308 N. Lincoln Ave.
Sterling, VA 20164
January 1, 2004

Joyce F. Brooks
Citizen Monitoring Coordinator
Virginia Department of Environmental Quality
P.O. Box 10009
Richmond, VA 23240-0009

Dear Joyce,

This responds to your request for nominations regarding water bodies to be monitored by DEQ. We have decided to address this request by focusing on waters that we believe are threatened in Loudoun County but are not being routinely monitored by DEQ. We hope this will be consistent with DEQ's mission of classifying state waters including following up on waters monitored by citizen groups and other agencies that suggest that water quality standards are not being met. Waters currently considered threatened by DEQ are listed in Appendix A. This will also allow Loudoun Watershed Watch to work with DEQ to better identify other waters that should be designated as threatened.

There are four sources of data that we are using for this analysis: (1) Loudoun Wildlife Conservancy (LWC), (2) Loudoun County Soil and Water Conservation District (LCSWCD), (3) North Fork Goose Creek Watershed Association (NFGCWA), and (4) Loudoun County Sanitation Authority (LCSA). We have not had an opportunity to update our data files from these organizations so we are using the same 1996-2002 data as was used in the "State of Loudoun Streams: 2002" report.

We recognize that DEQ does not accept monitoring data from some of these sources because they have not provided the type of documentation regarding their monitoring program as required by DEQ. Nevertheless, LWW believes these data have sufficient validity for our purpose of identifying threatened waters (see Appendix B). We also believe these data are sufficient to rebut the presumption that stream segments outside the impaired portions not sampled by DEQ meet state water quality standards. It is our understanding that this presumption is applied to any county waters not sampled by DEQ.

We seek to expand DEQ's list of threatened waters in Loudoun County because we believe it is important to establish an accurate profile of waters in Loudoun County that may not meet water quality standards. This information will be important to the county as they expand their water quality monitoring and as they begin watershed management plans. It is also important for educational programs for citizens. There is much data not used by DEQ in the 305b report that supports the need to expand the list. For example, the models used by DEQ in the TMDL's for Catoctin Creek and Goose Creek showed that large sections of the waters throughout the watershed do not meet water quality standards. These data we are presenting provide further information that confirm the model findings.

It is not our intent to suggest that DEQ should sample all of these waters. In most cases the waters are in watersheds with an existing TMDL and are being targeted for restoration. Therefore, these waters should be included in DEQ's monitoring as part of the ongoing TMDL implementation assessment. There are, however, some waters that should receive priority attention in 2004. The following are our nominations listed in priority order:

1. **Broad Run** – This is the second time we have recommended increased sampling in Broad Run. Please see Appendix C for background information regarding this recommendation. The monitoring needs are:
    a. A bacteriological station should be established at Rt. 625 (Waxpool Rd) in order to delineate the extent of the impairment.
    b. A bacteriological station should also be established at the mouth of Beaverdam Run to monitor drainage from the Ashburn area.
2. **Dutchman's Creek --** Currently there is no sampling being done by DEQ on Dutchman's Creek. Dutchman's Creek drains the Lovettsville area which is experiencing high growth. As a result residential communities are replacing wood lots and farms. A bacteriological sampling station is needed near the mouth of Dutchman's Creek at DEQ AW station 1ADUT000.62 in order to monitor this drainage.
3. **North Fork Goose Creek –** There has been no DEQ biological monitoring in the North Fork Goose Creek to assess threats to aquatic life. It is recommended that biomonitoring stations be established at Rt. 728, Rt. 729, and Rt. 733 in order to determine whether there is an aquatic life impairment.
4. **Beaverdam Creek --** There has been no DEQ biological monitoring in the Beaverdam Creek watershed. There is a need to establish biomonitoring stations in Beaverdam Creek and NF Beaverdam Creek to assess whether aquatic life impairments exist. Sampling is recommended at Rt. 731 in Beaverdam Creek and in the threatened area at Rt. 630 in NF Beaverdam Creek.
5. **Tuscarora Creek –** There has been no DEQ biological monitoring in Tuscarora Creek. There is a need for DEQ to follow-up and conduct a biological assessment of these threatened waters to determine whether a benthic impairment exists.
6. **Sugarland Run** -- There has been no DEQ biological monitoring in Sugarland Run. There is a need for DEQ to follow-up and conduct a biological assessment of these threatened waters to determine whether a benthic impairment exists. A recommended monitoring site is at Thomas Ave in Sterling.

We will be glad to provide further information regarding these recommendations as needed. Please let us know if you have any questions.

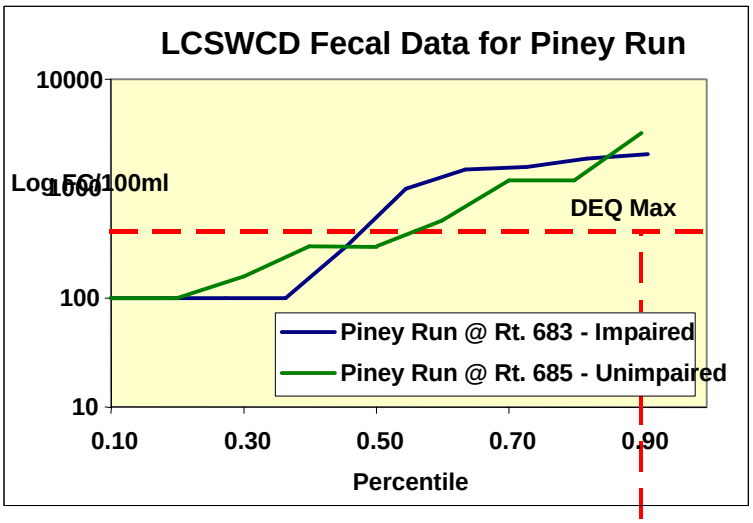
Sincerely,

Darrell Schwalm
Chairman, Monitoring Data and Research Subcommittee
Loudoun Watershed Watch

Water Quality Monitoring Needs in Threatened Waters in Loudoun County – 2004

1. Piney Run (A01)

Bacteriological Water Quality – Loudoun County Soil and Water Conservation District (LCSWCD) has two stations on Piney Run: (a) at Rt. 683 in the impaired segment, and (b) at Rt. 685 upstream in the unimpaired segment. The data graph show both stations with similar fecal coliform levels, and that both stations greatly exceed the water quality standard. There has been no DEQ monitoring in the upstream, unimpaired segment.



Aquatic Life – LCSWCD has two stations on the main stem and LWC has one station at the mouth of the unnamed tributary near Rt. 685. Benthic macroinvertebrate communities at all stations are good to excellent.

Conclusion – Local agency monitoring in Piney Run shows the water quality in the unimpaired segment upstream of the impairment has poor water quality similar to the downstream-impaired segment, and the upstream segment should be considered threatened. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

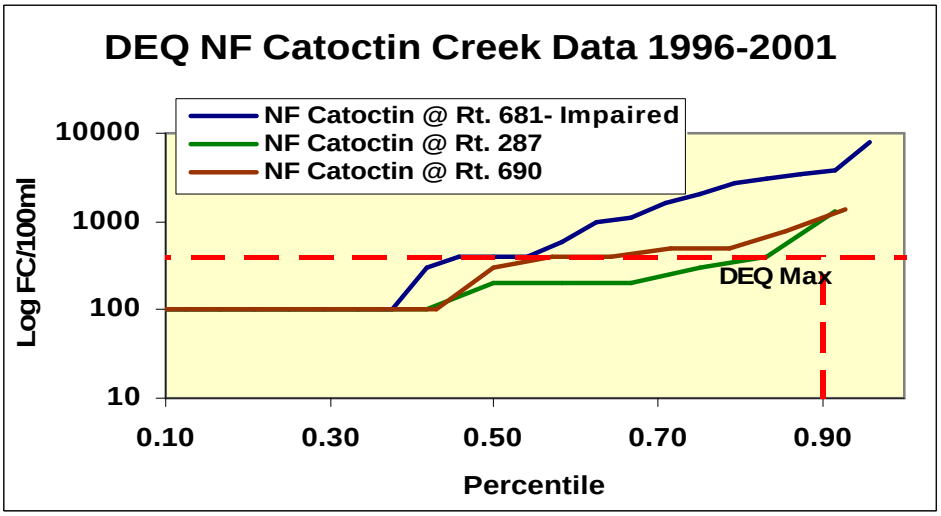
2. Dutchman's Creek (A01)

Currently there is no sampling being done by DEQ on Dutchman's Creek. Dutchman's Creek drains the Lovettsville area which is experiencing high growth. As a result residential communities are replacing wood lots and farms.

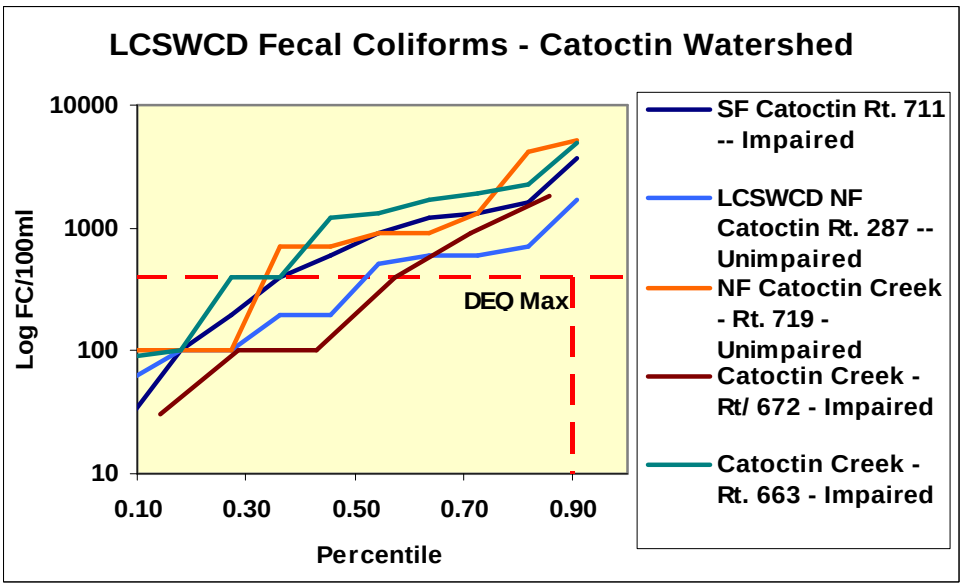
Conclusion – A bacteriological sampling station is needed near the mouth of Dutchman's Creek at DEQ AW station 1ADUT000.62 in order to monitor this drainage.

3. Catoctin Creek (A02)

Bacteriological Water Quality – There are three DEQ stations in the North Fork Catoctin Creek – one in the impaired area at Rt. 681, and two in unimpaired segments at Rt. 287 and Rt. 690/812. The plots of these data for the NF Catoctin Creek show that the fecal levels at all stations exceed the standard.



LCSWCD has five stations in the Catoctin Watershed – three in the impaired portions and two in unimpaired segments in the North Fork Catoctin Creek. The plot of the fecal coliform data shows that the water quality at all stations is similar, and exceeds the water quality standard.

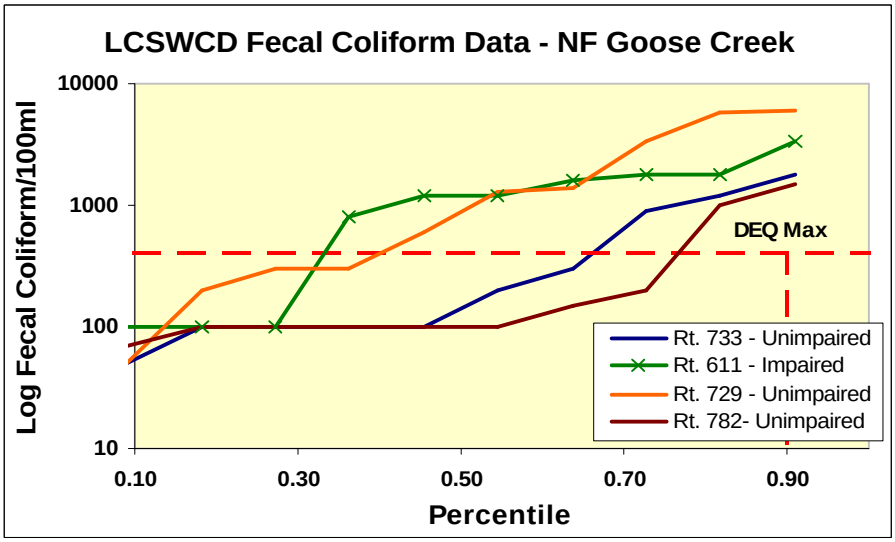


Aquatic Life – LCSWCD has five stations in the watershed using the SOS protocol, and LWC has four stations using the EPA RBPII protocol. Benthic macroinvertebrate communities at all stations are generally good to excellent with the exception of the LWC station on the South Fork Catoctin in Purcellville. DEQ will be designating this segment as impaired on the 2004 303(d) list.

Conclusions – DEQ and local agency fecal coliform monitoring at four stations in unimpaired, upstream segment the North Fork Catoctin Creek show there is poor water quality similar to the downstream impaired segment, and the upstream segment should be considered threatened. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

4. North Fork Goose Creek (A06)

Bacteriological Water Quality – LCSWCD has four stations in the North Fork Goose Creek Watershed – one in the impaired portion and three in unimpaired segments. The graph of the fecal coliform data shows that the water quality at all stations exceeds the water quality standard. There has been no DEQ sampling in the upstream, unimpaired portion of the stream until 2003.



Aquatic Life – LCSWCD has four stations in the watershed using the SOS protocol, North Fork Goose Creek Watershed Association (NFGC) has three stations using the SOS protocol, and LWC has one station using the ANS/EPA RBPII protocol. Benthic macroinvertebrate community ratings at the LCSWCD station (#8), the NFGC station (#1), and LWC station (#7) below Sleeter Lake are generally poor to excellent. DEQ has designated 2.5 miles downstream from Sleeter Lake as threatened based on the LWC data.

LCSWCD station #7 and NFGC station #5 at Rt. 729 downstream of the confluence with Crooked Run and LCSWCD station #3 at Rt. 733 at the mouth of NF Goose show poor to good aquatic insect community ratings. There is no DEQ biological data for the NF Goose Creek watershed.

LCSWCD Benthic Data at Rt. 729-- Site #7		NFGC Benthic Data at Rt. 729 -- # 5		LCSWCD Benthic Data at Rt. 733 -- Site #3	
Date	**SOS Rating**	**Date**	**SOS Rating**	**Date**	**SOS Rating**
Aug-99	Fair	07/26/00	Fair	Aug-99	Good
Nov-99	Good	02/12/01	Fair	Nov-99	Fair
Jun-00	Good	05/18/01	Poor	Jun-00	Good
Feb-01	Good	08/13/01	Fair	Feb-01	Fair

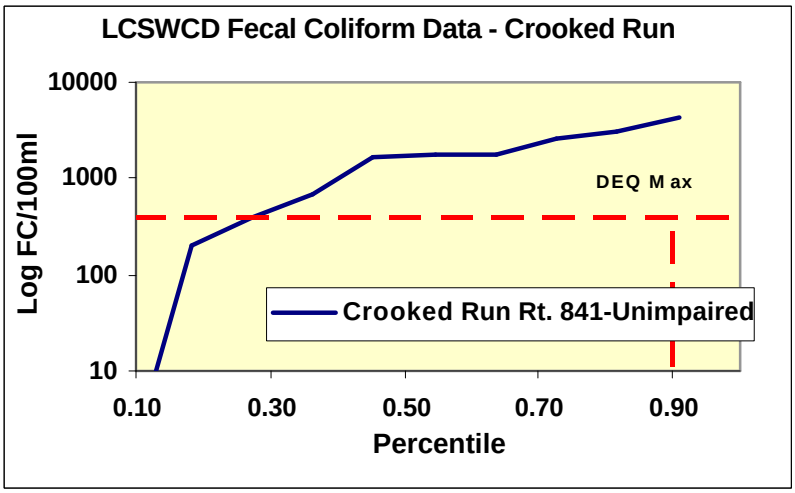
Conclusions -- Local agency bacteriological monitoring for fecal coliform at three stations in unimpaired segments downstream and upstream of the impaired segment in North Fork Goose Creek show there is poor water quality similar to the impaired segment. Other portions of the NF Goose Creek waters should be considered threatened. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

Local agency and citizen biological monitoring at two stations suggest there are additional portions of the North Fork Goose Creek that should be considered threatened for aquatic life.

- Biomonitoring stations should be established at Rt. 728, Rt. 729, and Rt. 733 in order to determine whether there is an aquatic life impairment.

5. Crooked Run (A06)

Bacteriological Water Quality – LCSWCD has one station (#6) in the Crooked Run Watershed. The graph of the fecal coliform data shows that the water quality at this station greatly exceeds the water quality standard. There has been no DEQ sampling in this stream.



Aquatic Life – LCSWCD has one station in the watershed using the SOS protocol, and LWC has one station using the ANS/EPA RBPII protocol. Benthic macroinvertebrate communities at both stations are generally good to excellent. There is no DEQ biological data for the Crooked Run watershed.

Conclusion -- Local agency bacteriological monitoring in this unimpaired stream shows there is poor water quality. These waters should be considered threatened. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

6. Beaverdam Creek (A07)

Bacteriological Water Quality – LCSWCD has one station (#4) in the Beaverdam Creek Watershed at Rt. 731 near DEQ station 1ABEC004.76 in the impaired segment of the stream. There are no bacteriological monitoring stations in the unimpaired portions of the stream above the confluence with the NF Beaverdam Creek, or in the NF Beaverdam Creek.

Aquatic Life – LCSWCD has one station in the Beaverdam Creek watershed using the SOS protocol, and LWC has two station using the ANS/EPA RBPII protocol; one on the NF Beaverdam Creek and one on Butcher's Run. The benthic macroinvertebrate community at the LCSWCD station is generally rated as marginal as shown in the table. Benthic macroinvertebrate communities at the two LWC stations (#9 and #10) at different locations are generally rated as fair to good. DEQ has designated 2.9 miles of NF Beaverdam Creek upstream from its mouth as threatened based on the LWC station #9 data. There are no DEQ biological data for the Beaverdam Creek watershed.

LCSWCD Aquatic Insect Data for Beaverdam Creek at Rt. 731 -- Site #4

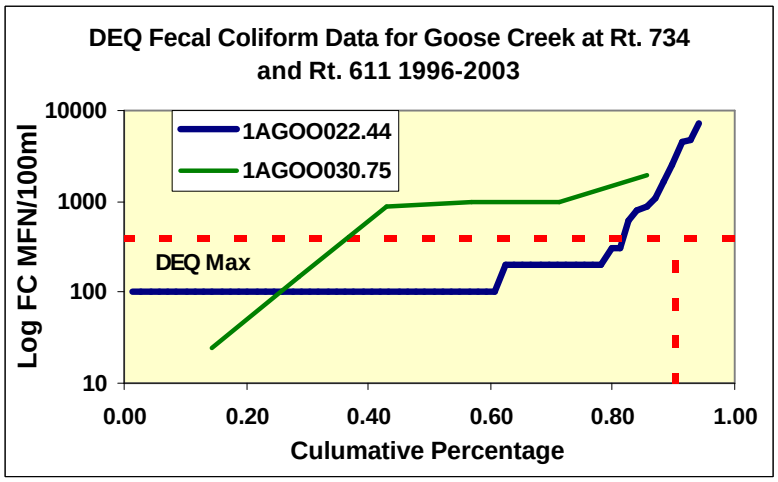
Date	SOS Rating
Aug-99	Fair
Nov-99	Fair
Jun-00	Excellent
Feb-01	Good

Conclusion – The unimpaired waters in Beaverdam Creek should be monitored by DEQ as part of the ongoing TMDL implementation assessment. A recommended site is DEQ (AW) 1ABEC011.19 station at Rt. 626.

There is a need to establish biomonitoring stations in Beaverdam Creek and NF Beaverdam Creek to assess whether aquatic life impairments exist. Sampling at Rt. 731 in Beaverdam Creek and Rt. 630 in NF Beaverdam Creek are recommended.

7. Middle Goose Creek (A08)

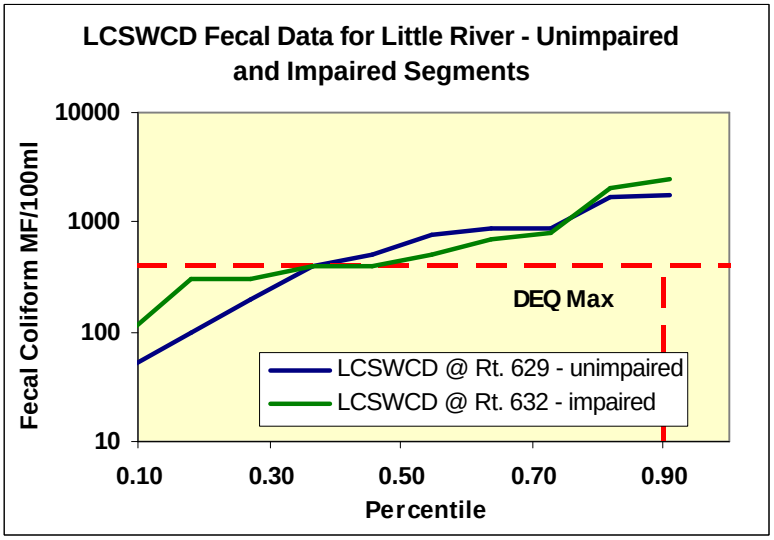
Bacteriological Water Quality – DEQ has two stations in the unimpaired portion of the middle section of Goose Creek in Loudoun County. The graph shows that the bacteriological quality of this section of the stream does not meet the water quality standard.



Conclusion – DEQ bacteriological monitoring at two stations upstream from the impaired portion of the stream shows there is poor water quality. These data indicate the waters should be considered threatened. This is consistent with the finding of the TMDL study that water quality is poor throughout the Goose Creek watershed. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

8. Little River (A08)

Bacteriological Water Quality – LCSWCD has one station (#4) in the impaired portion of Little River Watershed at Rt. 731 near DEQ station 1ABEC004.76, and a second station (#1) in the unimpaired upstream portion. The graph shows that the bacteriological quality of the upstream portion is similar to the downstream, impaired portion.

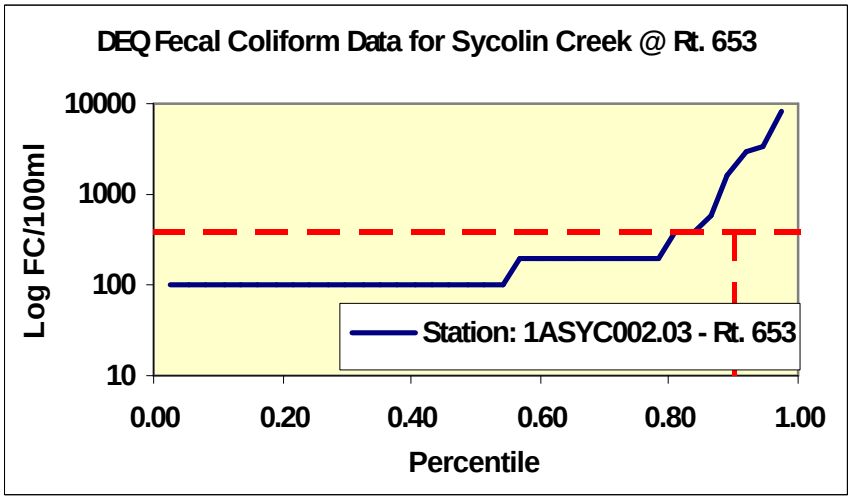


Aquatic Life – LCSWCD has two stations in the Little River watershed using the SOS protocol. The benthic macroinvertebrate communities at the two stations are generally good to excellent.

Conclusion – Local agency bacteriological monitoring at one station upstream from the unimpaired portion of the stream shows there is poor water quality. These data indicate the waters should be considered threatened. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

9. Sycolin Creek (A08)

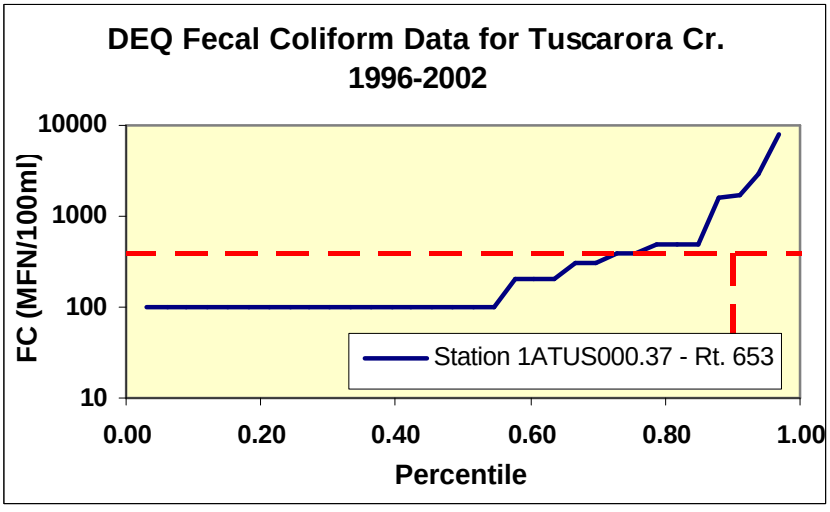
Bacteriological Water Quality – DEQ has one station in the unimpaired portion of Sycolin Creek. The graph shows that the bacteriological quality at this station does not meet the water quality standard.



Conclusion – DEQ bacteriological monitoring in Sycolin Creek shows there is poor water quality and that these waters should be considered threatened. This is consistent with the finding of the TMDL study that water quality is poor throughout the Goose Creek watershed. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

10. Tuscarora Creek (A08)

Bacteriological Water Quality – DEQ has one station in Tuscarora Creek in Loudoun County. The graph shows that the bacteriological quality of this stream does not meet the water quality standard.



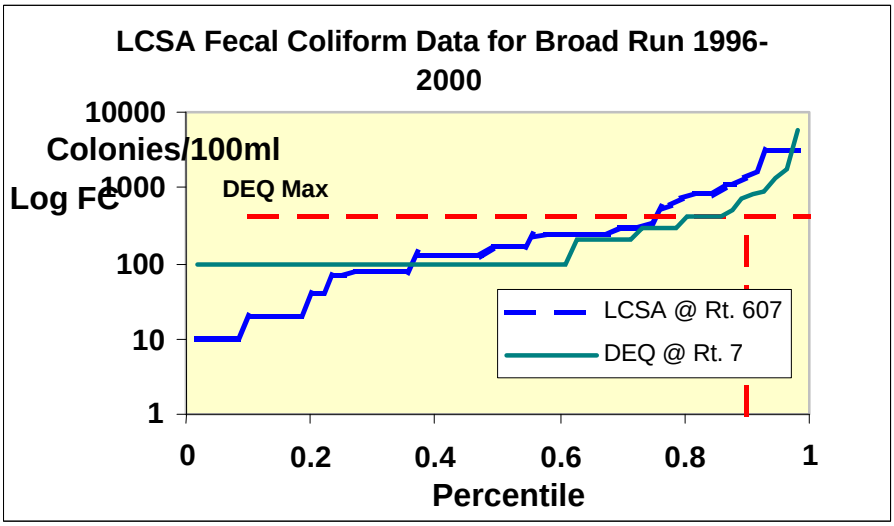
Aquatic Life – LWC has monitored at Lawson Rd. since 1997 using the EPA RBP protocol. The benthic macroinvertebrate community at the station is generally rated as poor to good. DEQ designated 3.6 miles upstream from the confluence with Goose Creek as threatened in 2002 based on the LWC data. There has been no DEQ biomonitoring in Tuscarora Creek.

Conclusion – DEQ bacteriological monitoring in Tuscarora Creek shows there is poor water quality and that these waters should be considered threatened. This is consistent with the finding of the TMDL study that water quality is poor throughout the Goose Creek watershed. These waters should be monitored by DEQ as part of the ongoing TMDL implementation assessment.

There is a need to monitor the aquatic life in Tuscarora Creek to determine whether there is a benthic impairment.

11. Broad Run Watershed (A09)

Bacteriological Water Quality – DEQ has one station in Broad Run at Rt. 7 in Loudoun County. The graph shows that the bacteriological quality of this section of the stream does not meet the water quality standard. Loudoun County Sanitation Authority (LCSA) also has a station in Broad Run about ½ mile upstream of the DEQ station at Rt. 7. The graph shows the bacteriological quality of the water at this station also does not meet the water quality standard.



Conclusion – DEQ bacteriological monitoring in Broad Run shows there is poor water quality and that these waters should be considered threatened.

- In order to delineate the extent of the impairment, a bacteriological station should be established at Rt. 625 Waxpool Rd).
- A bacteriological station should also be established at the mouth of Beaverdam Run.

12. Sugarland Run (A10)

Aquatic Life – LWC has monitored at two stations in Sugarland Run using the EPA RBP protocol. The benthic macroinvertebrate communities at the two stations are generally rated as fair to poor. Monitoring data from a citizens group in Fairfax using the SOS protocol has found similar results. DEQ considers Sugarland Run threatened for aquatic life, but has not sampled the waters to do an impairment assessment.

LWC Benthic Macroinvertebrate Data for Sugarland Run 1999-2002

Date	EPA Biosurvey Condition Category
Sugarland Run @ Rt. 604 in Fairfax	
7/16/2002	Fair
Sugarland Run Downstream from Heritage High School	
6/3/2002	Fair
7/7/2002	Fair
1/9/2003	Poor

Conclusion – There is a need for DEQ to establish a biomonitoring monitoring station in Sugarland Run to follow up and assess this water that is threatened for aquatic life. A recommended site is at Thomas Ave in Sterling.

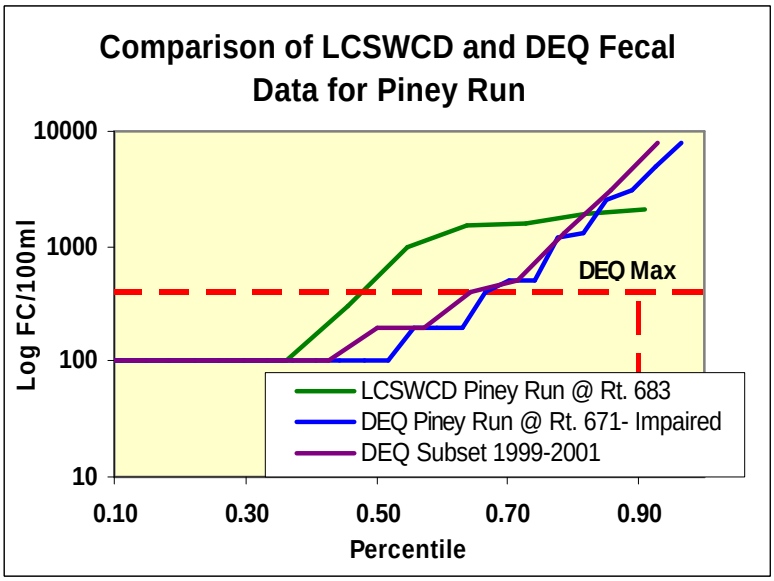
APPENDIX A.
Waters Designated by DEQ as Threatened in 2002 305(b) Report

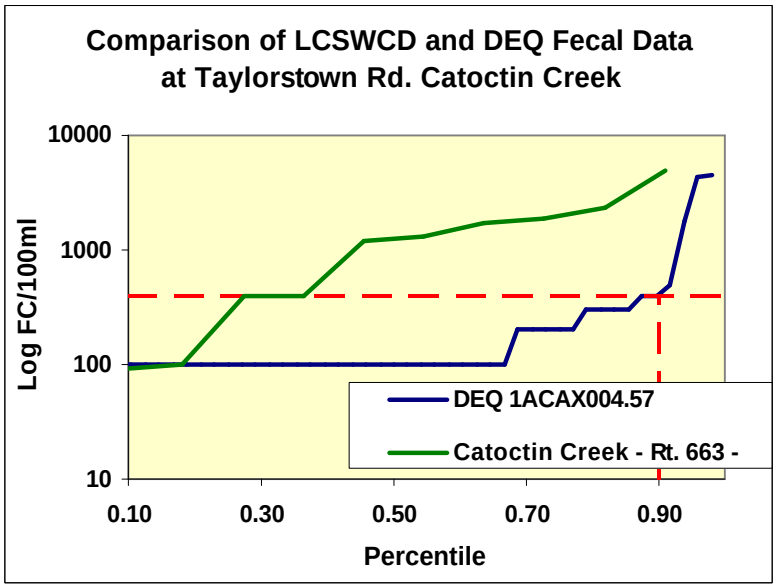
Name of Waters	Data Base Used	Description
North Fork Goose Creek	LWC Site 7 -- macroinvertebrates (moderate rating)	**Aquatic Life Use - Threatened -** 2.5 stream miles segment begins at the outlet from Sleeter Lake and continues downstream to the confluence with Jacks Run.
North Fork Goose Creek	DEQ - 1aNOG005.69 sufficient exceedances of the phosphorous screening value of 200 ug/L were recorded	**Aquatic Life Use - Threatened –** 4.3 miles segment begins at the confluence of an unnamed tributary to North Fork Goose Creek, approximately 0.25 river miles upstream from the Route 725 bridge, and continues downstream to its confluence with Crooked Run, approximately 0.35 river miles upstream from Route 729 bridge.
North Fork Beaverdam Creek	LWC Site 9 -- macroinvertebrates (moderate rating)	**Aquatic Life Use - Threatened** - 2.9 mile segment begins at the confluence of an unnamed tributary to the North Fork Beaverdam Creek, near the Rt. 730 bridge crossing the unnamed tributary, and continues downstream to the confluence with the main stem of Beaverdam Creek.
Tuscarora Creek	LWC Site 2 - macroinvertebrates (poor rating)	**Aquatic Life Use - Threatened** - 3.6 miles segment begins at the confluence of Town Branch to Tuscarora Creek, approximately 0.55 rivermile upstream of the Route 643 Bridge, downstream to its confluence with Goose Creek.
Sycolin Creek	DEQ -- 1aSYC002.03	**Drinking Water Supply - Threatened**[1] - **2.9 miles s**egment begins at the confluence of an unnamed tributary to Sycolin Creek, approximately 0.23 rivermiles upstream from Route 643, and continues downstream to its confluence with Goose Creek.
Broad Run	DEQ -- 1aBRB002.15	**Drinking Water Supply - Threatened**[1] - 2.9 miles segment begins at the confluence of Beaverdam Run to Broad Run, approximately 0.8 rivermiles upstream of Route 7, and continues downstream to its confluence with the Potomac River.
Sugarland Run	Friends of Sugarland Run	**Aquatic Life Use - Threatened** - 5.8 miles segment begins at the confluence of Folly Lick Branch to Sugarland Run and continues downstream to its confluence with the Potomac River.

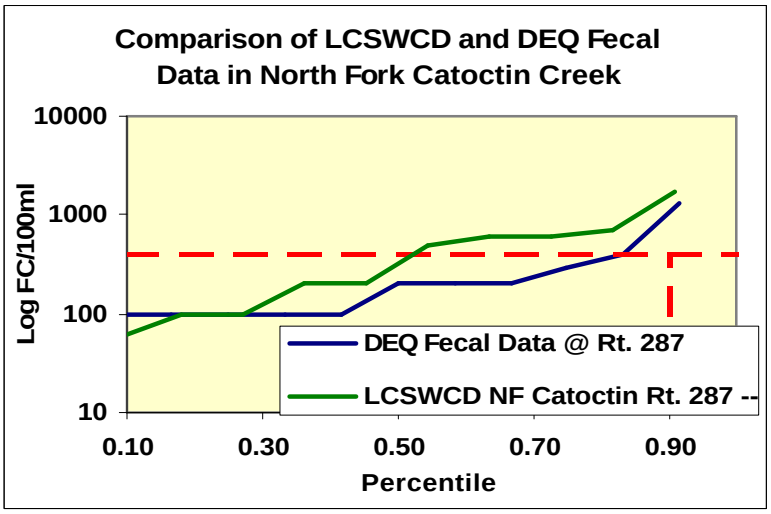
[1] Note: The Mn water quality criteria apply in public water supplies. This is a taste and odor criteria and plans for the 2003 triennial review are to have these criteria apply only at the intake. Therefore, this criterion [and the significance] will soon drop from the threatened list.

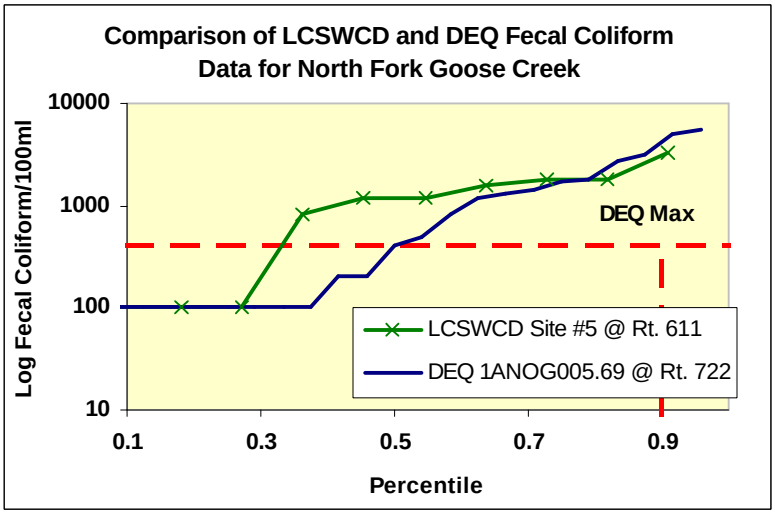
APPENDIX B.
Comparison of LCSWCD and DEQ Fecal Coliform Data

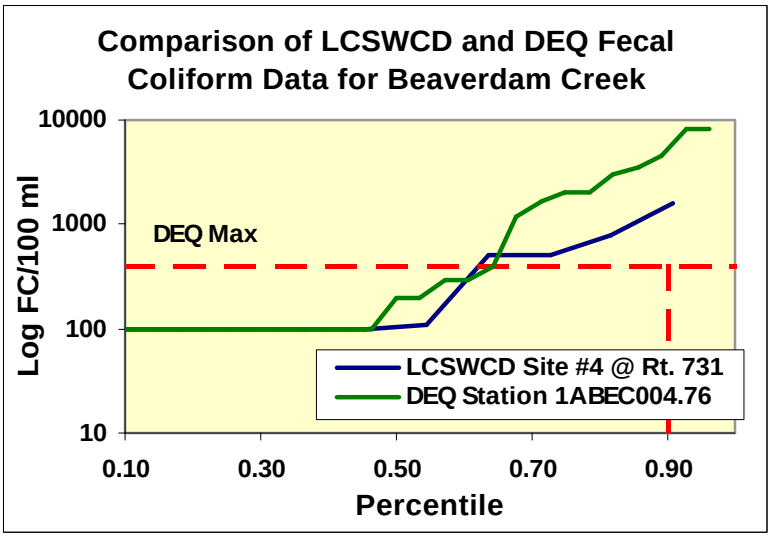
There are six stations sampled by LCSWCD for fecal coliform bacteria that are very near stations sampled by DEQ. These stations allow a graphical comparison to be made of the two data sets (no attempt is made to do a statistical comparison). These analyses are provided in the following graphs. In each case, the LCSWCD data consists of ten data points collected over three years. The DEQ data set consists of 20 or more samples collected over six years (1996-2001). These graphs show poor correlation for Catoctin at Taylorstown; moderately good correlation for Piney Run, NF Catoctin Creek, and NF Goose Creek; and very good correlation for Beaverdam Creek and Little River.

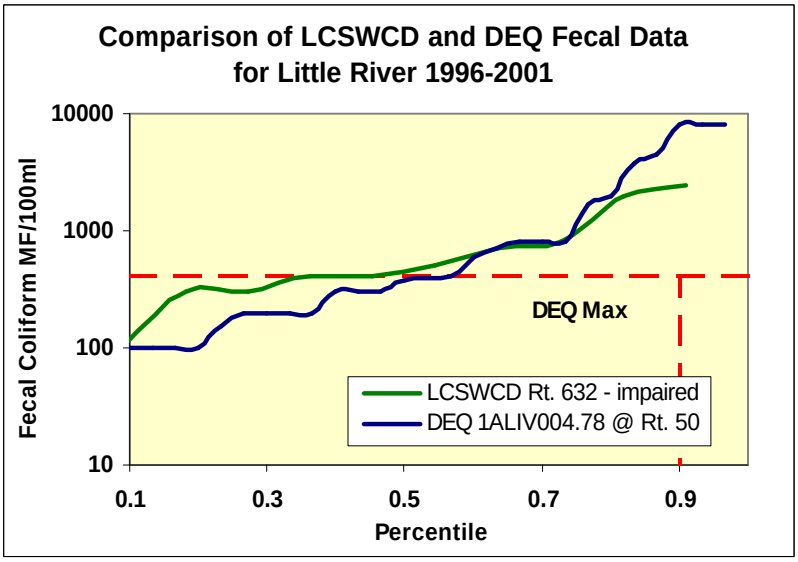





Comparison of LCSWCD and DEQ Fecal Data in North Fork Catoctin Creek
Log FC/100ml
10000
1000
100
10
0.10
0.30
0.50
0.70
0.90
Percentile
DEQ Fecal Data @ Rt. 287
LCSWCD NF Catoctin Rt. 287 --


Comparison of LCSWCD and DEQ Fecal Coliform Data for North Fork Goose Creek
Log Fecal Coliform/100ml
10000
1000
100
10
0.1
0.3
0.5
0.7
0.9
Percentile
DEQ Max
LCSWCD Site #5 @ Rt. 611
DEQ 1ANOG005.69 @ Rt. 722


Comparison of LCSWCD and DEQ Fecal Coliform Data for Beaverdam Creek
Log FC/100 ml
10000
1000
100
10
0.10
0.30
0.50
0.70
0.90
Percentile
DEQ Max
LCSWCD Site #4 @ Rt. 731
DEQ Station 1ABEC004.76


Comparison of LCSWCD and DEQ Fecal Data
for Little River 1996-2001
Fecal Coliform MF/100ml
10000
1000
100
10
0.1
0.3
0.5
0.7
0.9
Percentile
DEQ Max
LCSWCD Rt. 632 - impaired
DEQ 1ALIV004.78 @ Rt. 50

APPENDIX C.
Nomination for DEQ Monitoring

(1) Name of the water body or segment proposed for monitoring:

Broad Run, Hydrologic Unit A09, Loudoun County

(2) Description of the upstream and downstream boundaries of the water body proposed for monitoring. Attach a map (preferably a photocopy of a 7.5 minute quad USGS topographic map) which delineates the boundaries:

Broad Run, Hydrologic Unit A09, Loudoun County, between Arcola (Rt. 659) and Harry Byrd Highway (Rt. 7). Two additional stations are proposed:

(a) Broad Run at Rt. 625/640, Waxpool Road;

(b) Beaverdam Run at Rt. 607, Loudoun County Parkway.

(3) Reason for requesting that this water body be monitored:

The quality of the water and health of the stream habitat in the Broad Run watershed is not well documented. There is one DEQ monitoring station in the main stem of the stream, and one station about one mile upstream that is monitored by the Loudoun County Sanitation Authority.

There is extensive suburban development that is rapidly altering the nature of the land throughout the headwaters of Broad Run. The main stem is also under heavy pressure from industrial park, residential and other development in its watershed. Riparian buffer zones are poor to marginal in several segments of the stream where the land is in agricultural use. Runoff of sediments into the stream is a problem in some of these segments as well as from construction sites.

The amount of impervious surface in the Broad Run watershed is estimated at 10%. This level of imperviousness can be expected to begin to have a noticeable impact on the hydrological characterisitics of the watershed. Further impact can be anticipated as land use continues to change and imperviousness increases in a watershed that is designated for high residential and industrial growth.

Monitoring of fecal contamination by DEQ shows intermittent spikes of contamination at a rate that does not meet state standards. The Loudoun County Sanitation Authority fecal coliform data shows the same pattern but at a more frequent rate that also does not meet state standards. It is suspected that the intermittent spikes occur when pollutants are flushed off the land from impervious surfaces and storm drains into segments of the streams with poor riparian buffers under rainfall conditions.

The limited data show that the Broad Run watershed is impacted by human activities and the health of the stream is being stressed as a result. This is an important stream in a rapidly developing urban area that should receive high priority attention to maintain its quality and preserve its use to the large population that will reside within the watershed.

In 2001 DEQ adopted a rotational monitoring program in which each watershed is sampled two (2) years out of every six (6) year. Broad Run is scheduled to be sampled in the last cycle that will begin in 2006. In addition, the frequency of monitoring has been reduced from monthly to bimonthly so that within a two-year cycle, each monitoring site will have only 12 sample results. This lower frequency will likely not adequately assess the spikes in intermittent nonpoint pollution that have historically affected the quality of this stream and health of the watershed.