Data Summary for Waters with Existing Uses Different from the Designated Uses

Maryland
Department of
the Environment

Document Date: March 6, 2019

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I. Statement of Purpose and Background

Recently collected data have become available which demonstrates that the existing use of some waters is different than the currently designated use classification found in Code of Maryland Regulations 26.08.02.08. Specifically, several streams with warm or semi-warm use classifications (Class I, I-P, IV and IV-P) have been found to contain naturally reproducing populations of cold or cool-water obligate species. As a result, the applicable water temperature criteria at these locations may not reflect site-specific conditions or adequately protect these resident species. This document therefore serves to provide a brief description of the available data along with some summary statistics to aid future efforts at characterizing the existing use[1] of these waters. It should be noted, that this document does not purport to formally establish any existing use or the scale of any such existing use. Rather, this document is meant to provide notification of this information and to stimulate dialogue in how best to handle these scenarios moving forward.

The Maryland Department of the Environment (MDE or the Department) has been made aware of waterbodies in the Antietam Creek, Conewago Creek, Deer Creek, Double Pipe Creek, Furnace Creek, Lower Monocacy River, North Branch Potomac River, Patapsco River, and Octoraro Creek 8-digit watersheds, which are currently designated as Use Class I, I-P, IV or IV-P but which have, or may have, naturally reproducing populations of cold or cool-water obligate species. In creating these stream data summaries, the Department has relied on stream data collected by six primary groups: Carroll County Department of Land and Resource Management, Frederick County Sustainability and Environmental Resources, Maryland Department of the Environment (MDE) Field Services, Maryland Department of Natural Resources (MDDNR) Freshwater Fisheries Program, MDDNR Maryland Biological Stream Survey (MBSS) Service, and MDDNR Ambient Water Quality Monitoring Program (Core Trend). These groups have conducted various types of field surveys that included sampling for trout (salmonid) species, benthic macroinvertebrates, and water temperature. The results from these surveys were consolidated for each stream and are presented in this document to highlight the major factors considered in evaluating a water body's existing use and/or use classification. Currently, Maryland recognizes three fish species and two benthic macroinvertebrate taxa as cold water obligates; brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*), and benthic macroinvertebrate Stonefly species *Tallaperla* and *Sweltsa*. However, additional species that require cooler water temperatures may also be discussed within this document.

Please note that only those waters, which are not currently classified as Class III or III-P, are included in the water body descriptions that follow. This document will be placed on the Maryland Department of

[1] Here and throughout this document we use the term "existing use" as it's defined in the Clean Water Act (CWA). Per the CWA, "Existing uses are those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards."

the Environment's website to raise awareness of the resource found in these locations in order to promote proactive water quality planning in these areas.

II. Patapsco River

The North Branch Patapsco River main stem and tributaries that connect to the mainstem, between the confluence of Roaring Run and upstream to the confluence with West Branch Patapsco River, including Board Run and Deep Run, have naturally reproducing populations of brown trout. An unnamed tributary to the North Branch Patapsco River in the vicinity of Hollingsworth Road, the main stem of the West Branch Patapsco River, and a part of the South Branch Patapsco River also contain naturally reproducing populations of brown trout. For each waterbody, relevant data including water temperature and biological (e.g., trout and benthic macroinvertebrate) data are presented.

North Branch Patapsco River main stem

The North Branch Patapsco River main stem (12-digit 021309071048) from the unnamed tributary at Hollingsworth Road and north to the main stem's confluence with the West Branch Patapsco River is currently designated as a Class IV-P waterbody. Carroll County, MDE Field Services, and the MDDNR Fisheries Program, MBSS and Core Trend scientists conducted surveys of this section of the North Branch Patapsco River main stem. Figure 1 shows the location of the sampling stations and the stream segment being reviewed. The resulting data including water temperature and information on the presence of trout is shown in Tables 1 and 2, respectively.

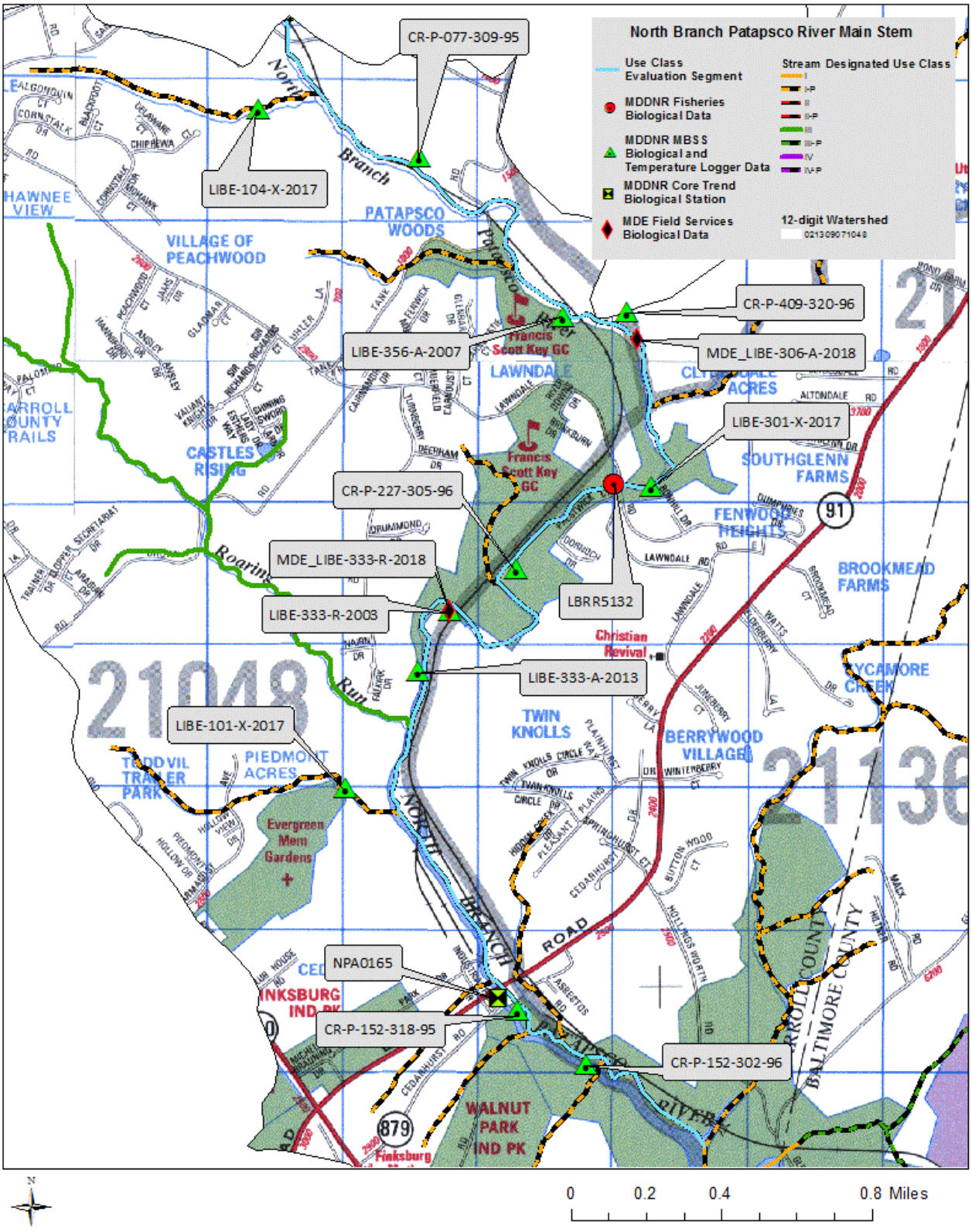

Figure 1. North Branch Patapsco River

Temperature Data for the North Branch Patapsco River

Water temperature data were collected at five of sixteen sampling events in 1996, 2003, 2007, 2013, 2015, 2017 and 2018. Two of the sampling event's temperature results meet the Class III criterion, (20° Celsius for 90% of the time) but they are not located on the mainstem evaluation segment, they are located on tributaries to the segment. The other three do not meet Class III criterion. Data results are pending for MDDNR MBSS & MDE Field Services station MDE_LIBE-306-A-2018. MDDNR Core Trend station NPA0165, not listed in Table 1, is located on the stream evaluation segment but temperature logger data is not included in the survey methodology.

Table 1. North Branch Patapsco River Water Temperature Logger Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent> 20°C	Percent> 24°C	Avg Daily Mean	Daily Max
2018	MDE_LIBE-333-R-2018	North Branch Patapsco River	MDE Field Services	-	-	-	-	-
2018	MDE_LIBE-306-A-2018	North Branch Patapsco River	MDDNR MBSS & MDE Field Services	-	-	-	-	-
2017	LBRR5132	North Branch Patapsco River	MDDNR Fisheries Program	-	-	-	-	-
2015	LBRR5132	North Branch Patapsco River	MDDNR Fisheries Program	-	-	-	-	-
2017	LIBE-104-X-2017	North Branch Patapsco River	MDDNR MBSS	6624	8%	0%	18.08	22.51
2017	LIBE-101-X-2017	North Branch Patapsco River	MDDNR MBSS	6624	10%	0%	17.98	23.21
2017	LIBE-301-X-2017	North Branch Patapsco River	MDDNR MBSS	6624	**73%**	**8%**	21.14	**25.87**
2013	LIBE-333-A-2013	North Branch Patapsco River	MDDNR MBSS	6624	**63%**	**8%**	20.81	**27.58**
2007	LIBE-356-A-2007	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
2003	LIBE-333-R-2003	North Branch Patapsco River	MDDNR MBSS	6191	**47%**	0.2%	19.14	**24.39**
1996	CR-P-227-305-96	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1996	CR-P-152-302-96	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1996	CR-P-409-320-96	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1995	CR-P-077-309-95	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1995	CR-P-152-318-95	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997).

Biological Data for the North Branch Patapsco River

Brown trout were found at nine of the sixteen biological sampling events along this water segment. Though not shown in the table below, MDDNR MBSS staff noted the capture of one young of year brown trout (measurement length not noted) downstream of the station LIBE-301-X-2017. Since this individual was sampled outside of the 75-meter sampling reach, it was not counted or measured as part of the record for LIBE-301-X-2017.

MDDNR Fisheries did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDE Field Services and MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species. MDDNR Core Trend sampled at station NPA0165 for benthic macroinvertebrate species from 1974 to 2017 (not listed in Table 2); coldwater obligate benthic macroinvertebrate species were not found.

Table 2. North Branch Patapsco River Biological Data

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
7/12/2018	MDE_LIBE-333-A-2018	UT to NB Patapsco River	MDE Field Services	brown trout	7	Unknown
8/4/2017	LBRR5132	NB Patapsco River	MDDNR Fisheries Program	brown trout	1	Adult
7/26/2017	LBRR5132	NB Patapsco River	MDDNR Fisheries Program	brown trout	9	Multiple Year Classes of Adults
9/1/2016	LBRR5132	NB Patapsco River	MDDNR Fisheries Program	brown trout	15	Multiple Year Classes with YOY
2018	MDE-LIBE-306-A-2018	NB Patapsco River	MDDNR MBSS & MDE Field Services	brown trout	7	Multiple Year Classes with YOY
7/26/2017	LIBE-301-X-2017	NB Patapsco River	MDDNR MBSS	brown trout	9	Multiple Year Classes Adult
7/19/2017	*LIBE-104-X-2017*	*UT to NB Patapsco River*	*MDDNR MBSS*	-	-	-
7/18/2017	*LIBE-101-X-2017*	*UT to NB Patapsco River*	*MDDNR MBSS*	-	-	-
8/26/2013	LIBE-333-A-2013	UT to NB Patapsco River	MDDNR MBSS	brown trout	6	Multiple Year Classes with YOY
7/19/2007	LIBE-356-A-2007	NB Patapsco River	MDDNR MBSS	brown trout	18	Multiple Year Classes with YOY
8/4/2003	LIBE-333-R-2003	NB Patapsco River	MDDNR MBSS	-	-	-
9/4/1996	CR-P-227-305-96	NB Patapsco River	MDDNR MBSS	-	-	-
8/21/1996	CR-P-152-302-96	NB Patapsco River	MDDNR MBSS	-	-	-
7/11/1996	CR-P-409-320-96	NB Patapsco River	MDDNR MBSS	-	-	-

8/8/1995	CR-P-077-309-95	NB Patapsco River	MDDNR MBSS	brown trout	1	Adult
8/1/1995	CR-P-152-318-95	NB Patapsco River	MDDNR MBSS	-	-	-

*YOY - young-of-year

Board Run

Board Run (12-digit 021309071048) is a Use Class I-P tributary to the North Branch Patapsco River upstream of Liberty Reservoir near Hampstead. Both the MDDNR Fisheries Program and MDDNR MBSS scientists have conducted surveys of Board Run. A map (Figure 2) of the location and sampling stations, and the data results (Tables 3 and 4), including water temperature and trout presence information are provided below.

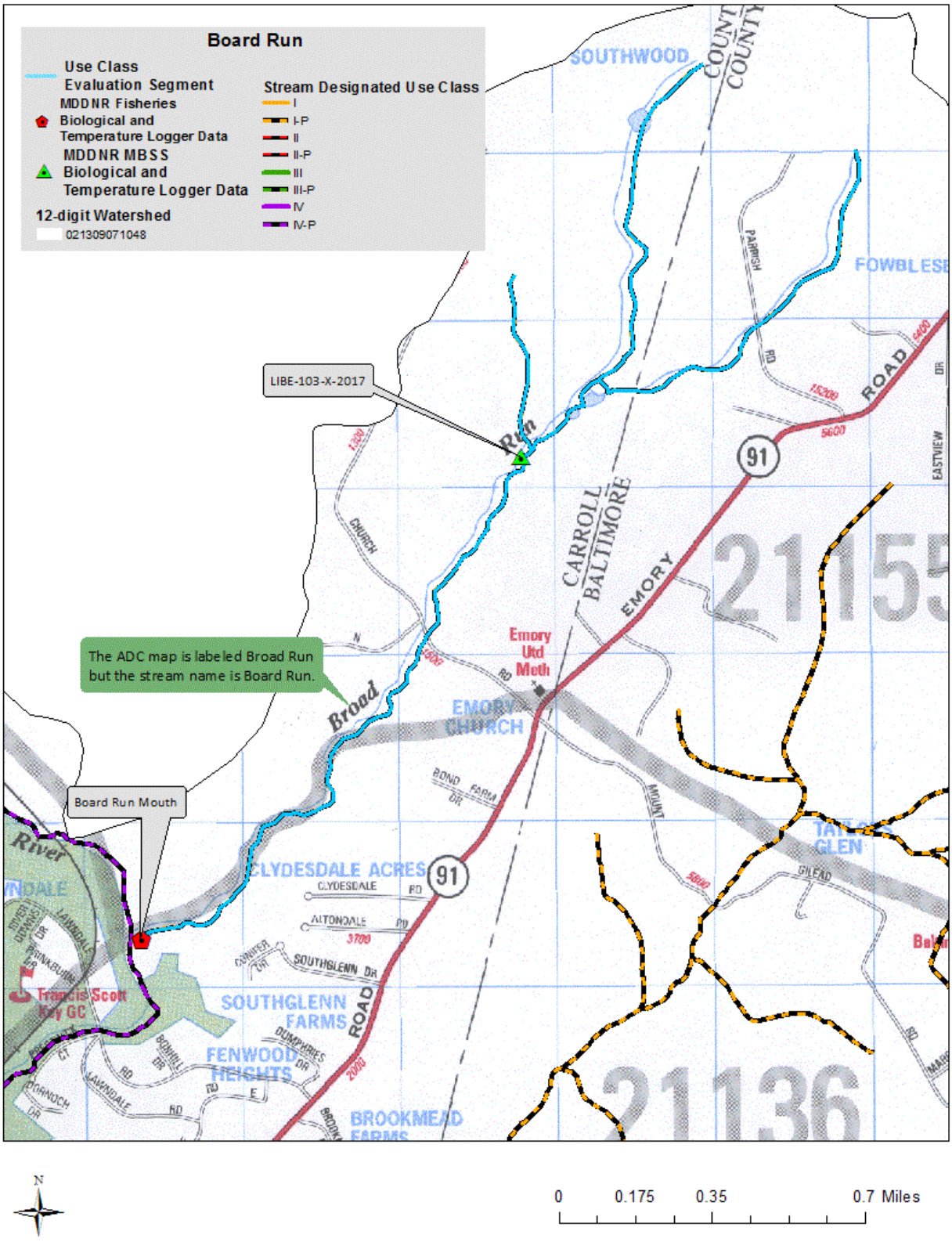

Figure 2. Board Run

Temperature Data for Board Run

Water temperature data were collected at two sampling events in 2017. Both stations' temperature results fail to meet the Class III criterion.

Table 3. Board Run Water Temperature Logger Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2017	LIBE-103-X-2017	Board Run	MDDNR MBSS	6624	**29%**	0%	18.88	23.19
2017	Board Run Mouth	Board Run	MDDNR Fisheries Program	6624	**46%**	0%	19.78	23.18

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August.

Biological Data for Board Run

Four adult brown trout were found at one of two sampling events along this segment. The MDDNR Fisheries did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 4. Board Run Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
7/18/2017	LIBE-103-X-2017	Board Run	MDDNR MBSS	brown trout	4	Multiple Year Classes Adult
6/8/2016	Board Run Mouth	Board Run	MDDNR Fisheries Program	-	-	-

*Fish sampling and water temperature data at the Board Run Mouth station were collected in separate years, 2016 and 2017, respectively.

Deep Run

Deep Run (12-digit 021309071048) is a Use Class I-P tributary to the North Branch Patapsco River located southwest of Hampstead, MD. Carroll County, MDDNR Fisheries Program and MBSS scientists conducted surveys along Deep Run. A map (Figure 3) shows the location of Deep Run along with the relevant sampling stations. Tables 5 and 6, provide a summary of water temperature and trout species information.

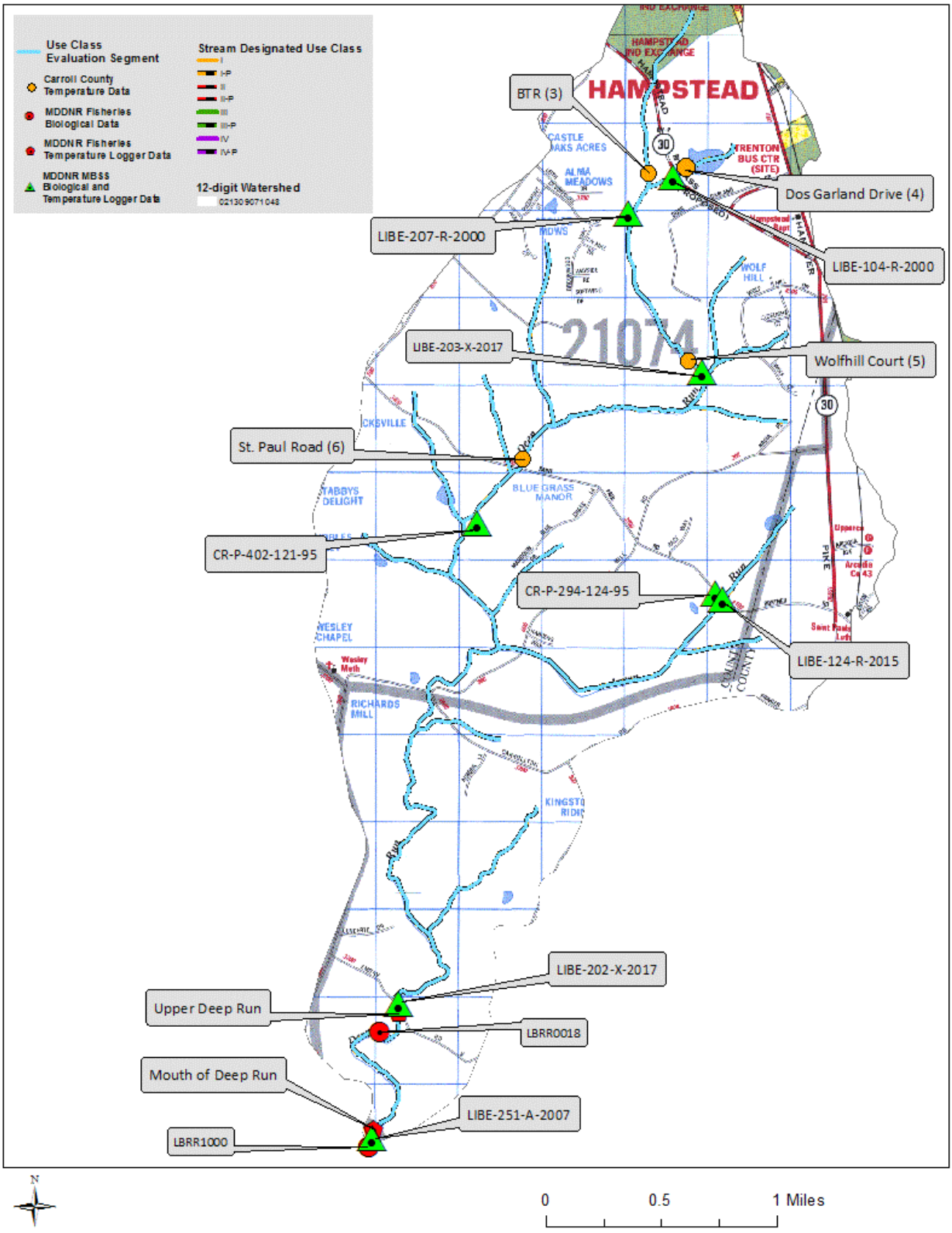

Figure 3. Deep Run

Temperature Data for Deep Run

Water temperature data were collected at seventeen of twenty-one sampling events in 1995, 2000, 2007, 2014, 2015, 2016, 2017, and 2018. None of the stations sampled have water temperature results that meet the Class III criterion.

Table 5. Deep Run Water Temperature Logger Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2018	St. Paul Road (6)	Deep Run	Carroll County	4416	**48%**	0%	19.78	**24.36**
2017	St. Paul Road (6)	Deep Run	Carroll County	4416	**55%**	**1%**	20.03	**24.61**
2016	St. Paul Road (6)	Deep Run	Carroll County	4416	**66%**	**5%**	20.79	**25.74**
2018	BTR (3)	Deep Run	Carroll County	4416	**96%**	**34%**	23.34	**29.77**
2017	BTR (3)	Deep Run	Carroll County	4414	**19%**	**2%**	17.96	**26.72**
2016	BTR (3)	Deep Run	Carroll County	4416	**36%**	**28%**	19.57	**30.80**
2017	Dos Garland Dr. (4)	Deep Run	Carroll County	4416	**35%**	0%	19.13	**24.41**
2016	Dos Garland Dr. (4)	Deep Run	Carroll County	4416	**48%**	**1%**	19.85	**26.18**
2018	Wolfhill Court (5)	Deep Run	Carroll County	4416	**57%**	**2%**	19.78	**25.14**
2017	Wolfhill Court (5)	Deep Run	Carroll County	4416	**62%**	**2%**	20.44	**25.19**
2016	Wolfhill Court (5)	Deep Run	Carroll County	4416	**75%**	**7%**	21.27	**25.60**
2015	Upper Deep Run	Deep Run	MDDNR Fisheries Program	1929	**71%**	**1%**	20.20	**25.14**
2014	Mouth of Deep Run	Deep Run	MDDNR Fisheries Program	5355	**42%**	0%	19.70	**31.31**
2017	LIBE-202-X-2017	Deep Run	MDDNR MBSS	6624	**63%**	**1%**	20.39	**24.24**
	LIBE-203-X-2017	Deep Run	MDDNR MBSS	6624	**63%**	**3%**	20.48	**25.28**
2015	LIBE-124-R-2015	Aspen Run tributary to Deep Run	MDDNR MBSS	6624	**21%**	0%	18.82	22.60
2007	LIBE-251-A-2007	Deep Run	MDDNR MBSS	6624	**56%**	**2%**	20.25	**26.09**
2000	LIBE-207-R-2000	Deep Run	MDDNR MBSS	-	-	-	-	-
	LIBE-104-R-2000	Deep Run	MDDNR MBSS	-	-	-	-	-
1995	CR-P-402-121-95	Deep Run	MDDNR MBSS	-	-	-	-	-
	CR-P-294-124-95	Aspen Run tributary to Deep Run	MDDNR MBSS	-	-	-	-	-

*Water temperature logger and instantaneous YSI flowtracker data were assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997). Carroll County provided data for 2015 but not for June/July/August.

Biological Data for Deep Run

Multiple year classes including young-of-year brown trout were found at four of the ten sampling events where fish populations were sampled. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 6. Deep Run Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
7/15/2015	LBRR0018	Deep Run	MDDNR Fisheries Program	brown trout	5	Multiple Year Classes with YOY
9/15/2014	LBRR1000	Deep Run	MDDNR Fisheries Program	brown trout	6	Multiple Year Classes with YOY
7/20/2017	LIBE-202-X-2017	Deep Run	MDDNR MBSS	brown trout	7	Multiple Year Classes with YOY
7/18/2017	LIBE-203-X-2017	Deep Run	MDDNR MBSS	-	-	-
7/19/2007	LIBE-251-A-2007	Deep Run	MDDNR MBSS	brown trout	4	Multiple Year Classes with YOY
7/6/2015	LIBE-124-R-2015	Aspen Run tributary to Deep Run	MDDNR MBSS	-	-	-
6/20/2000	LIBE-207-R-2000	Deep Run	MDDNR MBSS	-	-	-
6/20/2000	LIBE-104-R-2000	UT1 Deep Run	MDDNR MBSS	-	-	-
8/7/1995	CR-P-402-121-95	Deep Run	MDDNR MBSS	-	-	-
6/13/1995	CR-P-294-124-95	Aspen Run tributary to Deep Run	MDDNR MBSS	-	-	-

*YOY – young-of-year

Unnamed Tributary to North Branch Patapsco River

The unnamed tributary to the North Branch Patapsco River (Use Class I-P, 12-digit 021309071048) at the Hollingsworth Road crossing is approximately 9 miles in length and located north of Finksburg. The MDDNR Fisheries Program and MBSS scientists conducted surveys of this waterbody segment. A map (Figure 4) of the location and sampling stations, and the data results (Tables 7 and 8) including water temperature and trout species information are provided.

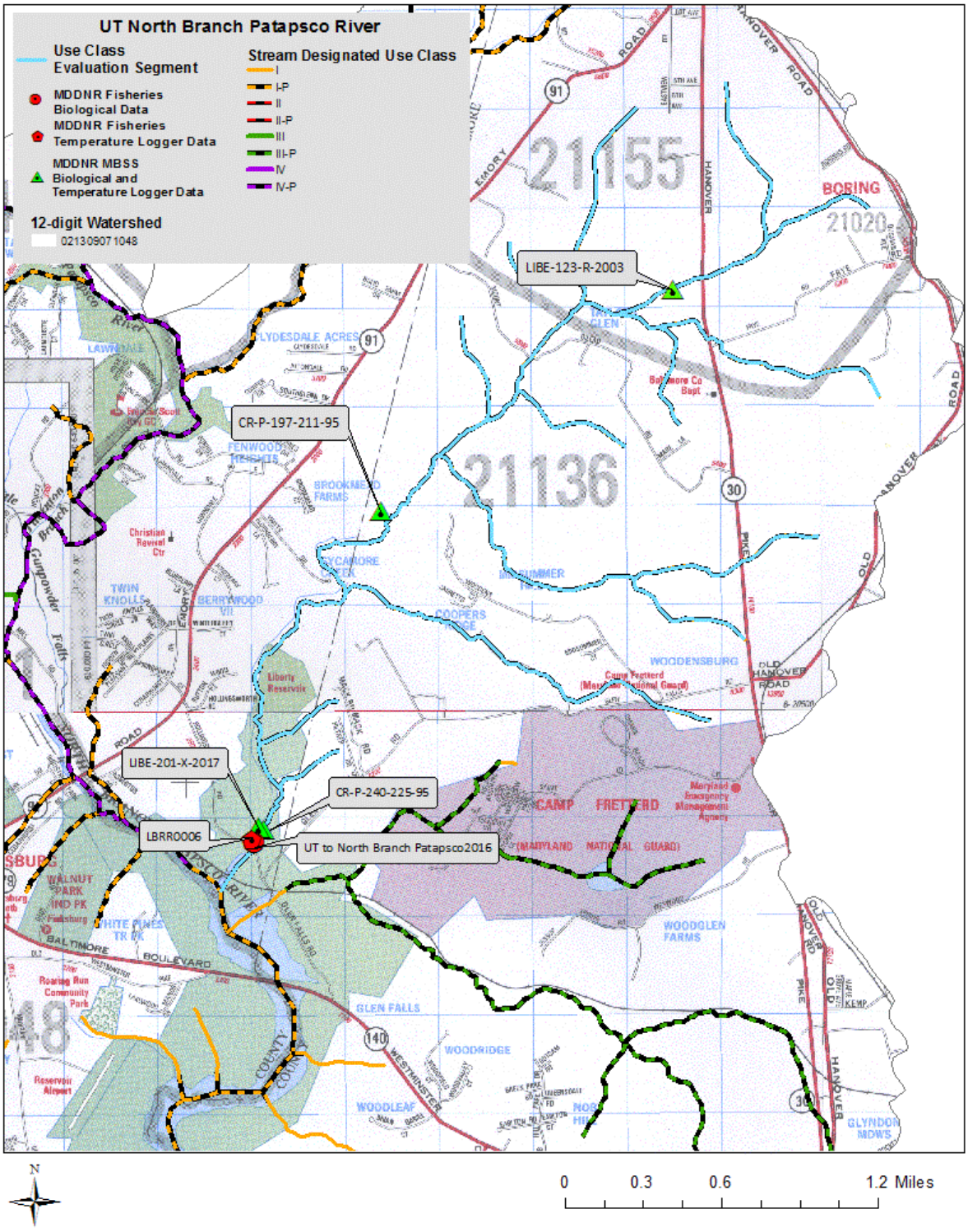

Figure 4. Unnamed Tributary to North Branch Patapsco River at Hollingsworth Road

Temperature Data for Unnamed Tributary to the North Branch Patapsco River

Water temperature data were collected at three sampling events in 1995, 2003, 2016, and 2017. None of the stations' water temperature results meet the Class III criterion.

Table 7. Unnamed Tributary North Branch Patapsco River Water Temperature Logger Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2016	UT to North Branch Patapsco River	UT to North Branch Patapsco River	MDDNR Fisheries Program	6623	**67%**	**4%**	20.79	**25.60**
2017	LIBE-201-X-2017	UT to North Branch Patapsco River	MDDNR MBSS	6624	**54%**	0%	19.97	**24.24**
2013	LIBE-123-R-2003	UT to North Branch Patapsco River	MDDNR MBSS	6191	**31%**	0%	18.70	**23.82**
1995	CR-P-197-211-95	UT1 to North Branch Patapsco River	MDDNR MBSS	-	**-**	-	-	**-**
1995	CR-P-240-225-95	UT1 to North Branch Patapsco River	MDDNR MBSS	-	**-**	-	-	**-**

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997).

Biological Data for Unnamed Tributary to the North Branch Patapsco River

Brown trout were found at three of the six biological sampling events 1995, 2003, 2011, 2016, and 2017. Though not shown in the table below, MDDNR MBSS staff noted the capture of four adult brown trout (length measurements not provided) upstream of the station LIBE-201-X-2017. Since these fish were sampled outside of the 75-meter sampling reach they were not counted or measured as part of the record for LIBE-201-X-2017. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 8. Unnamed Tributary North Branch Patapsco River Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
6/15/2016	LBRR0006	UT to North Branch Patapsco River	MDDNR Fisheries Program	brown trout	16	Multiple Year Classes with YOY
8/4/2011	LBRR0006	UT to North Branch Patapsco River	MDDNR Fisheries Program	-	-	-
7/19/2017	LIBE-201-X-2017	UT to North Branch Patapsco River	MDDNR MBSS	brown trout	1	YOY
6/16/2003	LIBE-123-R-2003	UT to North Branch Patapsco River	MDDNR MBSS	-	-	-
7/31/1995	CR-P-197-211-95	UT1 to North Branch Patapsco River	MDDNR MBSS	-	-	-
7/18/1995	CR-P-240-225-95	UT1 to North Branch Patapsco River	MDDNR MBSS	brown trout	3	Multiple Year Classes of Adults

* YOY - young-of-year

South Branch Patapsco River

The South Branch Patapsco River main stem (8-digit 02130908) located near Woodbine, MD in the southern portion of Carroll and northern portion of Howard County is currently designated as a Use Class IV waterbody. MDDNR MBSS scientists conducted surveys of this waterbody segment. A map (Figure 5) of the location and sampling stations, and the data results (Tables 9 and 10), including water temperature and trout species information is detailed below.

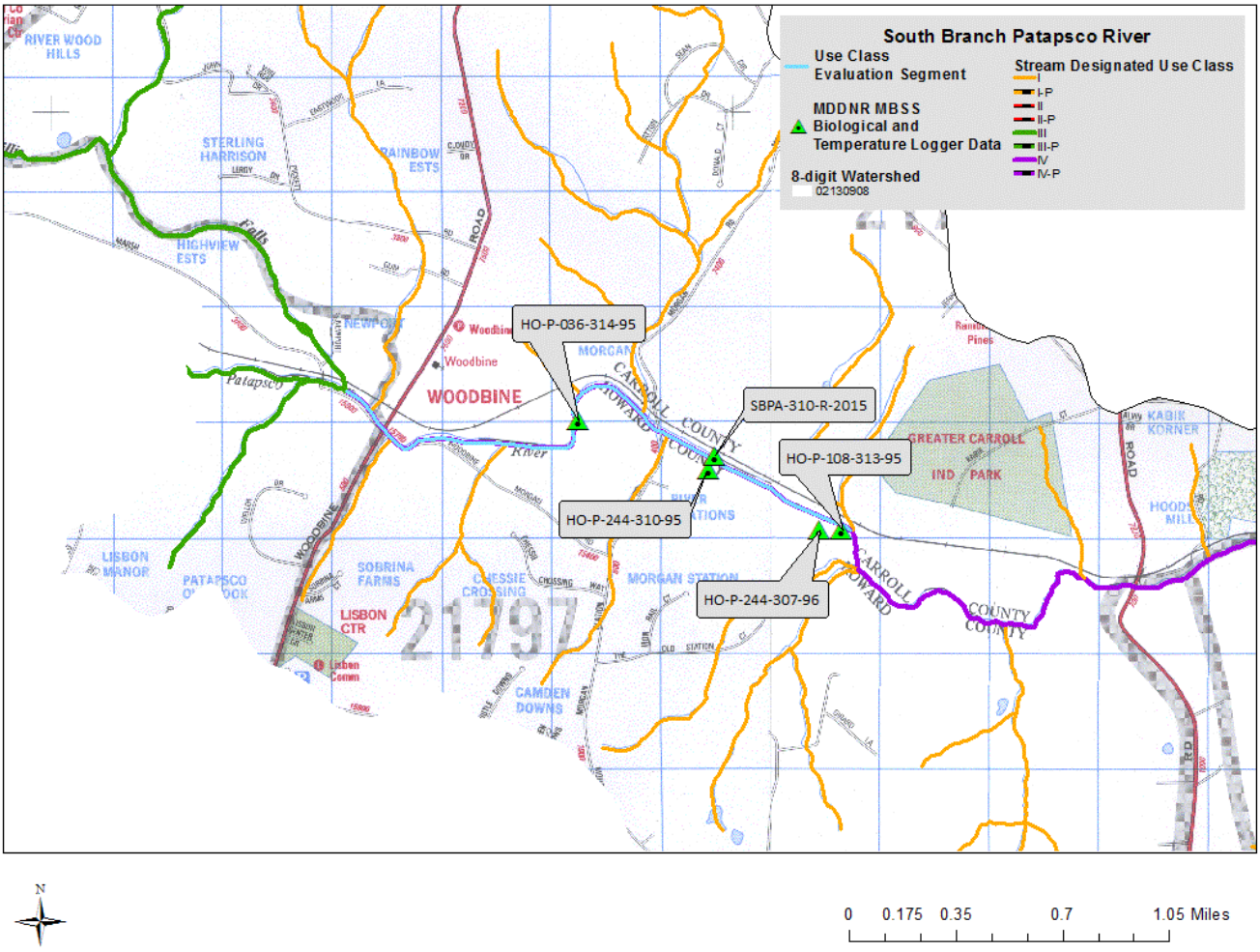

Figure 5. South Branch Patapsco River

Temperature Data for the South Branch Patapsco River

Water temperature data were collected at one of the five sampling events in 1995, 1996, and 2015. Water temperature results at this station do not meet the Class III criterion.

Table 9. South Branch Patapsco River Water Temperature Logger Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2015	SBPA-310-R-2015	South Branch Patapsco River	MDDNR MBSS	6624	**58%**	0%	19.98	23.28
1996	HO-P-244-307-96	South Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1996	HO-P-244-310-95	South Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1996	HO-P-108-313-95	South Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1995	HO-P-036-314-95	South Branch Patapsco River	MDDNR MBSS	-	-	-	-	-

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997).

Biological Data for the South Branch Patapsco River

Multiple year classes including young-of-year brown trout were found at the biological sampling event in 2015. One adult brown trout was found during a sampling event in 1995. MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 10. South Branch Patapsco River Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
9/14/2015	SBPA-310-R-2015	South Branch Patapsco River	MDDNR MBSS	brown trout	12	Multiple Year Classes with YOY
8/21/1996	HO-P-244-307-96	South Branch Patapsco River	MDDNR MBSS	-	-	-
7/26/1995	HO-P-244-310-95	South Branch Patapsco River	MDDNR MBSS	-	-	-
7/25/1995	HO-P-108-313-95	South Branch Patapsco River	MDDNR MBSS	brown trout	1	Adult
8/1/1995	HO-P-036-314-95	South Branch Patapsco River	MDDNR MBSS	-	-	-

* YOY - young-of-year

West Branch of the North Branch Patapsco River

The West Branch North Branch Patapsco main stem (12-digit 021309071051 and 021309071062) upstream of the confluence with the North Branch Patapsco River is located northwest of Westminster and is approximately 9 miles in length. It is currently designated as a Class IV water. Both the MDDNR Fisheries Program and MBSS scientists have conducted surveys of this waterbody segment. A map (Figure 6) of the location and sampling stations, and the data results (Tables 11 and 12), including water temperature and trout species information are provided.

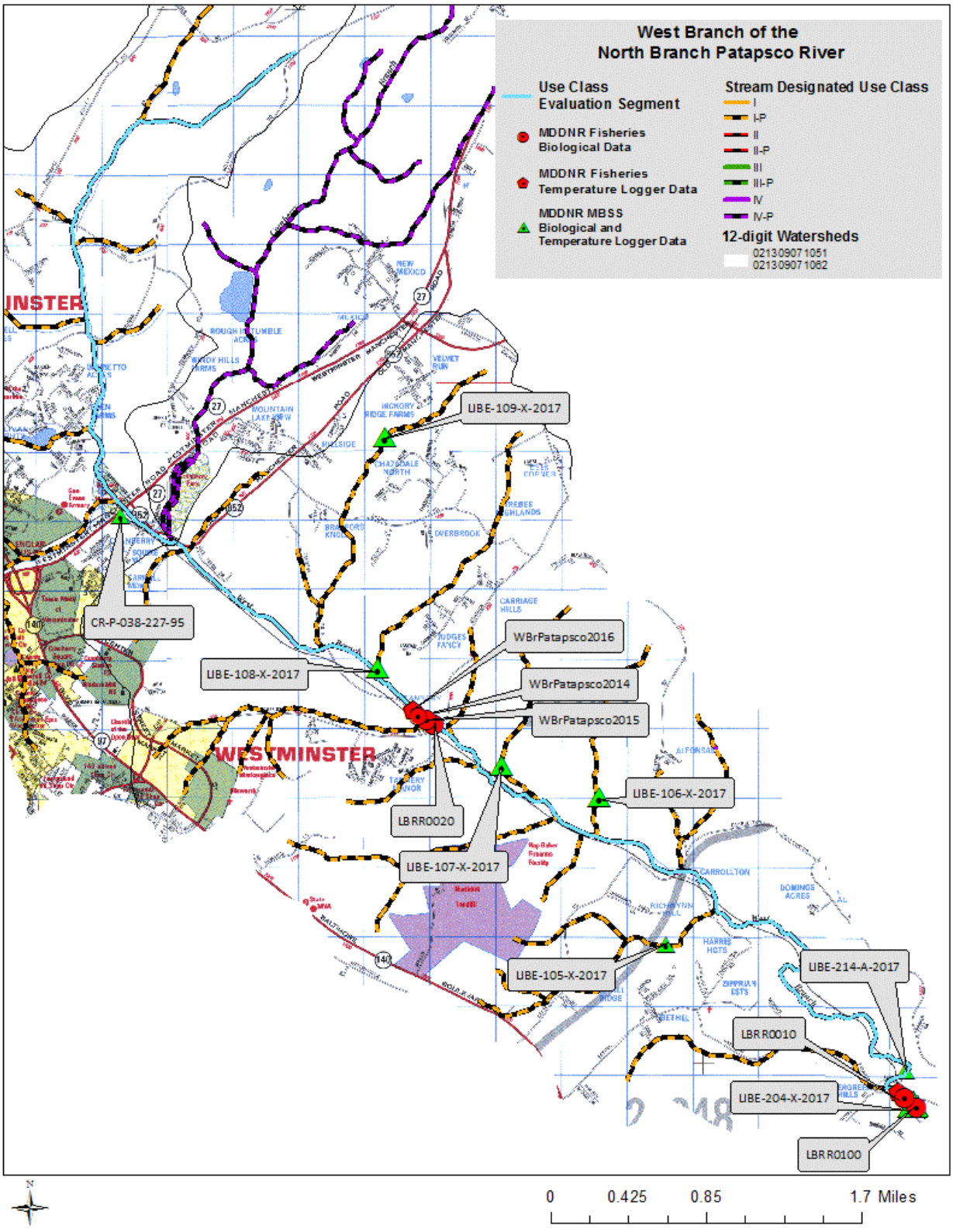

Figure 6. West Branch North Branch Patapsco River

Temperature Data for the West Branch North Branch Patapsco River

Water temperature data is available for nine of the eleven sampling events in the West Branch North Branch Patapsco River in 1995, 2007, 2014, 2015, 2016, and 2017. Three sampling events meet the Class III water temperature criterion. Six of the nine sampling events do not meet the Class III criterion. The three stations which meet the Class III criterion are not located on the evaluation segment; they are located on unnamed tributaries to the segment.

Table 11. West Branch Patapsco River Water Temperature Logger Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2016	WBrPatapsco2016	WBr Patapsco River	MDDNR Fisheries Program	6624	**78%**	**13%**	21.62	**27.20**
2015	WBrPatapsco2015	WBr Patapsco River	MDDNR Fisheries Program	1930	**62%**	**2%**	20.53	**24.94**
2014	WBrPatapsco2014	WBr Patapsco River	MDDNR Fisheries Program	5355	**35%**	0%	19.34	23.11
2017	LIBE-105-X-2017	UT to WBr Patapsco River	MDDNR MBSS	6624	8%	0%	17.88	21.77
2017	LIBE-106-X-2017	UT to WBr Patapsco River	MDDNR MBSS	6624	5%	0%	17.47	21.78
2017	LIBE-107-X-2017	UT to WBr Patapsco River	MDDNR MBSS	6624	**20%**	0%	18.41	22.71
2017	LIBE-108-X-2017	UT to WBr Patapsco River	MDDNR MBSS	6624	**25%**	0%	18.63	22.99
2017	LIBE-109-X-2017	UT to WBr Patapsco River	MDDNR MBSS	6624	0%	0%	17.10	19.98
2017	LIBE-204-X-2017	WBr Patapsco River	MDDNR MBSS	6624	**71%**	**7%**	21.00	**26.01**
2007	LIBE-214-A-2007	WBr Patapsco River	MDDNR MBSS	-	-	-	-	-
1995	CR-P-038-227-95	WBr Patapsco River	MDDNR MBSS	-	-	-	-	-

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997) – CR-P-038-224-95.

Biological Data for the West Branch North Branch Patapsco River

Brown trout were found at seven of the eleven biological sampling events with two of the sites having brown trout being located on unnamed tributaries to the evaluation segment. Though not shown in the table below, DNR MBSS staff noted the capture of three brown trout (length measurements not provided) downstream of the station LIBE-204-X-2017. Since these fish were sampled outside of the 75-meter sampling reach, they were not counted or measured as part of the record for LIBE-204-X-2017. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 12. West Branch Patapsco River Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
7/26/2017	LBRR0100	WBr Patapsco River	MDDNR Fisheries Program	brown trout	1	YOY
6/15/2016	LBRR0010	WBr Patapsco River	MDDNR Fisheries Program	brown trout	19	Multiple Year Classes with YOY
9/15/2014	LBRR0020	WBr Patapsco River	MDDNR Fisheries Program	brown trout	15	Multiple Year Classes with YOY
7/19/2017	LIBE-105-X-2017	UT to WBr Patapsco River	MDDNR MBSS	brown trout	12	Multiple Year Classes of Adults
7/19/2017	LIBE-106-X-2017	UT to WBr Patapsco River	MDDNR MBSS	-	-	-
7/5/2017	LIBE-107-X-2017	UT to WBr Patapsco River	MDDNR MBSS	-	-	-
7/5/2017	LIBE-108-X-2017	UT to WBr Patapsco River	MDDNR MBSS	brown trout	1	Adult
7/5/2017	LIBE-109-X-2017	UT to WBr Patapsco River	MDDNR MBSS	-	-	-
7/26/2017	LIBE-204-X-2017	WBr Patapsco River	MDDNR MBSS	brown trout	1	YOY
8/3/2007	LIBE-214-A-2007	WBr Patapsco River	MDDNR MBSS	brown trout	14	Multiple Year Classes with YOY
7/18/1995	CR-P-038-227-95	WBr Patapsco River	MDDNR MBSS	-	-	-

*YOY - young-of-year

III. Double Pipe Creek

An unnamed tributary to the Big Pipe Creek main stem and associated tributaries in the Double Pipe Creek watershed above Rinehart Road (12-digits 021403040286 and 021403040287) is located north of Westminster, MD in Carroll County. These waters have been found to support naturally reproducing populations of brook trout but are currently designated as Class IV-P waters. Carroll County, the MDDNR Fisheries Program and MBSS scientists have conducted surveys of these waterbody segments. Figure 7 shows the location of sampling stations while Tables 13 and 14 provide a summary of water temperature and cold/coolwater obligate information for this area.

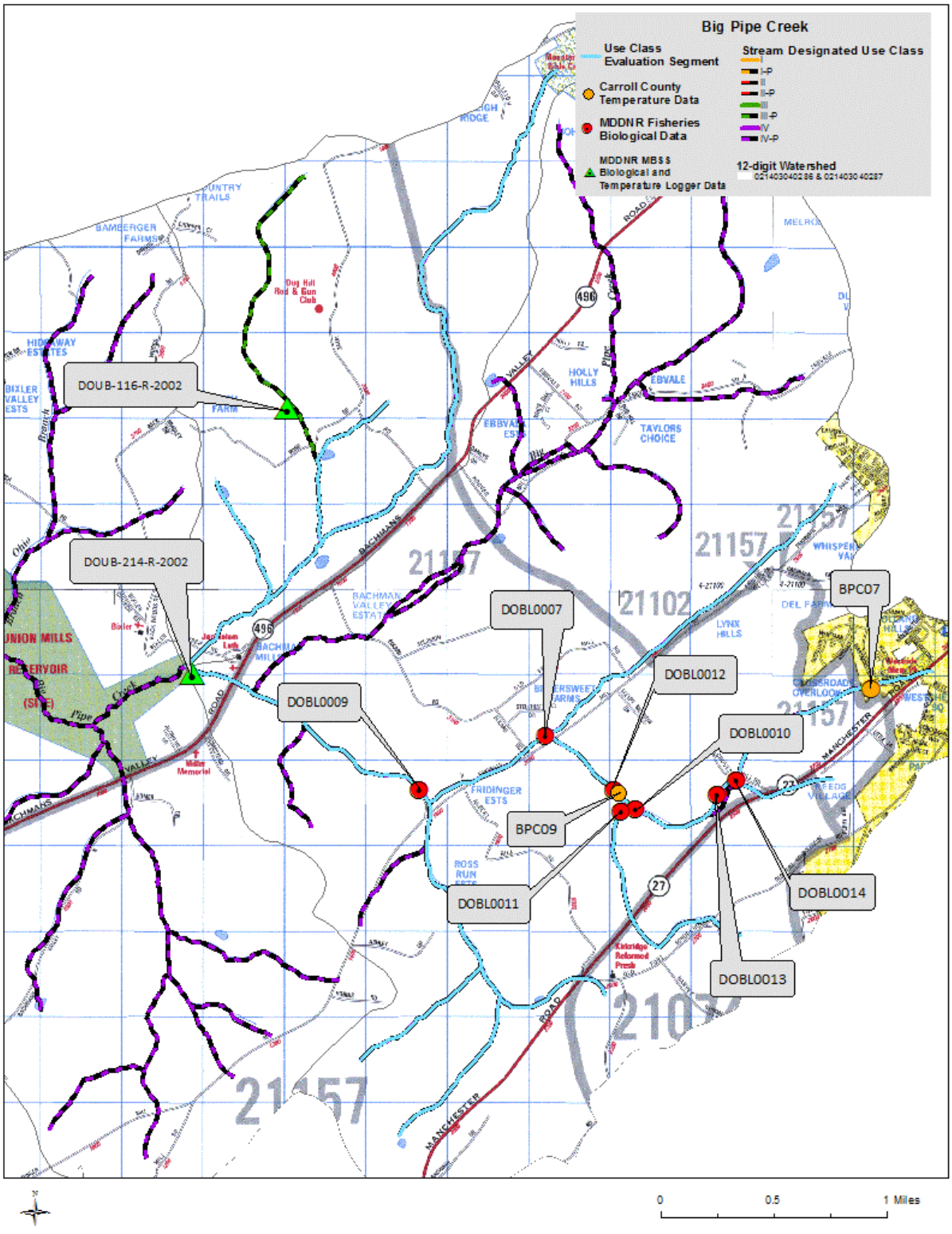

Figure 7. Unnamed Tributaries to Big Pipe Creek

Temperature Data for the Unnamed Tributaries to Big Pipe Creek

Water temperature data were collected at four sampling events in 2002, 2016, and 2018. Carroll County scientists submitted daily mean temperature results for seven days at station BPC07 between June and August 2016; therefore mean temperature analysis used mean temperatures for the Daily Mean and Daily Max calculations. Two of the four stations' temperature results do not meet the Class III criterion.

Table 13. Unnamed Tributary to Big Pipe Creek Water Temperature Logger Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2002	DOUB-214-R-2002	UT to Big Pipe Creek	MDDNR MBSS	4239	**64%**	**14%**	20.93	**27.25**
2018	BPC09	UT to Big Pipe Creek	Carroll County	6624	4%	0%	17.57	**24.03**
	BPC07	UT to Big Pipe Creek	Carroll County	6624	2%	0%	16.21	22.08
2016	BPC07	UT to Big Pipe Creek	Carroll County	7	0%	0%	16.91	18.70

*Water temperature logger and instantaneous YSI flowtracker data were assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. The water temperature calculations for Station BPC07 use seven daily mean temperatures.

Biological Data for the Unnamed Tributaries to Big Pipe Creek

Brook trout were found at seven of the eight biological sampling events in 2002 and 2017. Though not shown in the table below, DNR Fisheries staff observed but were not able to capture three young of year brook trout (length measurements not provided) near station DOB0014. Since these fish were not captured they were not counted or measured as part of DOB0014. Coldwater obligate benthic macroinvertebrate species data were not provided for MDDNR Fisheries Program stations and not found at the MDDNR MBSS station.

In 2002 upstream of the use class evaluation segment, a coldwater obligate benthic macroinvertebrate (*Tallaperla*) was found at station DOUB-116-R-2002; this stream segment is a designated Use Class III-P tributary.

Table 14. Unnamed Tributary to Big Pipe Creek Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
8/31/2017	DOBL0014	UT to Big Pipe Creek	MDDNR Fisheries Program	brook trout	12	Multiple Year Classes with YOY
8/31/2017	DOBL0013	UT to Big Pipe Creek	MDDNR Fisheries Program	brook trout	32	Multiple Year Classes with YOY
8/25/2017	DOBL0012	UT to Big Pipe Creek	MDDNR Fisheries Program	brook trout	12	Multiple Year Classes with YOY
8/25/2017	DOBL0011	UT to Big Pipe Creek	MDDNR Fisheries Program	brook trout	2	Multiple Year Classes with YOY
8/25/2017	DOBL0010	UT to Big Pipe Creek	MDDNR Fisheries Program	brook trout	14	Multiple Year Classes with YOY
8/24/2017	DOBL0009	UT to Big Pipe Creek	MDDNR Fisheries Program	brook trout	6	Multiple Year Classes Adult
8/18/2017	DOBL0007	UT to Big Pipe Creek	MDDNR Fisheries Program	brook trout	4	Multiple Year Classes Adult
7/8/2002	DOUB-214-R-2002	UT to Big Pipe Creek	MDDNR MBSS	-	-	-

*YOY - young-of-year

IV. Conewago Creek

Long Arm Creek and its tributaries (12-digit 020503010289) in the Conewago Creek watershed, located northwest of Manchester in Carroll County, are currently designated as Use Class I-P. The MDDNR Fisheries Program conducted a survey of the waterbody segment in 2017. Figure 8 below, shows the location of the sampling station, and water temperature data results (Table 15).

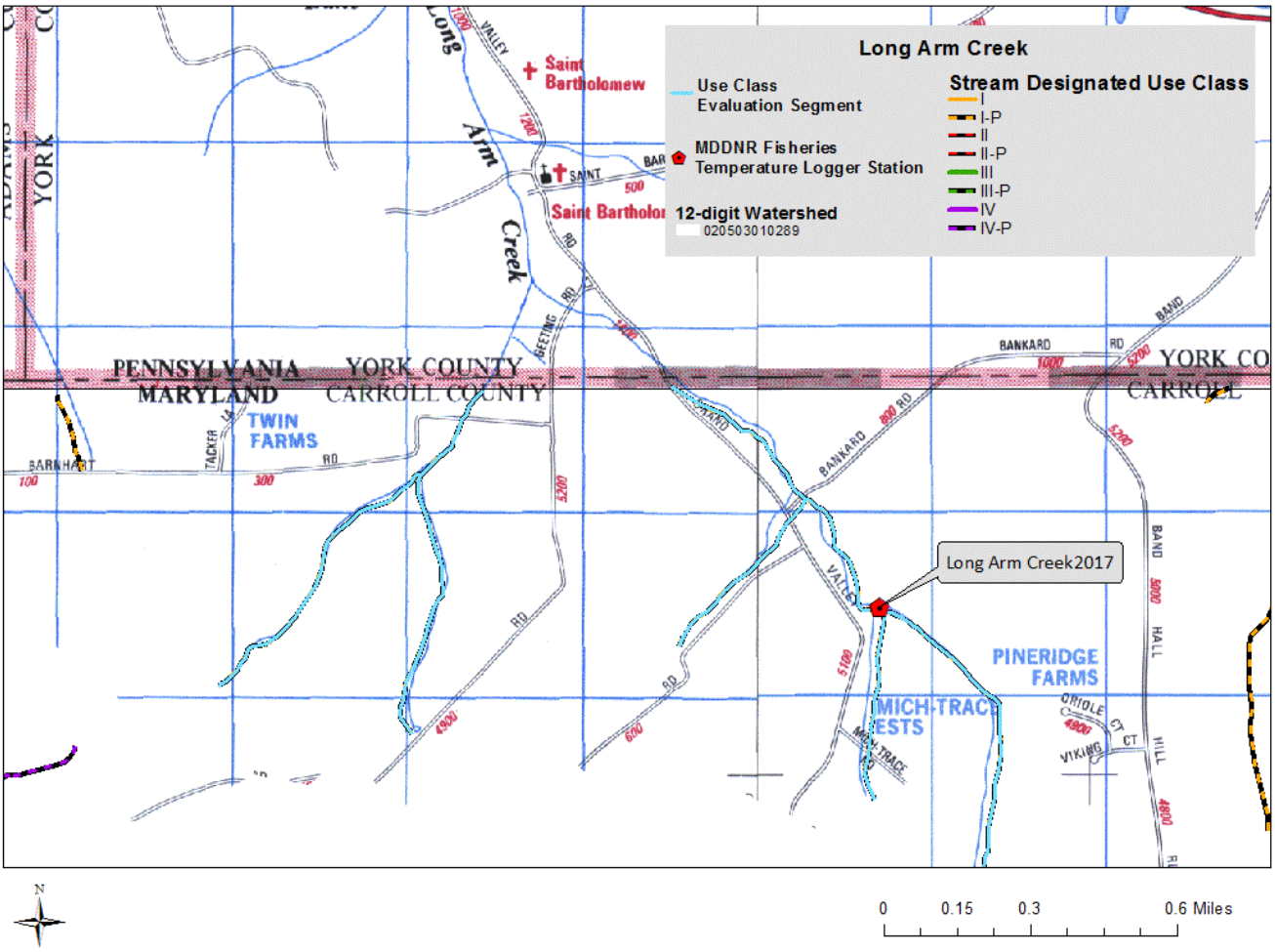

Figure 8. Long Arm Creek

Temperature Data for Long Arm Creek

Water temperature data were collected at one sampling event in 2017. The water temperature results meet the Class III criterion.

Table 15. Long Arm Creek Temperature Logger Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2017	Long Arm Creek	Long Arm Creek	MDDNR Fisheries Program	6624	4%	0%	17.58	23.02

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August.

Biological Data for Long Arm Creek

No biological data were available for these waters.

V. Antietam Creek

Falls Creek (12-digit 021405020205) in the Antietam Creek watershed, located northwest of Cascade in Washington County, is currently designated as Use Class IV-P. This waterbody segment currently supports a naturally reproducing population of brown trout. The MDDNR MBSS conducted a survey of the waterbody segment in 2003. Figure 9 below, shows the location of the sampling station and biological data results (Table 16).

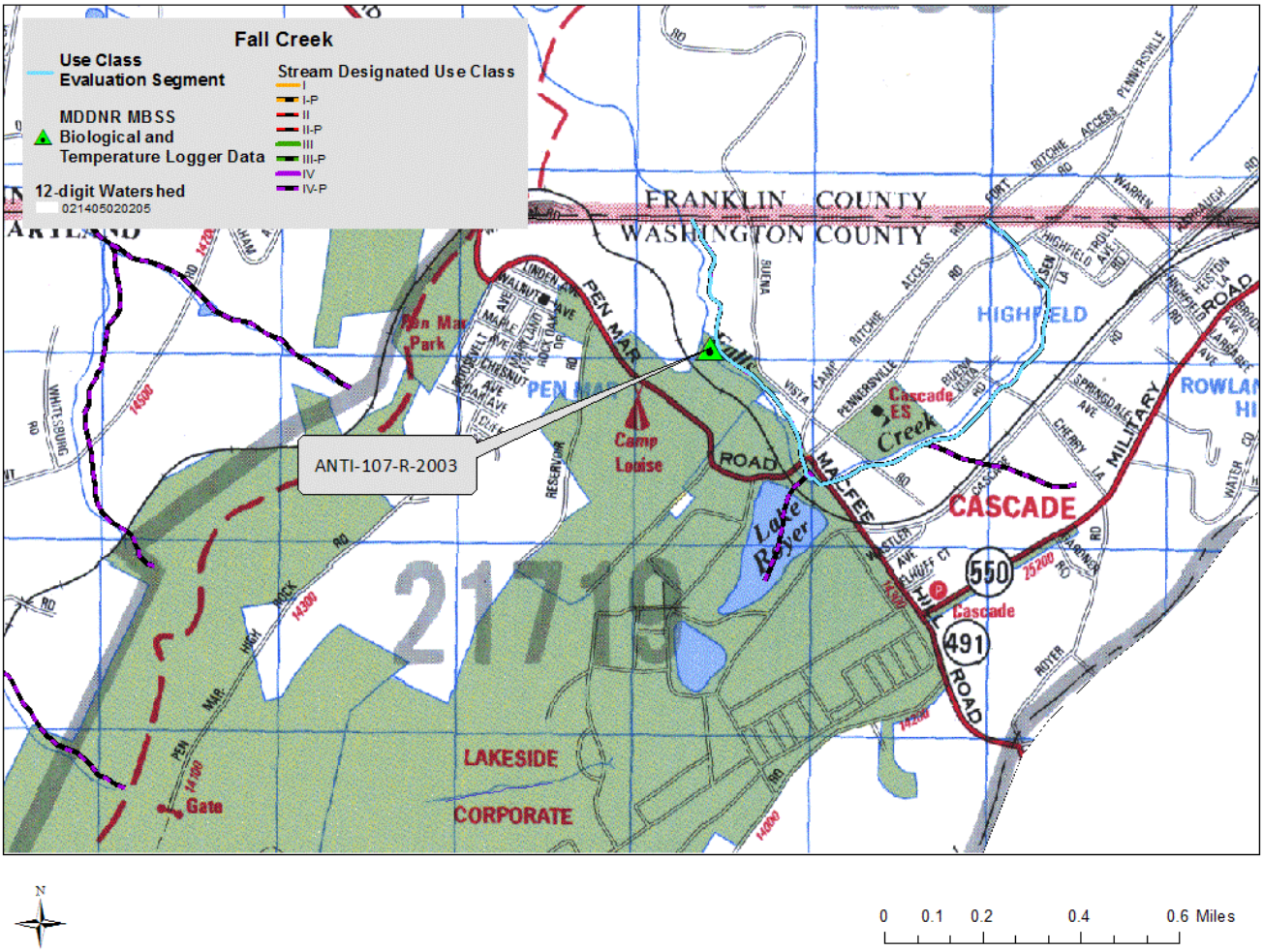

Figure 9. Falls Creek

Temperature Data for Falls Creek

No water temperature data were collected for this waterbody.

Biological Data for Falls Creek

Multiple year classes including young-of-year brown trout were found at the biological sampling event in 2003. MDDNR MBSS sampling did not yield any coldwater obligate benthic macroinvertebrate species.

Table 16. Falls Creek Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
6/30/2003	ANTI-107-R-2003	Falls Creek	MDDNR MBSS	brown trout	23	Multiple Year Classes with YOY

*YOY – YOUNG-OF-YEAR

VI. Furnace Creek

Mill Creek and its tributaries (12-digit 021306091137) are located in the Furnace Creek watershed near Perryville, MD. It is currently designated as a Use Class I-P water. The waterbody segment currently supports naturally reproducing populations of brown trout. The MDDNR Fisheries Program and MBSS scientists have conducted surveys of this waterbody segment. Figure 10 shows the location of sampling stations, with the water temperature and biological data results provided in Tables 17 and 18.

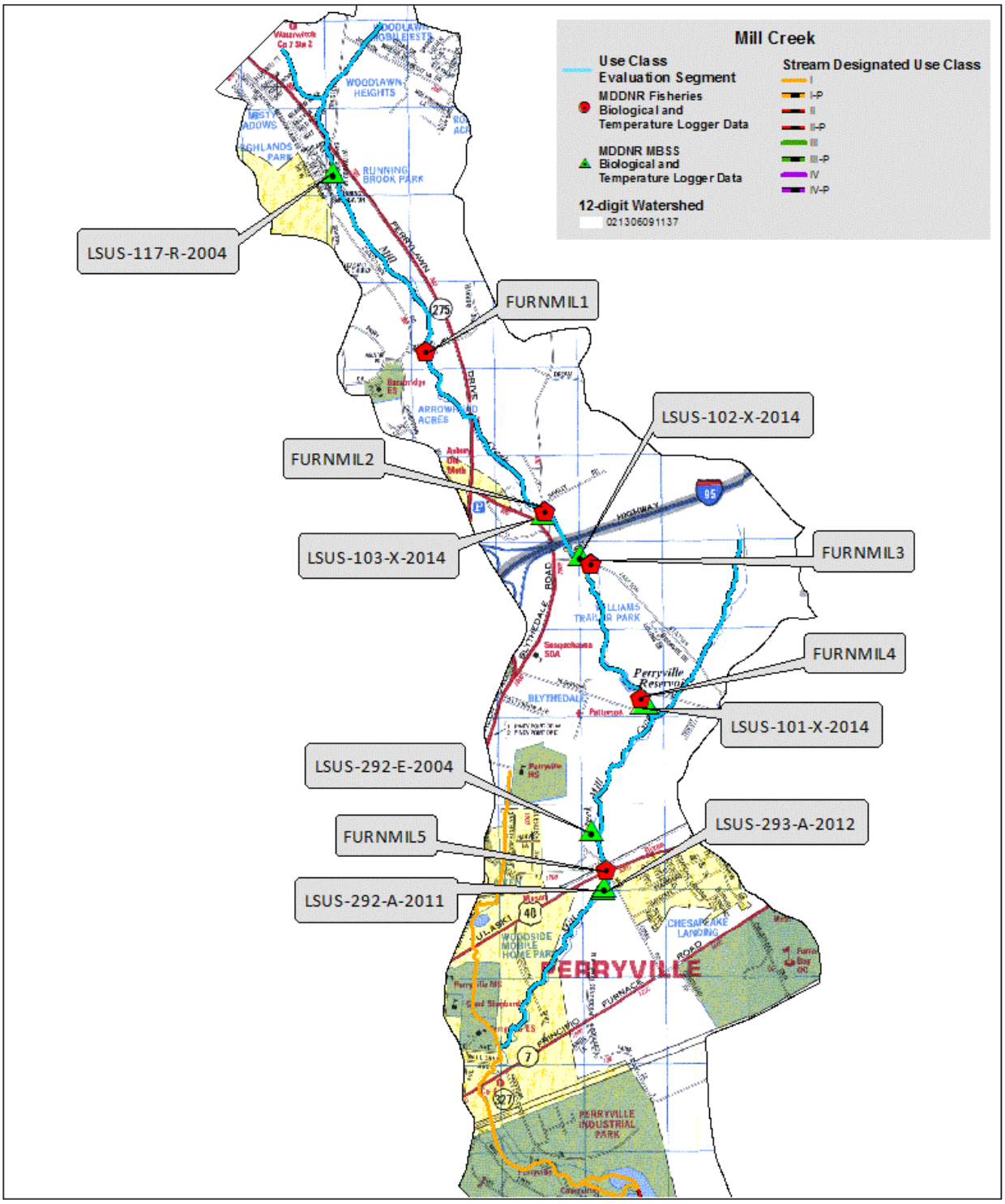

Figure 10. Mill Creek

Temperature Data for Mill Creek

Water temperature data were collected at nine sampling events in Mill Creek in 2003, 2004, 2011, 2012, and 2014. Three stations meet the Class III water temperature criterion. Six of the nine stations do not meet the Class III criterion.

Table 17. Mill Creek Water Temperature Data

Date	Station ID	Stream	DATA SUBMITTER	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2003	FURNMIL2	Mill Creek	MDDNR Fisheries Program	2190	9%	0%	17.77	22.26
2003	FUNRMIL4	Mill Creek	MDDNR Fisheries Program	2190	6%	0%	17.83	20.94
2014	LSUS-101-X-2014	Mill Creek	MDDNR MBSS	6624	**29%**	0%	19.10	23.14
2014	LSUS-102-X-2014	Mill Creek	MDDNR MBSS	6624	**16%**	0%	18.60	23.28
2014	LSUS-103-X-2014	Mill Creek	MDDNR MBSS	6624	**14%**	0%	18.52	22.44
2012	LSUS-293-A-2012	Mill Creek	MDDNR MBSS	6624	**71%**	**6%**	20.97	**25.94**
2011	LSUS-292-A-2011	Mill Creek	MDDNR MBSS	6624	**75%**	9%	21.25	26.50
2004	LSUS-292-E-2004	Mill Creek	MDDNR MBSS	5975	**32%**	0%	19.04	22.63
2004	LSUS-117-R-2004	Mill Creek	MDDNR MBSS	4967	5%	0%	16.99	22.14

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August.

Biological Data for Mill Creek

Mill Creek was sampled twenty-three times at twelve stations in 2001, 2004, 2007, 2008, 2009, 2011, 2012, 2013, 2014 and 2018. Brown trout were found at fourteen of the twenty-three biological sampling events. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 18. Mill Creek Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
6/14/2018	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	1	Adult
6/14/2018	FURNMIL2	Mill Creek	MDDNR Fisheries Program	brown trout	1	YOY
6/14/2018	FURNMIL1	Mill Creek	MDDNR Fisheries Program	-	-	-
9/4/2013	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	3	Multiple Year Classes with YOY
8/2/2011	FURNMIL2	Mill Creek	MDDNR Fisheries Program	-	-	-
8/1/2011	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	9	Multiple Year Classes of Adults
9/3/2009	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	5	Multiple Year Classes with YOY
8/26/2008	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	6	Multiple Year Classes with YOY
8/14/2007	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	4	Multiple Year Classes with YOY
8/25/2004	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	9	Multiple Year Classes with YOY
8/25/2004	FURNMIL2	Mill Creek	MDDNR Fisheries Program	brown trout	1	Adult
6/26/2001	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	5	Multiple Year Classes with YOY
6/26/2001	FURNMIL4	Mill Creek	MDDNR Fisheries Program	-	-	-
6/26/2001	FURNMIL5	Mill Creek	MDDNR Fisheries Program	-	-	-
6/25/2001	FURNMIL2	Mill Creek	MDDNR Fisheries Program	brown trout	12	Multiple Year Classes with YOY
6/25/2001	FURNMIL1	Mill Creek	MDDNR Fisheries Program	-	-	-
7/23/2014	LSUS-101-X-2014	Mill Creek	MDDNR MBSS	-	-	-
7/23/2014	LSUS-102-X-2014	Mill Creek	MDDNR MBSS	brown trout	2	Multiple Year Classes of Adults
7/29/2014	LSUS-103-X-2014	Mill Creek	MDDNR MBSS	brown trout	6	Multiple Year Classes with YOY
7/3/2012	LSUS-293-A-2012	Mill Creek	MDDNR MBSS	-	-	-
6/7/2011	LSUS-292-A-2011	Mill Creek	MDDNR MBSS	-	-	-
8/23/2004	LSUS-292-E-2004	Mill Creek	MDDNR MBSS	brown trout	1	YOY
7/26/2004	LSUS-117-R-2004	Mill Creek	MDDNR MBSS	-	-	-

*YOY - young-of-year

VII. North Branch Potomac River

From 2013 to 2017, the MDDNR Freshwater Fisheries Program conducted a fishery survey in the North Branch Potomac River from Jennings-Randolph Lake Dam downstream to Cumberland, MD in Allegany County. The portion of the North Branch Potomac River from Jennings-Randolph Lake to Laurel Run is currently designated as Class III-P, while segments downstream of this point are currently designated as Class I-P. A number of waterbody segments along these portions of the North Branch Potomac River are actively stocked by the MDDNR to support a recreational fishery. In addition, the segment of the North Branch Potomac River between the confluence of Laurel Run and downstream to its confluence with Piney Swamp Run (a tributary in West Virginia) is reported to support natural reproduction of brook trout, brown trout and rainbow trout. The fishery management areas sampled during the survey include the Lower, and Upper Catch and Release Area (C&R) Trout Fishing Management Area (TFMA), Westernport Put and Take (P&T) TFMA, McCoole Zero Creel Limit (ZCL) TFMA, and Gary Yoder (Black Oak) ZCL TFMA (Figure 11). For each waterbody segment, relevant data results from the *2013 Federal Aid Annual Report F-48-R-23 Study IV Job 2*, *2014 Federal Aid Annual Report F-48-R-24 Study IV Job 2, 2015 Federal Aid Annual Report F-48-R-25 Study IV Job 2, North Branch Potomac River From Jennings Randolph Lake Dam to Cumberland – FY16, and Annual Performance Report–FY17* including water temperature and biological (i.e., trout information) data are presented. Also the MDDNR Core Trend conducted a benthic macroinvertebrate survey from 1974 to 2017.

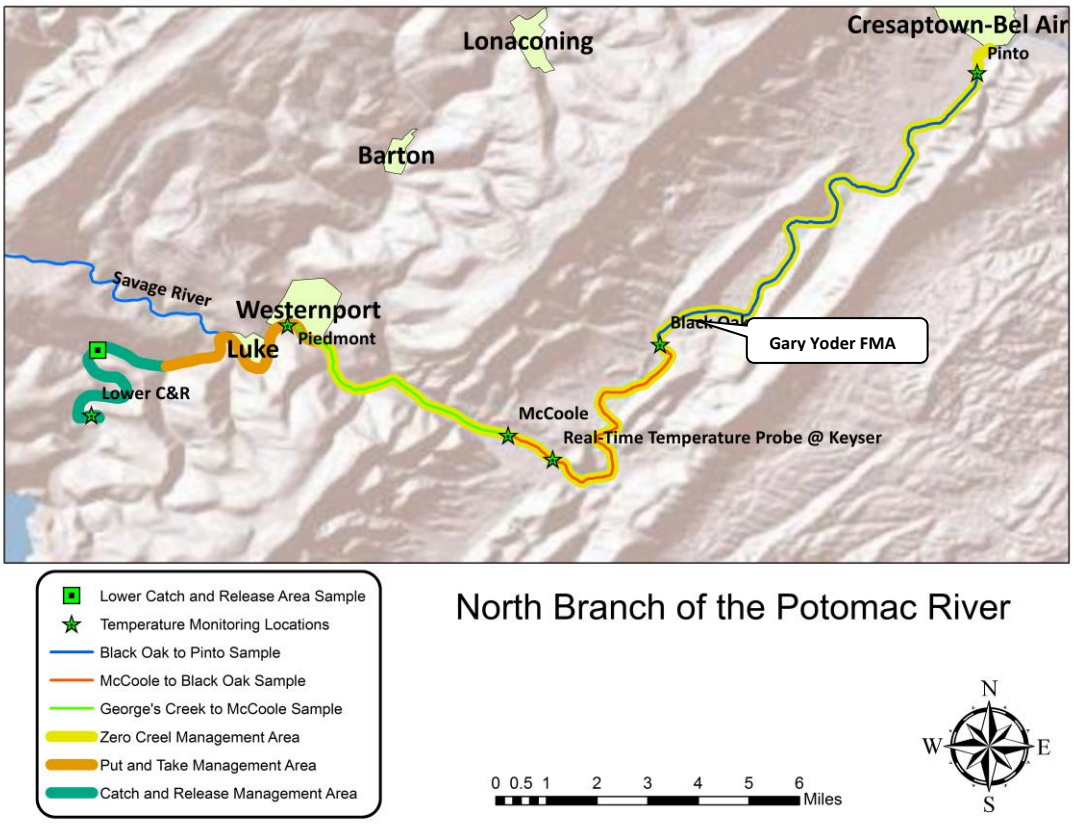

Figure 11.North Branch Potomac River Fisheries Management Areas (MDDNR Freshwater Fisheries Service 2015)

North Branch Potomac River (from Laurel Run to Piney Swamp Run)

The North Branch Potomac River (8-digit code 02141005) southwest of Cumberland, MD in Garrett County between Laurel Run and its confluence with Piney Swamp Run (a tributary in West Virginia), is currently designated as a Use I-P water. Though this area is stocked with both adult and fingerling-sized fish, MDDNR reports the presence of naturally reproducing populations of brook trout, brown trout and rainbow trout. Figure 12 shows the location of the waterbody segment, with water temperature and biological (e.g., trout) data results from the Lower C&R TFMA and Westernport P&T TFMA are provided in Figure 13, and Tables 19 and 20.

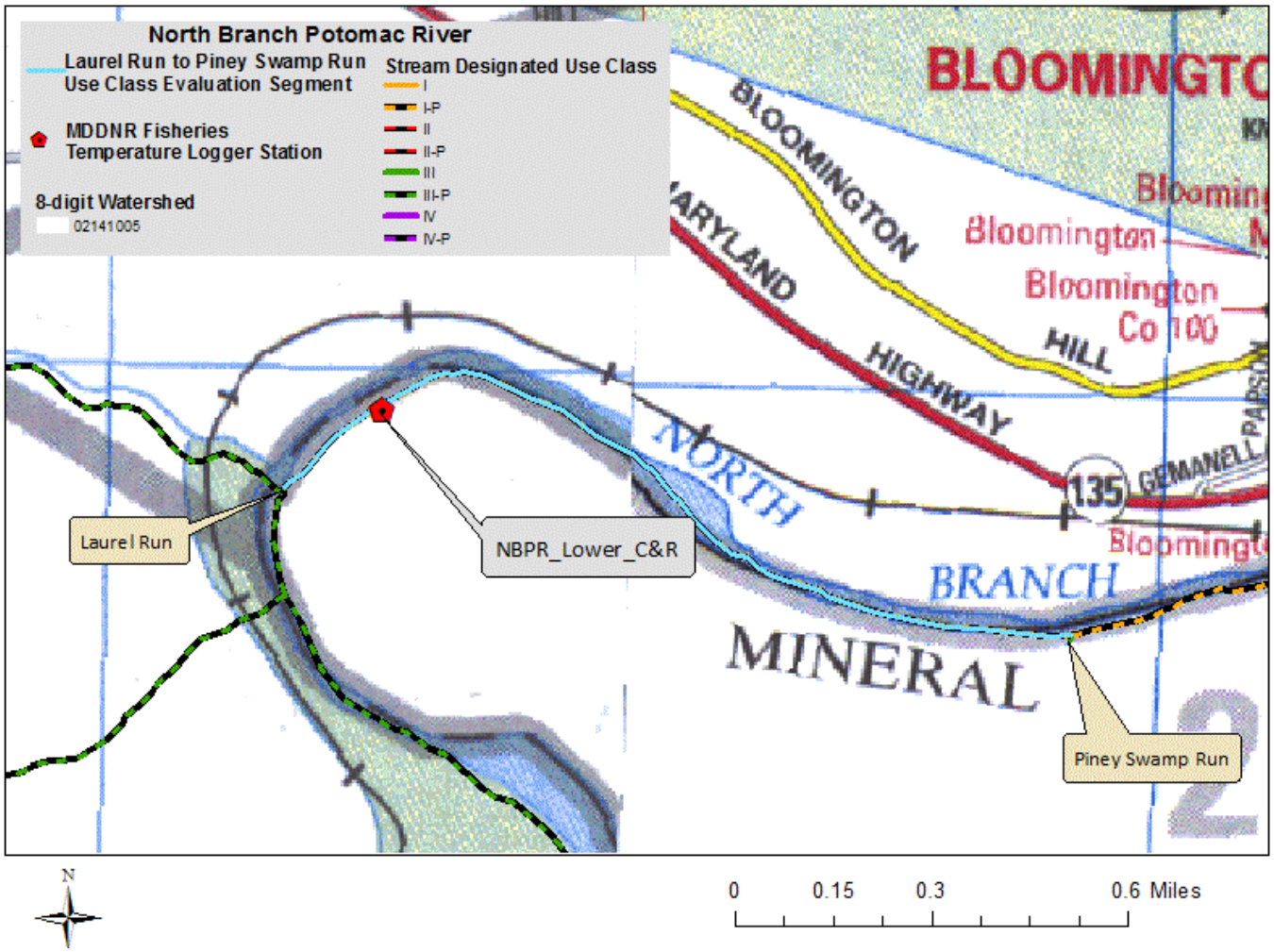

Figure 12. North Branch Potomac River from Laurel Run to Piney Swamp Run

Temperature Data for the North Branch Potomac River (from confluence with Laurel Run to confluence with Piney Swamp Run)

Water temperature data were collected in the Lower C&R TFMA in 2014, and 2015 and 2017. The analysis of raw 2015 and 2017 temperature readings provided in Table 19, from June to August of those years, meet the Class III water temperature criterion. Temperature readings from June through September 2014 appear to meet the Class III water temperature criterion; they were not available for this report so summary statistics are not provided and instead a graph from the 2014 Federal Aid Annual Report is shown below in Figure 13.

Table 19. North Branch Potomac River from Laurel Run to Piney Swamp Run Temperature Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2017	NBPR_Lower_C&R	NB Potomac River	MDDNR Fisheries Program	5616	0%	0%	15.20	19.0
2015	NBPR_Lower_C&R	NB Potomac River	MDDNR Fisheries Program	6300	0%	0%	14.82	19.1

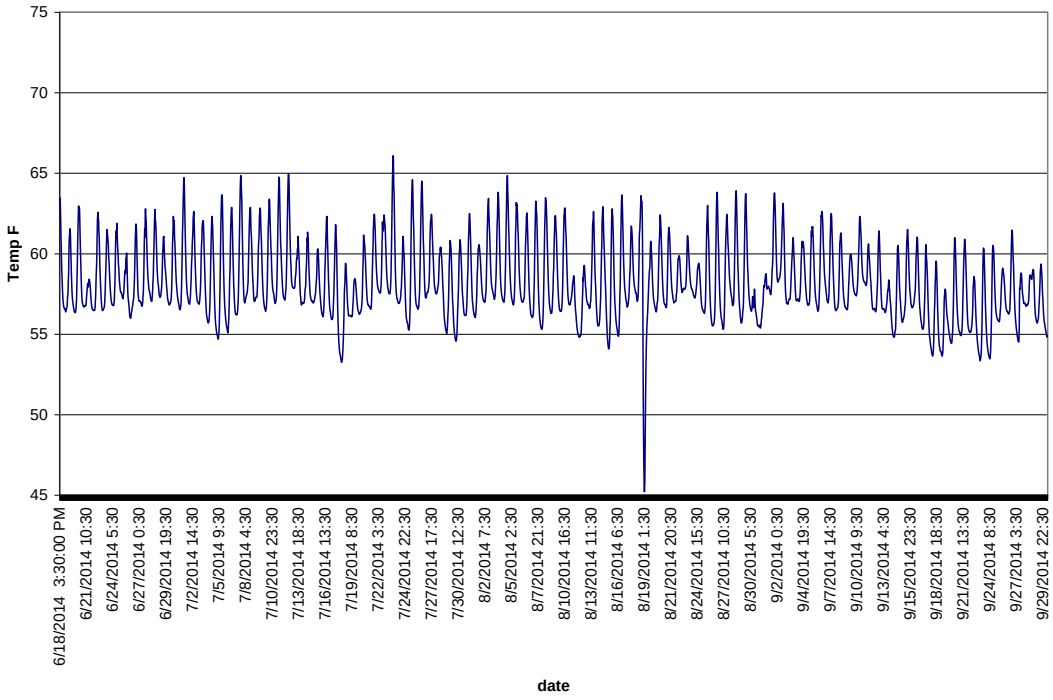

Figure 13. North Branch Potomac River Lower C&R TFMA Temperature in 2014

Biological Data for the North Branch Potomac River (from Laurel Run to Piney Swamp Run)

Brook trout, brown trout, and rainbow trout were collected in the Lower C&R TFMA. As noted in Table 20 below, there were multiple year classes with young-of-year rainbow trout, multiple year classes of adult brown trout, and young-of-year brook trout collected at the sampling station in 2015. During the 2015 sampling event, several additional trout were observed but not captured and thus they were not counted or measured as part of the official record. However, for informational purposes, they are provided in the table below. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species.

Table 20. North Branch Potomac River from Laurel Run to Piney Swamp Run Biological Data

Date	Location	Stream	DATA SUBMITTER	Species	Count	Maturity	Observed not collected
2015	Lower C&R TFMA	NBPR Laurel Run to Piney Swamp Run	MDDNR Fisheries Program	brook trout	1	YOY[1]	1
				brown trout	12	Multiple Year Classes of Adults[2]	3
				rainbow trout	27	Multiple Year Classes with YOY[3]	11

1. YOY - young-of-year 2. Brown trout – 8 wild, 4 hatchery 3. Rainbow trout – 16 wild with YOY, 11 hatchery

North Branch Potomac River (from Piney Swamp Run to Route 956 in Pinto, MD)

The segment of North Branch Potomac River (8 digit codes 02141001, 02141004, 02141005, and 02141006) located southwest of Cumberland, MD in Allegany and Garrett counties between Piney Swamp Run (a tributary in West Virginia) and Route 956 in Pinto, MD is currently designated as Use I-P. These waterbody segments are actively stocked for recreational fishing by the MDDNR Fisheries Program. Figure 14 shows the location of the waterbody segment, with water temperature and biological data results provided in Figures 15 through 25, and Tables 21 and 22.

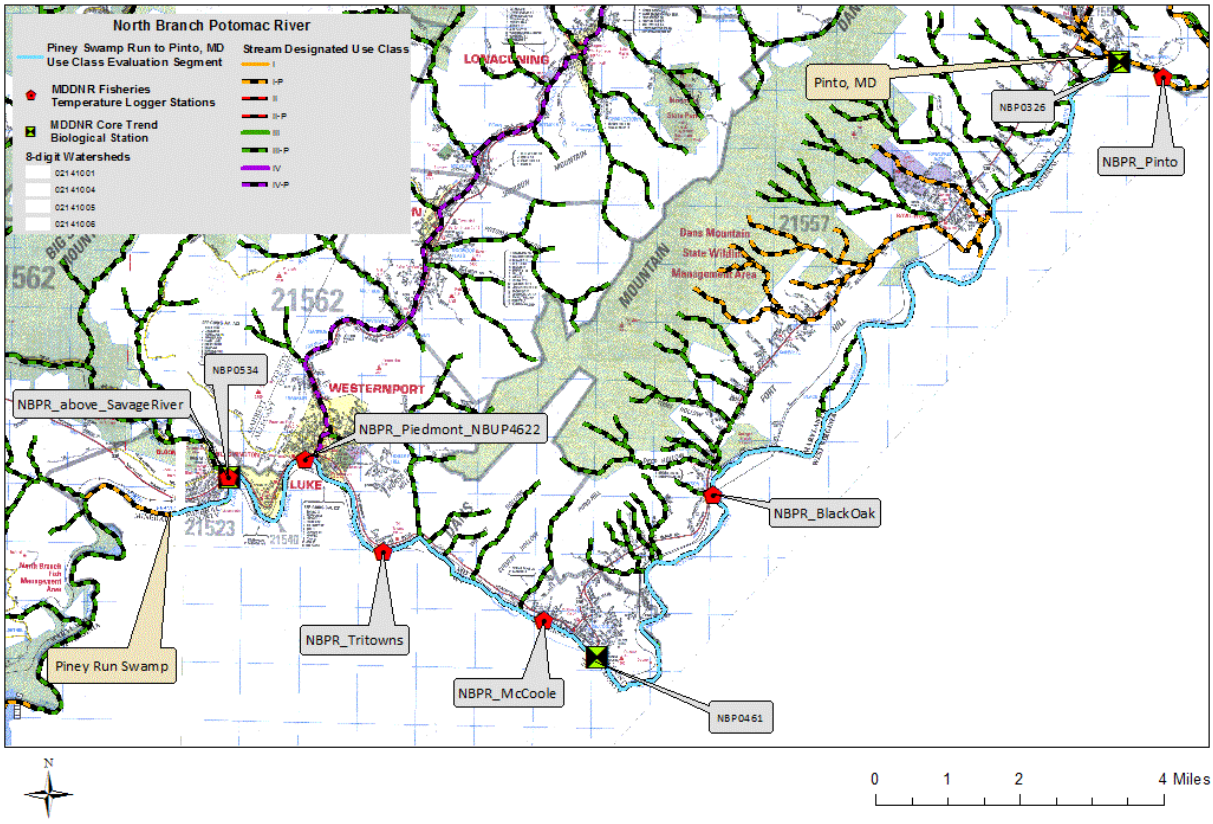

Figure 14. North Branch Potomac River from Piney Swamp Run to Route 956 in Pinto, MD

Water Temperature Data for North Branch Potomac River (from Piney Swamp Run to Route 956 in Pinto, MD)

Water temperature data were collected at nine sampling events from 2013 to 2017. Raw data were provided for 2015 and 2017 (Table 21); 2013 and 2014 raw data were not available for this report so summary statistics are not provided and instead graphs from the 2013 and 2014 Federal Aid Annual Reports (Figures 15 to 21) are shown below. The Federal Aid Annual reports note temperatures do not exceed the management recommendation of 25 degrees Celsius (77 degrees Fahrenheit). Except for the Gary Yoder (Black Oak) ZCL TFMA in 2014, 2015 and 2017 (Table 21 and Figure 16), Tritowns in 2015 (Table 21), and Pinto, MD in 2017 (Table 21) all of the stations' water temperature results meet the Class IV water temperature criterion. Please note that Figures 15, 16, and 17 do not list the dates of sampling for the ZCL McCoole and ZCL Gary Yoder (Black Oak) TFMA, and Westernport P&T TFMA temperature data results. Temperature data is provided in both degrees Fahrenheit and Celsius.

Table 21. North Branch Potomac River from Piney Swamp Run to Pinto, MD Temperature Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2017	NBPR_above_SavageRiver	NB Potomac River	MDDNR Fisheries Program	5616	5%	0%	15.80	20.1
2017	NBPR_Piedmont_NBUP4622	NB Potomac River	MDDNR Fisheries Program	5616	7%	0%	17.10	21.6
2017	NBPR_BlackOak	NB Potomac River	MDDNR Fisheries Program	5616	**55%**	**2%**	19.96	**25.1**
2017	NBPR_Pinto	NB Potomac River	MDDNR Fisheries Program	5616	**64%**	**7%**	20.90	**26.1**
2015	NBPR_above_SavageRiver	NB Potomac River	MDDNR Fisheries Program	6300	0.1%	0%	15.38	20.2
2015	NBPR_Piedmont_NBUP4622	NB Potomac River	MDDNR Fisheries Program	6300	3%	0%	16.64	21.1
2015	NBPR_Tritowns	NB Potomac River	MDDNR Fisheries Program	6300	**22%**	0%	18.34	23.1
2015	NBPR_McCoole	NB Potomac River	MDDNR Fisheries Program	6300	**33%**	0%	18.86	23.5
2015	NBPR_BlackOak	NB Potomac River	MDDNR Fisheries Program	6300	**47%**	**1%**	19.58	**24.9**

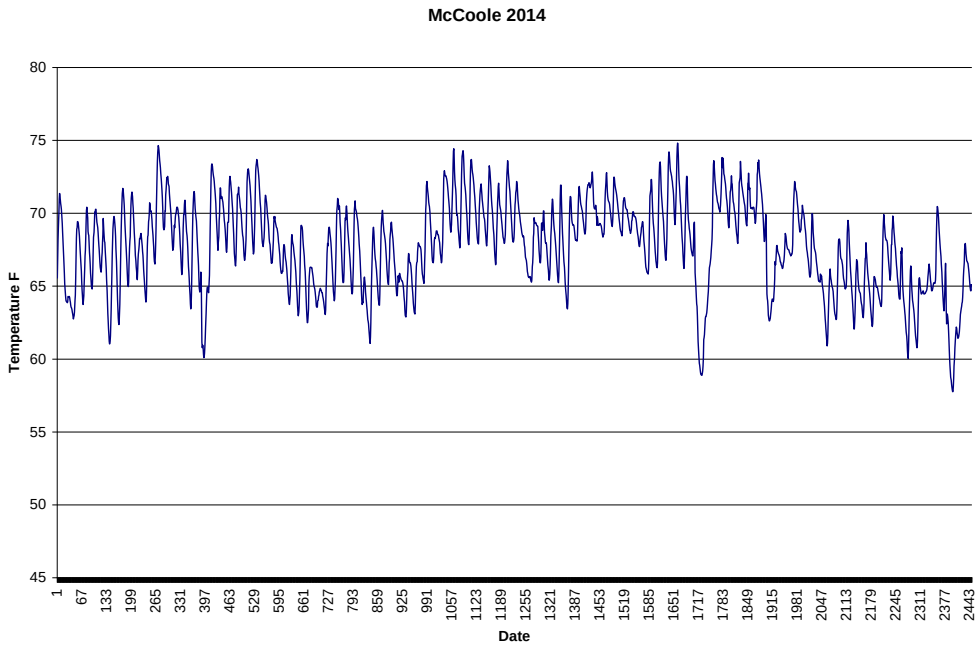

Figure 15. North Branch Potomac River (ZCL) at the McCoole TFMA Water Temperatures in 2014

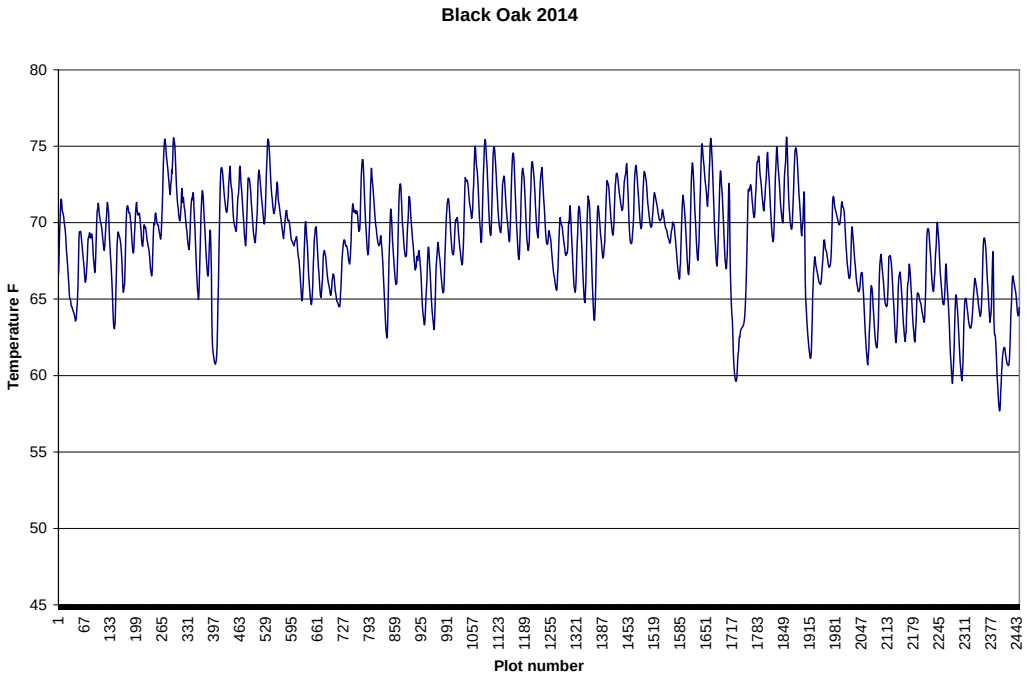

Figure 16. North Branch Potomac River (ZCL) at the Gary Yoder TFMA Water Temperatures in 2014

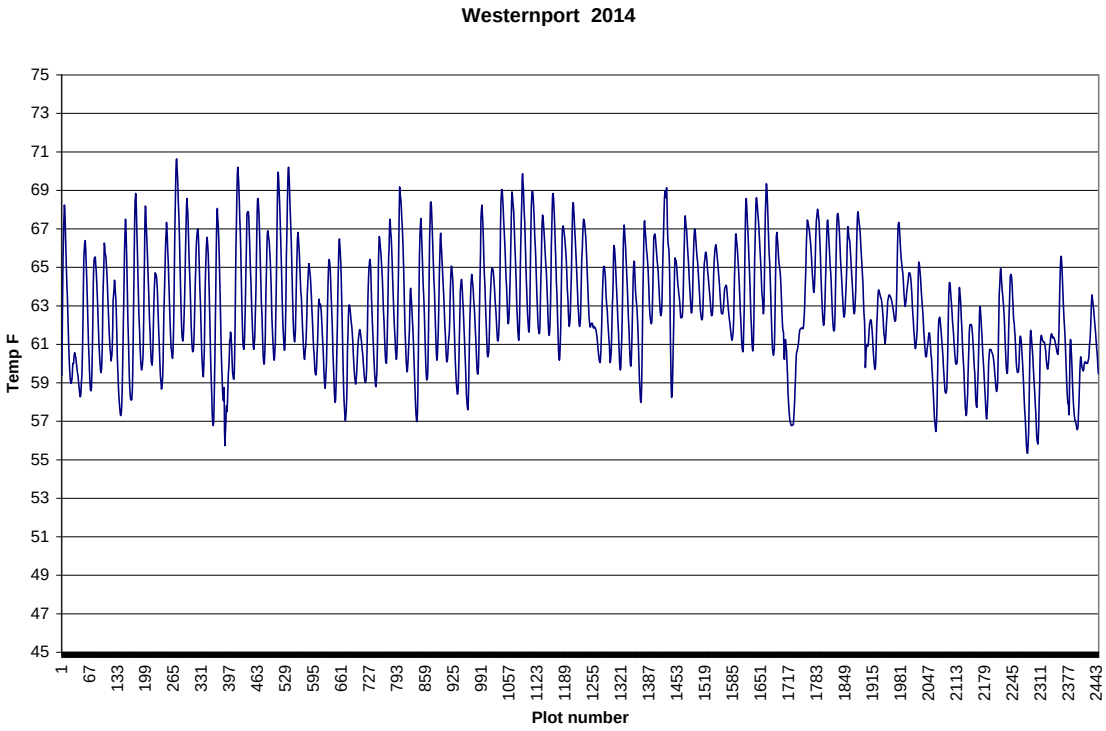

Figure 17. Westernport P&T TFMA Water Temperatures 2014.

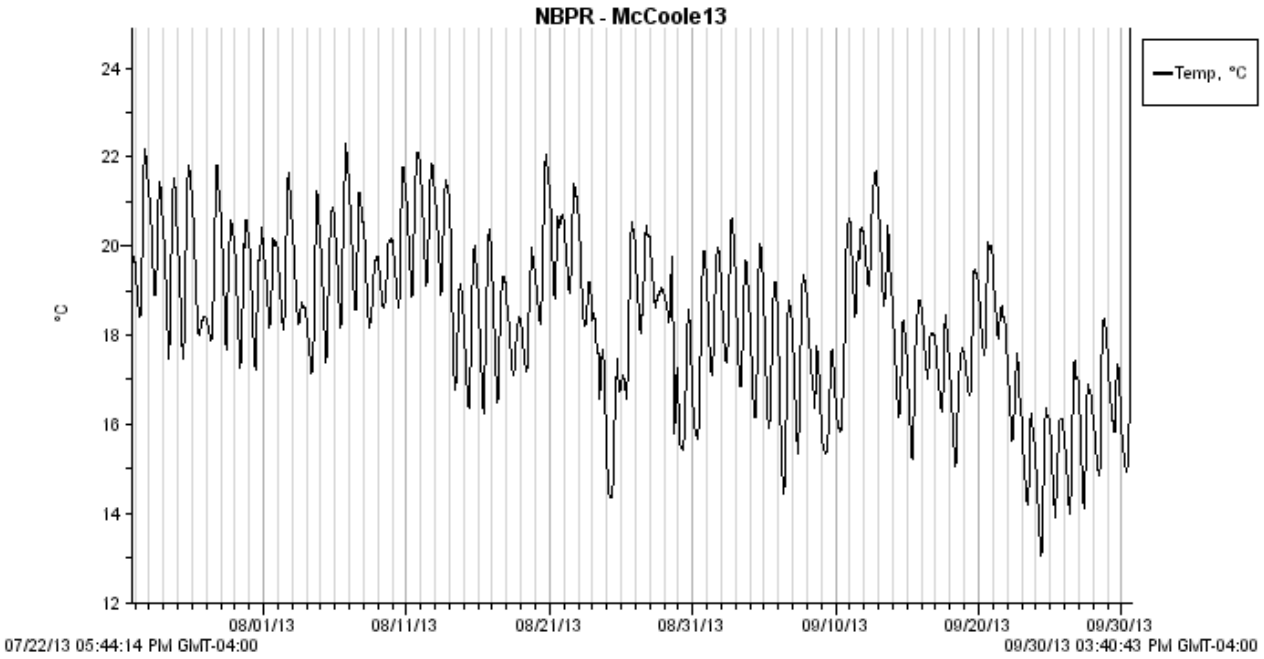

Figure 18. North Branch Potomac River (ZCL) at McCoole TFMA Water Temperatures in 2013.

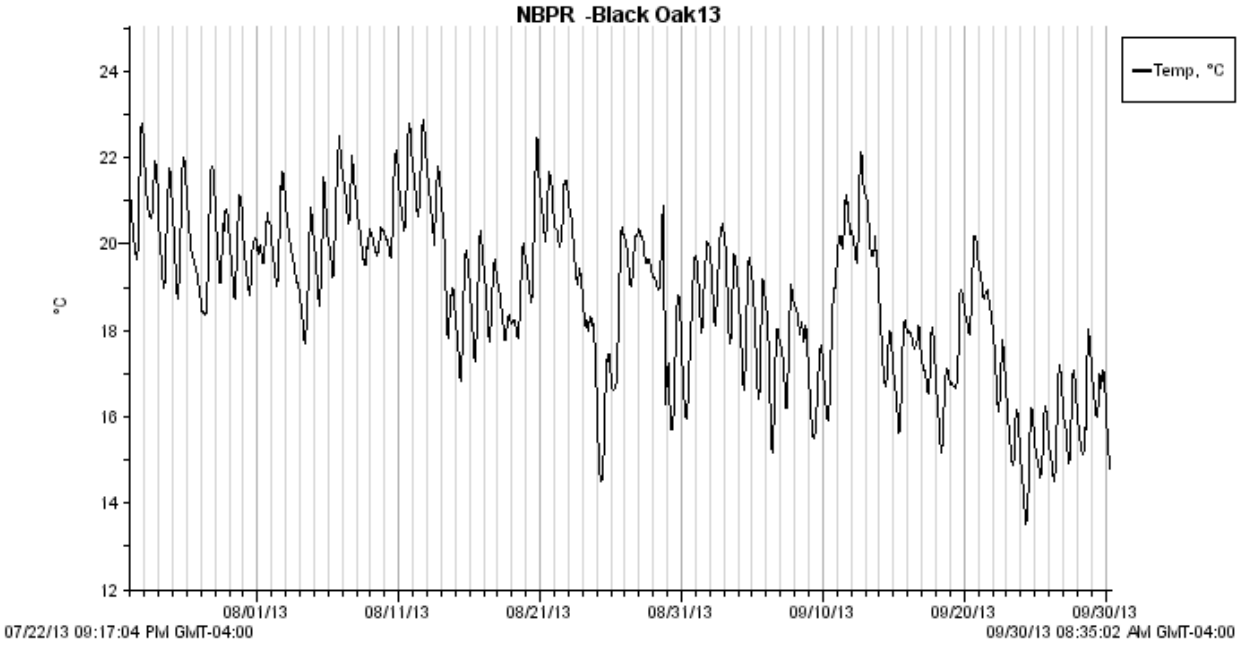

Figure 19. North Branch Potomac River (ZCL) at the Gary Yoder TFMA Water Temperatures in 2013.

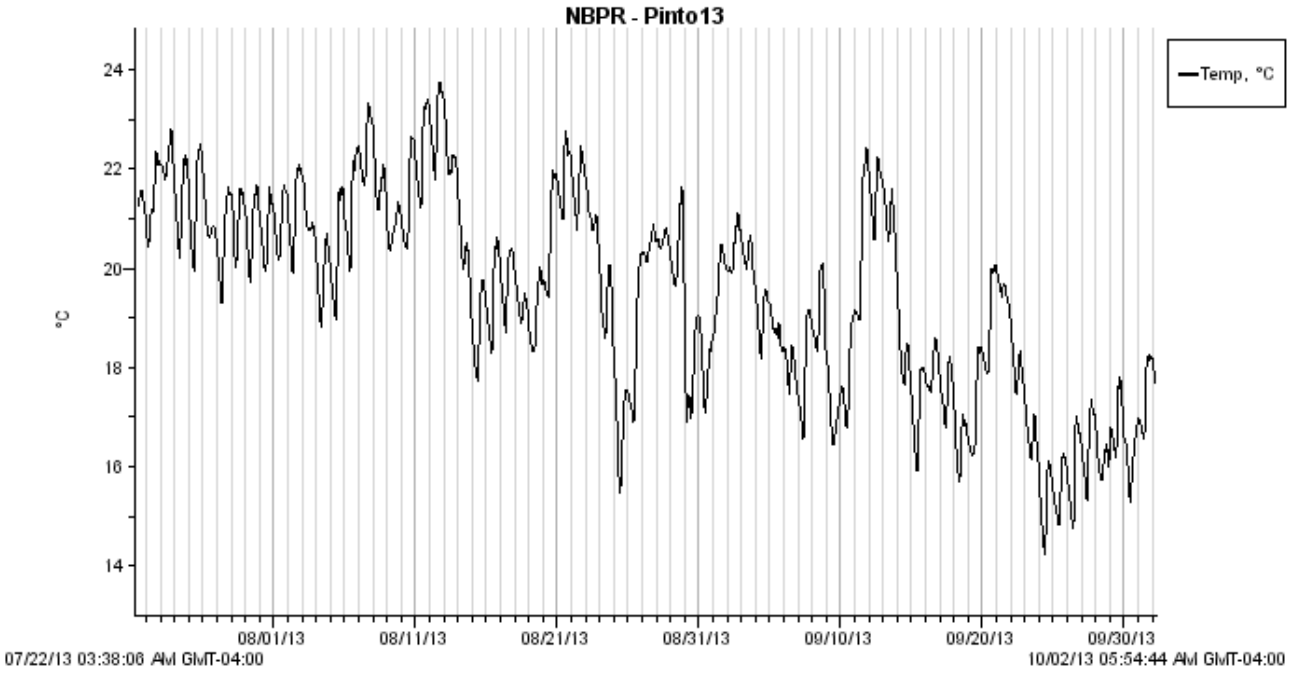

Figure 20. North Branch Potomac River (ZCL) TFMA at the lower boundary (Pinto, MD) Water Temperatures in 2013.

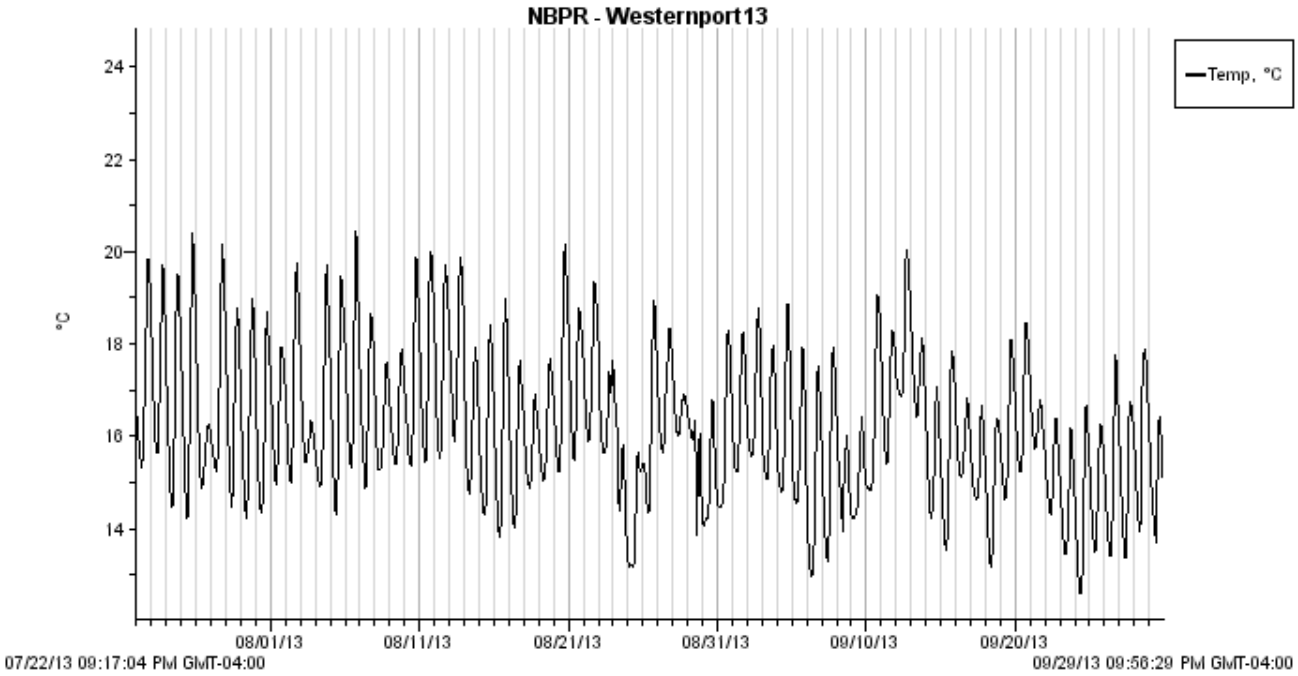

Figure 21. Westernport Put and Take TFMA Water Temperatures 2013.

Biological Data for the North Branch Potomac River (from Piney Swamp Run to Route 956 in Pinto, MD)

The number of brown trout and rainbow trout collected in the Upper C&R TFMA, Westernport P&T TFMA and ZCL TFMAs are provided in Table 22, and the number and length frequency distributions of trout species are provided in Figures 22 to 25. During some of these sampling events, several of these trout species were observed but not captured and thus were not counted or measured as part of the official record. However, for informational purposes, they are provided in the table below.

The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species. MDDNR Core Trend sampled at three stations in the waterbody segment, NBP0326, NBP0461 and NBP0534, from 1974 to 2017. *Tallaperla* was found on two occasions only at station NBP0534.

Table 22. North Branch Potomac River from Piney Swamp Run to Pinto, MD Biological Data.

Date	Location	Stream	DATA SUBMITTER	Species	Count	Maturity	Observed not collected
2017	Black Oak ZCL TFMA to Pinto	NBPR Piney Swamp Run to Pinto, MD	MDDNR Fisheries Program	brook trout	-	-	-
				brown trout	1	Adult	-
				rainbow trout	12	Multiple Year Classes of Adults	-
2016	Westernport P & T to Black Oak ZCL TFMA	NBPR Piney Swamp Run to Pinto, MD	MDDNR Fisheries Program	brook trout	-	-	-
				brown trout	20	Multiple Year Classes of Adults	-
				rainbow trout	103	Multiple Year Classes with YOY[1]	-
2015	McCoole to Black Oak ZCL TFMA	NBPR Piney Swamp Run to Pinto, MD	MDDNR Fisheries Program	brook trout	-	-	-
				brown trout	3	Multiple Year Classes of Adults	-
				rainbow trout	53	Multiple Year Classes with YOY[1]	50
2015	Westernport to McCoole ZCL TFMA	NBPR Piney Swamp Run to Pinto, MD	MDDNR Fisheries Program	brook trout	-	-	-
				brown trout	17	Multiple Year Classes of Adults	19
				rainbow trout	50	Multiple Year Classes of Adults	28
2015	Georges Creek to Westernport Wastewater Effluent P&T TFMA	NBPR Piney Swamp Run to Pinto, MD	MDDNR Fisheries Program	brook trout	-	-	-
				brown trout	3	Multiple Year Classes of Adults	4
				rainbow trout	2	Multiple Year Classes of Adults	-
2015	Piney Swamp Run to Savage River P&T TFMA	NBPR Piney Swamp Run to Pinto, MD	MDDNR Fisheries Program	brook trout	-	-	1
				brown trout	10	Multiple Year Classes of Adults	2
				rainbow trout	8[2]	Multiple Year Classes with YOY[1]	10
2013	ZCL TFMA	NBPR Piney Swamp Run to Pinto, MD	MDDNR Fisheries Program	brook trout	-	-	-
				brown trout	27	Multiple Year Classes of Adults	-
				rainbow trout	127	Multiple Year Classes with YOY[1]	-
8/24/1998	NBP0534	NBPR Piney Swamp Run to Pinto, MD	MDDNR Core Trend	*Tallaperla*	7	-	-
7/28/1997					3		

1. YOY - young-of-year 2. Rainbow trout – 4 wild with YOY, 4 hatchery

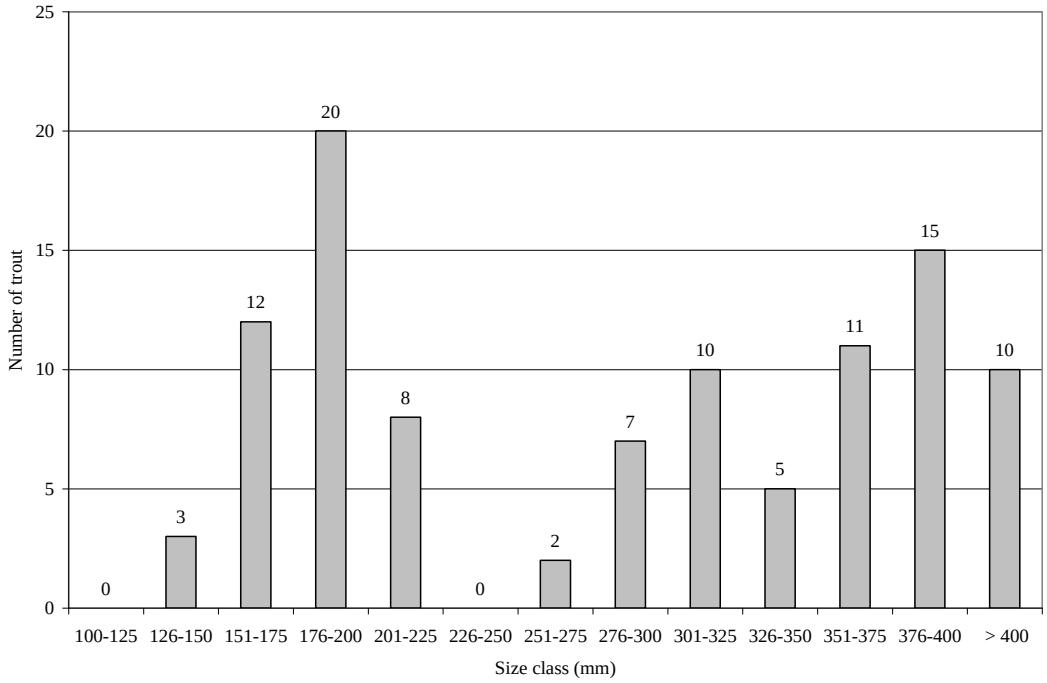

Figure 22. Length frequency distribution of rainbow trout (N = 103) in the ZCL TFMA of the North Branch Potomac River (Westernport to Black Oak), FY16.

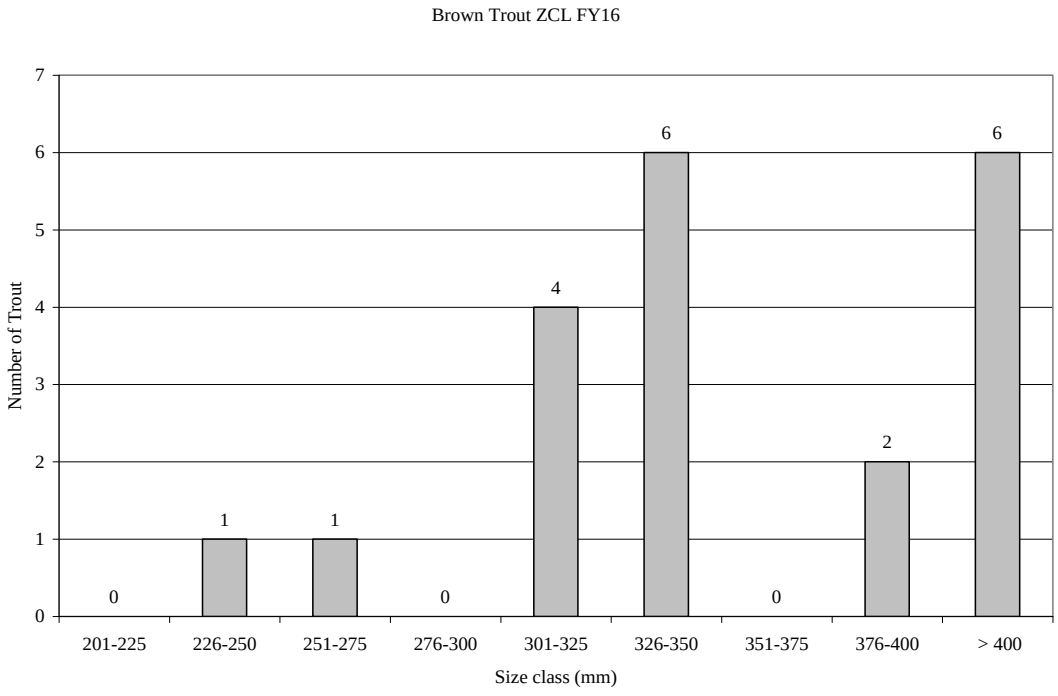

Figure 23. Length frequency distribution of brown trout (N = 20) in the ZCL TFMA of the North Branch Potomac River (Westernport to Black Oak), FY16.

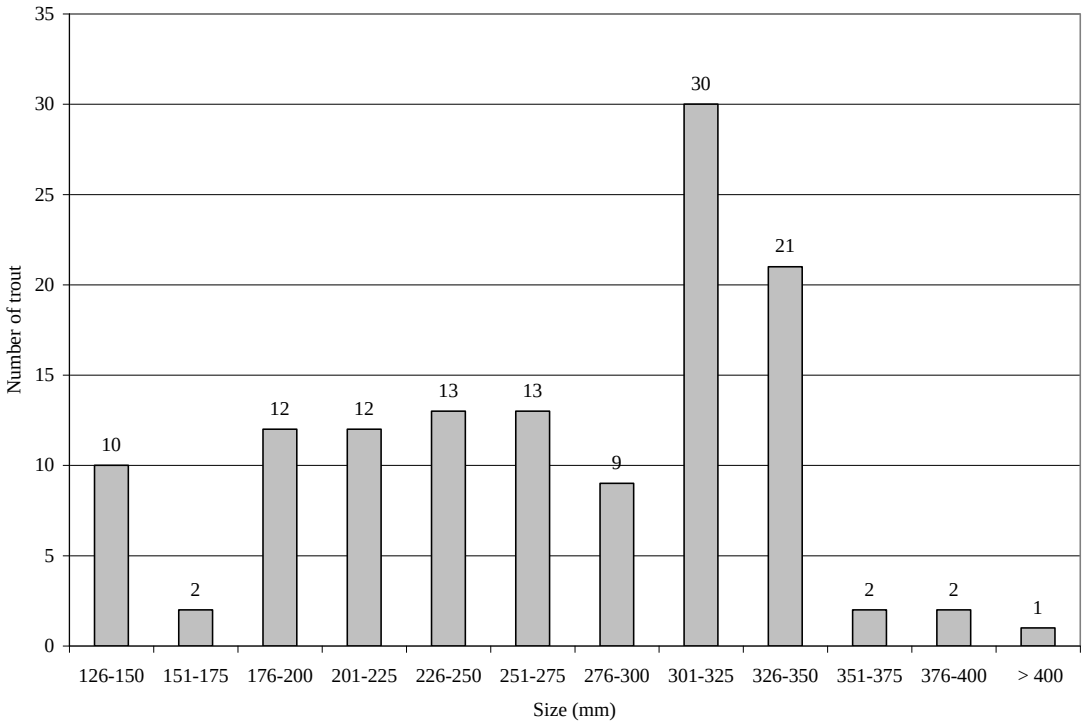

Figure 24. North Branch Potomac River ZCL TFMA Length Frequency Distribution Rainbow Trout (n=127) in June 2013.

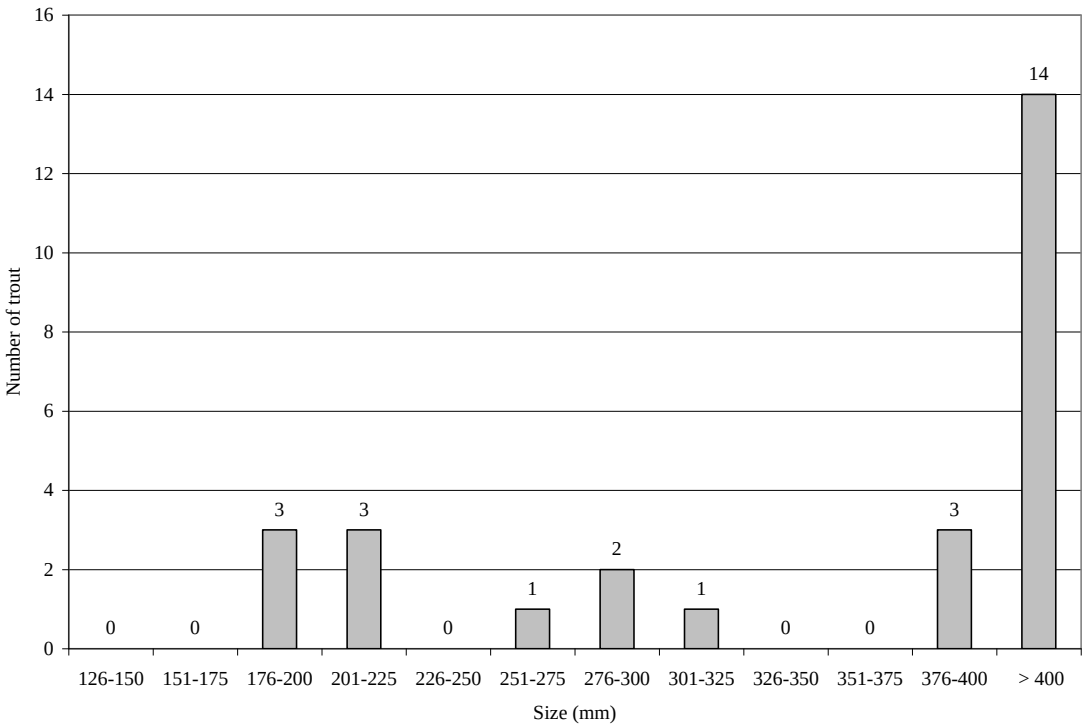

Figure 25. North Branch Potomac River ZCL TFMA Length Frequency Distribution Brown Trout (n=27) in June 2013.

Unnamed Tributary to the Potomac River Lower North Branch

An unnamed tributary to the Potomac River Lower North Branch (12-digit 021410010057) in the North Branch Potomac River watershed, located south of Cresaptown in Allegany County, is currently designated as Use Class I-P. The waterbody segment currently supports the coldwater obligate benthic macroinvertebrate species, *Sweltsa*. The MDDNR MBSS conducted a survey of the waterbody segment in 1996. Figure 26 below, shows the location of the sampling station and temperature and biological data results are in Table 23 and 24.

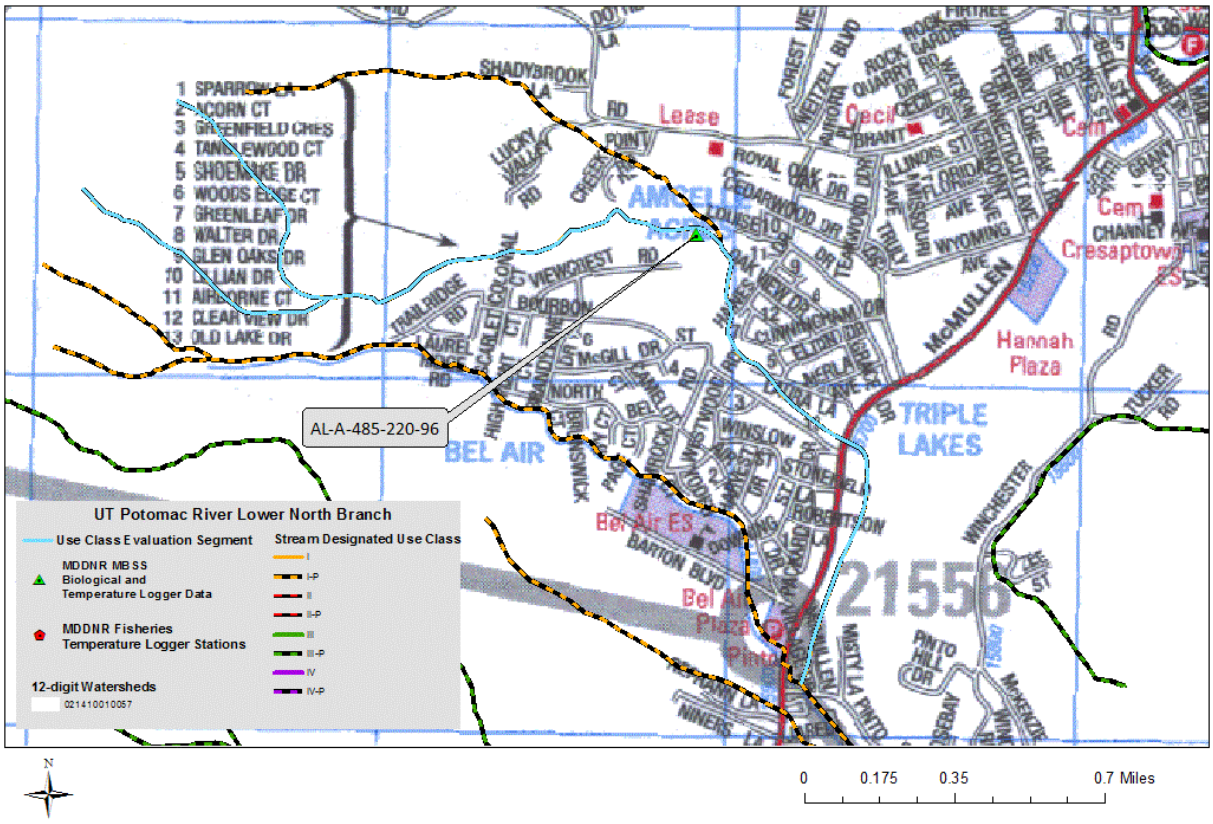

Figure 26. Unnamed Tributary to Potomac River Lower North Branch

Temperature Data for Unnamed Tributary to Potomac River Lower North Branch

The unnamed tributary to Potomac River Lower North Branch was surveyed in 1996 but no water temperature logger data were collected.

Table 23. Unnamed Tributary to Potomac River Lower North Branch Temperature Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
1996	AL-A-485-220-96	Potomac River LNB UT1	MDDNR MBSS	-	-	-	-	-

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997).

Biological Data for Unnamed Tributary to Potomac River Lower North Branch

The unnamed tributary to Potomac River Lower North Branch was surveyed in 1996 with three coldwater obligate benthic macroinvertebrate species (*Sweltsa*) being found. *Sweltsa* was also found at station AL-A-585-122-96 which is located east of the evaluation segment on a Use Class III-P unnamed tributary.

Table 24. Unnamed Tributary to Potomac River Lower North Branch Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
4/10/1996	AL-A-485-220-96	Potomac River LNB UT1	MDDNR MBSS	*Sweltsa*	3	-

VIII. Deer Creek

Two unnamed tributaries to Deer Creek potentially demonstrate that the existing use may be different than their currently designated use classification. The first is the unnamed tributary to Deer Creek between the confluence with Wet Stone Branch and Gladden Branch, and the second is the unnamed tributary to Falling Branch. For each waterbody, relevant data including water temperature and biological (e.g., trout and benthic macroinvertebrate) data are presented.

Unnamed Tributary to Deer Creek

An unnamed tributary to Deer Creek (12-digit 021202020327) in the Deer Creek watershed, located partially in the northeast region of Rocks State Park in Harford County, is currently designated as Use Class IV-P. The waterbody segment potentially supports brook trout. Figure 27 shows the location of the sampling station, and biological data results are presented in Table 25.

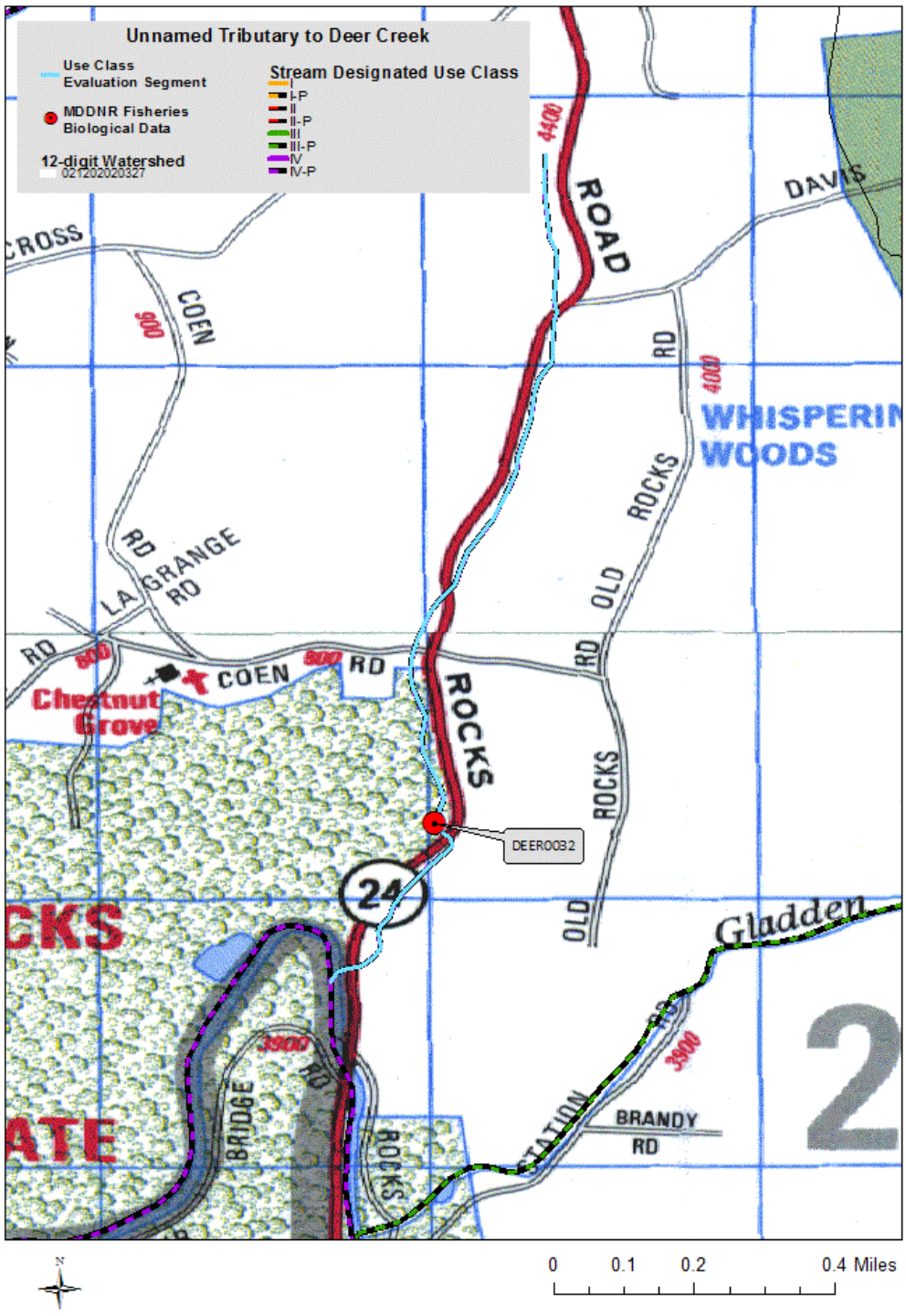

Figure 27. Unnamed Tributary to Deer Creek

Temperature Data for Unnamed Tributary to Deer Creek

No water temperature data were previously collected for this waterbody segment.

Biological Data for Unnamed Tributary to Deer Creek

The MDDNR Fisheries Program conducted a brief qualitative electrofishing survey in 2018. One adult and one young of year brook trout were found. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species. MDDNR Fisheries plans to conduct a quantitative survey in 2019.

Table 25. Unnamed Tributary to Deer Creek Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
10/11/2018	DEER0032	UT to Deer Creek	MDDNR Fisheries Program	brook trout	1	YOY
				brook trout	1	Adult

Unnamed Tributary to Falling Branch

An unnamed tributary to Falling Branch (12-digit 021202020329) in the Deer Creek watershed, located northwest of Bel Air in Harford County, is currently designated as Use Class IV-P. The waterbody segment currently supports several species of trout including brook trout, brown trout, and a sterile intergeneric hybrid, i.e., tiger trout was collected. The MDDNR Fisheries Program conducted a survey of the waterbody segment in 2018. Figure 28 shows the location of the sampling station, and water temperature logger and biological data results are presented in Table 26 and 27.

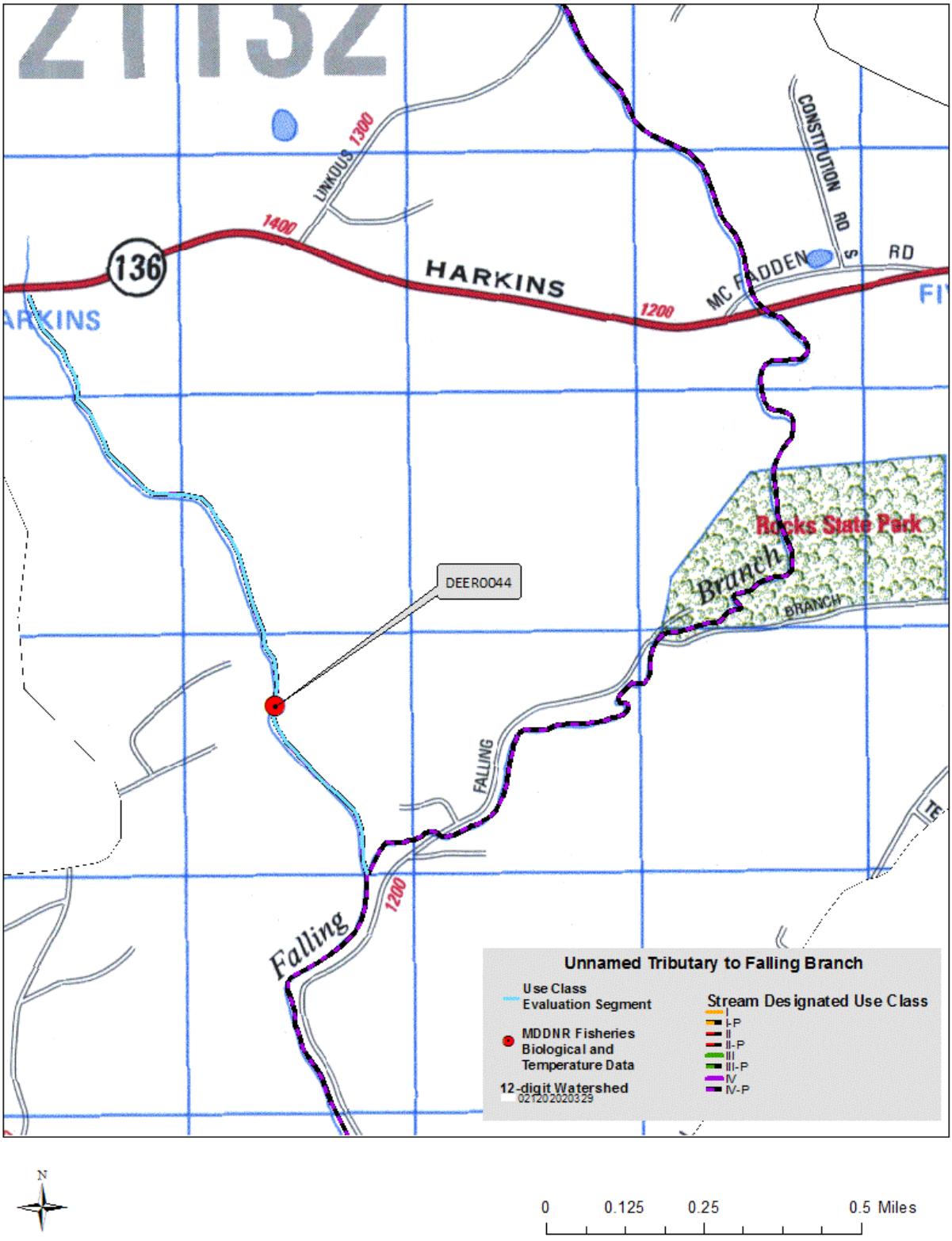

Figure 28. Unnamed Tributary to Falling Branch

Temperature Data for Unnamed Tributary to Falling Branch

Water temperature data were collected at one sampling event in 2018. The water temperature results meet the Class III criterion.

Table 26. Unnamed Tributary to Falling Branch Temperature Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2018	DEER0044	UT to Falling Branch	MDDNR Fisheries Program	4536	4%	0%	17.60	22.60

*Water temperature logger data assessed from June 30th to August 31st. The "Daily Max" represents the maximum temperature from 30th to August 31st.

Biological Data for Unnamed Tributary to Falling Branch

The unnamed tributary to Falling Branch stream evaluation segment was surveyed in 2018 during one sampling event. One adult and one young of year of brown trout, one adult brook trout, and one adult tiger trout were found. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species.

Table 27. Unnamed Tributary to Falling Branch Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
6/29/2018	DEER0044	UT to Falling Branch	MDDNR Fisheries Program	brook trout	1	Adult
				brown trout	2	Adult & YOY
				tiger trout	1	Adult

YOY - young-of-year

IX. Lower Monocacy River

Talbot Branch and Weldon Creek potentially demonstrate that their existing use may be different than their currently designated use classification. Both Talbot Branch and Weldon Creek are confluent to North Fork Linganore Creek in the Lower Monocacy River watershed (8-digit watershed 02140302). For each waterbody, relevant data including water temperature and biological (e.g., trout and benthic macroinvertebrate) data are presented.

Talbot Branch

Talbot Branch (12-digit 021403020238) in the Lower Monocacy River watershed, located southwest of New Windsor in Carroll and Frederick counties, is currently designated as Use Class IV-P. The waterbody segment may support several species of trout species or is a possible candidate for trout re-introduction by the MDDNR Fisheries Program. Frederick County, and the MDDNR Fisheries Program and MBSS conducted surveys of the waterbody segment in 1996, 2000, 2003, 2010, 2011, 2015 and 2018. Figure 29 below, shows the location of the sampling stations, and Tables 28 and 29 present temperature logger and biological data results.

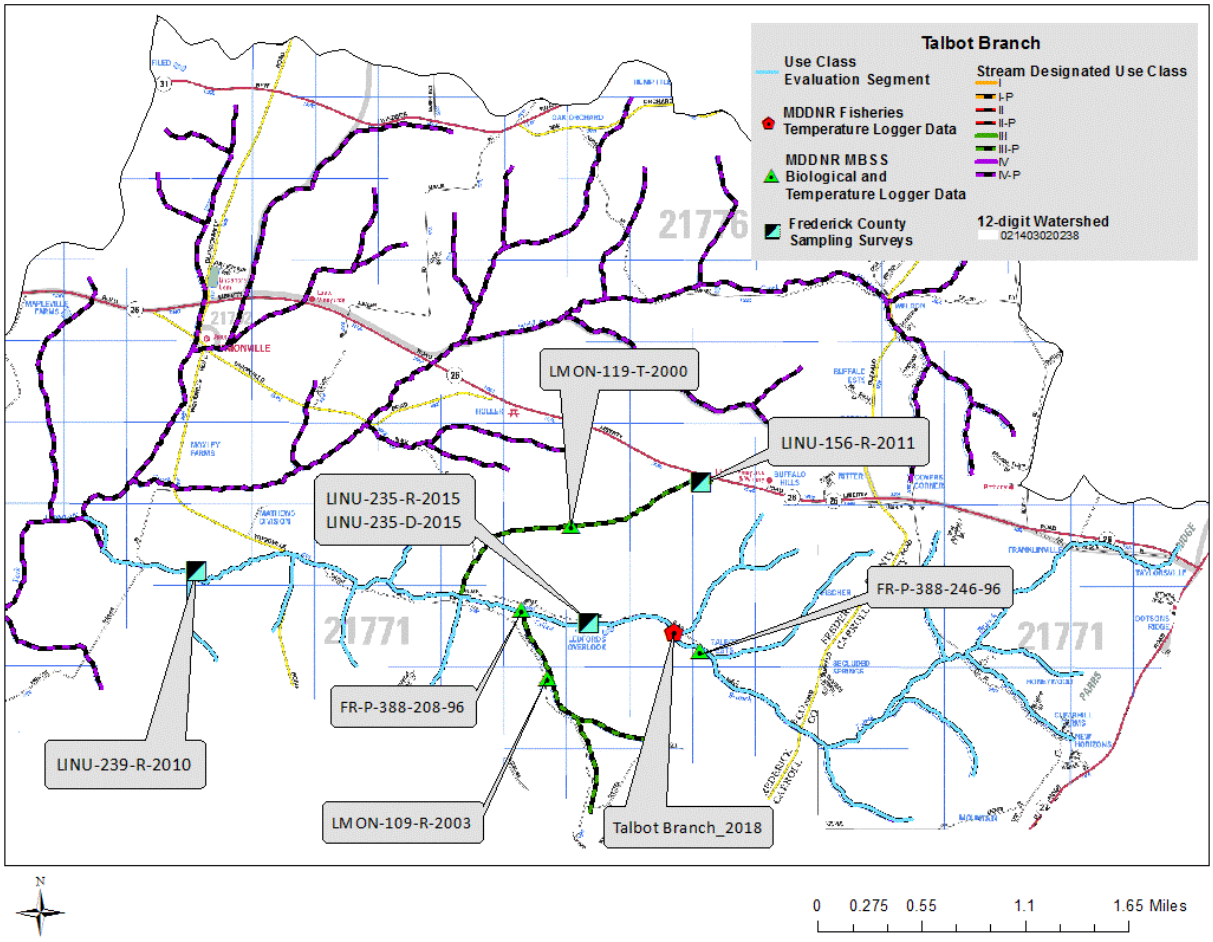

Figure 29. Talbot Branch

Temperature Data for Talbot Branch

Talbot Branch was surveyed in 1996, 2000, 2003, 2010, 2011, 2015, and 2018 but temperature logger data results are only available for 2018 and are provided in Table 28. Temperature logger data results do not meet the Class III water temperature criterion.

Table 28. Talbot Branch Temperature Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2015	LINU-235-D-2015	Talbot Branch	Frederick County	-	-	-	-	-
2015	LINU-235-R-2015	Talbot Branch	Frederick County	-	-	-	-	-
2011	LINU-156-R-2011	Talbot Branch UT	Frederick County	-	-	-	-	-
2010	LINU-239-R-2010	Talbot Branch	Frederick County	-	-	-	-	-
2018	Talbot Branch	Talbot Branch	MDDNR Fisheries Program	6624	**12%**	0%	18.19	22.25
2003	LMON-109-R-2003	Talbot Branch UT2	MDDNR MBSS	-	-	-	-	-
2000	LMON-119-T-2000	Talbot Branch UT1	MDDNR MBSS	-	-	-	-	-
1996	FR-P-388-208-96	Talbot Branch	MDDNR MBSS	-	-	-	-	-
1996	FR-P-388-246-96	Talbot Branch	MDDNR MBSS	-	-	-	-	-

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997).

Biological Data for Talbot Branch

Talbot Branch was surveyed in 1996, 2000, 2003, 2010, 2011, 2015, and 2018 but there were no trout or coldwater obligate benthic macroinvertebrate species found. MDDNR MBSS sampling events did not yield any trout species. MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species, and Frederick County sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 29. Talbot Branch Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
4/15/2015	LINU-235-D-2015	Talbot Branch	Frederick County	-	-	-
4/15/2015	LINU-235-R-2015	Talbot Branch	Frederick County	-	-	-
4/19/2011	LINU-156-R-2011	Talbot Branch UT	Frederick County	-	-	-
3/31/2010	LINU-239-R-2010	Talbot Branch	Frederick County	-	-	-
9/7/2018	Talbot Branch	Talbot Branch	MDDNR Fisheries Program	-	-	-
4/2/2003	LMON-109-R-2003	Talbot Branch UT2	MDDNR MBSS	*Sweltsa*	2[1]	-
3/27/2000	LMON-119-T-2000	Talbot Branch UT1	MDDNR MBSS	*Sweltsa*	4[1]	-
6/3/1996	FR-P-388-208-96	Talbot Branch	MDDNR MBSS	-	-	-
6/18/1996	FR-P-388-246-96	Talbot Branch	MDDNR MBSS	-	-	-

1. These sampling events are located on Use Class III-P designated stream which are tributaries to the Talbot Branch stream segment. This additional information is included to further aid in characterizing the surrounding area of the stream segment use class evaluation.

Weldon Creek

Weldon Creek (12-digit 021403020238) in the Lower Monocacy River watershed, located southwest of New Windsor in Carroll and Frederick counties, is currently designated as Use Class IV-P. The waterbody segment may support several species of trout species or is a possible candidate for trout re-introduction. Frederick County and the MDDNR MBSS conducted surveys of the waterbody segment in 2000, 2003, 2011, 2013, and 2017. Figure 30 below, shows the location of the sampling stations, and Tables 30 and 31 present temperature logger and biological data results.

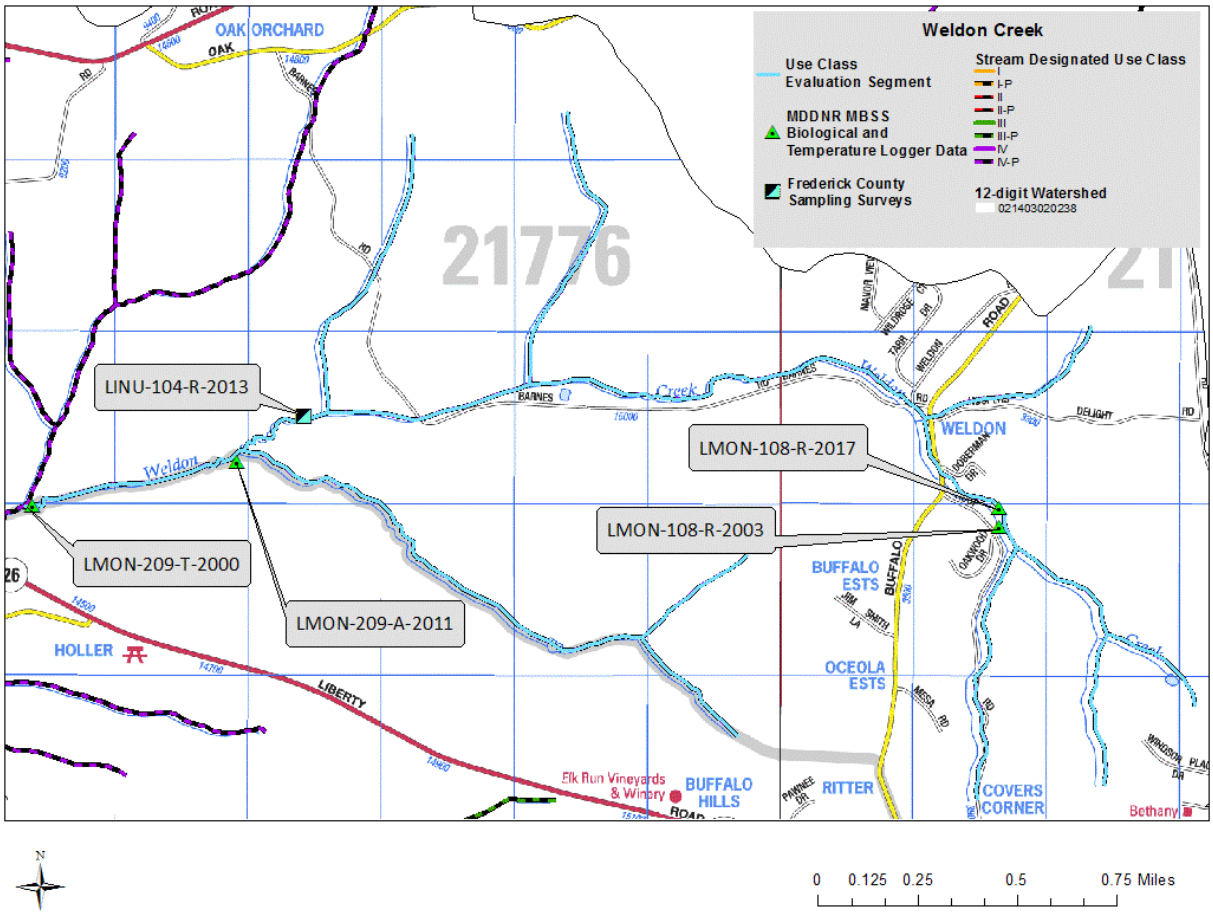

Figure 30. Weldon Creek

Temperature Data for Weldon Creek

Water temperature data were collected during two of five sampling events. One of the two sampling events meets the Class III water temperature criterion.

Table 30. Weldon Creek Temperature Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2013	LINU-104-R-2013	Weldon Creek	Frederick County	-	-	-	-	-
2017	LMON-108-R-2017	Weldon Creek	MDDNR MBSS	6624	10%	0%	18.08	21.70
2011	LMON-209-A-2011	Weldon Creek	MDDNR MBSS	6624	**42%**	4%	19.52	**26.72**
2003	LMON-108-R-2003	Weldon Creek	MDDNR MBSS	-	-	-	-	-
2000	LMON-209-T-2000	Weldon Creek	MDDNR MBSS	-	-	-	-	-

*Water temperature logger data assessed from June to August. The “Daily Max” represents the maximum temperature from June to August.

Biological Data for Weldon Creek

Tallaperla and *Sweltsa* were found during one of the five biological sampling events. MDDNR MBSS sampling events did not yield any trout species, and Frederick County sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 31. Weldon Creek Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
4/9/2013	LINU-104-R-2013	Weldon Creek	Frederick County	-	-	-
4/5/2017	LMON-108-R-2017	Weldon Creek	MDDNR MBSS	*Tallaperla*	1	-
				Sweltsa	1	-
8/2/2011	LMON-209-A-2011	Weldon Creek	MDDNR MBSS	-	-	-
6/17/2003	LMON-108-R-2003	Weldon Creek	MDDNR MBSS	-	-	-
6/28/2000	LMON-209-T-2000	Weldon Creek	MDDNR MBSS	-	-	-

X. Octoraro Creek

An unnamed tributary (12-digit 021202030346) in the Octoraro Creek watershed, located south of Rock Springs, MD in Cecil County, is currently designated as a Use Class I water. The waterbody segment currently supports naturally reproducing populations of brown trout. The MDDNR Fisheries Program and MBSS conducted surveys of the waterbody segment in 2004, 2015, and 2018. Figure 31 shows the location of the sampling stations, and Tables 32 and 33 present temperature logger and biological data results.

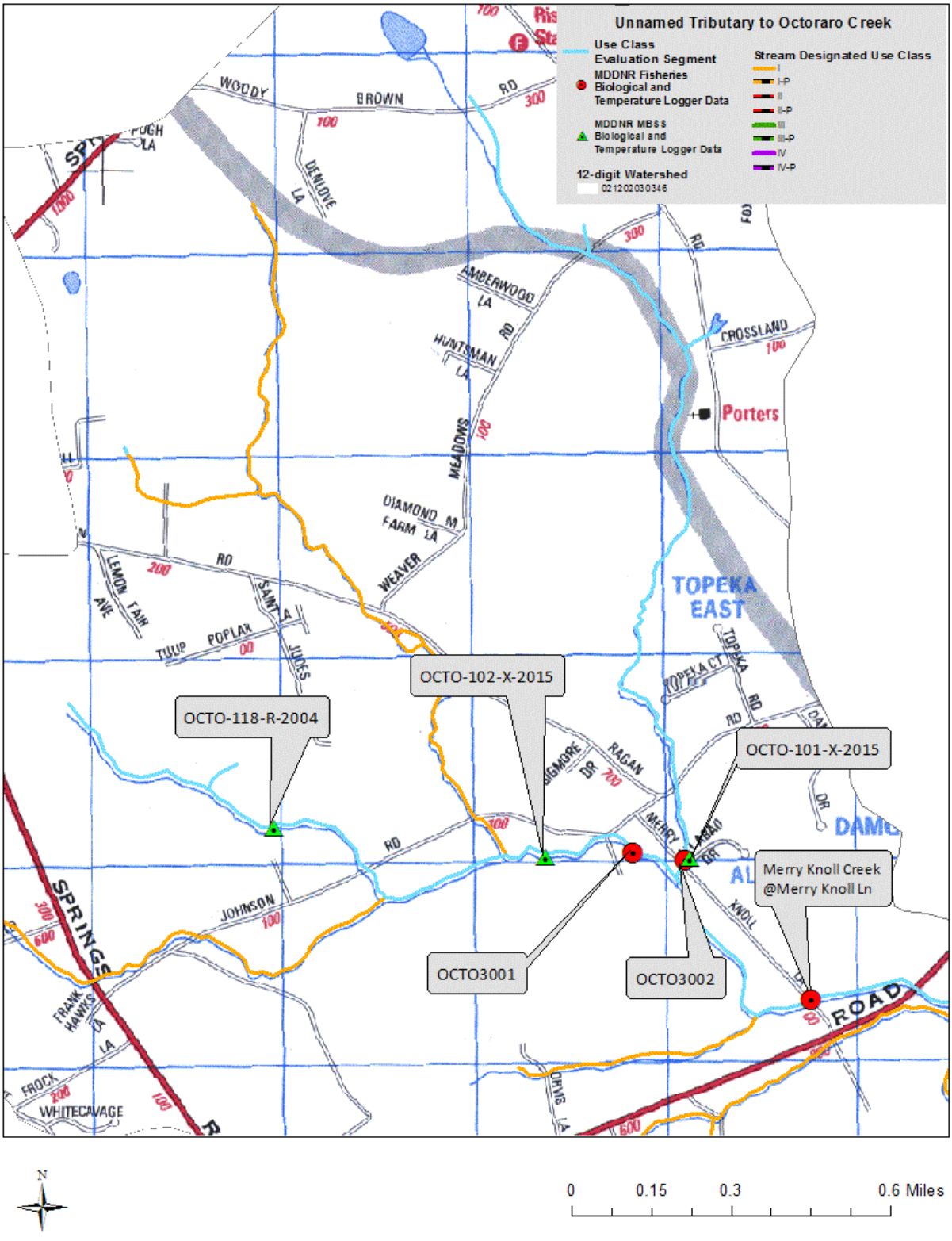

Figure 31. Unnamed Tributary to Octoraro Creek

Temperature Data for Unnamed Tributary to Octoraro Creek

Water temperature data were collected at four sampling events in 2004 and 2015. Water temperature results at this station do not meet the Class III criterion.

Table 32. Octoraro Creek Temperature Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2004	Merry Knoll Creek @Merry Knoll Ln	UT to Octoraro Creek	MDDNR Fisheries Program	2202	**22%**	0%	18.6	22.7
2015	OCTO-101-X-2015	UT to Octoraro Creek	MDDNR MBSS	6624	**29%**	0%	19.1	23.2
2015	OCTO-102-X-2015	UT to Octoraro Creek	MDDNR MBSS	6624	**49%**	2%	19.8	**24.3**
2015	OCTO-118-R-2004	UT to Octoraro Creek	MDDNR MBSS	6695	**14%**	0%	18.1	22.5

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August.

Biological Data for Unnamed Tributary to Octoraro Creek

Brown trout were found at four of the five biological sampling events in 2004, 2015, and 2018. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDDNR MBSS sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 33. Octoraro Creek Biological Data

Date	Station ID	Stream	DATA SUBMITTER	Species	Count	Maturity
8/16/2018	OCTO3001	UT to Octoraro Creek	MDDNR Fisheries Program	brown trout	3	Multiple Age Classes with YOY
8/16/2018	OCTO3002	UT to Octoraro Creek	MDDNR Fisheries Program	brown trout	1	Adult
7/29/2015	OCTO-101-X-2015	UT to Octoraro Creek	MDDNR MBSS	brown trout	6	Multiple Age Classes with YOY
7/29/2015	OCTO-102-X-2015	UT to Octoraro Creek	MDDNR MBSS	brown trout	3	YOY
7/22/2004	OCTO-118-R-2004	UT to Octoraro Creek	MDDNR MBSS	brown trout	-	-

* YOY - young-of-year

XI. Use Class Evaluations Summary Table

Stream Name	Location of Sampling	County	HUC	Current Designated Use Classification	Summary of Cold/Coolwater Characteristics Found
North Branch Patapsco River main stem	North of Finksburg	Carroll	020600030802	IV-P	Naturally reproducing population of brown trout. Temperature results at three of the sixteen stations on the evaluation segment do not meet the Class III criterion (20 degrees Celsius). Temperature results at two stations not located on the evaluation segment do meet the Class III criterion.
Board Run	Southwest of Hampstead	Baltimore, Carroll	020600030802	I-P	Four adult brown trout were found. The temperature at both of the two stations does not meet the Class III criterion (20 degrees Celsius).
Deep Run	Southwest of Hampstead	Carroll	020600030802	I-P	Naturally reproducing population of brown trout. The temperature at all ten stations sampled does not meet the Class III criterion (20 degrees Celsius).
Unnamed Tributary to North Branch Patapsco River at Hollingsworth Road	North of Finksburg	Baltimore, Carroll	020600030802	I-P	Naturally reproducing population of brown trout. Temperature results are only available for three of five stations; all three stations do not meet the Class III criterion (20 degrees Celsius).
South Branch Patapsco River main stem	Near Woodbine	Carroll, Howard	020600031001	IV	Naturally reproducing population of brown trout. Stream temperature at the one sampling station does not meet the Class III criterion (20 degrees Celsius). Four stations do not have temperature logger data.
West Branch of the North Branch Patapsco River main stem	Northeast of Westminster	Carroll	020600030801	IV-P	Naturally reproducing population of brown trout. The temperature at six of nine station results does not meet the Class III criterion (20 degrees Celsius). Two stations do not have temperature logger data.
Unnamed Tributary to Big Pipe Creek	Northeast of Westminster	Carroll	020700090501		Naturally reproducing population of brook trout. Water temperature at two of four stations monitored meets the Class III (20 degrees Celsius).
Long Arm Creek	Northwest of Manchester	Carroll	020503060101	I-P	Believed to hold coldwater obligate species. Temperature logger data results meet the Class III criterion (20 degrees Celsius). Biological data was not available.
Falls Creek	Northwest of Cascade	Washington	020700041001	IV-P	Naturally reproducing population of brown trout. Temperature logger data were not available for this waterbody.
Mill Creek	Northeast of Perryville	Cecil	020600020303	I-P	Naturally reproducing population of brown trout. The temperature at six of the nine stations does not meet the Class III criterion (20 degrees Celsius).
North Branch Potomac River (Laurel Run to Piney Swamp Run)	Southwest of Cumberland	Garrett	020700020205	I-P	This area is stocked with both adult and fingerling-sized rainbow and brown trout. YOY brook trout, multiple year classes with YOY brown trout and multiple year class with YOY rainbow trout were found. The temperature readings show the Class III water temperature criterion being met (20 degrees Celsius).
North Branch Potomac River (Old Wilson Bridge and Jennings-Randolph Lake, and Piney Swamp and Route 956 in Pinto, MD)	Southwest of Cumberland	Allegany, Garrett	020700020205	I-P	These waters are actively stocked by the Department of Natural Resources. Multiple year classes of adult brown trout, and multiple year classes of adults and multiple year classes with young-of-year rainbow trout were collected. The temperature data at five of the nine sampling events does not meet the Class III criterion (20 degrees Celsius). Coldwater obligate benthic macroinvertebrate *Tallaperla* was found during a sampling event in 1997 and 1998.
Unnamed Tributary to Potomac River LNB	South of Cresaptown	Allegany	020700020205	I-P	Temperature logger data were not available for this waterbody. Coldwater obligate benthic macroinvertebrate *Sweltsa* was found at one station in 1996.

Stream Name	Location of Sampling	County	HUC	Current Designated Use Classification	Summary of Cold/Coolwater Characteristics Found
UT to Deer Creek	Rocks State Park	Harford	020503061602	IV-P	The MDDNR Fisheries Program conducted a qualitative survey in which one adult and one YOY brook trout were found. Temperature logger and additional biological data for this waterbody are pending for 2019.
UT to Falling Branch	Northwest of Bel Air	Harford	020503061602	IV-P	One adult and one YOY of brown trout, one adult brook trout, and one adult intergeneric species, i.e., tiger trout collected. The temperature logger data result meets the Class III criterion (20 degrees Celsius).
Talbot Branch	Southwest of New Windsor	Carroll/Frederick	020700090702	IV-P	Water temperature results are only available for one station; it does not meet the Class III criterion. No trout or coldwater obligate benthic macroinvertebrate species were found in the segment being evaluated.
Weldon Creek	Southwest of New Windsor	Carroll/Frederick	020700090702	IV-P	Coldwater obligate benthic macroinvertebrate *Tallaperla* and *Sweltsa* were found during a sampling event in 2017. No trout species found in currently available data. One of the two sampling events meets the Class III water temperature criterion.
Unnamed Tributary to Octoraro Creek	South of Rock Springs	Cecil	020503061703	I	The waterbody segment currently supports a naturally reproducing population of brown trout. Water temperature results at all four sampling stations do not meet the Class III criterion.