

## **2.15 Mainstem 7**

### **2.15.1 General Characteristics**

Mainstem 7 flows in a southeasterly direction approximately five miles, from the north side of Fort Belvoir Proving Ground to Telegraph Road/Route 611. This tributary has a drainage area of 2,391 acres.

The majority of the assessed streams within the Mainstem 7 WMA are characterized as moderate to low gradient glide/pool streams with active widening and bank erosion. The channel bed is primarily cobble.

### **2.15.2 Field Reconnaissance**

In the Mainstem 7 WMA field crews assessed two neighborhoods and conducted four Hotspot Site Investigations. The results of these assessments are discussed below.

The Fairfax Assisted Living is a multifamily development. The area is 50 percent impervious cover, 40 percent grass cover, ten percent landscaping, and ten percent tree cover. Sidewalks were present with clean and dry curbs and gutters. Storm drain inlets were not stenciled, but were free of obstruction. There was open space with stream buffers in the floodplain with no encroachment evident.

Southgate Woods is a multifamily development located at Telegraph Road and Whernside Street. Lots had approximately 50 percent impervious cover, 45 percent grass cover, 5 percent landscaping, and 5 percent tree cover. Tires were found dumped in a dry stormwater management pond. Sidewalks were present with clean and dry curbs and gutters. Storm drain inlets were not stenciled, but were free of obstruction.

At the Virginia 95 Interstate Park and Fullerton Industrial Park vehicles were stored outdoors without diversion runoff. Leaks were evident. At Enterprise, vehicles were washed outdoors in an area that discharged directly to the storm drain. Garbage dumpsters were not covered. This location was identified as a potential hotspot.

At U-Haul on Terminal Road, approximately 30 fleet vehicles were stored outside without runoff diversion. Leaks were evident. Vehicles were washed in a garage, but wash water went directly into a storm drain inlet and a concrete channel. There was visible staining around an outdoor storage area connected to the storm drain system. The approximately 10-year-old building appeared clean, but the paved parking lot was stained. This site was identified as a confirmed hotspot.

Deen Park is a fueling station where fleet vehicles were fueled and stored uncovered outside. Leaks and spills were evident. There was a swale draining the parking lot which led to a stream channel. There were no private storm drains observed. This site was identified as a potential hotspot.

At D&K Heavy Truck Repair, approximately 30 large trucks were stored, repaired, and fueled in uncovered outdoor areas. This site was not identified as a hotspot.

### 2.15.3 Land Use

The Mainstem 7 WMA is characterized by a large amount of open space, parks and recreation areas with 41 percent of the watershed area set aside for these uses. Another 23 percent of the WMA is industrial development. See Map 2-30, attached, for details.

Future land use is projected to change in the open space, estate residential and low-intensity commercial land use categories. The most significant change is a loss in open space (-120 acres) which will primarily be met with gains in low-density residential (64 acres), industrial (30 acres), medium-density residential (20 acres) and high-intensity commercial (14 acres) categories. A summary of the land use within the WMA is shown in Table 2-29

**Table 2-29 - Mainstem 7 Existing and Future Land Use**

Land Use Type	Existing		Future		Change	
	Acres	Percent	Acres	Percent	Acres	Percent
Open Space, Parks and Recreational Areas	986	41	865	36	-121	-12
Golf Course	0	0	0	0	0	0
Estate Residential	5	0	0	0	-5	-100
Low-Density Residential	56	2	119	5	63	113
Medium-Density Residential	166	7	186	8	20	12
High-Density Residential	114	5	114	5	0	0
Low-Intensity Commercial	54	2	52	2	-2	-4
High-Intensity Commercial	51	2	66	3	15	29
Industrial	540	23	571	24	31	6
Institutional	22	1	21	1	-1	-5
Transportation	358	15	358	15	0	0
Water	39	2	39	2	0	0
<b>Total</b>	<b>2,391</b>	<b>100</b>	<b>2,391</b>	<b>100</b>	<b>0</b>	<b>0</b>

Due to rounding error, total percentages may be slightly greater or lesser than 100.

Total impervious area for the WMA is approximately 651 acres, or 27 percent of the total WMA area of 2,391 acres.

### 2.15.4 Stormwater Infrastructure

#### *Stormwater Management*

County records indicate that there are 61 stormwater management facilities within the Mainstem 7 WMA. These facilities provide control for 17 percent of the WMA. Thirteen percent of the total area has quantity control only, 3 percent receives both quantity and quality control and the remaining 1 percent has only quality control. Stormwater infrastructure is shown on Map 2-18, attached.

### 2.15.5 Stream Condition

Stream conditions for this WMA are shown on Map 2-19, attached.

#### *Erosion*

There was a total of 50 linear feet of erosion identified on the right stream bank in the WMA at one specific erosion location south of Boston Boulevard. This erosion site has moderate restoration potential.

### *Outfall Impacts*

There are fifteen outfall pipes located within the Mainstem 7 WMA. All of the pipes were within 100 feet of the stream channel and ranged in size from 12 inches to 84 inches. None of the pipes were causing erosion.

### *Stream Crossings*

Seven stream crossings were identified in the Mainstem 7 WMA. None of the crossings were having a significant impact on stream condition or causing any type of erosion.

### *Obstructions*

There are two obstruction sites located in the Mainstem 7 WMA, one which is trees and the other a beaver dam. The obstruction site with the trees, located west of Telegraph Road, is thought to be impacting fish movement within the stream.

### *Stream Buffers*

All of the stream buffers within the Mainstem 7 WMA are lawns and pavement. There were eight deficient buffer points. Severe encroachment is not present in any of these stream buffers.

### *Habitat*

As part of the Stream Physical Assessment in 2003, the stream physical habitat was characterized along the streams in the Mainstem 7 WMA. Of the assessed reaches, 92 percent of the length was classified as good, 7 percent as fair and 1 percent as poor.

Approximately 67 percent of the glide/pool streams were characterized as optimal for bottom substrate/available cover and 56 percent for pool substrate characterization. Almost all of the streams were classified as suboptimal for channel flow status (normal flow).

### **2.15.6 WMA Modeling**

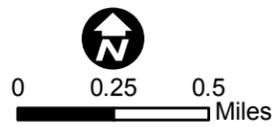
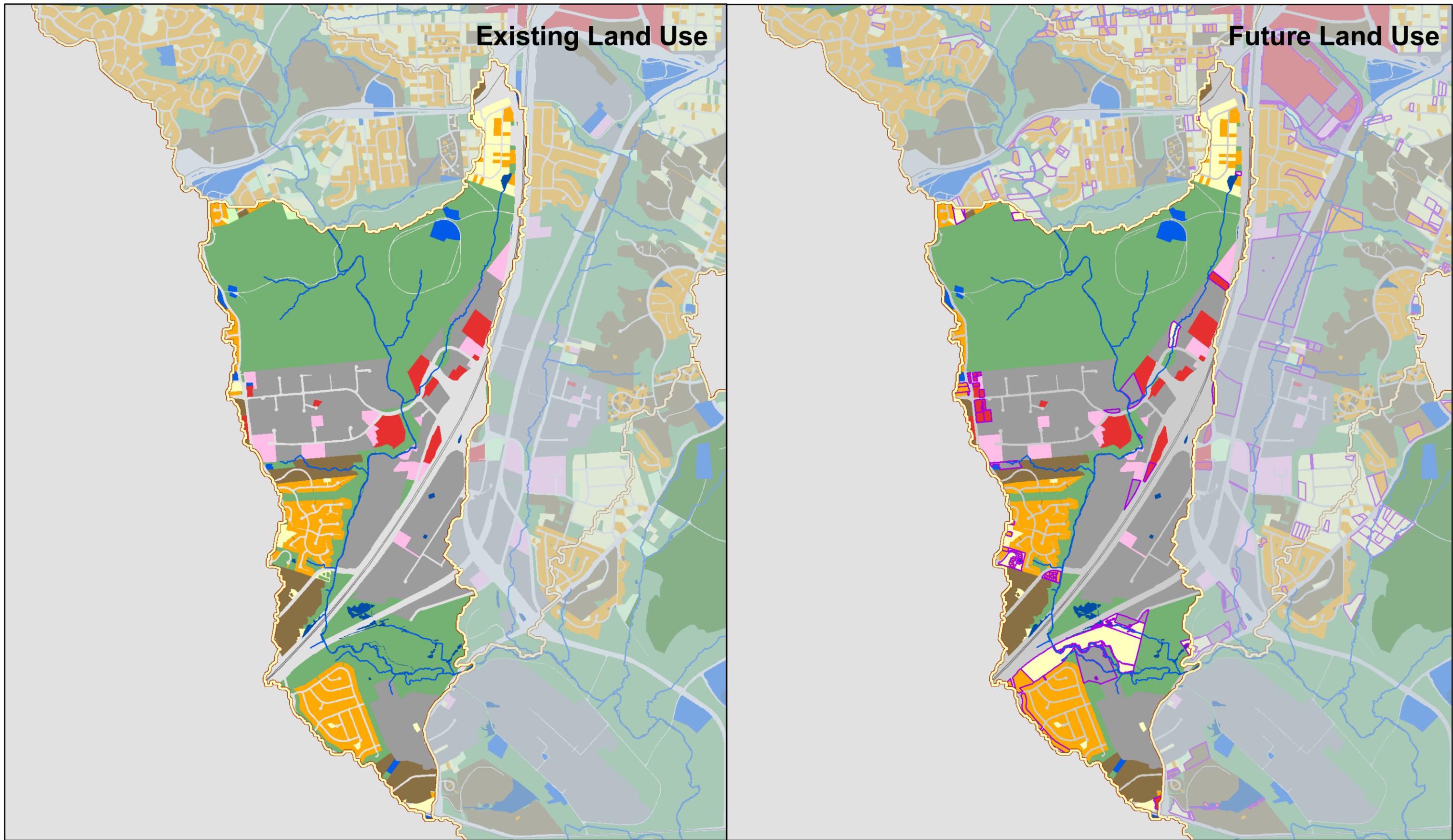
The highest loadings in this WMA are from the subwatersheds containing industrial land uses adjacent to the Capitol Beltway: AC-AC-0090, AC-AC-0095, AC-AC-0105 and AC-FL-0000. See results in Table 2-30. The headwater area of Fieldlark Branch (AC-FL-0010) also shows high loadings from the intersection of the Beltway and Franconia-Springfield Parkway.

**Table 2-30 - Mainstem 7 Water Quality Modeling Results**

<b>Subwatershed</b>	<b>Pollutant Loading</b>		
	<b>TN lb/ac/yr</b>	<b>TP lb/ac/yr</b>	<b>TSS t/ac/yr</b>
AC-AC-0070	7.20	0.93	0.25
AC-AC-0075	2.96	0.43	0.34
AC-AC-0080	7.09	1.12	0.55
AC-AC-0085	9.08	1.16	0.26
AC-AC-0090	9.55	1.49	0.23
AC-AC-0095	9.33	1.30	0.25
AC-AC-0100	9.02	1.18	0.22
AC-AC-0105	10.79	1.51	0.28
AC-AC-0110	8.02	1.05	0.20
AC-AC-0115	4.99	0.83	0.09
AC-AC-0120	4.84	0.81	0.09
AC-AC-0125	6.60	1.09	0.13
AC-AC-0130	6.38	1.03	0.12
AC-FL-0000	10.66	1.49	0.26
AC-FL-0005	7.07	1.07	0.16
AC-FL-0010	11.74	1.91	0.28

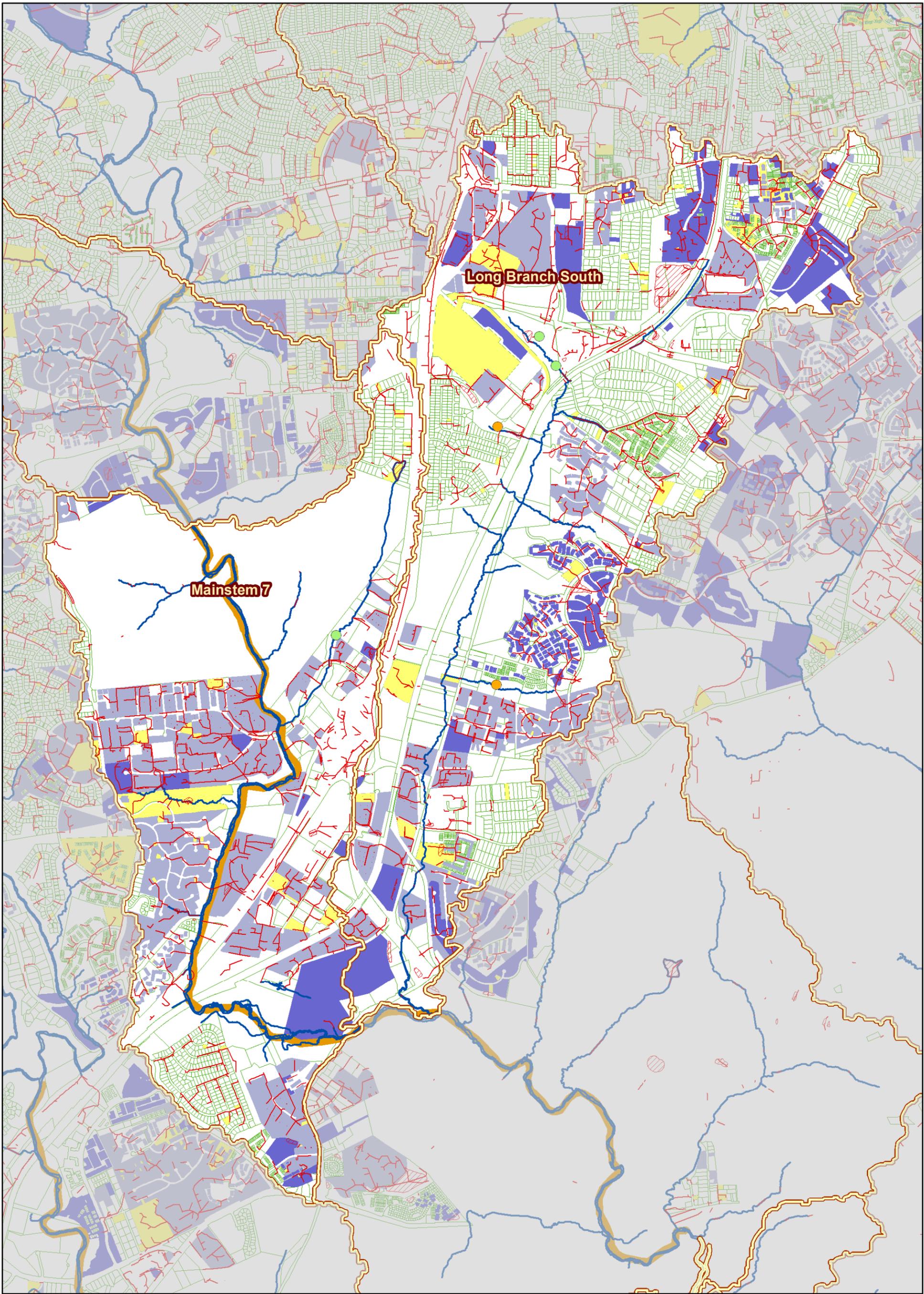
# Existing Land Use

# Future Land Use



### Land Use

- |                          |                           |                            |                    |
|--------------------------|---------------------------|----------------------------|--------------------|
| Estate Residential       | High Intensity Commercial | Low Density Residential    | Open Space         |
| Golf Course              | Industrial                | Low Intensity Commercial   | Transportation     |
| High Density Residential | Institutional             | Medium Density Residential | Water              |
|                          |                           |                            | WMA Boundary       |
|                          |                           |                            | Change in Land Use |



**Long Branch South**

**Mainstem7**

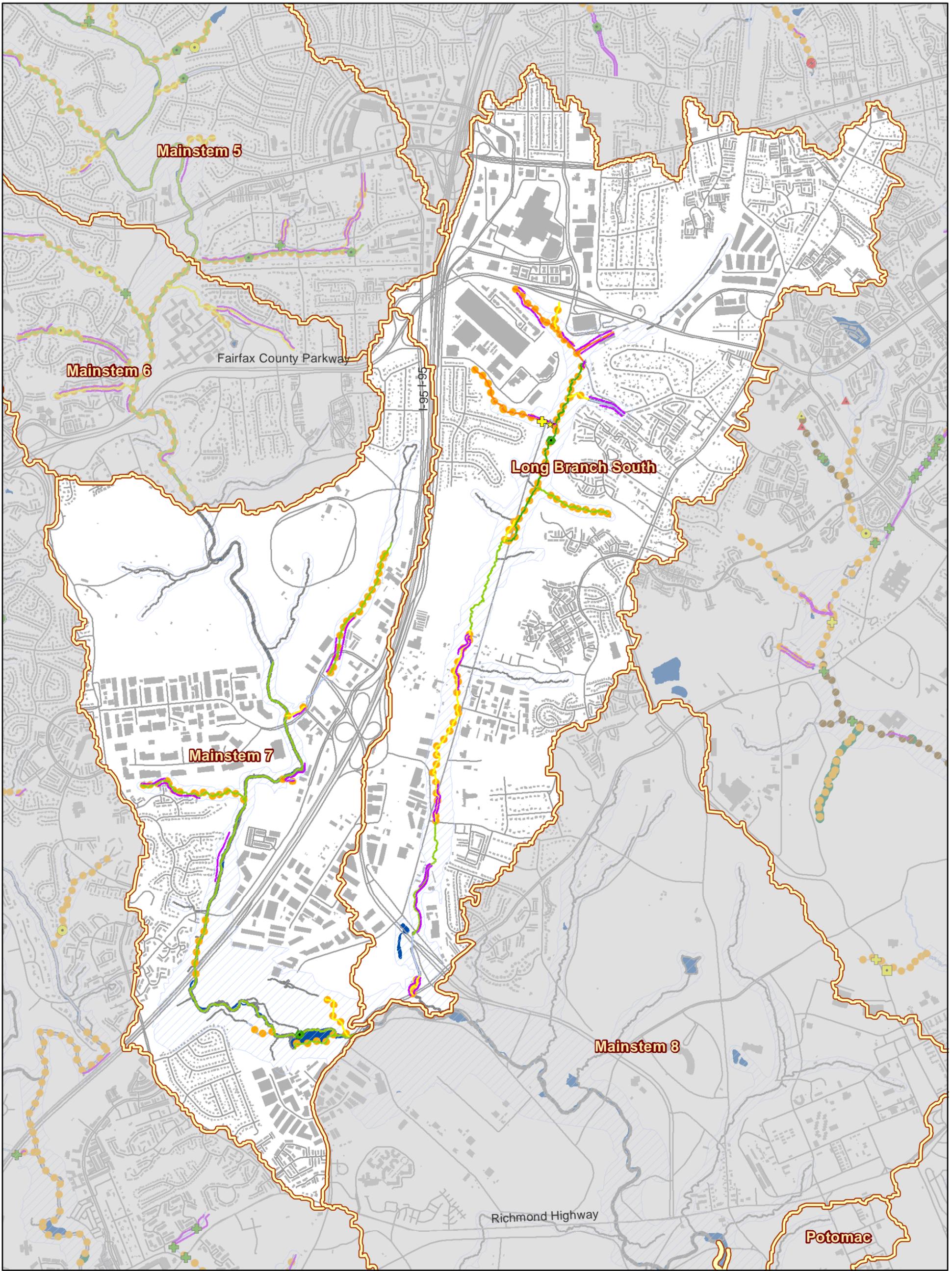


0 0.25 0.5 Miles

-  WMA Boundary
-  303d Listed Streams
-  Stormwater Facilities
-  Stormwater Pipes
-  Parcels
-  MSMD Flooding/Drainage Complaints
-  Public Identified Problem Areas 2003 - 2006

- Regional Ponds**
-  Constructed
-  Planned
- BMP Control Type**
-  Quantity and Quality
-  Quantity

Map 2-18  
**Stormwater Infrastructure Map**  
 Mainstem 7  
 Long Branch South




1742



0 0.25 0.5 Miles

<p><b>Obstruction Impact</b></p> <ul style="list-style-type: none"> <li>Minor to Moderate</li> <li>Moderate to Severe</li> <li>Severe to Extreme</li> </ul> <p><b>Dump Site Impact</b></p> <ul style="list-style-type: none"> <li>Minor to Moderate</li> <li>Moderate to Severe</li> <li>Severe to Extreme</li> </ul> <p><b>Habitat Rating</b></p> <ul style="list-style-type: none"> <li>Excellent</li> <li>Good</li> <li>Fair</li> <li>Poor</li> <li>Very Poor</li> <li>Unassessed</li> </ul>	<p><b>Head Cut Height</b></p> <ul style="list-style-type: none"> <li>0.5' - 1.0'</li> <li>1' - 2'</li> <li>&gt;2'</li> </ul> <p><b>Pipe Impact</b></p> <ul style="list-style-type: none"> <li>Minor to Moderate</li> <li>Moderate to Severe</li> <li>Severe to Extreme</li> </ul>	<p><b>Ditch Impact</b></p> <ul style="list-style-type: none"> <li>Minor to Moderate</li> <li>Moderate to Severe</li> <li>Severe to Extreme</li> </ul> <p><b>Utility Impact</b></p> <ul style="list-style-type: none"> <li>Minor to Moderate</li> <li>Moderate to Severe</li> <li>Severe to Extreme</li> </ul> <p><b>CEM Category</b></p> <ul style="list-style-type: none"> <li>CEM 2 - Incising</li> <li>CEM 3 - Widening</li> </ul>	<p><b>Crossing Impact</b></p> <ul style="list-style-type: none"> <li>Minor to Moderate</li> <li>Moderate to Severe</li> <li>Severe to Extreme</li> </ul> <p>WMA Boundary</p> <p>Resource Protection Area (RPA)</p> <p>Lakes and Ponds</p> <p>Deficient Buffer</p> <p>Erosion</p>
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Map 2-19

# Stream Condition Map

Mainstem 7  
Long Branch South