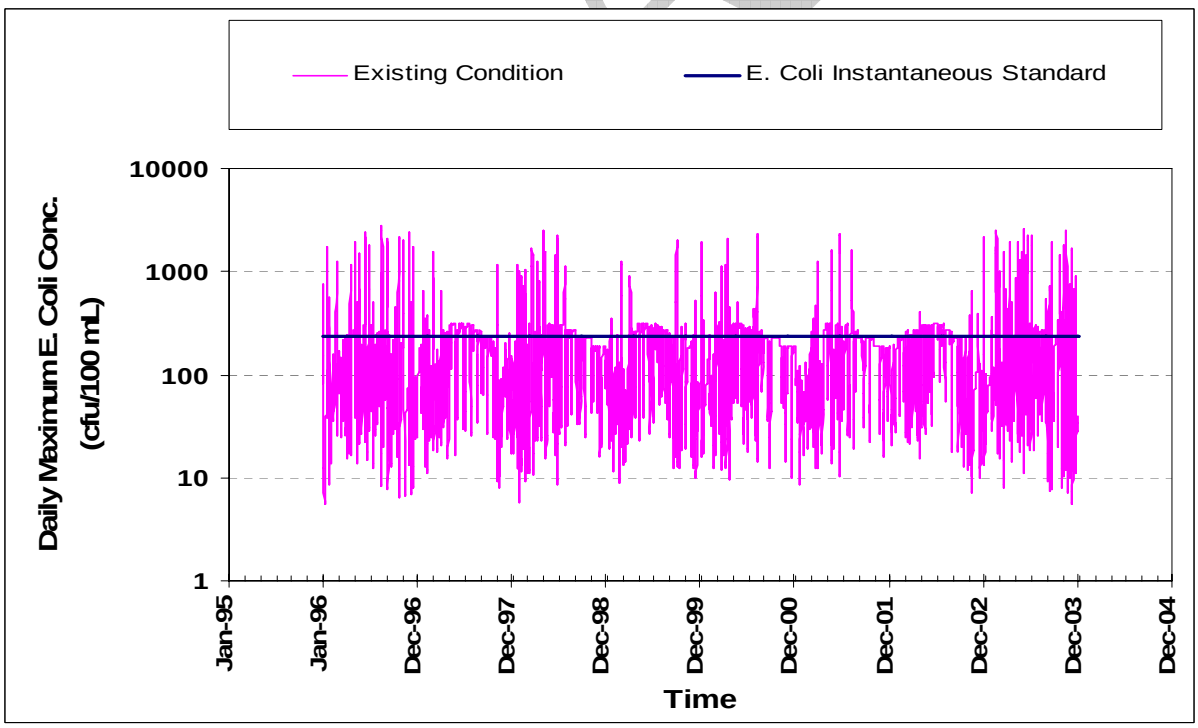


Figure E-36: South Run (Segment VAN-A19R-04) E. coli Instantaneous Existing Conditions



Appendix F

Sensitivity Analysis

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Sensitivity Analysis

The sensitivity analysis of the fecal coliform loadings and the waterbody response provides a better understanding of the watershed conditions that lead to the water quality standard violation and provides insight and direction in developing the TMDL allocation and implementation. Potential sources of fecal coliform include non-point (land-based) sources such as runoff from livestock grazing, manure and biosolids land application, residential waste from failed septic systems or straight pipes, and wildlife. Some of these sources are dry weather driven and others are wet weather driven.

The objective of the sensitivity analysis was to assess the impacts of variation of model calibration parameters on the simulation of flow and the violation of the fecal coliform standard in the nine impairments. For the January 1995 to December 2004 period, the model was run with 110 percent and 90 percent of calibrated values of the parameters. The scenarios that were analyzed include the following:

- 10 percent increase in LZSN
- 10 percent decrease in LZSN
- 10 percent increase in INFILT
- 10 percent decrease in INFILT
- 10 percent increase in AGWRC
- 10 percent decrease in AGWRC
- 10 percent increase in UZSN
- 10 percent decrease in UZSN
- 10 percent increase in INTFW
- 10 percent decrease in INTFW
- 10 percent increase in IRC
- 10 percent decrease in IRC
- 10 percent increase in LZETP
- 10 percent decrease in LZETP

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The modeled flows for different sensitivity runs were compared with observed flows at the gage and the coefficients of determination of the hydrologic sensitivity analysis are presented in Table F-1. Based on these tables it can be seen that the calibration parameters affect the coefficient of determination in the decreasing order of AGWRC, INFILT, INTFW, IRC, UZSN, LZSN and LZETP.

The sensitivity analysis was also performed for two water quality parameters, WSQOP and FSTDEC, by simulating the fecal coliform concentrations for 120 percent and 80 percent of their calibrated values. The rate of violation of the Monthly Geometric Mean Water Quality Standard was determined for each scenario and compared with the rate of violation under the water quality calibration run. The changes in the rate of violation are presented in Table F-2. The results of the sensitivity analysis show that WSQOP has a more pronounced effect on the violation of the water quality standards than FSTDEC.

Table F-1. Sensitivity Analysis: Variation in Coefficient of Determination With Respect to Variation in Parameters For Simulation Period 1996-2003

Parameter	Coefficient of Determination	
	+10% change in parameter	**-10% change in parameter**
LZSN	0.805	0.801
INFILT	0.804	0.801
AGWRC	0.802	0.803
UZSN	0.804	0.802
INTFW	0.805	0.801
IRC	0.802	0.803
LZETP	0.803	0.803
Calibrated Parameters 0.803		

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Table F-2. Sensitivity Analysis: Change in Violation Rate From 20% Change in Calibration Parameter Values

	WSQOP		FSTDEC	
Segment #	**20%**	**-20%**	**20%**	**-20%**
Little Bull Run (Segment. No. 23)	-5.0%	0.0%	0.0%	0.0%
Popes Head (Segment No. 5)	-1.7%	0.0%	0.0%	0.0%
Bull Run (Segment No. 4)	0.0%	1.7%	0.0%	0.0%
Broad Run (Segment No. 42)	0.0%	0.0%	0.0%	0.0%
Broad Run (Segment No. 40)	0.0%	1.7%	0.0%	0.0%
South Run (Segment No. 47)	-1.7%	0.0%	0.0%	0.0%
Broad Run (Segment No. 33)	-3.3%	0.0%	0.0%	0.0%
Kettle Run (Segment No. 49)	-3.3%	1.7%	0.0%	0.0%

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Appendix G
Load Reduction Scenarios under 30-day Geometric Mean and Instantaneous Standards for E. c*oli*

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Table G1: Broad Run (VAN-A19R-01) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						22%	70%
1	100					22%	70%
2	100	50				14%	70%
3	100	100				9%	70%
4	100	100	100	100		0%	0%
5	100	100			50	8%	70%
6	100	100			75	8%	70%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	85	85	0	0%	0%

Table G1: Broad Run (VAN-A19R-02) Load Reduction Scenarios under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						53%	94%
1	100					52%	94%
2	100	50				41%	90%
3	100	100				27%	84%
4	100	100	100	100		25%	84%
5	100	100			50	1%	30%
6	100	100			75	0%	30%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	90	90	60	0%	0%

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Table G3: Broad Run (VAN-A19R-05) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag NPS. Reduction	NPS Urban	Direct Wildlife	Exceedence of GM E. Coli Std	Exceedence of Instantaneous E. Coli Std
0						43%	94%
1	100					43%	94%
2	100	50				32%	87%
3	100	100				23%	81%
4	100	100	100	100		19%	81%
5	100	100			50	0%	27%
6	100	100			75	0%	27%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	95	95	80	0%	0%

Table G4: South Run (VAN-A19R-04) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						9%	33%
1	100					8%	33%
2	100	50				0%	33%
3	100	100				0%	33%
4	100	100	100	100		0%	0%
5	100	100			50	0%	33%
6	100	100			75	0%	33%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	95	95	50	0%	0%

Table G5: Kettle Run (VAN-A19R-03) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						60%	97%
1	100					60%	97%
2	100	50				43%	94%
3	100	100				1%	33%
4	100	100	100	100		1%	0%
5	100	100			50	0%	33%
6	100	100			75	0%	33%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	95	95	50	0%	0%

Table G6: Popes Head Creek (VAN-A23R-02) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						19%	81%
1	100					18%	81%
2	100	50				13%	74%
3	100	100				11%	33%
4	100	100	100	100		11%	0%
5	100	100			50	0%	33%
6	100	100			75	0%	33%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	95	95	48	0%	0%

Table G7: Little Bull Run (VAN-A21R-01) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						26%	90%
1	100					26%	90%
2	100	50				1%	30%
3	100	100				0%	30%
4	100	100	100	100		0%	0%
5	100	100			50	0%	30%
6	100	100			75	0%	30%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	90	90	0	0%	0%

Table G8: Bull Run (VAN-A23R-01) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						11%	37%
1	100					11%	37%
2	100	50				0%	37%
3	100	100				0%	37%
4	100	100	100	100		0%	7%
5	100	100			50	0%	37%
6	100	100			75	0%	33%
7	100	100	95	95	75	0%	0%
8 (TMDL)	100	100	90	90	0	0%	0%

Table G9 Occoquan River (VAN-A20R-01) Load Reduction Scenario under 30-Day Geometric Mean and Instantaneous Standards for E. *coli*

Scenario	Septics & Pipe	Direct Cattle	Ag. NPS	NPS Urban	Direct Wildlife	Exceedence of Geometric Mean E. *coli* Standard	Exceedence of Instantaneous E. *coli* Standard
0						7%	37%
1	100					7%	37%
2	100	50				4%	37%
3	100	100				3%	37%
4	100	100	100	100		0%	7%
5	100	100			50	2%	37%
6	100	100			75	2%	37%
7	100	100	95	95	75	0%	10%
8 (TMDL)	100	100	95	95	0	0%	0%

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Appendix H

Monthly Distribution of Fecal Coliform Loading Under Existing and Allocated Conditions

Table H-1 Broad Run - 34 (VAN-A19R-01) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	1.36E+11	3.19E+10	2.38E+11	1.35E+12	4.67E+11	3.70E+09	4.32E+10	1.24E+12
2	1.12E+11	3.62E+10	2.26E+11	1.30E+12	4.34E+11	3.03E+09	4.13E+10	1.15E+12
3	1.51E+11	4.91E+10	2.53E+11	1.29E+12	4.59E+11	4.12E+09	4.19E+10	1.19E+12
4	1.17E+11	3.13E+10	1.49E+11	6.02E+11	2.24E+11	3.23E+09	2.08E+10	5.64E+11
5	1.42E+11	4.13E+10	2.54E+11	1.42E+12	5.13E+11	3.88E+09	4.37E+10	1.30E+12
6	1.40E+11	5.30E+10	3.46E+11	2.13E+12	7.14E+11	3.80E+09	6.59E+10	1.92E+12
7	1.21E+11	2.78E+10	1.26E+11	3.41E+11	1.20E+11	3.38E+09	1.37E+10	2.97E+11
8	9.49E+10	2.66E+10	1.33E+11	5.82E+11	2.18E+11	2.63E+09	1.85E+10	5.41E+11
9	1.25E+11	4.17E+10	2.24E+11	1.18E+12	4.03E+11	3.44E+09	3.91E+10	1.09E+12
10	7.77E+10	2.56E+10	1.31E+11	6.54E+11	2.20E+11	2.13E+09	2.18E+10	5.85E+11
11	9.07E+10	2.33E+10	1.57E+11	8.79E+11	3.24E+11	2.48E+09	2.73E+10	8.19E+11
12	1.06E+11	2.16E+10	1.82E+11	1.03E+12	3.46E+11	2.90E+09	3.36E+10	9.19E+11

Table H-2 Broad Run - 40 (VAN-A19R-02) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	3.89E+10	7.60E+09	5.27E+10	3.12E+11	3.08E+10	1.48E+08	1.39E+09	0.00E+00
2	3.21E+10	8.62E+09	5.02E+10	3.01E+11	2.86E+10	1.21E+08	1.33E+09	0.00E+00
3	4.31E+10	1.17E+10	5.61E+10	2.99E+11	3.02E+10	1.65E+08	1.35E+09	0.00E+00
4	3.34E+10	7.46E+09	3.31E+10	1.39E+11	1.48E+10	1.29E+08	6.69E+08	0.00E+00
5	4.06E+10	9.85E+09	5.63E+10	3.29E+11	3.39E+10	1.55E+08	1.40E+09	0.00E+00
6	4.03E+10	1.26E+10	7.66E+10	4.94E+11	4.71E+10	1.52E+08	2.12E+09	0.00E+00
7	3.48E+10	6.63E+09	2.79E+10	7.90E+10	7.94E+09	1.35E+08	4.40E+08	0.00E+00
8	2.72E+10	6.33E+09	2.95E+10	1.35E+11	1.44E+10	1.05E+08	5.95E+08	0.00E+00
9	3.60E+10	9.94E+09	4.97E+10	2.74E+11	2.65E+10	1.37E+08	1.26E+09	0.00E+00
10	2.23E+10	6.09E+09	2.90E+10	1.52E+11	1.45E+10	8.50E+07	7.02E+08	0.00E+00
11	2.60E+10	5.56E+09	3.48E+10	2.04E+11	2.14E+10	9.91E+07	8.78E+08	0.00E+00
12	3.05E+10	5.16E+09	4.04E+10	2.40E+11	2.28E+10	1.16E+08	1.08E+09	0.00E+00

Table H-3 Broad Run - 42 (VAN-A19R-05) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	3.55E+10	1.10E+10	1.01E+11	1.12E+11	4.20E+10	2.46E+07	0.00E+00	0.00E+00
2	2.92E+10	1.25E+10	9.61E+10	1.08E+11	3.91E+10	2.02E+07	0.00E+00	0.00E+00
3	3.93E+10	1.70E+10	1.07E+11	1.07E+11	4.12E+10	2.74E+07	0.00E+00	0.00E+00
4	3.05E+10	1.08E+10	6.33E+10	5.01E+10	2.01E+10	2.15E+07	0.00E+00	0.00E+00
5	3.70E+10	1.43E+10	1.08E+11	1.18E+11	4.62E+10	2.58E+07	0.00E+00	0.00E+00
6	3.67E+10	1.83E+10	1.47E+11	1.78E+11	6.42E+10	2.53E+07	0.00E+00	0.00E+00
7	3.17E+10	9.61E+09	5.34E+10	2.84E+10	1.08E+10	2.25E+07	0.00E+00	0.00E+00
8	2.48E+10	9.18E+09	5.64E+10	4.85E+10	1.96E+10	1.75E+07	0.00E+00	0.00E+00
9	3.28E+10	1.44E+10	9.52E+10	9.86E+10	3.62E+10	2.29E+07	0.00E+00	0.00E+00
10	2.03E+10	8.82E+09	5.56E+10	5.45E+10	1.97E+10	1.42E+07	0.00E+00	0.00E+00
11	2.37E+10	8.05E+09	6.66E+10	7.32E+10	2.91E+10	1.65E+07	0.00E+00	0.00E+00
12	2.78E+10	7.47E+09	7.75E+10	8.62E+10	3.11E+10	1.93E+07	0.00E+00	0.00E+00

Table H-4 Bull Run - 9 (VAN-A23R-01) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	2.23E+10	6.38E+07	4.48E+09	1.39E+12	4.65E+10	7.73E+08	1.48E+10	1.11E+12
2	1.83E+10	7.22E+07	4.27E+09	1.34E+12	4.33E+10	6.34E+08	1.41E+10	1.02E+12
3	2.47E+10	9.82E+07	4.77E+09	1.33E+12	4.57E+10	8.62E+08	1.43E+10	1.06E+12
4	1.91E+10	6.25E+07	2.81E+09	6.22E+11	2.23E+10	6.75E+08	7.12E+09	5.03E+11
5	2.32E+10	8.26E+07	4.79E+09	1.47E+12	5.11E+10	8.10E+08	1.49E+10	1.16E+12
6	2.30E+10	1.06E+08	6.52E+09	2.21E+12	7.11E+10	7.95E+08	2.25E+10	1.71E+12
7	1.99E+10	5.56E+07	2.37E+09	3.53E+11	1.20E+10	7.07E+08	4.68E+09	2.65E+11
8	1.56E+10	5.31E+07	2.50E+09	6.02E+11	2.17E+10	5.49E+08	6.34E+09	4.82E+11
9	2.06E+10	8.34E+07	4.23E+09	1.22E+12	4.01E+10	7.18E+08	1.34E+10	9.69E+11
10	1.27E+10	5.11E+07	2.47E+09	6.76E+11	2.19E+10	4.45E+08	7.47E+09	5.22E+11
11	1.49E+10	4.66E+07	2.96E+09	9.09E+11	3.23E+10	5.19E+08	9.35E+09	7.30E+11
12	1.75E+10	4.33E+07	3.44E+09	1.07E+12	3.45E+10	6.07E+08	1.15E+10	8.19E+11

Table H-5 Kettle Run (VAN-A19R-03) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	2.95E+10	2.30E+10	4.73E+10	6.46E+11	2.35E+10	3.05E+08	8.03E+09	3.14E+10
2	2.43E+10	2.61E+10	4.50E+10	6.23E+11	2.19E+10	2.50E+08	7.68E+09	2.91E+10
3	3.27E+10	3.55E+10	5.03E+10	6.18E+11	2.31E+10	3.40E+08	7.78E+09	3.02E+10
4	2.53E+10	2.26E+10	2.97E+10	2.88E+11	1.13E+10	2.66E+08	3.87E+09	1.43E+10
5	3.07E+10	2.99E+10	5.05E+10	6.82E+11	2.58E+10	3.20E+08	8.12E+09	3.31E+10
6	3.05E+10	3.83E+10	6.88E+10	1.02E+12	3.59E+10	3.14E+08	1.22E+10	4.86E+10
7	2.63E+10	2.01E+10	2.50E+10	1.64E+11	6.06E+09	2.79E+08	2.54E+09	7.54E+09
8	2.06E+10	1.92E+10	2.64E+10	2.79E+11	1.10E+10	2.17E+08	3.44E+09	1.37E+10
9	2.72E+10	3.01E+10	4.46E+10	5.67E+11	2.03E+10	2.84E+08	7.27E+09	2.75E+10
10	1.69E+10	1.85E+10	2.61E+10	3.14E+11	1.11E+10	1.76E+08	4.06E+09	1.48E+10
11	1.97E+10	1.68E+10	3.12E+10	4.21E+11	1.63E+10	2.05E+08	5.08E+09	2.08E+10
12	2.31E+10	1.56E+10	3.63E+10	4.96E+11	1.74E+10	2.40E+08	6.24E+09	2.33E+10

Table H-6 Little Bull Run (VAN-A21R-01) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	3.74E+10	5.91E+09	3.93E+10	2.63E+11	5.04E+10	2.41E+08	2.32E+10	2.99E+11
2	3.09E+10	6.70E+09	3.74E+10	2.54E+11	4.69E+10	1.98E+08	2.22E+10	2.77E+11
3	4.15E+10	9.10E+09	4.18E+10	2.52E+11	4.95E+10	2.69E+08	2.25E+10	2.88E+11
4	3.22E+10	5.80E+09	2.46E+10	1.17E+11	2.42E+10	2.11E+08	1.12E+10	1.36E+11
5	3.91E+10	7.66E+09	4.20E+10	2.78E+11	5.54E+10	2.53E+08	2.35E+10	3.15E+11
6	3.88E+10	9.82E+09	5.71E+10	4.17E+11	7.71E+10	2.48E+08	3.54E+10	4.63E+11
7	3.35E+10	5.16E+09	2.08E+10	6.67E+10	1.30E+10	2.21E+08	7.36E+09	7.18E+10
8	2.62E+10	4.92E+09	2.20E+10	1.14E+11	2.36E+10	1.71E+08	9.96E+09	1.31E+11
9	3.46E+10	7.73E+09	3.71E+10	2.31E+11	4.35E+10	2.24E+08	2.10E+10	2.62E+11
10	2.14E+10	4.73E+09	2.17E+10	1.28E+11	2.37E+10	1.39E+08	1.17E+10	1.41E+11
11	2.50E+10	4.32E+09	2.59E+10	1.72E+11	3.50E+10	1.62E+08	1.47E+10	1.98E+11
12	2.94E+10	4.01E+09	3.02E+10	2.02E+11	3.74E+10	1.89E+08	1.80E+10	2.22E+11

Table H-7 Occoquan River (VAN-A20R-01) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	4.03E+10	5.84E+09	1.57E+10	2.05E+12	2.34E+11	9.15E+08	3.33E+10	1.88E+12
2	3.32E+10	6.61E+09	1.49E+10	1.97E+12	2.18E+11	7.49E+08	3.19E+10	1.74E+12
3	4.47E+10	8.99E+09	1.67E+10	1.96E+12	2.30E+11	1.02E+09	3.23E+10	1.81E+12
4	3.46E+10	5.72E+09	9.85E+09	9.12E+11	1.12E+11	7.98E+08	1.61E+10	8.55E+11
5	4.21E+10	7.56E+09	1.68E+10	2.16E+12	2.57E+11	9.58E+08	3.37E+10	1.98E+12
6	4.17E+10	9.70E+09	2.28E+10	3.24E+12	3.58E+11	9.40E+08	5.08E+10	2.91E+12
7	3.60E+10	5.09E+09	8.30E+09	5.18E+11	6.03E+10	8.36E+08	1.06E+10	4.51E+11
8	2.82E+10	4.86E+09	8.78E+09	8.83E+11	1.09E+11	6.50E+08	1.43E+10	8.20E+11
9	3.73E+10	7.63E+09	1.48E+10	1.80E+12	2.02E+11	8.50E+08	3.02E+10	1.65E+12
10	2.31E+10	4.67E+09	8.65E+09	9.92E+11	1.10E+11	5.26E+08	1.68E+10	8.87E+11
11	2.69E+10	4.26E+09	1.04E+10	1.33E+12	1.62E+11	6.13E+08	2.11E+10	1.24E+12
12	3.16E+10	3.96E+09	1.21E+10	1.57E+12	1.74E+11	7.18E+08	2.59E+10	1.39E+12

Table H-8 Popes Head (VAN-A23R-02) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	1.45E+11	3.69E+10	1.69E+11	2.70E+12	1.63E+12	5.91E+09	1.94E+11	1.10E+13
2	1.20E+11	4.18E+10	1.61E+11	2.60E+12	1.52E+12	4.84E+09	1.86E+11	1.02E+13
3	1.61E+11	5.67E+10	1.80E+11	2.58E+12	1.60E+12	6.58E+09	1.88E+11	1.06E+13
4	1.25E+11	3.61E+10	1.06E+11	1.20E+12	7.83E+11	5.15E+09	9.35E+10	5.00E+12
5	1.52E+11	4.77E+10	1.80E+11	2.85E+12	1.80E+12	6.19E+09	1.96E+11	1.16E+13
6	1.50E+11	6.12E+10	2.46E+11	4.27E+12	2.50E+12	6.07E+09	2.96E+11	1.70E+13
7	1.30E+11	3.21E+10	8.93E+10	6.84E+11	4.21E+11	5.40E+09	6.15E+10	2.64E+12
8	1.02E+11	3.07E+10	9.44E+10	1.17E+12	7.64E+11	4.19E+09	8.32E+10	4.80E+12
9	1.34E+11	4.82E+10	1.59E+11	2.37E+12	1.41E+12	5.49E+09	1.76E+11	9.63E+12
10	8.32E+10	2.95E+10	9.31E+10	1.31E+12	7.69E+11	3.40E+09	9.81E+10	5.19E+12
11	9.71E+10	2.69E+10	1.11E+11	1.76E+12	1.13E+12	3.96E+09	1.23E+11	7.26E+12
12	1.14E+11	2.50E+10	1.30E+11	2.07E+12	1.21E+12	4.64E+09	1.51E+11	8.15E+12

Table H-9 South Run (VAN-A19R-04) Fecal Coliform Load: Existing Condition (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	7.58E+09	3.36E+08	1.54E+10	3.42E+11	1.60E+10	3.94E+08	3.38E+08	2.37E+09
2	6.25E+09	3.81E+08	1.46E+10	3.30E+11	1.49E+10	3.23E+08	3.23E+08	2.19E+09
3	8.41E+09	5.18E+08	1.63E+10	3.27E+11	1.58E+10	4.39E+08	3.27E+08	2.28E+09
4	6.52E+09	3.30E+08	9.63E+09	1.53E+11	7.69E+09	3.44E+08	1.63E+08	1.08E+09
5	7.91E+09	4.36E+08	1.64E+10	3.61E+11	1.76E+10	4.13E+08	3.41E+08	2.49E+09
6	7.85E+09	5.58E+08	2.23E+10	5.41E+11	2.45E+10	4.05E+08	5.15E+08	3.66E+09
7	6.77E+09	2.93E+08	8.12E+09	8.66E+10	4.14E+09	3.60E+08	1.07E+08	5.68E+08
8	5.30E+09	2.80E+08	8.58E+09	1.48E+11	7.50E+09	2.80E+08	1.45E+08	1.03E+09
9	7.01E+09	4.40E+08	1.45E+10	3.00E+11	1.38E+10	3.66E+08	3.06E+08	2.08E+09
10	4.34E+09	2.69E+08	8.46E+09	1.66E+11	7.55E+09	2.27E+08	1.71E+08	1.12E+09
11	5.06E+09	2.46E+08	1.01E+10	2.23E+11	1.11E+10	2.64E+08	2.14E+08	1.57E+09
12	5.94E+09	2.28E+08	1.18E+10	2.62E+11	1.19E+10	3.09E+08	2.62E+08	1.76E+09

Table H-10 Broad Run - 34 (VAN-A19R-01) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	2.04E+10	4.79E+09	3.56E+10	2.02E+11	7.01E+10	5.55E+08	6.48E+09	1.86E+11
2	1.68E+10	5.42E+09	3.39E+10	1.95E+11	6.52E+10	4.55E+08	6.20E+09	1.72E+11
3	2.26E+10	7.37E+09	3.79E+10	1.94E+11	6.88E+10	6.18E+08	6.29E+09	1.79E+11
4	1.75E+10	4.69E+09	2.24E+10	9.02E+10	3.36E+10	4.84E+08	3.12E+09	8.46E+10
5	2.12E+10	6.20E+09	3.81E+10	2.13E+11	7.70E+10	5.81E+08	6.56E+09	1.96E+11
6	2.11E+10	7.95E+09	5.18E+10	3.20E+11	1.07E+11	5.70E+08	9.89E+09	2.88E+11
7	1.82E+10	4.17E+09	1.88E+10	5.12E+10	1.81E+10	5.07E+08	2.05E+09	4.46E+10
8	1.42E+10	3.99E+09	1.99E+10	8.73E+10	3.27E+10	3.94E+08	2.78E+09	8.12E+10
9	1.88E+10	6.26E+09	3.36E+10	1.78E+11	6.04E+10	5.15E+08	5.87E+09	1.63E+11
10	1.17E+10	3.83E+09	1.96E+10	9.82E+10	3.30E+10	3.19E+08	3.28E+09	8.78E+10
11	1.36E+10	3.50E+09	2.35E+10	1.32E+11	4.86E+10	3.72E+08	4.10E+09	1.23E+11
12	1.60E+10	3.25E+09	2.73E+10	1.55E+11	5.20E+10	4.36E+08	5.04E+09	1.38E+11

Table H-11 Broad Run - 40 (VAN-A19R-02) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	3.89E+09	7.60E+08	5.27E+09	3.12E+10	3.08E+09	1.48E+07	1.39E+08	0.00E+00
2	3.21E+09	8.62E+08	5.02E+09	3.01E+10	2.86E+09	1.21E+07	1.33E+08	0.00E+00
3	4.31E+09	1.17E+09	5.61E+09	2.99E+10	3.02E+09	1.65E+07	1.35E+08	0.00E+00
4	3.34E+09	7.46E+08	3.31E+09	1.39E+10	1.48E+09	1.29E+07	6.69E+07	0.00E+00
5	4.06E+09	9.85E+08	5.63E+09	3.29E+10	3.39E+09	1.55E+07	1.40E+08	0.00E+00
6	4.03E+09	1.26E+09	7.66E+09	4.94E+10	4.71E+09	1.52E+07	2.12E+08	0.00E+00
7	3.48E+09	6.63E+08	2.79E+09	7.90E+09	7.94E+08	1.35E+07	4.40E+07	0.00E+00
8	2.72E+09	6.33E+08	2.95E+09	1.35E+10	1.44E+09	1.05E+07	5.95E+07	0.00E+00
9	3.60E+09	9.94E+08	4.97E+09	2.74E+10	2.65E+09	1.37E+07	1.26E+08	0.00E+00
10	2.23E+09	6.09E+08	2.90E+09	1.52E+10	1.45E+09	8.50E+06	7.02E+07	0.00E+00
11	2.60E+09	5.56E+08	3.48E+09	2.04E+10	2.14E+09	9.91E+06	8.78E+07	0.00E+00
12	3.05E+09	5.16E+08	4.04E+09	2.40E+10	2.28E+09	1.16E+07	1.08E+08	0.00E+00

Table H-12 Broad Run - 42 (VAN-A19R-05) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	1.77E+09	5.51E+08	5.05E+09	5.62E+09	2.10E+09	1.23E+06	0.00E+00	0.00E+00
2	1.46E+09	6.24E+08	4.80E+09	5.42E+09	1.95E+09	1.01E+06	0.00E+00	0.00E+00
3	1.97E+09	8.48E+08	5.37E+09	5.37E+09	2.06E+09	1.37E+06	0.00E+00	0.00E+00
4	1.52E+09	5.40E+08	3.17E+09	2.51E+09	1.01E+09	1.07E+06	0.00E+00	0.00E+00
5	1.85E+09	7.14E+08	5.39E+09	5.92E+09	2.31E+09	1.29E+06	0.00E+00	0.00E+00
6	1.84E+09	9.15E+08	7.34E+09	8.89E+09	3.21E+09	1.27E+06	0.00E+00	0.00E+00
7	1.58E+09	4.80E+08	2.67E+09	1.42E+09	5.41E+08	1.13E+06	0.00E+00	0.00E+00
8	1.24E+09	4.59E+08	2.82E+09	2.42E+09	9.81E+08	8.75E+05	0.00E+00	0.00E+00
9	1.64E+09	7.20E+08	4.76E+09	4.93E+09	1.81E+09	1.14E+06	0.00E+00	0.00E+00
10	1.02E+09	4.41E+08	2.78E+09	2.73E+09	9.87E+08	7.08E+05	0.00E+00	0.00E+00
11	1.18E+09	4.03E+08	3.33E+09	3.66E+09	1.46E+09	8.26E+05	0.00E+00	0.00E+00
12	1.39E+09	3.74E+08	3.87E+09	4.31E+09	1.56E+09	9.67E+05	0.00E+00	0.00E+00

Table H-13 Bull Run - 9 (VAN-A23R-01) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	2.23E+09	6.38E+06	4.48E+08	1.39E+11	4.65E+09	7.73E+07	1.48E+09	1.11E+11
2	1.83E+09	7.22E+06	4.27E+08	1.34E+11	4.33E+09	6.34E+07	1.41E+09	1.02E+11
3	2.47E+09	9.82E+06	4.77E+08	1.33E+11	4.57E+09	8.62E+07	1.43E+09	1.06E+11
4	1.91E+09	6.25E+06	2.81E+08	6.22E+10	2.23E+09	6.75E+07	7.12E+08	5.03E+10
5	2.32E+09	8.26E+06	4.79E+08	1.47E+11	5.11E+09	8.10E+07	1.49E+09	1.16E+11
6	2.30E+09	1.06E+07	6.52E+08	2.21E+11	7.11E+09	7.95E+07	2.25E+09	1.71E+11
7	1.99E+09	5.56E+06	2.37E+08	3.53E+10	1.20E+09	7.07E+07	4.68E+08	2.65E+10
8	1.56E+09	5.31E+06	2.50E+08	6.02E+10	2.17E+09	5.49E+07	6.34E+08	4.82E+10
9	2.06E+09	8.34E+06	4.23E+08	1.22E+11	4.01E+09	7.18E+07	1.34E+09	9.69E+10
10	1.27E+09	5.11E+06	2.47E+08	6.76E+10	2.19E+09	4.45E+07	7.47E+08	5.22E+10
11	1.49E+09	4.66E+06	2.96E+08	9.09E+10	3.23E+09	5.19E+07	9.35E+08	7.30E+10
12	1.75E+09	4.33E+06	3.44E+08	1.07E+11	3.45E+09	6.07E+07	1.15E+09	8.19E+10

Table H-14 Kettle Run (VAN-A19R-03) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	1.47E+09	1.15E+09	2.37E+09	3.23E+10	1.18E+09	1.53E+07	4.01E+08	1.57E+09
2	1.21E+09	1.31E+09	2.25E+09	3.12E+10	1.09E+09	1.25E+07	3.84E+08	1.45E+09
3	1.63E+09	1.77E+09	2.52E+09	3.09E+10	1.15E+09	1.70E+07	3.89E+08	1.51E+09
4	1.27E+09	1.13E+09	1.48E+09	1.44E+10	5.63E+08	1.33E+07	1.93E+08	7.15E+08
5	1.54E+09	1.49E+09	2.53E+09	3.41E+10	1.29E+09	1.60E+07	4.06E+08	1.65E+09
6	1.52E+09	1.91E+09	3.44E+09	5.11E+10	1.80E+09	1.57E+07	6.12E+08	2.43E+09
7	1.32E+09	1.00E+09	1.25E+09	8.18E+09	3.03E+08	1.40E+07	1.27E+08	3.77E+08
8	1.03E+09	9.60E+08	1.32E+09	1.39E+10	5.49E+08	1.08E+07	1.72E+08	6.86E+08
9	1.36E+09	1.51E+09	2.23E+09	2.84E+10	1.01E+09	1.42E+07	3.63E+08	1.38E+09
10	8.43E+08	9.23E+08	1.30E+09	1.57E+10	5.53E+08	8.78E+06	2.03E+08	7.42E+08
11	9.84E+08	8.42E+08	1.56E+09	2.11E+10	8.15E+08	1.02E+07	2.54E+08	1.04E+09
12	1.15E+09	7.82E+08	1.81E+09	2.48E+10	8.72E+08	1.20E+07	3.12E+08	1.16E+09

Table H-15 Little Bull Run (VAN-A21R-01) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	3.74E+09	5.91E+08	3.93E+09	2.63E+10	5.04E+09	2.41E+07	2.32E+09	2.99E+10
2	3.09E+09	6.70E+08	3.74E+09	2.54E+10	4.69E+09	1.98E+07	2.22E+09	2.77E+10
3	4.15E+09	9.10E+08	4.18E+09	2.52E+10	4.95E+09	2.69E+07	2.25E+09	2.88E+10
4	3.22E+09	5.80E+08	2.46E+09	1.17E+10	2.42E+09	2.11E+07	1.12E+09	1.36E+10
5	3.91E+09	7.66E+08	4.20E+09	2.78E+10	5.54E+09	2.53E+07	2.35E+09	3.15E+10
6	3.88E+09	9.82E+08	5.71E+09	4.17E+10	7.71E+09	2.48E+07	3.54E+09	4.63E+10
7	3.35E+09	5.16E+08	2.08E+09	6.67E+09	1.30E+09	2.21E+07	7.36E+08	7.18E+09
8	2.62E+09	4.92E+08	2.20E+09	1.14E+10	2.36E+09	1.71E+07	9.96E+08	1.31E+10
9	3.46E+09	7.73E+08	3.71E+09	2.31E+10	4.35E+09	2.24E+07	2.10E+09	2.62E+10
10	2.14E+09	4.73E+08	2.17E+09	1.28E+10	2.37E+09	1.39E+07	1.17E+09	1.41E+10
11	2.50E+09	4.32E+08	2.59E+09	1.72E+10	3.50E+09	1.62E+07	1.47E+09	1.98E+10
12	2.94E+09	4.01E+08	3.02E+09	2.02E+10	3.74E+09	1.89E+07	1.80E+09	2.22E+10

Table H-16 Occoquan River (VAN-A20R-01) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	2.02E+09	2.92E+08	7.85E+08	1.02E+11	1.17E+10	4.57E+07	1.67E+09	9.40E+10
2	1.66E+09	3.31E+08	7.47E+08	9.86E+10	1.09E+10	3.75E+07	1.59E+09	8.70E+10
3	2.23E+09	4.49E+08	8.35E+08	9.78E+10	1.15E+10	5.09E+07	1.62E+09	9.04E+10
4	1.73E+09	2.86E+08	4.92E+08	4.56E+10	5.61E+09	3.99E+07	8.03E+08	4.28E+10
5	2.10E+09	3.78E+08	8.39E+08	1.08E+11	1.29E+10	4.79E+07	1.68E+09	9.89E+10
6	2.09E+09	4.85E+08	1.14E+09	1.62E+11	1.79E+10	4.70E+07	2.54E+09	1.45E+11
7	1.80E+09	2.54E+08	4.15E+08	2.59E+10	3.02E+09	4.18E+07	5.28E+08	2.26E+10
8	1.41E+09	2.43E+08	4.39E+08	4.41E+10	5.47E+09	3.25E+07	7.14E+08	4.10E+10
9	1.86E+09	3.82E+08	7.40E+08	8.98E+10	1.01E+10	4.25E+07	1.51E+09	8.24E+10
10	1.15E+09	2.34E+08	4.33E+08	4.96E+10	5.51E+09	2.63E+07	8.42E+08	4.44E+10
11	1.35E+09	2.13E+08	5.18E+08	6.67E+10	8.12E+09	3.07E+07	1.05E+09	6.21E+10
12	1.58E+09	1.98E+08	6.03E+08	7.84E+10	8.68E+09	3.59E+07	1.29E+09	6.97E+10

Table H-17 Popes Head (VAN-A23R-02) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	7.27E+09	1.84E+09	8.44E+09	1.35E+11	8.17E+10	2.95E+08	9.70E+09	5.50E+11
2	5.99E+09	2.09E+09	8.04E+09	1.30E+11	7.60E+10	2.42E+08	9.28E+09	5.09E+11
3	8.06E+09	2.84E+09	8.98E+09	1.29E+11	8.02E+10	3.29E+08	9.41E+09	5.29E+11
4	6.25E+09	1.81E+09	5.30E+09	6.02E+10	3.91E+10	2.58E+08	4.68E+09	2.50E+11
5	7.58E+09	2.39E+09	9.02E+09	1.42E+11	8.98E+10	3.09E+08	9.81E+09	5.78E+11
6	7.52E+09	3.06E+09	1.23E+10	2.14E+11	1.25E+11	3.04E+08	1.48E+10	8.50E+11
7	6.49E+09	1.61E+09	4.46E+09	3.42E+10	2.11E+10	2.70E+08	3.07E+09	1.32E+11
8	5.08E+09	1.53E+09	4.72E+09	5.83E+10	3.82E+10	2.10E+08	4.16E+09	2.40E+11
9	6.72E+09	2.41E+09	7.96E+09	1.19E+11	7.04E+10	2.74E+08	8.78E+09	4.82E+11
10	4.16E+09	1.48E+09	4.65E+09	6.55E+10	3.84E+10	1.70E+08	4.90E+09	2.59E+11
11	4.85E+09	1.35E+09	5.57E+09	8.80E+10	5.67E+10	1.98E+08	6.14E+09	3.63E+11
12	5.70E+09	1.25E+09	6.48E+09	1.04E+11	6.06E+10	2.32E+08	7.54E+09	4.07E+11

Table H-18 South Run (VAN-A19R-04) Fecal Coliform Load: Allocation Run (counts/ month)

Month	Forest	Cropland	Pasture	Low Density Residential	Commercial/ Industrial	Water/Wet land	Other Urban	High Density Residential
1	3.79E+08	1.68E+07	7.68E+08	1.71E+10	8.02E+08	1.97E+07	1.69E+07	1.18E+08
2	3.12E+08	1.90E+07	7.31E+08	1.65E+10	7.46E+08	1.61E+07	1.62E+07	1.10E+08
3	4.20E+08	2.59E+07	8.17E+08	1.64E+10	7.88E+08	2.20E+07	1.64E+07	1.14E+08
4	3.26E+08	1.65E+07	4.82E+08	7.63E+09	3.84E+08	1.72E+07	8.14E+06	5.39E+07
5	3.95E+08	2.18E+07	8.20E+08	1.80E+10	8.82E+08	2.06E+07	1.71E+07	1.25E+08
6	3.92E+08	2.79E+07	1.12E+09	2.71E+10	1.23E+09	2.03E+07	2.57E+07	1.83E+08
7	3.39E+08	1.47E+07	4.06E+08	4.33E+09	2.07E+08	1.80E+07	5.35E+06	2.84E+07
8	2.65E+08	1.40E+07	4.29E+08	7.38E+09	3.75E+08	1.40E+07	7.24E+06	5.17E+07
9	3.50E+08	2.20E+07	7.24E+08	1.50E+10	6.92E+08	1.83E+07	1.53E+07	1.04E+08
10	2.17E+08	1.35E+07	4.23E+08	8.30E+09	3.77E+08	1.13E+07	8.54E+06	5.59E+07
11	2.53E+08	1.23E+07	5.07E+08	1.11E+10	5.56E+08	1.32E+07	1.07E+07	7.83E+07
12	2.97E+08	1.14E+07	5.89E+08	1.31E+10	5.95E+08	1.55E+07	1.31E+07	8.78E+07