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Bacteria Total Maximum Daily Load Trend Monitoring Annual Report (FINAL)

Marley Creek and Furnace Creek Watersheds, Anne Arundel County

Year 3 Progress (July 2021 – June 2022)

Task Order 02: Bacteria TMDL Trend Monitoring – Furnace and Marley Creek Watersheds

Contract No. 10478, Category 14

November 10, 2022

Prepared for:

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Task Order 02: Bacteria TMDL Trend Monitoring – Furnace and Marley Creek Watersheds
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Acronyms and Abbreviations

°C – degrees Celsius

BWI – Baltimore/Washington Thurgood Marshall International Airport

cfs – cubic feet per second

cfu/mL – Colony-forming units per milliliter

COC – Chain of Custody

CWA – Clean Water Act

DO – dissolved oxygen

EPA – U.S. Environmental Protection Agency

FU – Furnace Creek

GIS – geographic information system

MA – Marley Creek

MBSS – Maryland Biological Stream Survey

MDE – Maryland Department of the Environment

mg/L – Milligram per liter

mL – milliliter

MPN – most probable number

mS/cm – Millisiemens per centimeter

MS4 – Municipal Separate Storm Sewer System

NOAA – National Oceanic and Atmospheric Administration

NPDES – National Pollutant Discharge Elimination System

NTU – Nephelometric turbidity units

NWS – National Weather Service

OSDS – Onsite Sewage Disposal System

PFD – Personal Floatation Device

PPE – Personal Protective Equipment

QA/QC – Quality Assurance/Quality Control

TMDL – Total Maximum Daily Load

USGS – United States Geological Survey

WLA – Waste Load Allocation

1. Introduction

Anne Arundel County's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (11-DP-3316 MD0068306) requires the County to develop restoration plans to address the stormwater Waste Load Allocations (WLAs) for various water quality impairments with Maryland Department of the Environment (MDE)-issued and U.S. Environmental Protection Agency (EPA)-approved Total Maximum Daily Loads (TMDLs). A TMDL is the calculated maximum pollutant amount a waterbody can receive and continue to meet water quality standards for that pollutant. Both Marley Creek and Furnace Creek watersheds were listed as impaired for bacteria according to the Maryland Final 2010 Integrated Report of Surface Water Quality (MDE 2010a). The federal Clean Water Act (CWA) requires MDE to develop a TMDL for improving the water quality of impaired water bodies by establishing pollutant goals and control targets.

Marley and Furnace Creeks are Maryland Use Class I waters with designated uses that include water contact recreation and protection of nontidal warmwater aquatic life. A TMDL for enterococci was issued in 2010 for Marley Creek and Furnace Creek as a method of reducing the amount of bacterial pollutants entering the water bodies. Enterococci is used as a bacteria water quality indicator for Maryland Use Class I waters. The enterococci TMDL allocations developed for Marley Creek and Furnace Creek watersheds for enterococci are shown below in **Table 1-1**.

Table 1-1: Enterococci TMDLs per Watershed (MDE, 2010b)

Waterbody	Enterococci TMDL (counts per day)
Furnace Creek	8.14×10^{11}
Marley Creek	1.50×10^{12}

In compliance with MDE and EPA regulatory guidelines, Anne Arundel County developed a County-wide TMDL Restoration Plan for Bacteria (January 2017) that included restoration strategies for the Marley Creek and Furnace Creek watersheds as well as other bacteria-impaired watersheds. To measure progress toward achieving the enterococci TMDLs for the Marley Creek and Furnace Creek watersheds, the County initiated a Bacteria TMDL Trend Monitoring Program. This report presents the results from the third fiscal year (FY) from July 2021 - June 2022 of the monitoring program.

The County identified 12 monitoring stations to be sampled monthly, six each in the Marley Creek and Furnace Creek watersheds. Each station was sampled once per month by AECOM scientists. Samples were collected on the second Wednesday and Thursday of each month except for March 2022, when inclement weather conditions required postponing the sampling for one day to the second Thursday and Friday of that month. During the FY 2022 sampling period, samples were successfully collected monthly at each monitoring station.

This report presents an analysis of the sample data collected from the 12 monitoring stations for the 12-month sampling period in FY 2022 and identifies trends, correlations with potential sources (sanitary sewer overflows, established transient encampments, avian congregation locations, etc.), and seasonal variations. Along with the quantitative data, anecdotal observations of each sampling location are included in the report. A composite report of data from all monitoring years will be developed following the last year of sampling.

2. Monitoring Locations

The County identified 12 monitoring stations within the project area to be sampled monthly: six each in the Furnace Creek (FU) and Marley Creek (MA) watersheds. The sampling areas are in shallow surface waters, streams, and tidal waters, and are accessible by foot. Based on an initial field reconnaissance conducted in FY 2020, the original location proposed by the County for site FU-06 was deemed inaccessible for sample collection. Therefore, an alternative location for FU-06 was proposed by AECOM and approved by the County in emails dated April 12, 2019.

During the first FY of the monitoring program, the contributing drainage areas to each of the 12 monitoring stations were delineated and a field reconnaissance was conducted to observe land use conditions in the drainage areas to the monitoring stations. AECOM obtained the geographic information system (GIS) data of watershed boundaries for Furnace Creek and Marley Creek watersheds from MDE's TMDL Data Center. The drainage area to each monitoring point was delineated using the 2-foot topographic GIS data downloaded from the County's open data website (https://opendata.aacounty.org/). The 2017 land use GIS data obtained from the County's open data website was used to evaluate overall land use conditions in the Marley and Furnace Creek watersheds as well as the land use conditions within the drainage area to each monitoring point. Additionally, GIS data for most up to date onsite sewage disposal systems (OSDS) obtained from the County in FY 2022 and sanitary sewer system and pump station GIS data also obtained from the County's open data website in FY2020 was used to conduct a spatial analysis to identify proximity of OSDS, sewer infrastructure, pumping stations to the monitoring stations.

Table 2-1 provides the site identification numbers, geographic coordinates, and drainage areas for each of the sampling locations. A map and photographs depicting the locations of the 12 monitoring stations, and a map with delineated drainage areas to monitoring stations are provided in **Appendix A.**

Table 2-1: Bacteria Sampling Site IDs and Locations

Site ID	Latitude	Longitude	Drainage Area (acres)
FU-01	39.15013	-76.66172	606
FU-02	39.16994	-76.63152	2,148
FU-03	39.17252	-76.62697	1,007
FU-04	39.17770	-76.62106	628
FU-05	39.18275	-76.61593	978
FU-06	39.18181	-76.60700	255
MA-01	39.13693	-76.61356	2,106
MA-02	39.14233	-76.60846	675
MA-03	39.14378	-76.60640	519
MA-04	39.14841	-76.60388	1,358
MA-05	39.148820	-76.60143	311
MA-06	39.15116	-76.60172	39

2.1 Furnace Creek

The drainage area for Furnace Creek is approximately 13.41 square miles, and is composed primarily of residential (34%), commercial (12%), industrial (6%), and undeveloped or open areas (34%). A portion of Baltimore/Washington International Thurgood Marshall (BWI) Airport and the surrounding open space is also part of this watershed. Based on review of County's GIS data, there are approximately 691 OSDS located primarily in the upstream portion of the watershed. No septic conversions or additions have occurred in FY22. A map of the land use in Furnace Creek is included as **Figure 2-1** and a map of OSDS and sanitary sewer system in Furnace Creek is included as **Figure 2-2.**

AECOM conducted field reconnaissance of the Furnace Creek watershed on August 13, 2020, to observe watershed conditions and identify any potential bacteria-contributing sources. The sections below describe the monitoring locations, land use conditions within the drainage area to the monitoring location, and any notable observations identified from the field reconnaissance. **Table 2-2** shows the land use distribution in the drainage area of each monitoring point within Furnace Creek based on the County's 2017 GIS land use data.

Table 2-2: Land Use Distribution in the Furnace Creek Watershed Monitoring Location Drainage Areas

	FU-01	FU-02	FU-03	FU-04	FU-05	FU-06
Commercial (%)	3	6	6	22	6	35
Industrial (%)	1	6	10	9	3	4
Open Space (%)	16	17	20	18	5	7
Pasture and Row Crops (%)	6	-	-	-	-	-
Transportation and Utilities (%)	4	9	4	9	8	12
Water (%)	-	1	0	0	0	1
Airport (%)	-	5	37	5	-	-
Wetland (%)	1	1	2	2	0	2
Residential (%)	36	26	14	21	68	32
Woods (%)	33	29	7	14	10	7
Total	**100**	**100**	**100**	**100**	**100**	**100**

AECOM calculated the proximity of upstream pump stations within the drainage area for each Furnace Creek Watershed monitoring location. **Table 2-3** displays the distance between each Furnace Creek Monitoring Location and the pump stations.

Table 2-3: Distance Between Furnace Creek Watershed Monitoring Points and Pump Stations

Monitoring Point	Upstream Pump Stations within Monitoring Point Drainage Area	Distance
FU-01	None	
FU-02	Quarterfield Crossing	8, 395 ft (1.59 mi)
FU-03	None	
FU-04	None	
FU-05	None	
FU-06	None	

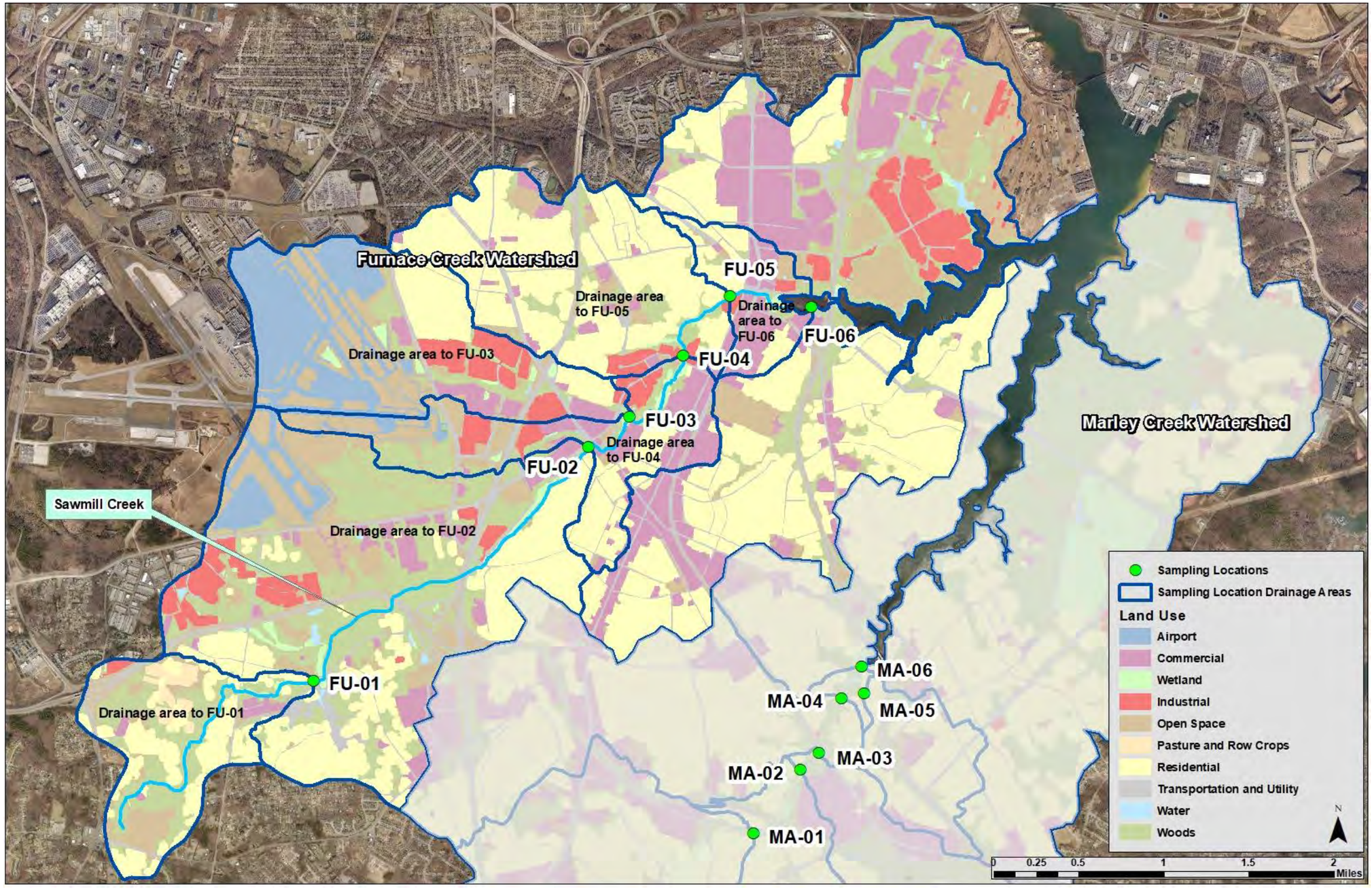


Figure 2-1: Land Use Distribution in Furnace Creek Watershed

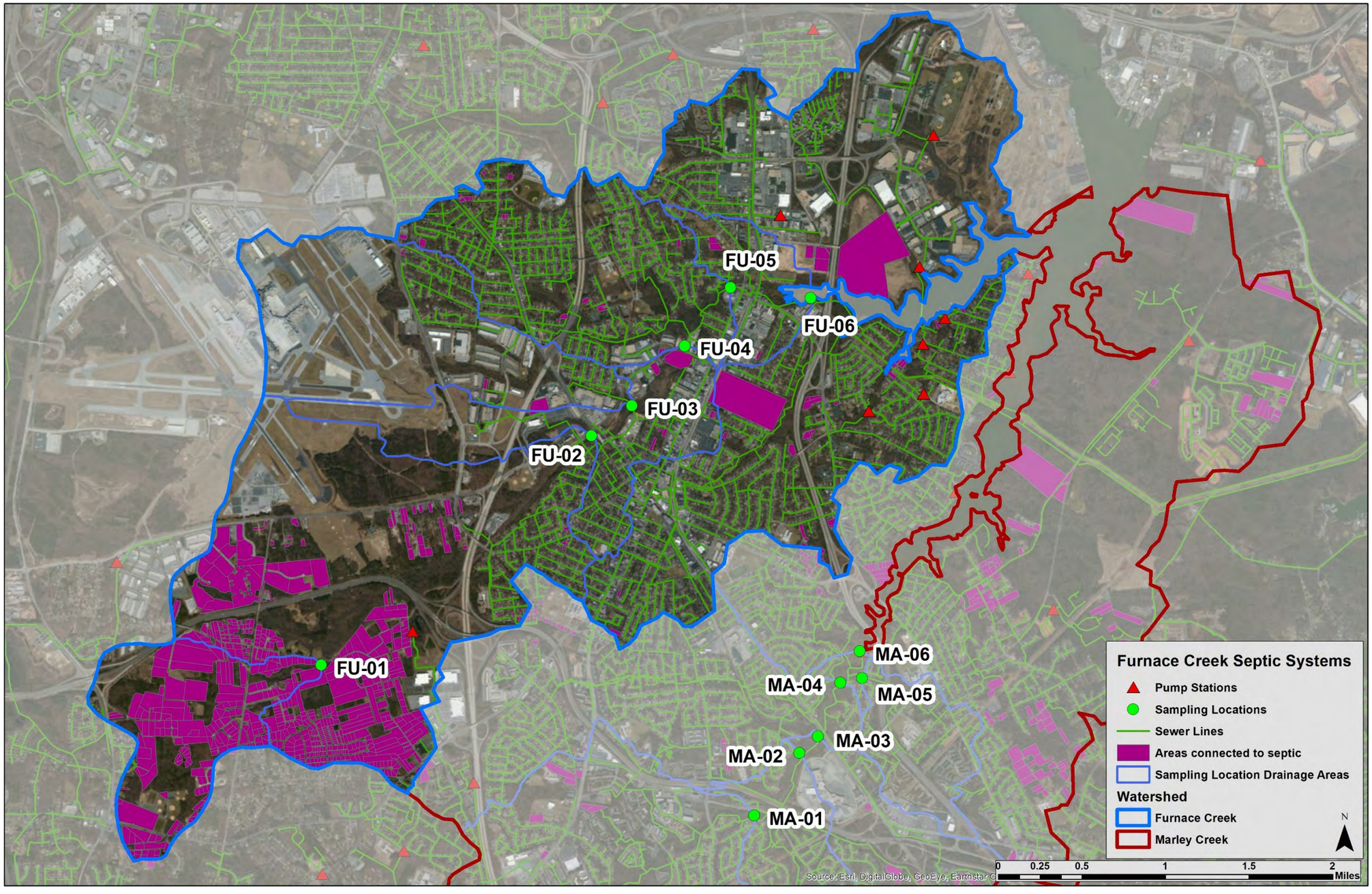


Figure 2-2 : Location of OSDS and Sewer System in Furnace Creek

2.1.1 FU-01

FU-01 is located across from Queenstown Park, along a driveway off Queenstown Road. The stream is fed by the headwaters of Sawmill Creek, originating in the Severn Danza Park area of Severn, MD. The sampling area resembles a wetland, with saturated ground and aquatic plants in the area.

Within the drainage area to FU-01, there are mainly residential, wooded, or open areas, comprising 36%, 33%, and 16% of the drainage area, respectively. The few commercial areas (3%) appear to be automobile or large-scale storage related. There is also pastureland (6%) along Sandy Farm Road, though no livestock or other animals were observed at the time of 2020 field reconnaissance. Other land uses in the drainage area include transportation and utilities (4%), industrial (1%) and wetland (1%). Most areas that drain to this monitoring location are connected to septic sewer systems.

2.1.2 FU-02

FU-02 is located along Dorsey Road in Glen Burnie, MD, across the street from the Maryland Military Department First Regiment Armory, next to the Baltimore & Annapolis Trail. The sampling area itself is part of Sawmill Creek; the collection point is located after the confluence with Irving Branch. The streambank growth consists mostly of cattails, and the streambed is rocky and sandy. The sampling location is near a busy intersection with heavy automobile and pedestrian traffic.

Within the drainage area to this sampling point, residential areas comprise 26% of the total land use. The non-residential developed areas include BWI airport (5%), industrial areas south of BWI airport (6%), and commercial areas (6%) that are largely construction and automobile related. One notable business in this area is United Site Services on Glenbrook Road, which is a supplier of portable toilets. This business backs up to Sawmill Creek. The rest of the drainage area is primarily wooded (29%) or open space (17%). Other minor land uses include transportation and utilities (9%), water (1%) and wetland (1%). FU-02 also receives drainage from FU-01. Several areas in the south and southwest of this drainage area are connected to septic systems.

2.1.3 FU-03

FU-03 is located off 8th Avenue NW, at the location of the old 8th Avenue Flea Market. The sampling area is part of Sawmill Creek and has transient encampments present year-round. The streambed is sandy and often has sunken debris. There is a sewer line that runs adjacent to the upstream branch of the stream.

The drainage area to the monitoring point partially consists of residential neighborhoods, which comprise 14% of the drainage area. The non-residential land use is largely open space (20%), industrial (10%), and commercial (6%). These areas contain automobile and construction related businesses, as well as a retail area adjacent to the monitoring location. The northeast portion of BWI Airport also occupies 37% of this drainage area. Other minor land uses include transportation and utilities (4%), wetland (2%) and woods (7%). Two small industrial and commercial areas in this watershed are connected to septic systems.

2.1.4 FU-04

FU-04 is located off 8th Avenue NW, adjacent to Maisel Brothers, a commercial landscaping facility and is surrounded by commercial areas on all sides. The sampling area is before Ferndale Branch, in the leg of Sawmill Creek running alongside the west fence of Maisel Brothers. The sampling area has remnants of transient encampments, including abandoned bedding, clothing, shopping carts, and debris in the path leading to the sampling location. The stream is part of Sawmill Creek, and the sampling location captures the drainage from FU-01 through 03.

Drainage to this location comes from a portion of BWI airport (5% of the drainage area), wooded and residential areas (14% and 21% of the drainage area, respectively), and developed commercial and industrial areas (22% and 9% of the drainage area, respectively). The commercial and industrial areas appear to be largely automobile and construction related. The adjacent area south of the monitoring location is connected to a septic system. There are a few small residential areas in the central part of the watershed that are also connected to septic. Other land uses in

the drainage area include open space (18%), transportation and utilities (9%) and wetland (2%). FU-04 receives drainage from upstream drainage areas to monitoring locations FU-01 through FU-03.

2.1.5 FU-05

FU-05 is near the intersection of Crain Highway and East Furnace Branch Road, adjacent to Dave's Trim Shop. The sampling area is adjacent to commercial businesses and multiple parking lots. The stream is part of Sawmill Creek, and is fed by the main trunk as well as tributaries originating from neighborhoods located around North Glen Park in Glen Burnie, MD. This sampling location receives the downstream drainage from FU-01 through 04.

The drainage area to this sampling location is primarily residential (68%), with a few areas comprising commercial (6%), industrial (3%), and wooded (10%) land use. During FY 2020 field reconnaissance, it was noted that many of the homes had boats parked nearby. There are a few residential areas in this drainage area that are connected to septic systems. Other land uses in the watershed include open space (5%) and transportation and utilities (8%). FU-05 receives drainage from drainage areas of upstream monitoring locations FU-01 through FU-04.

2.1.6 FU-06

FU-06 is the tidal site for Furnace Creek, fed primarily by Sawmill Creek. It is located off East Furnace Branch Road, adjacent to 120 North Langley Road. The sampling location is surrounded by commercial businesses and is adjacent to transient encampments year-round. This sampling location experiences substantial variation in tide level compared to other monitoring sites which can lead to the streambed being exposed during routine sampling activities.

The drainage area to this location is primarily occupied by commercial and residential land use types. Residential areas comprise 32% of the drainage area. The commercial areas, which comprise 35% of the drainage area, are mostly automobile related, though the area immediately around the monitoring location is an industrial supply warehouse. Other land uses in the drainage area include industrial (4%), open space (7%), transportation and utilities (12%), water (1%), wetland (2%) and woods (7%). Since this location is the terminal sampling point for Furnace Creek, it receives drainage from all upstream areas, including drainage that reaches FU-01 through FU-05. There are two small residential areas in the drainage area that are connected to septic systems.

2.2 Marley Creek

The drainage area of Marley Creek is approximately 13.65 square miles, and is primarily composed of residential (51%), commercial (10%), and undeveloped or open areas (31%). Based on review of County's GIS data, Marley Creek watershed has approximately 384 OSDS that are located throughout the watershed. No septic conversions or additions have occurred in FY22. A map of the land use in Marley Creek is included as **Figure 2-3** and a map of OSDS and sanitary sewer system in Marley Creek is included as **Figure 2-3.**

AECOM conducted field reconnaissance of Marley Creek watershed on August 13, 2020, to observe watershed conditions and to identify any potential bacteria-contributing sources. The sections below describe the monitoring locations, land use conditions within the drainage area to the monitoring location, and any notable observations identified from the field reconnaissance. **Table 2-4** shows the land use distribution in the drainage area of each monitoring point within Marley Creek based on the County's 2017 GIS land use data.

Table 2-4: Land Use Distribution in Marley Creek Watershed Monitoring Location Drainage Areas

	MA-01	MA-02	MA-03	MA-04	MA-05	MA-06
Commercial (%)	14	5	27	15	14	-
Industrial (%)	0	-	0	0	-	-
Open Space (%)	6	8	3	5	5	-
Pasture and Row Crops (%)	2	2	-	-	-	-

	MA-01	MA-02	MA-03	MA-04	MA-05	MA-06
Transportation and Utilities (%)	9	6	12	9	13	-
Water (%)	0	0	0	0	0	3
Airport (%)	-	-	-	-	-	-
Wetland (%)	1	2	0	1	0	4
Residential (%)	56	53	33	62	58	64
Woods (%)	12	24	25	8	10	29
Total	**100**	**100**	**100**	**100**	**100**	**100**

AECOM calculated the proximity of upstream pump stations within the drainage area for each Marley Creek Watershed monitoring location. **Table 2-5** displays the distance between each Marley Creek Monitoring Location and the pump stations.

Table 2-5: Distance Between Marley Creek Watershed Monitoring Points and Pump Stations

Monitoring Point	Upstream Pump Stations within Monitoring Point Drainage Area	Distance
MA-01	None	
MA-02	Old Mill Road	7,977 ft (1.51 mi)
MA-03	Humble Oil (private)	7,913 ft (1.5 mi)
	Pasadena Crossroads (private)	7,423 ft (1.41 mi)
	Horizons (private)	6,961ft (1.32 mi)
	Southdale (private)	7,134 ft (1.35 mi)
MA-04	Parke West	12,010 ft (2.27 mi)
MA-05	None	
MA-06	Marley	135 ft (0.02 mi)

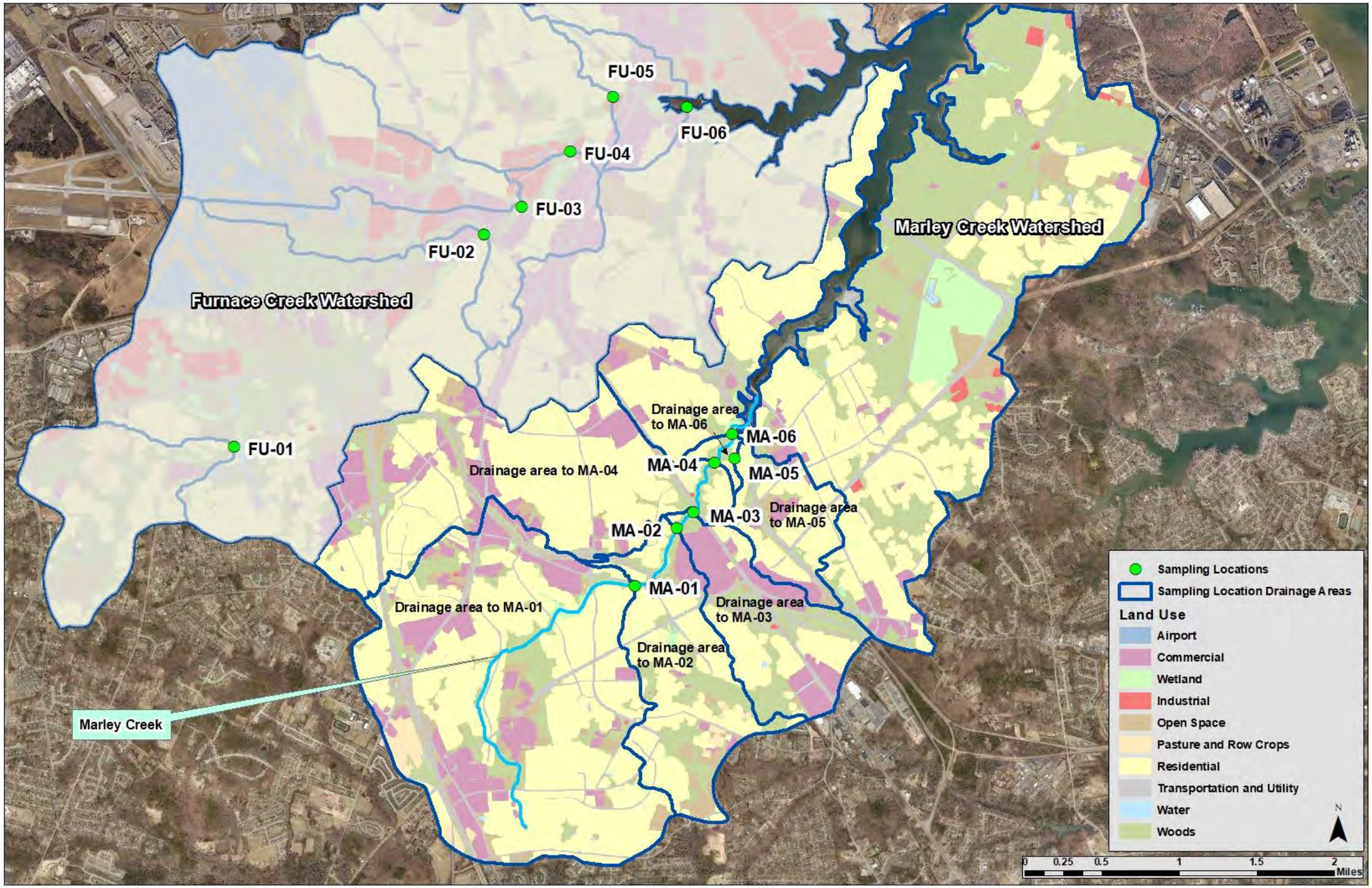


Figure 2-3: Land Use Distribution in Marley Creek Watershed

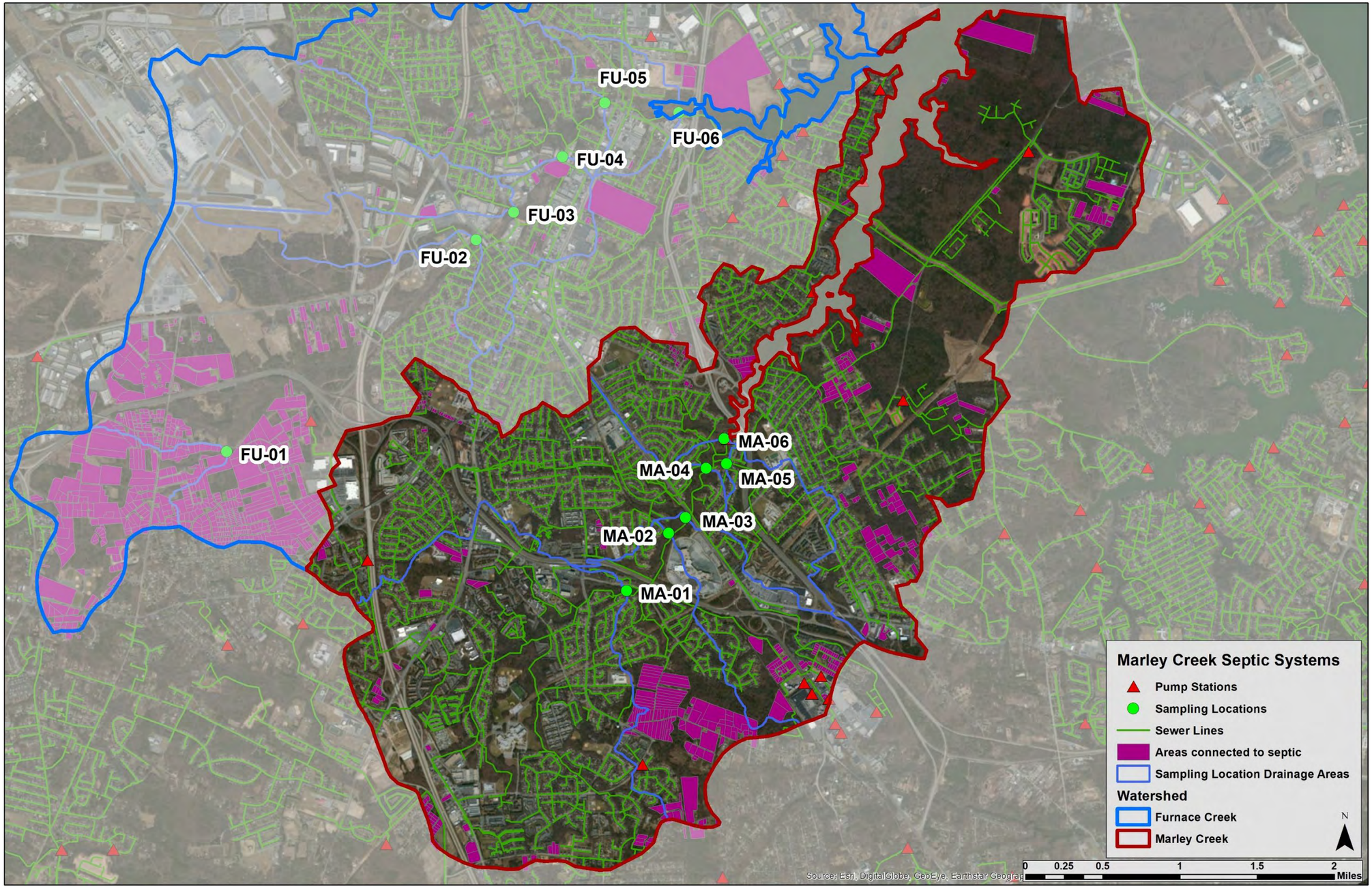


Figure 2-4: Location of OSDS and Sewer System in Marley Creek

2.2.1 MA-01

MA-01 is located between Cross Creek Drive and Hospital Drive in Glen Burnie, MD. The stream is fed by the headwaters of Marley Creek, originating in the west part of the Southgate area in Glen Burnie, MD. The sampling area is generally overgrown but otherwise healthy. A sewer line runs adjacent to much of the upstream portion of Marley Creek.

The drainage area to this sampling point is composed of primarily residential communities (56% of the drainage area), interspersed with several larger commercial areas, which comprise 14% of the drainage area. Northwest of the monitoring location is the University of Baltimore Washington Medical Center. The other commercial areas beyond the hospital are also largely medical and healthcare related. To the east and southeast of MA-01 are several shopping centers with mainly retail businesses. A few residential and commercial areas to the southwest and west of the monitoring location are connected to septic sewer systems. Other land uses in the drainage area include woods (12%), open space (6%), pasture and row crops (2%), transportation and utilities (9%), and wetland (1%).

2.2.2 MA-02

MA-02 is located underneath the Marley Creek Trussle Bridge, which is located along the Baltimore & Annapolis Trail next to Marley Station Mall. The sampling location is wooded and is adjacent to both a large residential neighborhood and the Marley Station shopping mall.

The monitoring location captures the upstream portions of Marley Creek that run through MA-01 as well as additional headwaters that originate in the neighborhoods off Foxwell Road in Glen Burnie and Elvaton Road in Pasadena. Areas in the immediate vicinity of the monitoring station are served by public sewer system. Neighborhoods in upper reaches of the drainage area are primarily connected to septic systems. Residential areas comprise 53% of the drainage area. During the 2020 field reconnaissance, it was noted that the neighborhood to the southwest had a lot of litter and loose trash. Some houses had boats parked nearby. The majority of the remaining drainage area is largely wooded (24% of the drainage area). Other land uses in the drainage area include commercial (5%), open space (8%), pasture and row crops (2%), transportation and utilities (6%), and wetland (2%).

2.2.3 MA-03

MA-03 is located approximately 250 yards downstream from MA-02. It can be accessed from Governor Ritchie Highway near the Marley Station shopping mall. The sampling location is located after Marley Creek is intersected by storm drain outfalls that flow from Marley Station Mall. These outfalls appear to be connected to tributaries that originate in the Woodholme neighborhood of Pasadena, MD. This neighborhood, in the southern part of the drainage area, is primarily connected to septic systems.

This sampling location captures drainage from the upstream areas that reach MA-01 and 02, as well as the Marley Station Mall and adjacent retail center, another retail center to the southeast, residential neighborhoods, and wooded areas. The southeast retail center includes PPT Porta Potty Rentals off Jumpers Hole Road. Commercial, residential, and wooded areas comprise 27%, 33%, and 25% of the drainage area to MA-03, respectively. Open space and transportation and utilities occupy 3% and 12% of the drainage area, respectively.

2.2.4 MA-04

MA-04 is located in the wooded area between Tower Road and Dixon Drive in Glen Burnie. The monitoring location captures the main stem of Marley Creek, including drainage from upstream monitoring locations MA-01 through MA-03, as well as additional flow from sources in adjacent neighborhoods along Ritchie Highway and nearby commercial areas. A sewer line runs adjacent to the upstream length of the stream.

Residential areas cover 62% of the land use draining to MA-04. Commercial areas, which comprise 15% of the drainage area, are primarily medical, retail, and automobile industry businesses. One notable business in the drainage area is Premier Porta Potty Rental off Landmark Drive. Other land uses in the drainage area include open space (5%), transportation and utilities (9%), and woods (8%). Only one small area at the upstream point of the drainage area appears to be connected to septic sewer systems.

2.2.5 MA-05

MA-05 is located off Norman Avenue between Phelps Avenue and Mueller Drive in Glen Burnie. The sampling location captures flow from tributaries originating near Marley Elementary School and several neighborhoods and apartment buildings before connecting to the main stem of Marley Creek. During field reconnaissance, it was noted that the neighborhoods in this drainage area had very little trash and debris. Yards are large and grassy, with boats parked at many homes.

Residential communities make up 58% of the land use, while commercial areas comprise 14% of the drainage area. Other land uses in the drainage include transportation and utilities (13%), open space (5%), and woods (10%). A sewer line runs adjacent to the stream, and a pumping station is located less than 1,000 feet from the sampling location. No areas within the drainage area to MA-05 appear to be connected to septic systems.

2.2.6 MA-06

MA-06 is the tidal site for Marley Creek. It is found behind the sewer transfer station located at 521 Norman Avenue in Glen Burnie. It is fed primarily by Marley Creek tributaries, including all tributaries captured by upstream Marley Creek monitoring locations. MA-06 does not capture Marley Creek tributaries north and east of Maryland Route 10 (Arundel Expressway). The sampling location is generally silty with heavy cattail growth in the shallow waters. A sewage-like odor was evident during the 2020 field reconnaissance that could be related to the nearby Marley Pump Station and /or marshy conditions at the sampling location.

The drainage area to this monitoring station is largely residential (64%) and wooded (29%). Other land uses in the drainage area include water (3%) and wetlands (4%). No areas within the drainage area to MA-06 appear to be connected to septic systems.

3. Sampling Methodology

AECOM performed bacteria trend monitoring sampling activities for the 12-month sampling period beginning in July 2021 and ending in June 2022. Sampling was conducted on the second Wednesday and Thursday for all months except March 2022. Sampling for March 2022 was conducted on the second Thursday and Friday of the month due to a heavy rain event which caused unsafe sampling conditions on the intended Wednesday. AECOM provided a two-person sampling team to perform the bacteria trend monitoring sampling activities in the project area, in accordance with the Bacteria Sampling Plan and Quality Assurance/Quality Control Protocols (July 2019, revised April 2021), and EPA sampling protocols.

3.1 Field Sampling Preparation

One week before a scheduled sampling event, bottles and an insulated cooler were ordered. One day prior to a sampling event, the multi-parameter sonde was checked to confirm it was functioning properly, and if necessary, a replacement sonde or parts were obtained. At least one day prior to a scheduled sampling event, field equipment was assembled and prepared for use, and the necessary field forms and safety sheets were printed.

3.2 Sample Collection and Field Measurements

The sampling team consisted of one team member collecting the sample and one team member recording data using the field form. The field team mobilized to the site on two consecutive days: Furnace Creek on the second Wednesday of each month and Marley Creek on the second Thursday of each month. During the March 2022 sampling event, Furnace Creek was sampled on the second Thursday and Marley Creek was sampled on the second Friday. The team conducted sampling at each watershed starting with the most downstream location as follows:

Except as noted above, monitoring stations in Furnace Creek watershed were sampled on the second Wednesday of every month in the following order:

- FU-06 (tidal site)
- FU-05
- FU-04
- FU-03
- FU-02
- FU-01

Except as noted above, monitoring stations in the Marley Creek watershed were sampled on the second Thursday of every month in the following order:

- MA-06 (tidal site)
- MA-05
- MA-04
- MA-03
- MA-02
- MA-01

3.2.1 Bacteria Sampling

A grab sample was collected at each monitoring site for bacteria analysis. Prior to collecting the sample, the team member handling the sampling container donned a clean pair of nitrile gloves and collected the sample directly into the laboratory-supplied sterile sample container.

Collecting Samples

The sampler entered the stream from a downstream location and waded slowly to the collection point, taking care not to disturb the stream bed or the collection point. In order to collect the sample, the sampler removed the sample container lid and removed the preservative tablet, taking care not to contaminate the inner surface or underside of the

cap or the neck of the bottle. The person collecting the samples was positioned facing upstream, and the sample was collected from the incoming flow by holding the container at the base and angling the neck and mouth of the bottle toward the water. The bottle was then plunged neck-down into the water, avoiding any debris or surface scum, and positioned into the current until the neck faced slightly upward and the mouth of the container was facing the current, in order to allow air to escape and the container to fill. If there was no current, one was created by moving the bottle forward horizontally away from the sampler.

Samples were collected from a point that is representative of the site, with the sampler taking care not to collect the sample too near the bank or too far from the point of drawoff, or at a depth above or below the drawoff. For tidal sites FU-06 and MA-06, the sample was taken at a location approximately 0.5-meter deep, and for the other sites, the sample was taken at a location approximately 0.1 meter below the surface. The sampler allowed the container to fill but left approximately 1 to 2 centimeters of air space to allow mixing by shaking before examination. The sampler then carefully placed the preservative tablet back into the container before replacing the cap and locking the lid in place.

During the FY 2022 sampling year, all samples were collected directly in the sampling containers, and none required a piece of sampling equipment (e.g., telescopic dipper) to collect the sample.

Logging Samples

Once the sample was collected, the container was sealed and labeled appropriately with sample ID, date, and time, then the same information entered onto the Chain-of-Custody (COC) form. The sample was then placed in an insulated cooler for transportation to the analysis laboratory. Samples were put on ice and maintained between 1 and 10 degrees Celsius (°C) during transit. In order to keep the samples dry, they were placed in a waterproof storage bag prior to being placed in the cooler. The 8-hour hold time for enterococci analysis was not exceeded for any of the sampling events.

3.2.2 Field Measurements and Observations

The field team member responsible for collecting data noted field observations and conditions, including equipment information, field measurements, high/low flow determination, tidal characteristics, and other observations of the sites and surrounding areas in a field log. The field log consists of field data sheets and calibration sheets. Field observations and other pertinent anecdotal information was recorded, including:

- Date and time of sample collection
- Depth of sample collection
- Ambient air temperature
- Extreme conditions (weather, flooding, extreme temperatures, high winds)
- Unusual sampling/environment (possible sources of contamination, unusual inflow/outflow, algal blooms, significant changes to historical field results, etc.)
- Presence of transient encampments, congregations of evidence of avian or other wildlife, accumulated debris, etc.
- Presence of invasive species (snakeheads, phragmites, etc.)
- Precipitation amount for 3 days prior to sampling and at the time of sampling
- Tide characteristics (high/low or ebb/flood/slack) obtained from the National Oceanic and Atmospheric Administration's (NOAA's) Ft. McHenry tidal monitoring station 8574680
- Water characteristics
- Water color
- Visual turbidity
- Odor
- Flow characteristics (still, fast, dam, etc.)

At each site, sampling team members donned personal protective equipment (PPE) and prepared the sampling equipment. A multi-parameter sonde was used to collect the following physical water quality data for each sample:

- Temperature (°C)
- Dissolved Oxygen (milligrams per liter [mg/L])
- Specific Conductivity (millisiemens per centimeter [mS/cm])
- Turbidity (Nephelometric turbidity units [NTUs])
- pH

Prior to use, the multi-parameter sonde probe was examined to ensure that any antifouling components or probe protective attachments were equipped and the probe was securely attached to the cable. The sampling team member submerged the sonde probe in the stream flow and read results directly from the probe. The probe was placed in the stream with the sampler facing upstream and submerged at least 0.1 meter below the water surface in full contact with the flow. The reading was taken from approximately the same depth as the bacteria sample. The probe was held in place for at least 30 seconds to allow readings to stabilize before results were recorded in the field log. The team member responsible for taking notes compared the results to a field measurement reading guide to ensure the readings are all in range. If a reading was unreasonable/out-of-range, the YSI probe was recalibrated for the out-of-range parameter.

Field data sheets, calibration logs, and field measurement reading guides are provided as **Appendix B**.

3.2.3 Cleanup and Decontamination

Proper decontamination procedures were followed while sampling at each location to prevent bacteria and nuisance organism/pathogen cross-contamination and to prevent the introduction and spread of nuisance organisms and pathogens to other locations. The sampling team followed the Maryland Biological Stream Survey (MBSS) *Decontamination Procedures for Boots and Equipment* (MDNR n.d.).

The decontamination area was set up at least 50 yards from the stream. After samples were collected from a station, the field members wiped their hands with disinfectant wipes or lotion or washed with soap and water to reduce exposure to potentially harmful bacteria or other microorganisms. The sample team then followed the following protocols to decontaminate the field equipment:

For the multiparameter sonde:

- Don a clean pair of nitrile gloves
- Clean sonde, exposed cable, and sample container by removing visible contamination with a brush or wipes and rinse with distilled/deionized water
- Submerge sonde, exposed cable, and sample collection contained (if used) in a 5% salt solution for at least 10 minutes
- Thoroughly dry with paper towels

For the boots and waders:

- Remove boots/waders
- Using sprayer filled with 1% Virkon Aquatic solution, thoroughly spray any area of boots/waders that came into contact with stream water
- Place boots/waders in a clean plastic trash bag for transportation to next sampling location

The team properly disposed the wash water, rinse water, rinsates, and other sampling wastes (disposable PPE, plastic sheeting, paper towels, etc.) in properly marked, sealable containers or bags.

3.2.4 Data Collection/Recordkeeping Procedures

Information provided by NOAA's National Weather Service (NWS) for BWI was used to collect precipitation data for 72 hours prior to the sampling event and on the date of sampling. Outside temperature and weather were recorded at the time of sample collection.

AECOM used data from United States Geological Survey (USGS) Gauge Station 01589500 (Sawmill Creek, Glen Burnie, MD) to determine the cutoff flow rates for high/low flows and make a high/low flow determination for each sample collected from monitoring sites. For the two tidal sites, FU-06 and MA-06, AECOM used data from NOAA tidal monitoring station 8574680 (Fort McHenry). Prior to sampling, the sampling team recorded field observations and other details pertinent to site characterization in the field data sheets.

The sampling team recorded field observations and other pertinent anecdotal information for each monitoring station in the field data sheets as described in Section 3.2.2. Field observations and conditions, including equipment

information, water quality data, high/low flow determination, tidal characteristics, and other observations of the site and surrounding area were recorded in the field data sheets.

3.3 Laboratory Analysis

Martel Laboratories JDS, Inc., a Maryland State-certified water quality laboratory, analyzed the water samples using IDEXX Enterolert (ASTM Method #D6503-99) for the presence of enterococci bacteria. The sampling team delivered the bacteria monitoring samples to the laboratory no later than 6 hours after the initial collection. The hold time for enterococci is 8 hours. Delivering the samples to the lab within 6 hours of collection ensured adequate time for pre-processing and analysis of the samples within the hold time limit. Results were reported in Most Probable Number (MPN) per 100 milliliters (mL). Beginning with the Marley Creek sampling event in October 2020, extended dilutions were performed on the samples. Extended dilutions were continued for all future events in FY 2021 and FY 2022. The highest bacteria count recorded for all samples prior to the Marley Creek sampling event on October 2020 was " $\geq$ 2420." Laboratory reports are provided in **Appendix C**.

3.4 Field Note Package

Upon receiving laboratory analytical results after each sampling event, AECOM sent an email to the County's Project Manager with a PDF file summarizing field activities and results. The file included the calibration logs for the sonde, water quality data field data sheets, sampling event field notes, laboratory analytical results, and COC forms.

3.5 Quality Assurance/Quality Control (QA/QC) Protocols

3.5.1 Field Sampling QA/QC

Samples were collected at approximately the same time and day each month to provide consistently gathered data. A field test at each monitoring site was performed during July 2019, the first sampling event of FY 2020 monitoring, to confirm the presence or absence of residual halogens (free chlorine) that could affect analytical results. The results showed that the Marley Creek and Furnace Creek monitoring locations were not affected by chlorination sources.

The sampling team exercised aseptic sample techniques to avoid the potential for contamination during routine sampling. Sample equipment remained sealed and sterile until ready for use. Samples for laboratory analysis were collected directly into the sterile, laboratory-supplied container.

All sampling activities were conducted from the most downstream point to the most upstream site to prevent initial sampling activities from impacting results of subsequent samples. Samples were collected facing upstream, away from the sampler and into the current, to prevent contamination from the sampler. If no current was present, one was generated artificially by sampling horizontally in a forward motion. The sampler entered the stream downstream of the sample collection point. If wading, the sampler moved carefully to avoid significant fouling of the water.

Beginning in April 2021, field measurements collected with the multi-parameter sonde probe were compared against a field measurement guide that AECOM developed and identifies expected ranges for the monitored parameters. The guide contains procedures to follow such as confirmation readings and recalibration in the event erroneous readings or probe malfunction are suspected.

After all of the samples were collected from a monitoring station, the sampling team used soap and water, alcohol wipes, or a disinfectant lotion to wash and dry their hands and any reusable PPE to reduce exposure to harmful bacteria and to prevent cross-contamination of sites. Field equipment was cleaned/decontaminated according to the procedures specified in Section 3.2.3.

The field team collected one field blank sample per every third sampling event. The field blank was collected first by pouring a sample of analyte-free water into a sterile sample container in the field. The field team collected one duplicate sample per sampling event. The duplicate sample was collected following the same procedures as regular sample collection.

Samples were transferred upon collection to a cooler maintained at 1°C to 10°C until delivered to the laboratory for analysis. To keep sample containers dry, the samples were placed in a sealable waterproof storage bag prior to being placed in the cooler. The sampling team delivered samples to the laboratory no later than 6 hours after initial collection time. This allowed for 2 hours of processing time from when samples were delivered to when they were analyzed.

3.5.2 Database QA/QC

A Microsoft Access database was developed to compile the monthly sample collection data from the water quality field data sheets and laboratory analytical results for the 12 sites. The database includes data from monitoring conducted by AECOM in FY 2020, FY 2021, and FY 2022 as well as monitoring data received from County for FY 2021. However, thia report includes analysis of only FY 2022 monitoring data collected by AECOM. The database schema includes the following fields:

- Site ID
- Location
- Date and time of sample collection
- Tide characteristics
- Field measurements
  - Temperature (°C)
  - Dissolved Oxygen (mg/L)
  - Specific Conductivity (mS/cm)
  - Turbidity (NTUs)
  - pH
  - Depth of sample collection
- Laboratory analysis results
  - Enterococcus (MPN/100 mL)
- Notes

In order to maintain quality control and verify that the data entered in the database accurately represent the results obtained from the lab analysis and parameters measured at the monitoring site, all database entries were checked by a second AECOM staff member. Additionally, a histogram of the collected data was visually inspected to detect any outliers. Outliers were investigated to determine the cause and are documented in Section 4. This database is attached in **Appendix D**.

4. Monitoring Results

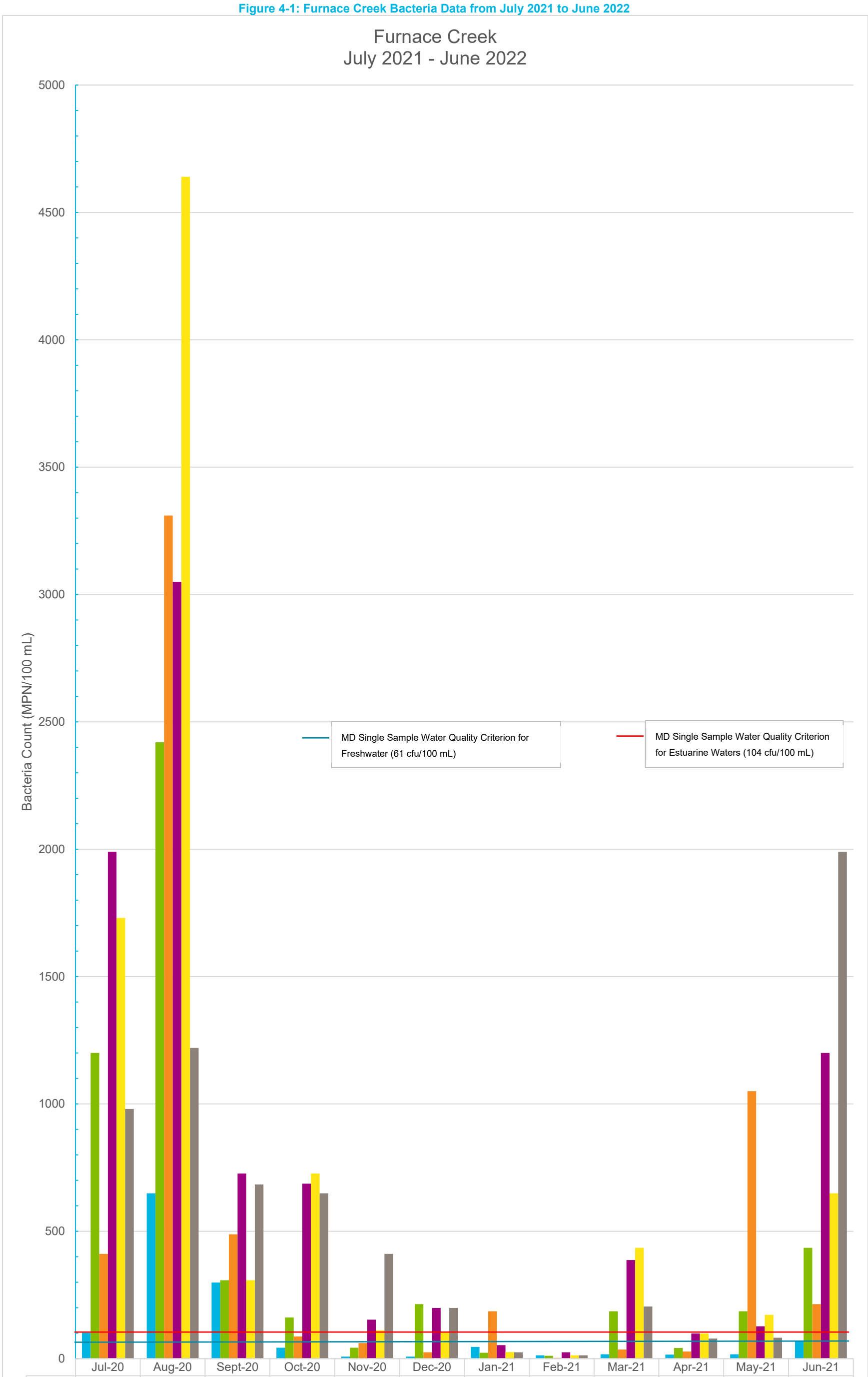
The TMDLs established by MDE require a reduction of enterococci bacteria by 75.75% for Marley Creek and 77.79% for Furnace Creek. The water quality criterion for Marley Creek and Furnace Creek watersheds states that the mean density of enterococci in a sampling event shall not exceed 35 colony-forming units per 100 milliliters (cfu/100 mL). The water quality criterion is designed to protect the Use Class I waters of Marley Creek and Furnace Creek. MDE's *Guidance for County Recreational Water Quality Monitoring and Notification Programs 2020* uses Beach Action Values for Indicator Organism Densities adapted from US EPA 2002 *EPA-823-B-02-004*. The Beach Action Value is not being met if the geometric mean of a sampling event's results for enterococci exceeds 104 cfu/100 mL. The data collected for this report are reported in most probable number per 100 mL (MPN/100 mL) and are directly comparable to the water quality standards presented in cfu/100 mL.

Because the Use Class I and Beach Action Value criteria are for means of sampling events, the data provided below was compared to the single sample water quality criterion of 61 MPN/100 mL for freshwater and single sample water quality criterion of 104 MPN/100 mL for estuarine waters. Though both creeks are considered estuary water types, they are impaired by both tidal and freshwater input. Therefore, both the single sample water quality criterion for fresh water and the single sample estuarine water quality criterion is used for comparison at all sites.

4.1 Furnace Creek

The data collected for Furnace Creek show bacteria trends to be generally higher during the summer months and lower during the winter and spring months. The highest values were typically seen at FU-06 (the tidal site), FU-05, and FU-04. Samples from all sites except for FU-06 had the highest values in August. In February 2022, all sites met the single sample water criterion for freshwater (61 MPN/100 mL) and in April 2022, all sites met the single sample water quality criterion for estuarine water (104 MPN/100 mL). **Figure 4-1** shows the data for all Furnace Creek monitoring sites. The sections below discuss results for each sampling site.

Figure 4-1: Furnace Creek Bacteria Data from July 2021 to June 2022



	Jul-20	Aug-20	Sept-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21
FU-01	102	649	299	43	8	8	46	13	17	16	17	70
FU-02	1200	2420	308	162	43	214	23	11	186	42	186	435
FU-03	411	3310	488	87	61	25	186	3	36	28	1050	214
FU-04	1990	3050	727	687	153	199	53	25	387	99	127	1200
FU-05	1730	4640	308	727	111	105	26	13	435	99	172	649
FU-06	980	1220	684	649	411	199	25	13	205	79	82	1990

4.1.1 FU-01

FU-01 experienced its highest enterococcus concentration of 649 MPN/100 mL in August, as shown in **Figure 4-2**. Enterococcus levels remained below the single sample estuarine water criterion (104 MPN/100 mL) in July and from October through June of the following year. Levels met the single sample freshwater quality criterion (61 MPN/100 mL) from October through May. Levels exceeded the single sample freshwater quality criterion in July through September and the following June.

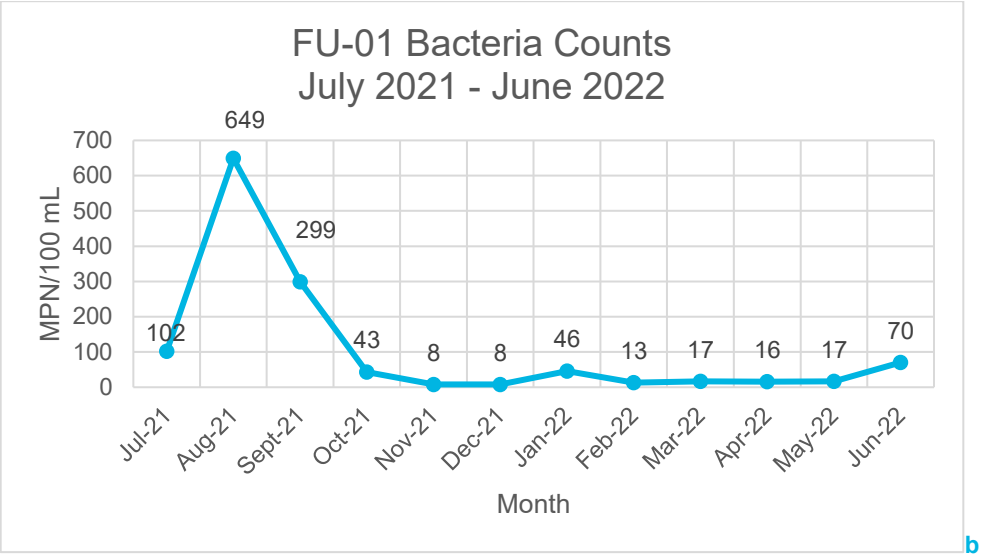


Figure 4-2: FU-01 Bacteria Trend

4.1.2 FU-02

FU-02 experienced its highest enterococcus concentrations of 2,420 MPN/100 mL in August, shown in **Figure 4-3**. Bacteria levels were below both the single sample freshwater quality criterion (61 MPN/100 mL) and the single sample estuarine water criterion (104 MPN/100 mL) in November, January, February, and April. Elevated concentrations above the single sample freshwater quality criterion occurred in July through October, December, March, May, and June.

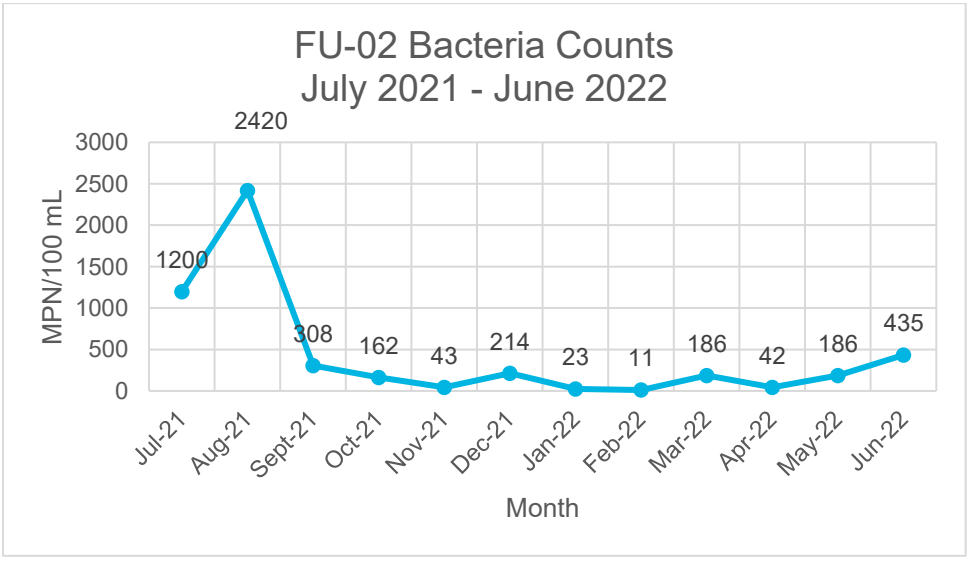


Figure 4-3: FU-02 Bacteria Trend

4.1.3 FU-03

FU-03 experienced its highest enterococcus level of 3,310 MPN/100 mL in August, shown in **Figure 4-4**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) from October through December and from February through April. Levels met or were below the single sample freshwater quality criterion (61 MPN/100 mL) in November, December and February through April. Elevated concentrations above the single sample freshwater quality criterion occurred in July through October, January, May, and June.

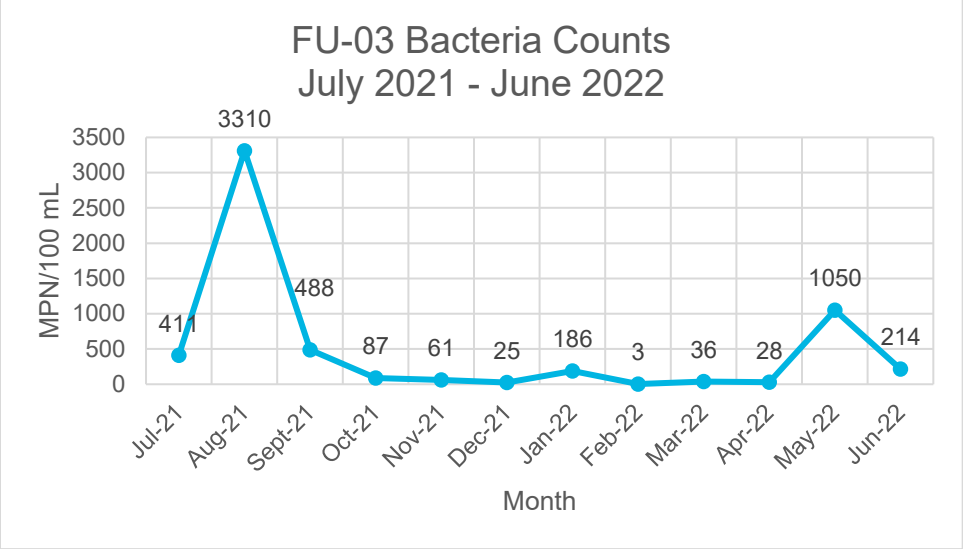


Figure 4-4: FU-03 Bacteria Trend

4.1.4 FU-04

FU-04 experienced its highest enterococcus concentration of 3,050 MPN/100 mL in August, shown in **Figure 4-5**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) from January, February, and April. Levels met the single sample freshwater quality criterion (61 MPN/100 mL) in January and February. Elevated concentrations above the single sample freshwater quality criterion occurred in July through December and March through June.

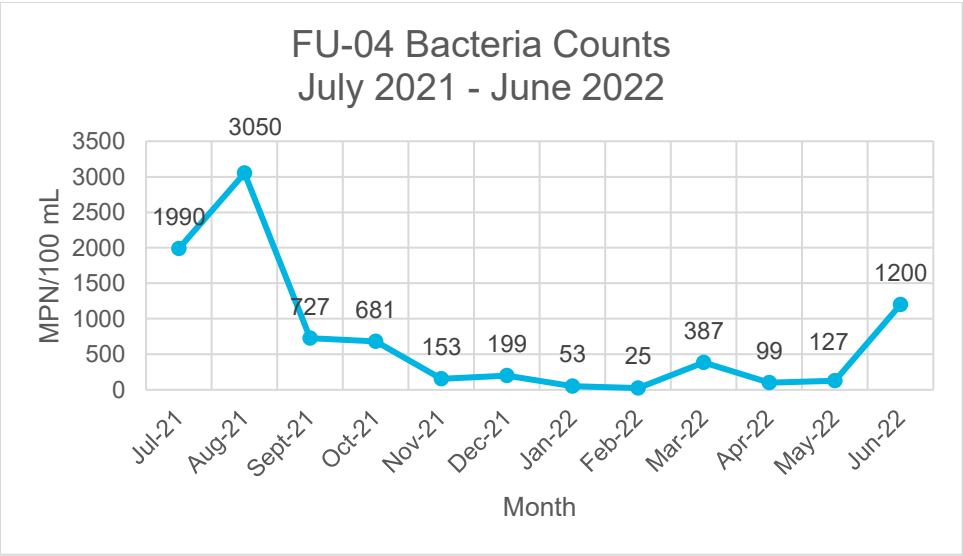


Figure 4-5: FU-04 Bacteria Trend

4.1.5 FU-05

FU-05 experienced its highest enterococcus concentration of 4,640 MPN/100 mL in August, shown in **Figure 4-6**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) from January, February, and in April. Levels met the single sample freshwater quality criterion (61 MPN/100 mL) in January and February. Elevated concentrations above the single sample freshwater quality criterion occurred in July through December and March through June.

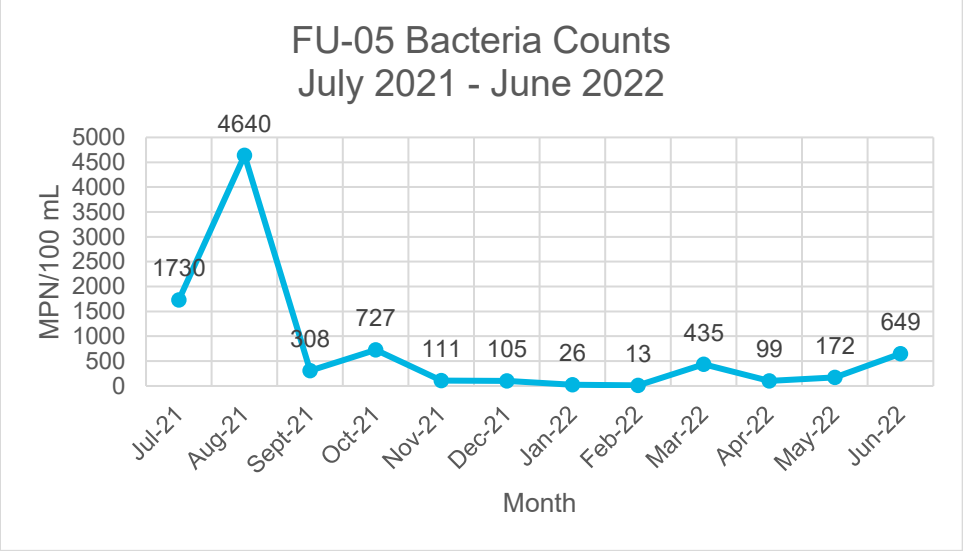


Figure 4-6: FU-05 Bacteria Trend

4.1.6 FU-06

FU-06 experienced its highest enterococcus concentration of 1,990 MPN/100 mL in June, shown in **Figure 4-7.** Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) in January, February, April, and May. Levels met the single sample freshwater quality criterion (61 MPN/100 mL) in January and February. Elevated concentrations above the single sample freshwater quality criterion occurred from July through December and March through June.

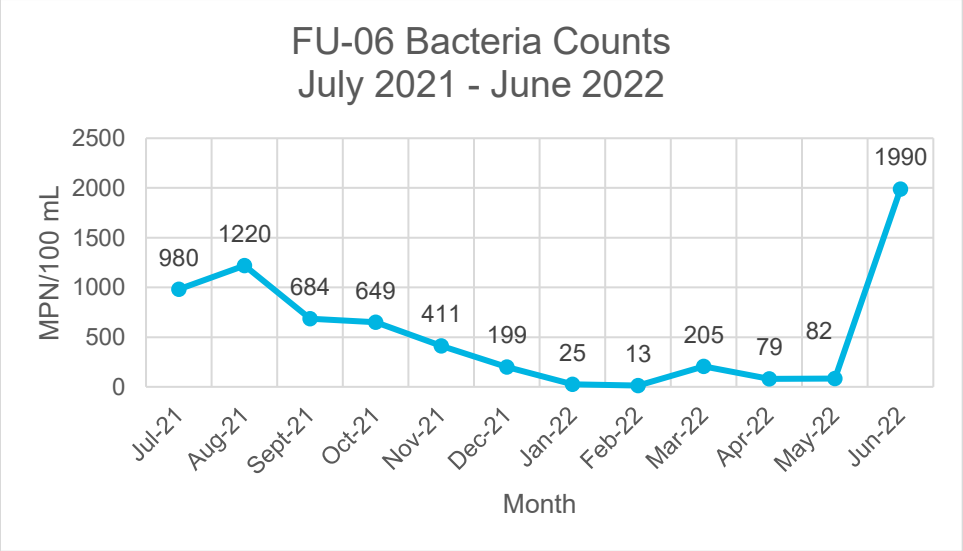
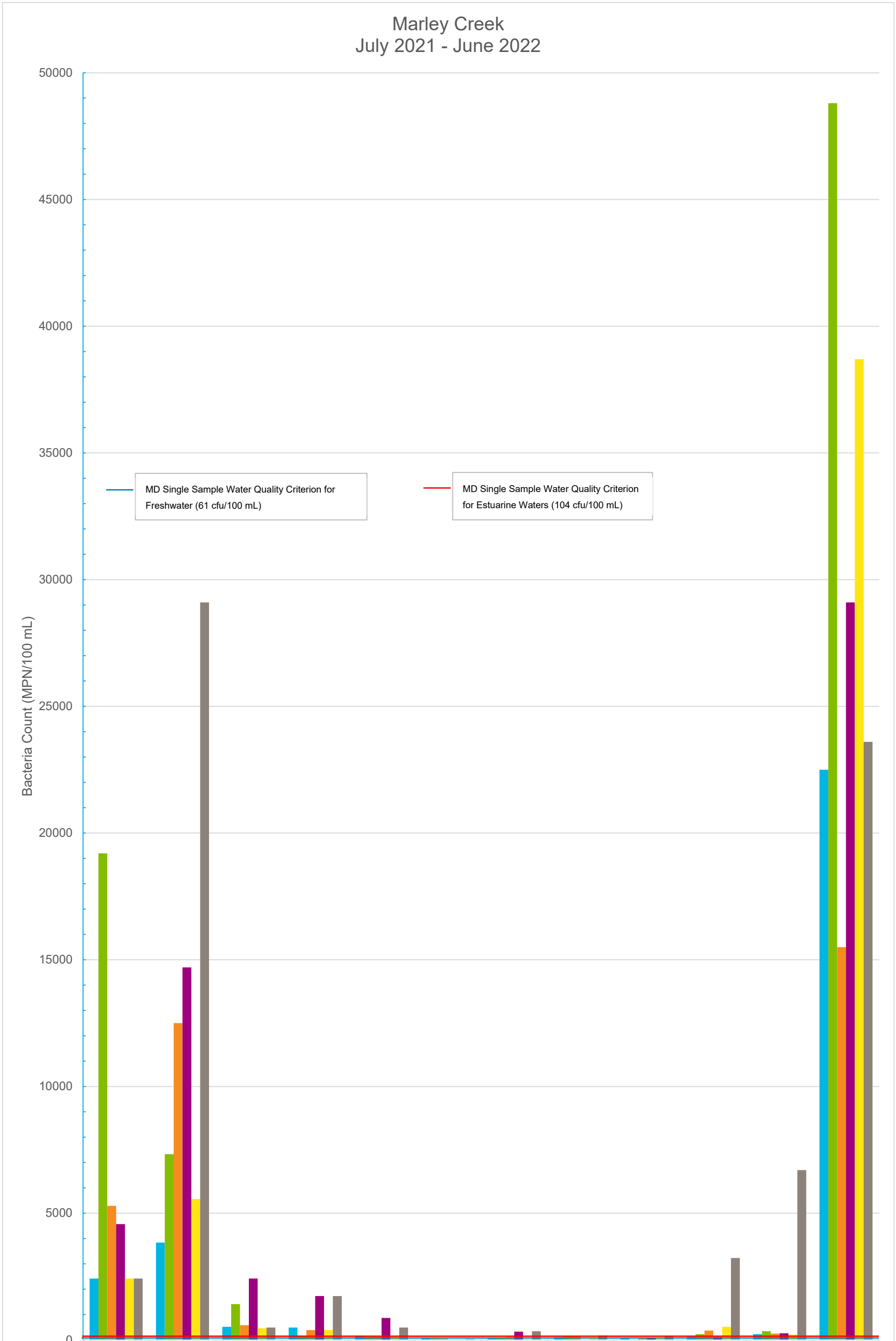


Figure 4-7: FU-06 Bacteria Trend

4.2 Marley Creek

Marley Creek results show bacteria trends for most sites to be highest during June 2022. Significantly elevated concentrations of ≥ 2,420 MPN/100 mL occurred at every site in July, August, and the following June. MA-06 exceeded single sample estuarine water criterion (104 MPN/100 mL) during every month of the sampling period except for December. No sites met the single sample estuarine water criterion (61 MPN/ 100 mL) during the months of July through November and April through June. All sites met the single sample estuarine water criterion in December. **Figure 4-8** shows the data for all Marley Creek monitoring sites.

Figure 4-8: Marley Creek Sampling Data from July 2020 to June 2021



	Jul-21	Aug-21	Sept-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22
MA-01	2420	3840	517	488	172	71	57	108	57	125	225	22500
MA-02	19200	7330	1410	161	120	52	86	133	4	225	345	48800
MA-03	5290	12500	579	387	129	47	107	150	88	365	248	15500
MA-04	4570	14700	2420	1730	866	5	326	3	88	111	261	29100
MA-05	2420	5560	461	387	125	23	24	51	93	517	210	38700
MA-06	2420	29100	488	1730	488	36	345	179	131	3230	6700	23600

4.2.1 MA-01

MA-01 experienced its highest concentration of enterococci of 22,500 MPN/100 mL in June, shown in **Figure 4-9**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) in December, January, and March. Levels met the single sample freshwater water criterion (61 MPN/100 mL) in January and March. Significantly elevated concentrations of ≥ 2,420 MPN/mL occurred in July, August, and June.

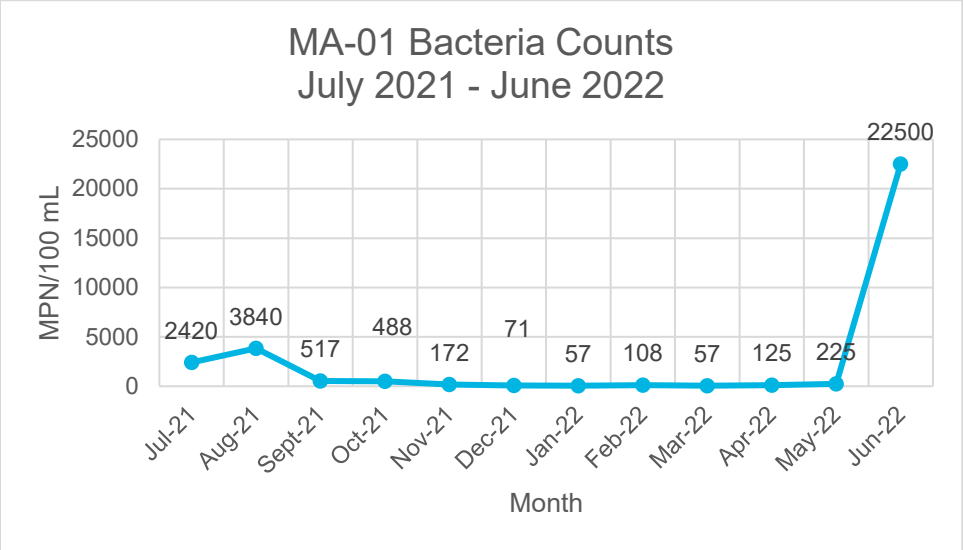


Figure 4-9: MA-01 Bacteria Trend

4.2.2 MA-02

MA-02 experienced its highest enterococcus concentration of 48,800 MPN/100 mL in June, shown in **Figure 4-10**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) in December, January, and March. Levels met the single sample freshwater criterion (61 MPN/100 mL) in December and March. Significantly elevated concentrations of ≥ 2,420 MPN/100 mL occurred in July, August, and June.

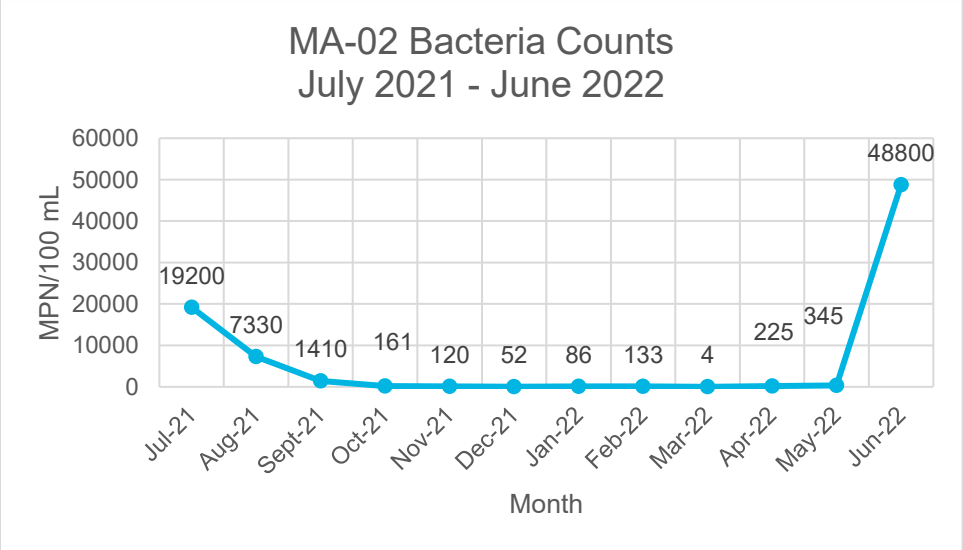


Figure 4-10: MA-02 Bacteria Trend

4.2.3 MA-03

MA-03 experienced its highest enterococcus concentration of 15,500 MPN/100 mL in June, as shown in **Figure 4-11**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) in December and March and below the single sample freshwater criterion (61 MPN/100 mL) in December. Significantly elevated concentrations of ≥ 2,420 MPN/100 mL occurred in July, August, and June.

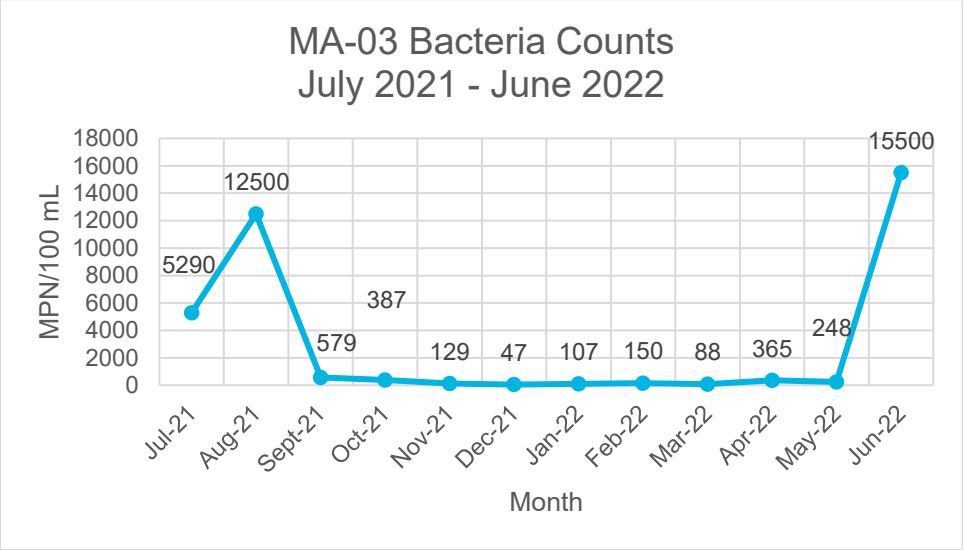


Figure 4-11: MA-03 Bacteria Trend

4.2.4 MA-04

MA-04 experienced its highest enterococcus concentration of 29,100 MPN/100 mL in June, shown in **Figure 4-12**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) in December, February, and March. Bacteria levels were below the single sample freshwater criterion (61 MPN/mL) in December and February. Significantly elevated concentrations of ≥ 2,420 MPN/100 mL occurred in July, August, September, and June.

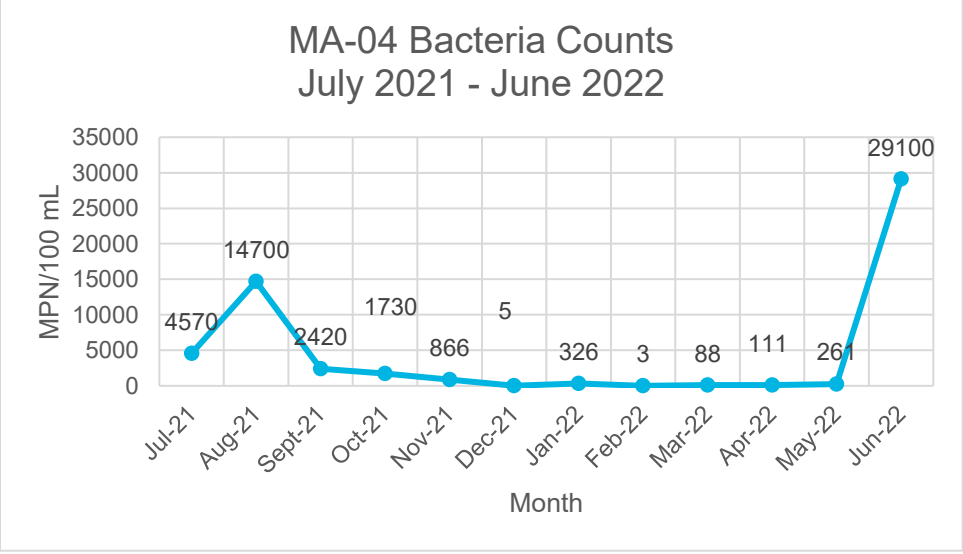


Figure 4-12: MA-04 Bacteria Trend

4.2.5 MA-05

MA-05 experienced its highest enterococcus concentration of 38,700 MPN/100 mL in June, shown in **Figure 4-13**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) and single sample freshwater criterion (61 MPN/100 mL) in December through March. Significantly elevated concentrations of ≥ 2,420 MPN/100 mL occurred in July, August, and June.

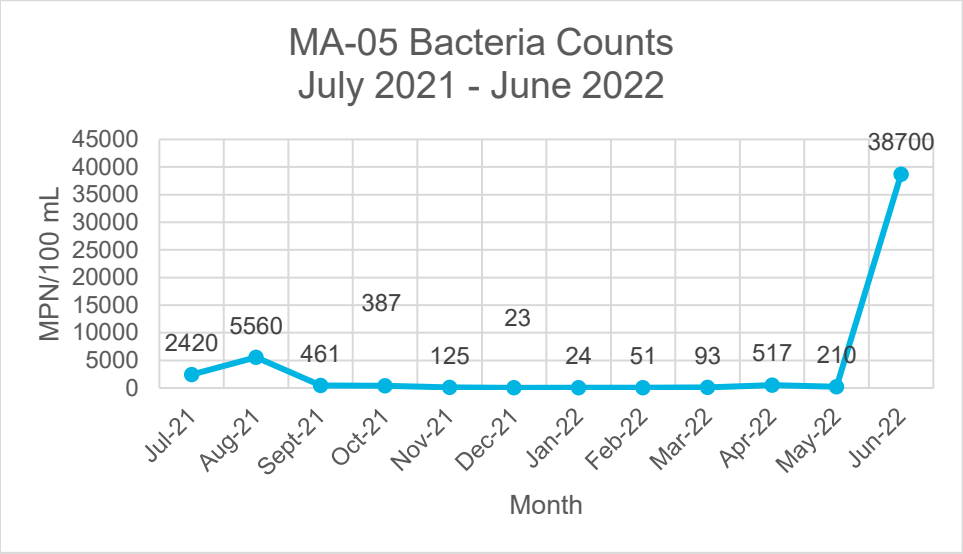


Figure 4-13: MA-05 Bacteria Trend

4.2.6 MA-06

Unlike all other sites, MA-06 experienced its highest enterococcus concentration of 29,100 MPN/100 mL in August, shown in **Figure 4-14**. Bacteria levels were below the single sample estuarine water criterion (104 MPN/100 mL) and below the single sample freshwater quality criterion (61 MPN/100 mL) in December. Significantly elevated concentrations of ≥ 2,420 MPN/100 mL occurred in July, August, and April through June.

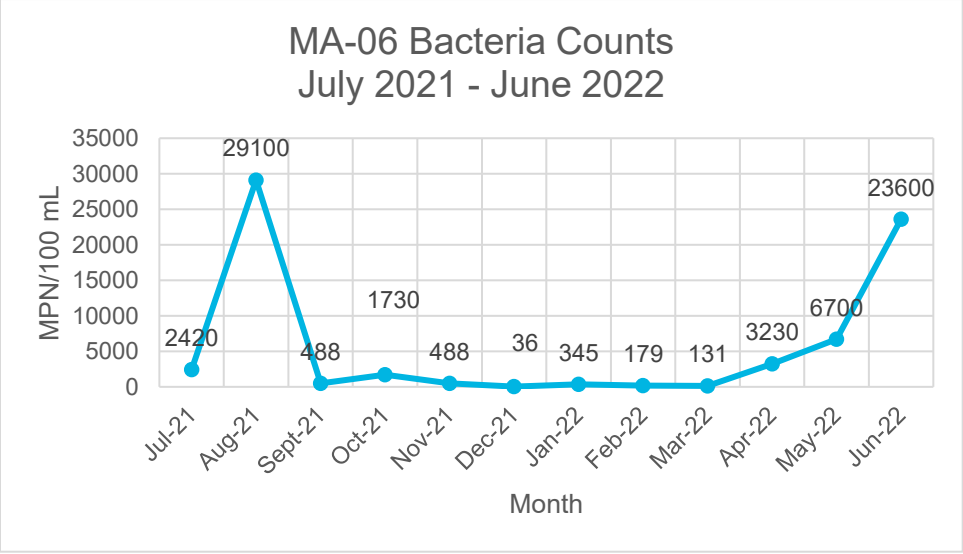


Figure 4-14: MA-06 Bacteria Trend

5. Data Correlation and Statistical Analysis

5.1 Data Correlation

The tidal sites (FU-06 and MA-06) generally experienced heightened levels of enterococci concurrently with other upstream monitoring sites. However, bacteria counts in July, August, and the following June were significantly elevated for all sites. Values were only slightly elevated for MA-06 in July. As a part of this project, County-wide sanitary sewer overflows and force main break data for FY 2022 was obtained from the County to identify any correlation between sewer overflows in the drainage areas to the monitoring stations with elevated bacteria concentrations. Any sewer overflows would likely result in elevated enterococci counts at downstream monitoring stations except for tidal areas where sewer contamination can travel upstream via tidal flows. No overflows were reported at any of the pump stations in the watersheds.

Marley Creek stations experienced highly elevated levels of enterococci in July and August and the following June when all samples from all stations registered enterococci counts of 2,420 MPN/100 mL or greater. By September, levels were relatively lower but still above the single sample water quality criterion for MD (104 MPN/100 mL). MA-06 is a tidal site and the most downstream site, and it is not unexpected for it to have elevated levels when other stations experience elevated levels. A significant sewage release associated with a 12-inch gravity main sewer break was reported on June 2, 2022. The reported location of the break was within vicinity of MA-04 and MA-05 . Significantly elevated levels of enterococci were registered at all stations from the June 9, 2022, sampling event.

Stations MA-02 and MA-03 are located further upstream in the watershed than half of the monitoring locations. These locations are located more than 3,000 feet from the nearest pump station (Marley Pump Station). They are the only two monitoring points fed directly by tributaries around the Marley Station Mall and surrounding neighborhoods. There are several conditions present in the drainage areas for these monitoring stations that could potentially be related to the elevated bacteria results:

- Neighborhoods in the upper reaches of the drainage areas for MA-02 and MA-03 are primarily connected to septic systems. Failing septic systems and their associated drain fields have been identified as one of the sources of bacteria in the watersheds by MDE (MDE 2010b).
- As shown on Figure 2-4, there is a sewer line running south to north that crosses in proximity to MA-02 and MA-03; AECOM field teams noticed raised sewer manholes near both sampling locations.
- Pet waste may be a factor influencing the elevated enterococci levels because the drainage areas to these monitoring locations are primarily residential.

Furnace Creek generally had heightened levels of enterococci in July, August, and June. Many residential areas in Furnace Creek are connected to septic systems and as discussed above, failing septic systems and their associated drain fields could be a potential cause for elevated enterococci concentrations. The highest enterococci counts at monitoring location FU-06 were observed during August and June. This tidal area of the stream likely experiences recreational boating use, which would be expected to be highest in the summer months. Raw and poorly managed sewage from boats contain bacteria and could be one of the contributors of elevated bacteria concentrations in tidal areas.

5.2 Statistical Analysis

Temperature, dissolved oxygen, specific conductivity, turbidity, and pH data were collected at each monitoring location during bacteria sampling, and a Pearson Correlation Coefficient (r) was estimated for a combination of enterococci counts with each parameter. A correlation coefficient was also estimated for the combination of enterococci counts with air temperature, USGS gage flow, and tide levels. In general, correlation coefficients range between "-1" and “+1,” with “-1” indicating strong negative correlation and “+1” indicating strong positive correlation. A

value for "r" close to "0" indicates no correlation. **Figure 5-1** shows the correlation coefficient heat map developed for the parameters and the enterococci counts.

	Temperature (°C)	*Dissolved Oxygen (mg/L)*	*Specific Conductivity (mS/cm)*	*Turbidity (NTU)*	*pH*	*Enterococci (MPN/100 mL)*	*Air Temperature (°F)*	*USGS Gage Flow (cfs)*	*Tide Level (ft)*	*Precipitation (in)*
Temperature (°C)	1.00									
Dissolved Oxygen (mg/L)	-0.67	1.00								
Specific Conductivity (mS/cm)	0.01	-0.24	1.00							
Turbidity (NTU)	0.25	-0.34	0.01	1.00						
pH	-0.58	0.44	-0.13	-0.06	1.00					
Enterococci (MPN/100 mL)	0.40	-0.43	-0.11	0.74	-0.12	1.00				
Air Temperature (°F)	0.93	-0.55	-0.10	0.19	-0.48	0.33	1.00			
USGS Gage Flow (cfs)	0.33	-0.28	-0.11	0.79	-0.06	0.83	0.27	1.00		
Tide Level (ft)	0.75	-0.41	-0.06	0.06	-0.50	0.16	0.75	0.14	1.00	
Precipitation (in)	0.17	-0.18	-0.13	0.75	0.15	0.78	0.09	0.90	0.01	1.00

Figure 5-1: Correlation Map for Enterococci Count vs. Sample Parameters

The bolded blue row and column in this map show the correlation coefficient (r) for each of the sampling parameters against the enterococci count. Based on the data shown in **Figure 5-1**, none of the parameters stand out as having a strong correlation.

Each sampling parameter along with air temperature, USGS gage flow rate, and tide levels were also plotted against enterococci count individually to determine a graphical relationship with the parameters. A coefficient of determination (R^2) value was also calculated to determine the strength of the relationship.

Given the dataset includes only one year of sampling data with 144 sampling data points, it is a comparatively small dataset to identify the strength of parameters as predictors for enterococci count. With more sampling, it is possible that trends will emerge as the sample size increases.

Sample Temperature

The sample temperature from July 2021 to June 2022 ranged between 3.1°C and 26.2°C. No apparent trend appears as temperature changes, shown by the elevated enterococci counts at temperatures in the range 16°C - 24.3°C. A polynomial function fit to this dataset produced the highest R^2 value at 0.20, indicating a weak relationship between the two variables. **Figure 5-2** shows a scatter plot of sample temperature and Enterococci counts.

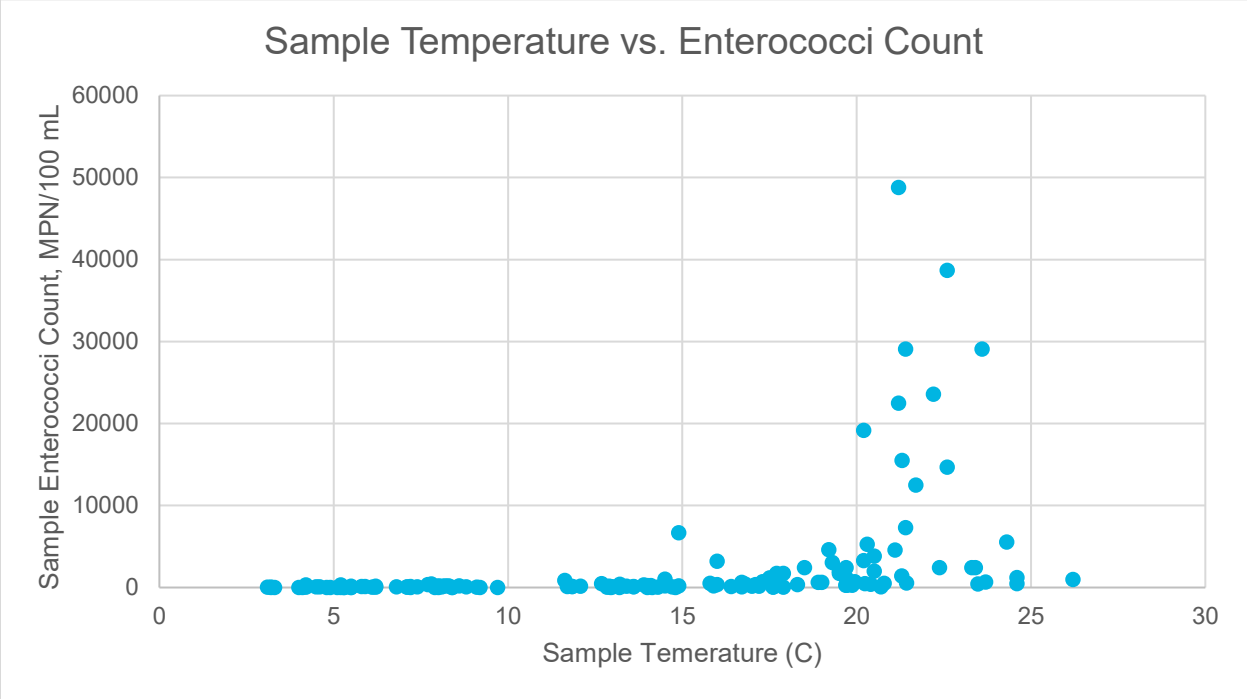


Figure 5-2: Plot of Sample Temperature vs. Bacteria Count

Dissolved Oxygen

Dissolved oxygen (DO) generally ranged between 0.134 and 12.6 mg/L. No apparent trend appears as DO changes, shown by the elevated enterococci counts at DO readings as low as 0.134 and as high as 8.81. A power function fit to these data produced the highest R^2 value of 0.21, which does not indicate a strong correlation between this parameter and enterococci count. **Figure 5-3** shows a plot of DO vs. enterococci counts.

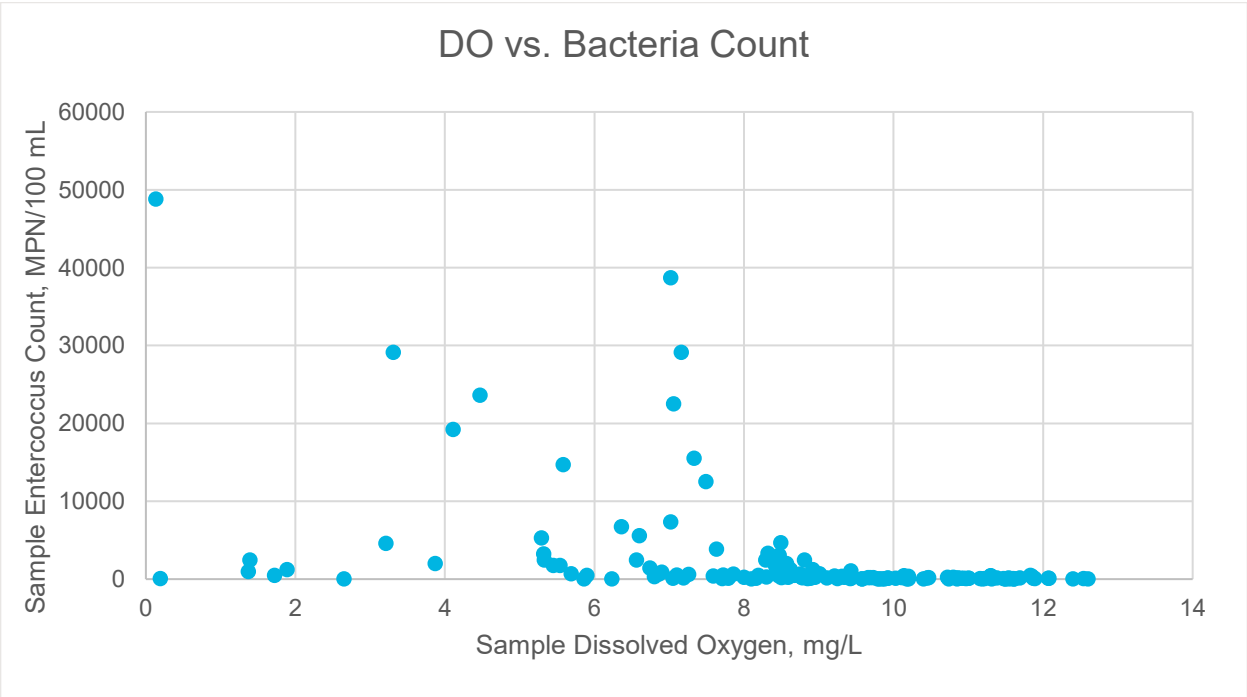


Figure 5-3: Plot of Sample DO vs. Bacteria Count

Specific Conductivity

Samples collected between July 2021 and June 2022 had specific conductivities between 0.1 and 8.15 mS/cm, with most readings below 1 mS/cm. These data best fit a power function, producing an R^2 value of 0.1. This low value indicates that specific conductivity is not a strong predictor for enterococci count. Samples with both high and low values of specific conductivity had elevated counts of bacteria, though primarily lower conductivity samples had elevated counts of bacteria. **Figure 5-4** shows a plot of these data.

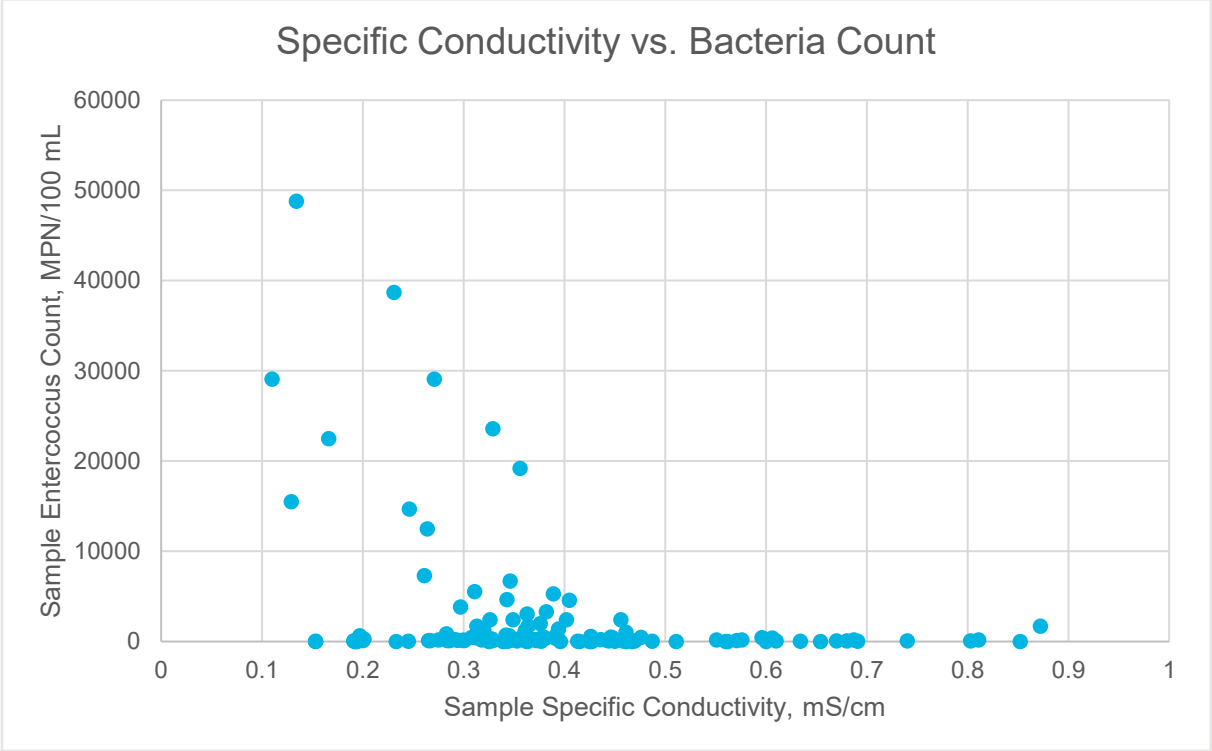


Figure 5-4: Plot of Sample Specific Conductivity vs. Bacteria Count

Turbidity

Turbidity of samples generally fell between 0 and 17.14 NTU, though turbidity values ranged as high as 136.04 NTU. A polynomial function best fits this dataset with an R^2 value of 0.57, indicating a moderate relationship between the two variables. However, elevated bacteria counts can be seen in samples with turbidity readings as low as 2.8 NTU and as high as 136.04 NTU. **Figure 5-5** shows the plot of this turbidity vs. enterococci counts.

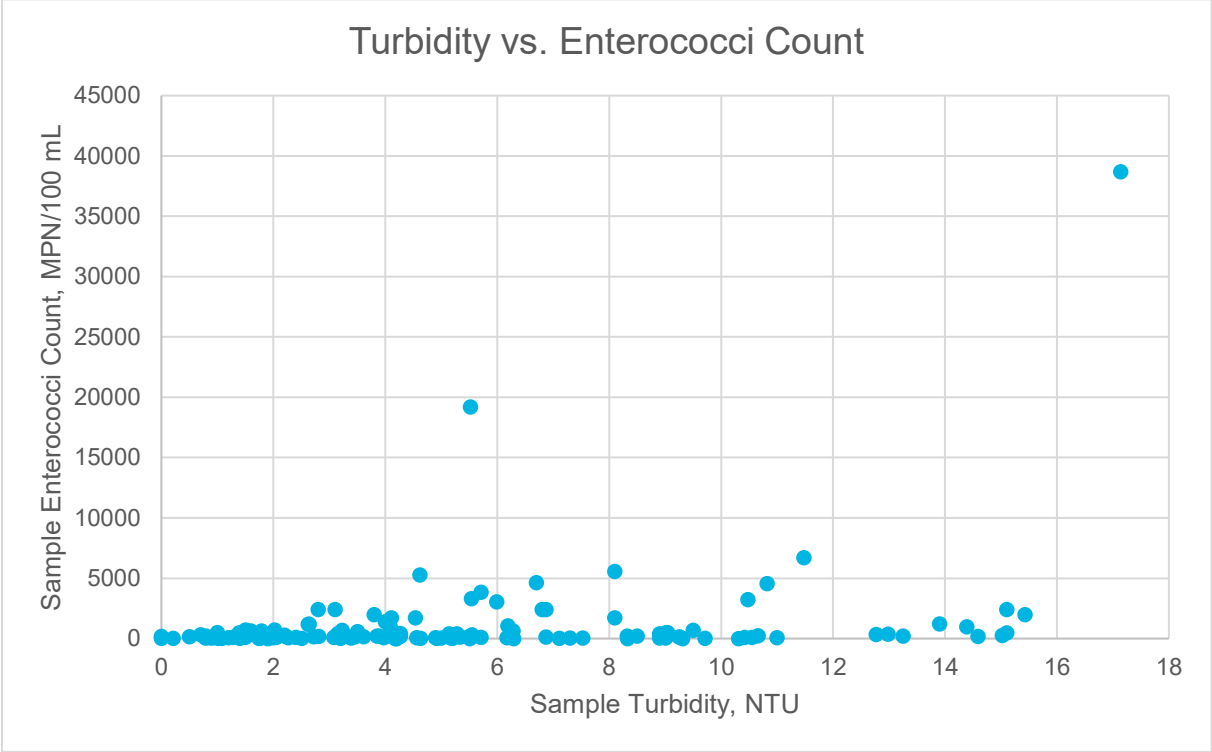


Figure 5-5: Plot of Sample Turbidity vs. Bacteria Count

pH

The pH values of samples generally ranged from 5.8 to 8.7. A polynomial function best fit these data with an R^2 value of 0.04. No clear trends emerged from these data, shown by the extremely low R^2. Elevated bacteria counts can primarily be found in samples of both higher and lower pH readings. **Figure 5-6** shows the plot of this dataset.

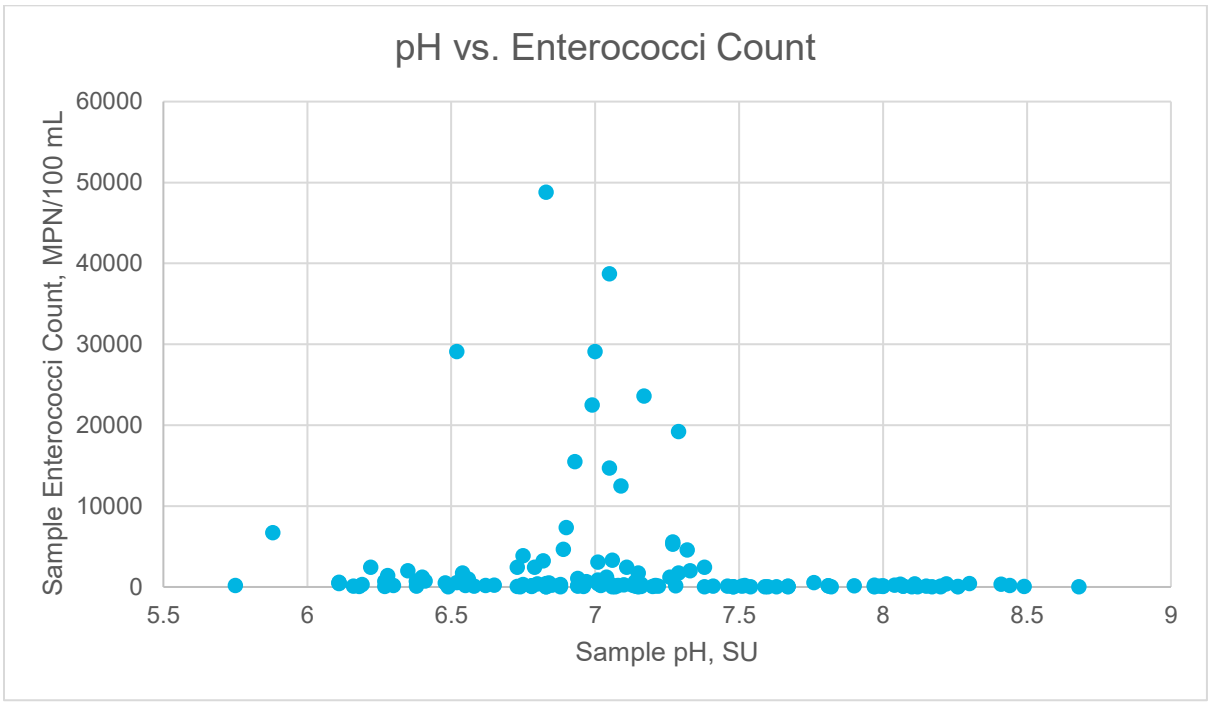


Figure 5-6: Plot of Sample pH vs. Bacteria Count

Air Temperature

The air temperature at the time of sample collection ranged from 25°F to 91°F. A polynomial function best fit this dataset with an R^2 value of 0.10. Though samples with elevated enterococci counts were found only in warmer months, the low R^2 value indicates that this parameter is not strongly correlated with bacteria count. **Figure 5-7** shows a plot of this dataset.

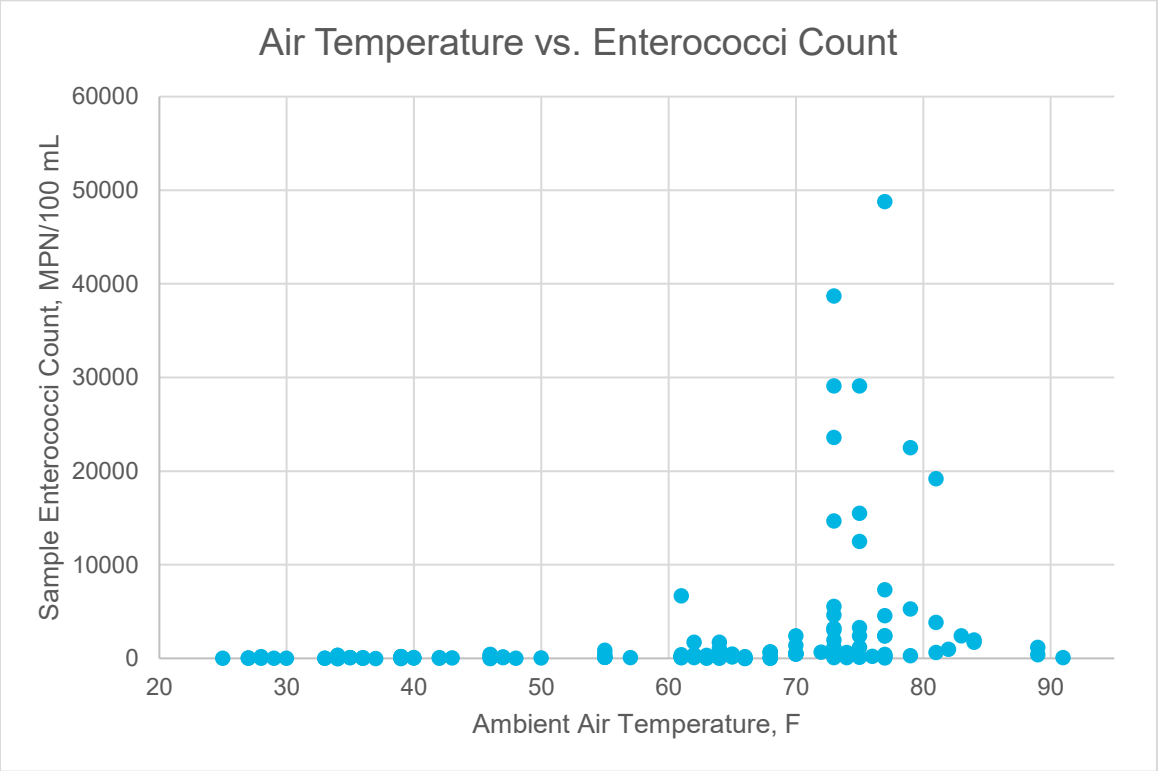


Figure 5-7: Plot of Air Temperature vs. Bacteria Count

USGS Gage Flow Rate

The USGS flow gages at each of the 12 sampling locations displayed values between 4.15 and 20 cubic feet per second (cfs), with most values falling between 4.15 and 6 cfs. Fit to a polynomial function, this dataset produced an R^2 value of 0.68, which indicates a moderate correlation between flow rate and enterococci count in the sample. However, elevated bacteria counts can be found in samples taken during both higher and lower flow rate conditions. **Figure 5-8** shows a plot of these data.

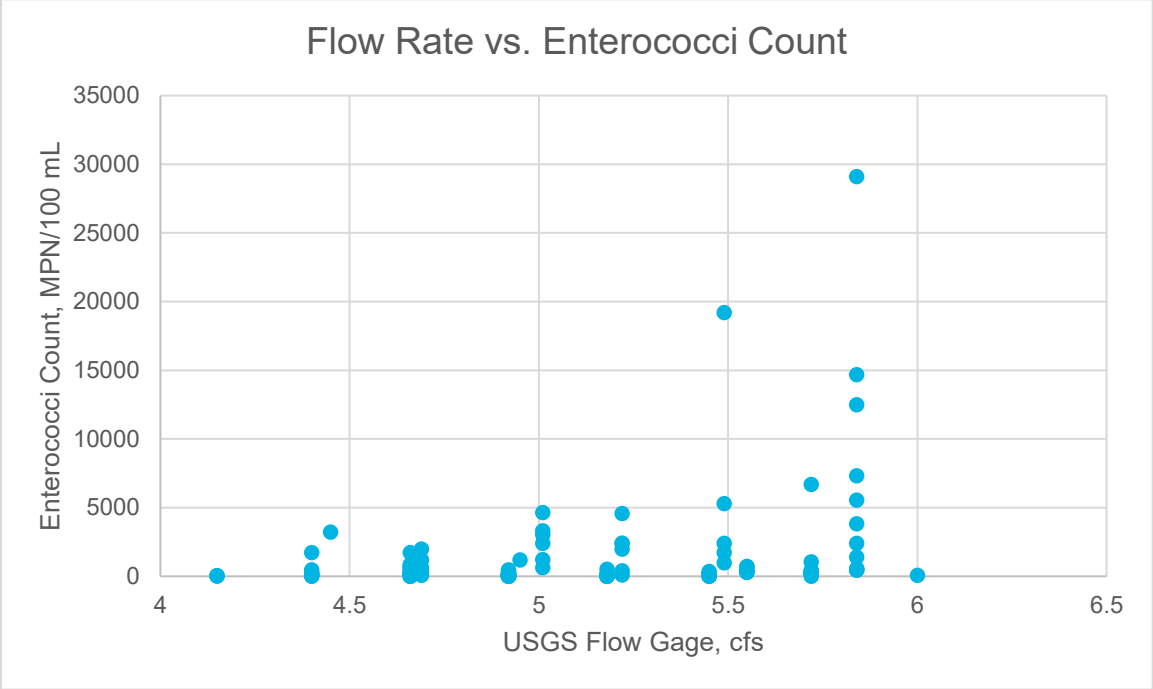


Figure 5-8: Plot of Flow Rate vs. Bacteria Count

Tide Level

The tide levels at the time of sampling fell between 0.21 and 2.78 feet. Fitting these data to an polynomial function yielded the highest R^2 value of 0.06, which indicates no correlation between tide level and enterococci count. However, elevated bacteria counts were found only in samples taken during conditions with tide levels between 1.34 feet and 2.48 feet. **Figure 5-9** shows a plot of these data.

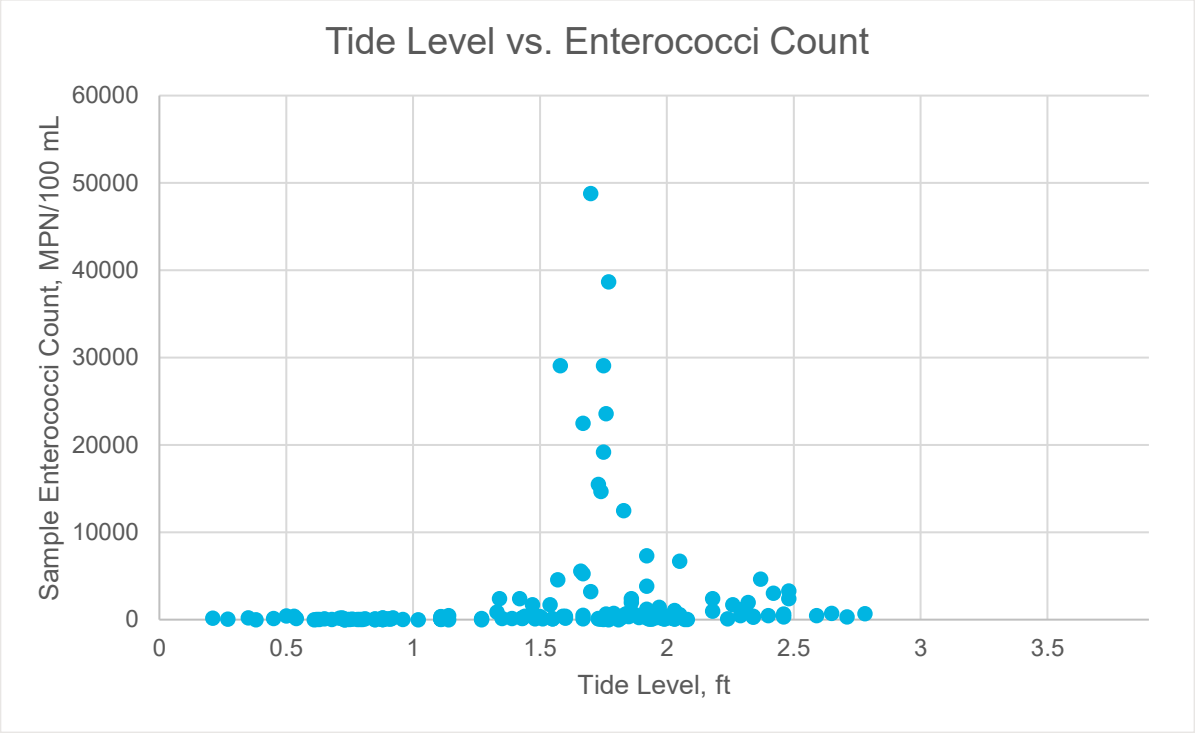


Figure 5-9: Plot of Tide Level vs. Bacteria Count

Precipitation

Precipitation within 72 hours prior to sampling ranged from 0 inch to 1.92 inches, with most events producing less than 0.12 inch of precipitation. For sampling days with precipitation in the prior 72 hours, the precipitation type was rainfall. Fitting these data to an exponential function yielded the highest R^2 value of 0.67, which indicates a moderate correlation between precipitation and enterococci count. However, elevated bacteria counts were found in samples taken during all precipitation conditions. Figure 5-10 shows a plot of these data.

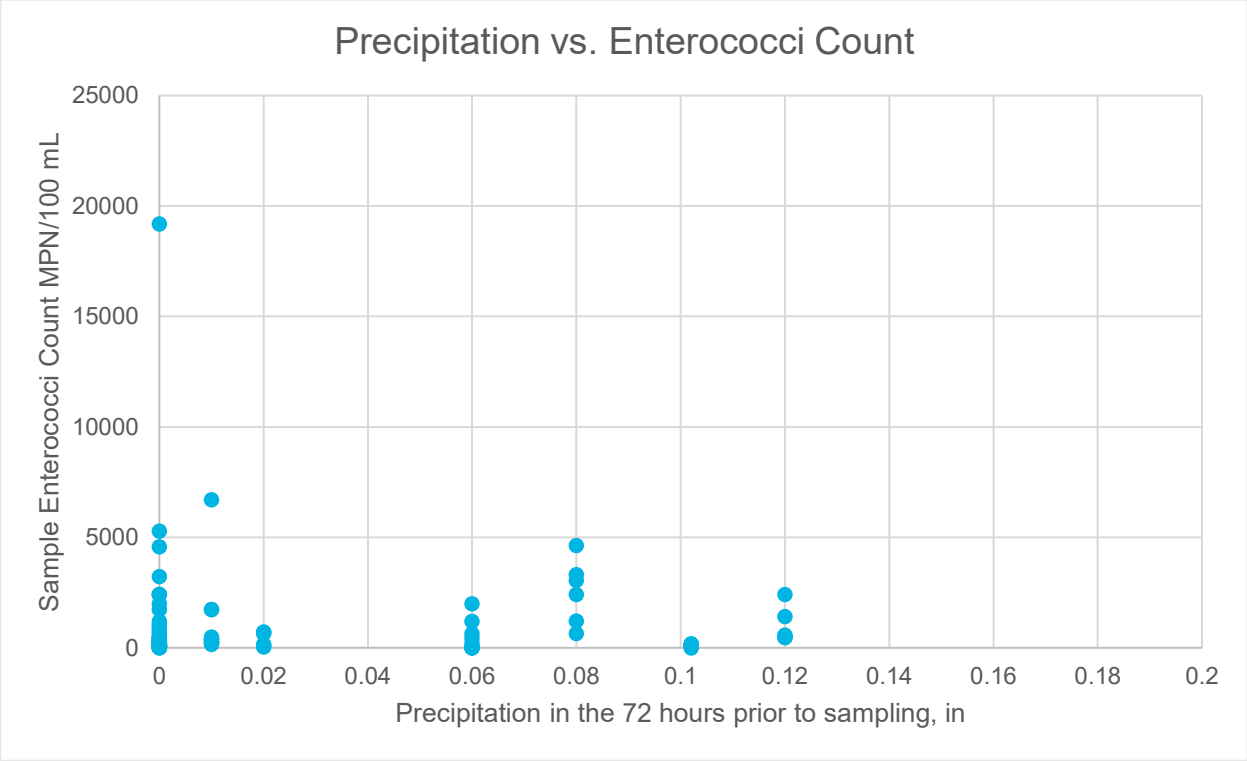


Figure 5-10: Plot of Precipitation vs. Bacteria Count

6. Summary and Conclusions

Because data analyzed is from sampling conducted for only one year, elevated values of the indicator enterococci that were observed may or may not be indicative of impairment in the watershed. It will be necessary to evaluate the results from indicator organisms from multiple sampling events over time to adequately quantify water quality conditions. One year of sampling data will show changes in trends on a monthly scale, but seasonal trends will not be verifiable until more data are collected and data from the three years of sampling planned are combined as one dataset. Still, some trends are apparent after a third year of sampling.

Results of the Year 3 sampling in Furnace Creek have shown a general upward trend in bacteria levels during warmer months, and a downward trend during colder months. Results for Marley Creek have shown somewhat of the same trends for some areas of the watershed, but other areas are exhibiting levels of bacteria that exceed seasonal patterns.

Enterococci count does not appear to be statistically correlated with any of the sampling parameters (sample temperature, dissolved oxygen, specific conductivity, turbidity, pH, air temperature, flow rate, USGS flow rate, tide level, and precipitation). Of these parameters, only turbidity, USGS flow rate, and precipitation exhibited a moderate correlation, though the dataset is too small to draw conclusions. There is insufficient data from this one year of sampling to statistically correlate any potential sources of bacteria with the elevated enterococci counts that have been observed. Trends may emerge when the three years of sampling data collected to date are collectively analyzed. These results will be presented in a separate report. If additional sampling is conducted in the future and the dataset increases in size, trends may emerge to indicate relationships between sampling parameters and enterococci counts. Any future trends can be used to identify the source of the bacteria impairment and improve the quality of the water in the Furnace Creek and Marley Creek watersheds.

7. References

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MDE. 2010a. Maryland's Final 2010 Integrated Report of Surface Water Quality. Maryland Department of the Environment, Environmental Assessment & Standards Program, Water and Science Administration, Baltimore, MD. Approved by EPA March 18, 2011.

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Maryland Department of Natural Resources (MDNR). n.d. Maryland Biological Stream Survey (MBSS) *Decontamination Procedures for Boots and Equipment*. Maryland Department of Natural Resources Non-Tidal Assessment Division, Resource Assessment Service, Baltimore, MD.

MDNR. 2010. Total Maximum Daily Loads of Bacteria Impaired Recreational Areas in Marley Creek and Furnace Creek of Baltimore Harbor Basin in Anne Arundel County, Maryland. Approved by EPA March 10, 2011.

Appendix A
Site Maps and Monitoring Station Photographs

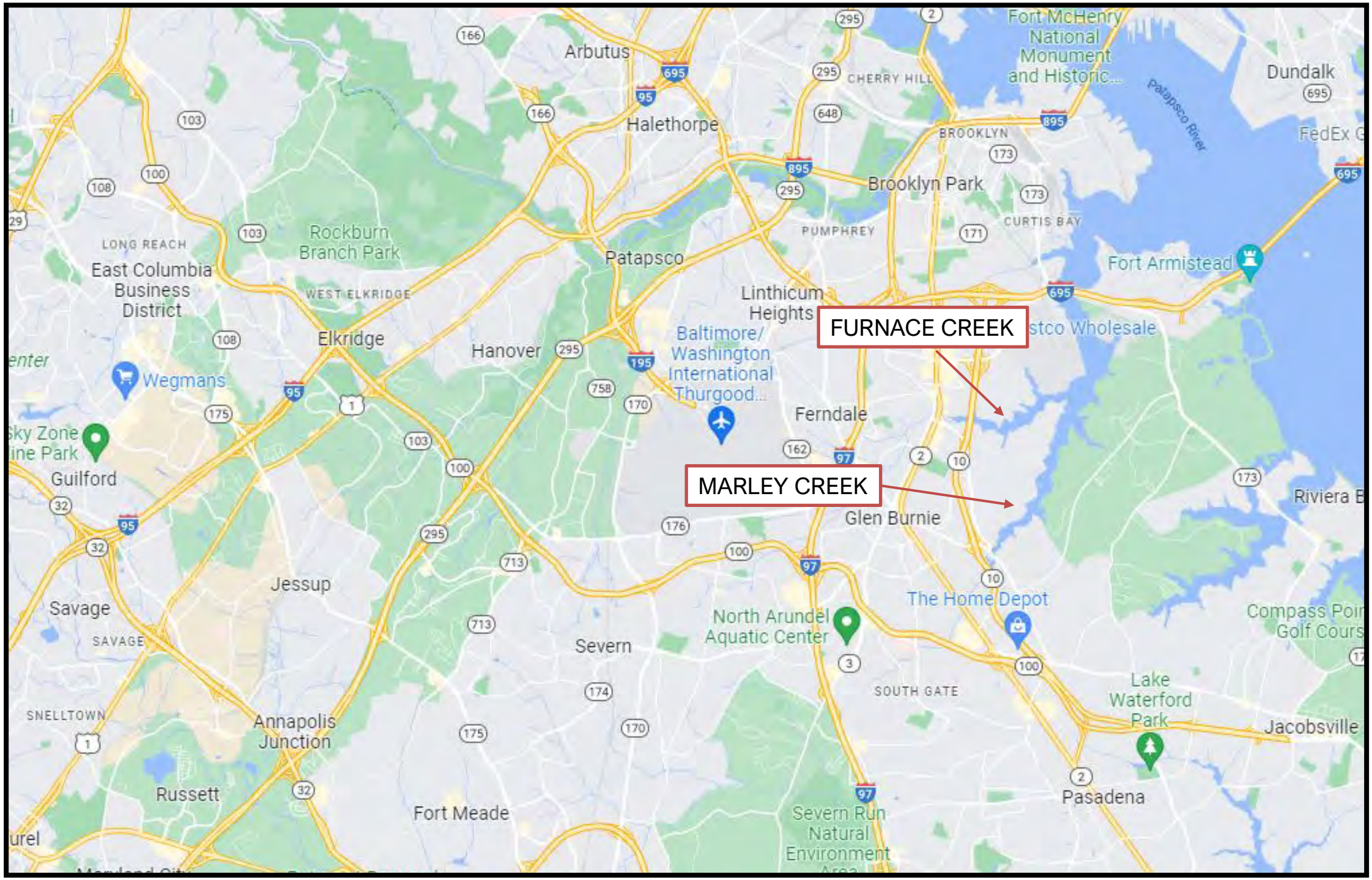

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FIGURE A-1
GENERAL LOCATION MAP
Marley and Furnace Creeks
Anne Arundel County, Maryland

AECOM

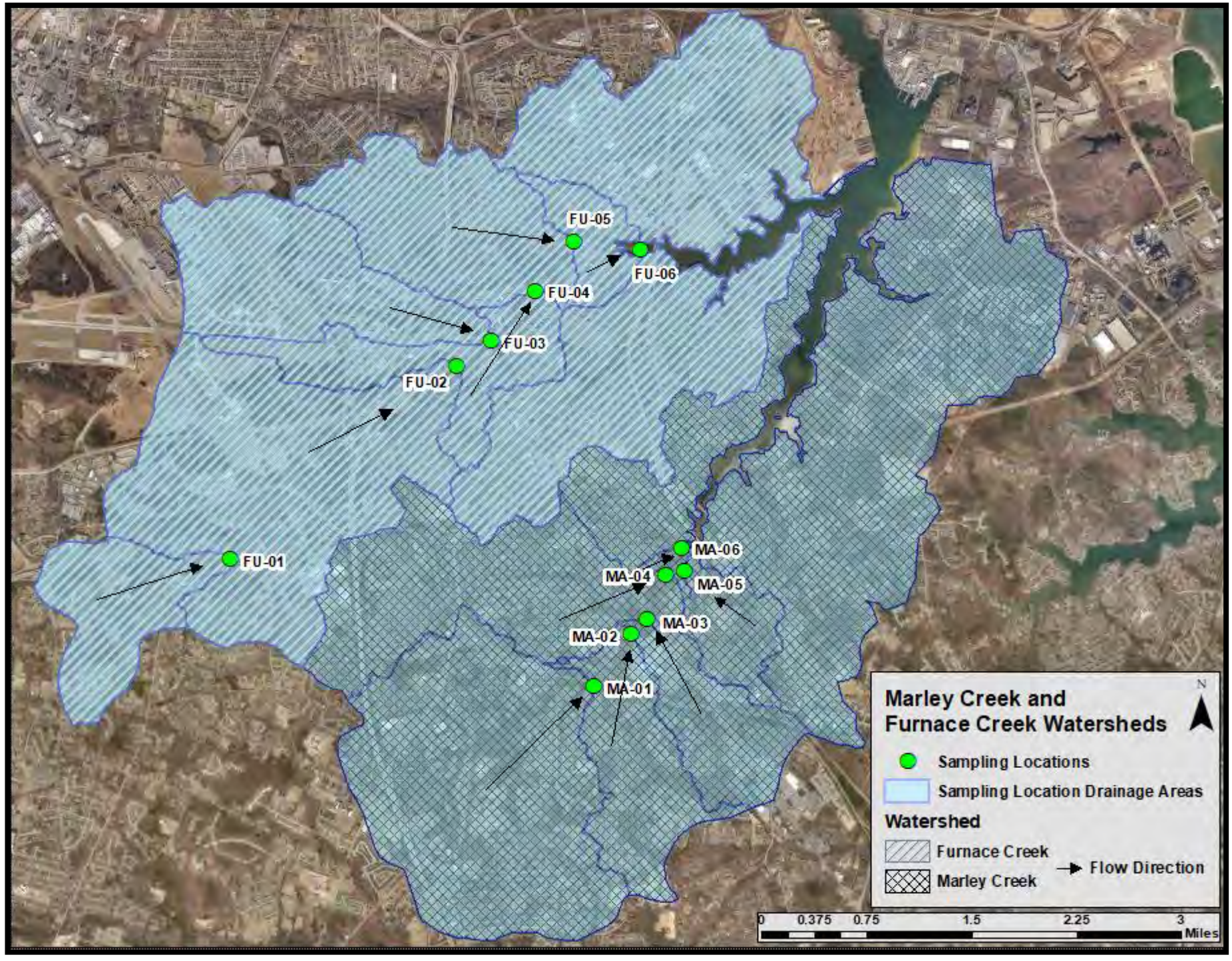

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FIGURE A-2
SAMPLING LOCATIONS AND WATERSHED MAP
Marley and Furnace Creeks
Anne Arundel County, Maryland

AECOM

FIGURE A-3
FU-01 SAMPLING LOCATION
Furnace Creek
Anne Arundel County, Maryland

AECOM

FIGURE A-4
FU-02 SAMPLING LOCATION
Furnace Creek
Anne Arundel County, Maryland

FIGURE A-5
FU-03 SAMPLING LOCATION
Furnace Creek
Anne Arundel County, Maryland

AECOM

FIGURE A-6
FU-04 SAMPLING LOCATION
Furnace Creek
Anne Arundel County, Maryland

AECOM

FIGURE A-7
FU-05 SAMPLING LOCATION
Furnace Creek
Anne Arundel County, Maryland

FIGURE A-8
FU-06 SAMPLING LOCATION
Furnace Creek
Anne Arundel County, Maryland

AECOM

FIGURE A-9
MA-01 SAMPLING LOCATION
Marley Creek
Anne Arundel County, Maryland

AECOM

FIGURE A-10
MA-02 SAMPLING LOCATION
Marley Creek
Anne Arundel County, Maryland

FIGURE A-11
MA-03 SAMPLING LOCATION
Marley Creek
Anne Arundel County, Maryland

FIGURE A-12
MA-04 SAMPLING LOCATION
Marley Creek
Anne Arundel County, Maryland

AECOM

FIGURE A-13
MA-05 SAMPLING LOCATION
Marley Creek
Anne Arundel County, Maryland

AECOM

FIGURE A-14
MA-06 SAMPLING LOCATION
Marley Creek
Anne Arundel County, Maryland

AECOM

Appendix B
Field Data

Anne Arundel County Bacteria Monitoring

FIELD MEASUREMENTS GUIDE

When taking field measurements with the YSI probe, compare the readings to the ranges on the table below. If the readings fall outside of these ranges do the following:

1. Confirm correct units are being used.
2. Take a second confirmatory reading (see information on Page 2 regarding dissolved oxygen readings).
3. If reading is still unreasonable/out of range, recalibrate probe for out of range parameter (see calibration procedures on Page 2 for dissolved oxygen).
4. Retake readings.

ALWAYS take photos of the readings on the screen for later confirmation, if needed.

Parameter	Units	MD Water Quality Standard[1]	Expected Range
Temperature	°C	≤ 32	3 - 18 (Nov-Mar); 10 - 26 (Apr-Oct)
Dissolved Oxygen	mg/L	≥ 5	5 - <16
Specific Conductivity	µS/cm	No standard	50 – 1,500[3]
Turbidity	NTUs	See note 2	0 – 100[4]
pH	SU	6.5 – 8.5	6.0 – 8.5

1. MD water quality standard for Class I Waters (COMAR 26.08.02.03-3A)

2. (a) Turbidity may not exceed levels detrimental to aquatic life. (b) Turbidity in the surface water resulting from any discharge may not exceed 150 units at any time or 50 units as a monthly average. Units shall be measured in Nephelometer Turbidity Units.
3. The conductivity of rivers in the United States generally ranges from 50 to 1500 µSs/cm. https://archive.epa.gov/water/archive/web/html/vms59.html

   The Maryland Biological Stream Survey has established of levels below <247 mS/cm as optimal for macroinvertebrates health and below <171 mS/cm as optimal for fish health. https://dnr.maryland.gov/pgc/Documents/Conductivity.pdf

   Based on data obtained by the County the following spikes have been recorded:

   Site FU-02: The tributary that joins the mainstem near this site routinely has SPC levels in the 1000-5000 range.

   Site FU-03: Typically between 100 and 500 throughout the year, though they have recorded spikes up to 2500 in the winter.

   Site FU-04: Typically between 200 and 400, though late winter/early spring levels can reach 800. They have recorded spikes of up to 1800.

   Site FU-05: Typically between 200 and 400, though late winter/early spring levels can reach 900. They have recorded spikes of up to 2000.

4. Reading should correlate with visual observation (i.e. turbid/muddy water should have higher reading; clear water should have low reading).

Calibration Procedures for Dissolved Oxygen

1.) If field reading is suspected to be high, first try to clean and reposition the probe. Sometimes air bubbles/debris can get in the way of accurate readings.

2.) If readings still seem high, perform field calibration as follows:

   a. Calibrate DO for 100% saturation.

   b. Place 1/8 inch of water into the calibration container (the water should not touch any of the sensors when the probe is placed in the container). This water will create a humid environment.

   c. Loosely close the container on the probe (should not be tightly closed – you do not want to cut off air flow).

   d. Wait for numbers to settle.

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 7/14/2021 **Time:** 1130

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 91 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.22 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.24 feet ____ High ____ Low _X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear, fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-14-2021, 1140	20.7	8.16	0.200	2.05	7.14	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-20210714 **Time Collected:** 1140

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 7/14/2021 **Time:** 1100

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 89 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.95 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.31 feet __X__ High ____ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. Construction activities at adjacent outfall.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-14-2021, 1030	19.7	8.62	0.320	2.64	7.04	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU02-20210714 **Time Collected:** 1110

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 7/14/2021 **Time:** 1035

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.17152** **(Lat.)** **-76.62697** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 89 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.22 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.34 feet __X__ High ____ Low ___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear, fast moving water. Overgrown vegetation surrounding stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-14-2021, 1030	20.4	8.46	0.448	5.14	6.83	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU03-20210714** **Time Collected:** 1045

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 7/14/2021 **Time:** 0955

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 84 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.22 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.32 feet __X__ High ____Low __ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear and fast-moving water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-14-2021, 0830	20.5	8.57	0.376	3.80	7.33	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-20210714** **Time Collected:** 1005

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 7/14/2021 **Time:** 0925

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 84 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.49 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.26 feet __X__ High ____Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. Dragonflies and other insects were observed on water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-14-2021, 0830	19.5	8.42	0.364	4.11	7.15	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-20210714** **Time Collected:** 0935

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 7/14/2021 **Time:** 0900

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 82 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.49 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.18 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is slow flowing, and levels are high. Transient encampments visible across channel. Sheen on surface of water with floating and suspended particles.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-14-2021, 0830	26.2	1.37	7.498	14.39	6.56	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-20210714** **Time Collected:** 0907

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 7/15/2021 **Time:** 1010

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.13693** **(Lat.)** **-76.61356** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 83 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.49 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.86 feet __X_ High ____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast-moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-15-2021, 0750	19.7	8.29	0.349	2.80	7.11	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA01-20210715** **Time Collected:** 1020

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 7/15/2021 **Time:** 0945

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.14233** **(Lat.)** **-76.60846** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 81 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.49 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.75 feet ___ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is slow-moving and clear. Debris observed in stream. Bullfrogs present in stream area. Transient encampments observed upstream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-15-2021, 0750	20.2	4.11	0.356	5.52	7.29	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA02-20210715** **Time Collected:** 0950

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 7/15/2021 **Time:** 0925

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.14378** **(Lat.)** **-76.60640** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 79 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.49 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.67 feet ____ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow-moving. Tadpoles observed in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-15-2021, 0750	20.3	5.29	0.389	4.62	7.27	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-20210715 **Time Collected:** 0930

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 7/15/2021 **Time:** 0900

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.22 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.57 feet ____ High _____Low _X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is still and murky. Strong rotting odor.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-15-2021, 0750	21.1	3.21	0.405	10.82	7.32	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-20210715 **Time Collected:** 0910

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 7/15/2021 **Time:** 0830

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.14882** **(Lat.)** **-76.60143** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.22 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.42 feet ____ High _____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Trash and debris observed in stream. Stream is slow-moving and some particles and foam on the surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-15-2021, 0750	23.3	6.56	0.456	6.87	7.38	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA05-20210715** **Time Collected:** 0845

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID MADP-20210715 Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 7/15/2021 **Time:** 0821

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.15116** **(Lat.)** **-76.60172** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 75 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.22 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.34 feet ____ High ____ Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is murky and slow-moving. Cattails are visible on the opposite of the stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46868, 49337	7-15-2021, 0750	23.4	1.39	3.365	15.10	6.22	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-20210715 **Time Collected:** 0821

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

	pH Standard							Bump	
	Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH	Temp (oC)	Date & Time	Result
8:30	7/14/21	SS	4	1GC758	3.88	4.0	23.8	1020	4.06
8:30	7/14/21	SS	7	1GC1089	6.93	7.0	24.0	1023	7.01
8:30	7/14/21	SS	10	9GL648	10.0	10.0	24.0	1025	10.08
RECAL	1026	SS	4	↓	4.11	4.0		11:51	4.18
↓	1028	SS	7	↓	6.94	7.0		11:54	7.00
	1030	SS	10	↓	9.99	10.0		11:56	10.05

	Conductivity							Bump	
	Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal	Temp (oC)	Date & Time	Result
	7/14/21	SS	4.49 ~~1.413~~	21100214	~~4.50~~ 4.54	4.49		11:58	4.570
RECAL	1031	SS	4.49	↓	4.57	4.44			~~0.~~

			Turbidity			Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
7/14/21	SS	0	21100214	-0.40	0		11:59	-0.04
7/14/21	SS	126	21A2049005	131.93	126		1159	122.09
1035	SS	0	↓	0.05	0			
1038	SS	126.0	↓	122.80	126			

Model: Sonde: 46868 meter: 49337
Rental ID: ~~DTO~~ DSS

Calibration Location: FU06
RECAL FU03
BUMP @ ~~1020 @ FU03~~ BUMP @ FU01

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: RECALIBRATED @ FU-03 @ 1030 DUE TO pH SLOW STABILIZATION.

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

	pH Standard						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH 4.00	Cal pH		Date & Time	Result
7:50	7/15/21	SS	4	1GC758	~~4.15~~	4.0	23.6	1028	4.08
	7/15/21	SS	7	1GC1089	6.95	7.0		1032	6.98
	7/15/21	SS	10	9GL648	10.30	10.0		1035	9.94

	Conductivity						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
8:00	7/15/21	SS	1.413	21100214	4.558	4.490		1037	4.499

	Turbidity						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
8:05	7/15/21	SS	0	21100214	-0.02	0.00		1037	1.00
	7/15/21	SS	126	21120490054	123.40	126		1039	125.86

Model: 49337 - meter, 46368 - sonde

Rental ID: _____

Calibration Location: MA06

BUMP @ MA01

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: ~~no~~ Conditions and equipment remained stable.

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 8/11/2021 **Time:** 0943

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** **39.15013 (Lat.) -76.66172 (Long.)**

Weather Conditions:

Ambient Air Temperature: 81 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.08 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.01 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.46 feet X High ____ Low __ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear, fast moving. Frogs observed in water. Cattails and other vegetation are overgrown.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-11-2021, 0730	18.9	7.86	0.197	1.79	6.38	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU01-08112021** **Time Collected:** 0952

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 8/11/2021 **Time:** 0917

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.08 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.01 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.48 feet __X__ High ____ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. Minnows observed in stream. Outfall has been newly repaired; there is ground stabilization on recently disturbed stream bank including grass, seed, and netting.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-11-2021, 0730	18.5	8.81	0.326	3.10	6.73	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU02-08112021 **Time Collected:** 0925

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 8/11/2021 **Time:** 0857

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** **39.17152** **(Lat.)** **-76.62697** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 75 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.08 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.01 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.48 feet __X__ High ____ Low ___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear, fast moving water. Overgrown vegetation surrounding stream. Insects observed in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-11-2021, 0730	20.2	8.32	0.382	5.54	7.06	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU03-08112021** **Time Collected:** 0908

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 8/11/2021 **Time:** 0827

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.08 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.01 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.42 feet __X__ High ____Low __ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear and fast-moving water. Overgrown vegetation along streambank.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-11-2021, 0730	19.3	8.47	0.363	5.99	7.01	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-08112021** **Time Collected:** 0839

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID **FUDP-08112021** Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 8/11/2021 **Time:** 0807

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.08 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.01 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.37 feet __X__ High ____Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. Debris suspended in water and floating on the surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-11-2021, 0730	19.2	8.49	0.343	6.70	6.89	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-08112021** **Time Collected:** 0819

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 8/11/2021 **Time:** 0746

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.08 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.01 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.3 feet __X__ High ____Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high; water is slow moving. Moderately turbid. Transient encampments visible along the path to the sampling point and across channel.

Heavy vegetation along site.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-11-2021, 0730	24.6	1.89	4.160	13.90	6.40	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-08112021** **Time Collected:** 0755

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 8/12/2021 **Time:** 0941

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 81 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.50 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.92 feet __X_ High ____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast-moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-12-2021, 0745	20.5	7.63	0.297	5.71	6.75	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-08122021 **Time Collected:** 0948

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 8/12/2021 **Time:** 0912

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.14233 **(Lat.)** -76.60846 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.50 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.92 feet __X__ High ____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high and slow moving. Partial visibility and murky. Transient encampments observed upstream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-12-2021, 0745	21.4	7.02	0.261	23.81	6.90	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA02-08122021 **Time Collected:** 0921

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 8/12/2021 **Time:** 0847

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.14378 **(Lat.)** -76.60640 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 75 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.50 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.83 feet __X__ High ____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is slow moving and cloudy. Partial visibility in water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-12-2021, 0745	21.7	7.49	0.264	24.80	7.09	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-08112021 **Time Collected:** 0856

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 8/12/2021 **Time:** 0826

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.50 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.74 feet __X__ High _____Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is slow moving to still. Almost no visibility.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-12-2021, 0745	22.6	5.58	0.246	34.90	7.05	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-08112021 **Time Collected:** 0832

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 8/12/2021 **Time:** 0813

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.14882 **(Lat.)** -76.60143 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.50 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.66 feet __X__ High _____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear and moderate flow. Foam forming on the surface. Trash and debris settled on the streambed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-12-2021, 0745	24.3	6.60	0.311	8.10	7.27	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA05-08122021 **Time Collected:** 0819

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 8/12/2021 **Time:** 0800

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.50 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.58 feet __X__ High ____ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high. Low visibility in water. Sheen (organic and non-organic mix) seen on surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI Pro DSS #46389, 039238	8-12-2021, 0745	23.6	3.31	0.271	44.65	6.52	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-08122021 **Time Collected:** 0804

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

8/11/21

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
0720	GD	4	0GJ264	4.10	4.00		1000	4.09
0723	GD	7	0GJ538	7.13	7.00		1004	7.14
0726	GD	10	9GL648	10.06	10.00		1005	10.06

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0729	GD	1.413	0GL235	1.401	1.413		1007	1.485

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0735	GD	0	21100214	-0.19	0.00		1009	-0.15
0739	GD	126	20M2047023	123.4	126.0			129.10

Model: YSI ProDSS Serial 46389
Rental ID: METER: 039238

Calibration Location: FU-06, CLEAR & SUNNY
Bump @ FU-01, CLEAR & SUNNY - JP

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

8/12/21

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
0741 ~~0730~~	JP	4	OG5264	~~3.96~~ 4.12	4.00		0955	4.04
0742 ~~0734~~	JP	7	OG5538	~~6.97~~ 6.97	7.00		0956	7.01
0743 ~~0737~~	JP	10	AG6648	~~9.97~~	10.00		0957	10.03

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0745 ~~0738~~	JP	1.413	OG235	1.544	1.413		0959	1.516

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
~~0746~~ 0746	JP	0	21100214	0.46	0.00	1004	~~0950~~	-0.20
0749	JP	126	20120420	122.54	126.0	~~1004~~ 1004		126.90

Model: YSI PRO DSS #46389
Rental ID: 403238

Calibration Location: @ MA06, CLEAR + SUNNY
BUMP @ MA01, CLEAR + SUNNY

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: INITIAL PH CAL FAILED @ 0737. RECAL.

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 9/08/2021 **Time:** 1041

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 79 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.55 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.34 feet ____ High ____ Low _X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is overgrown with vegetation. Very marsh-like environment. Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-5000 Horiba #047397, 47398	9-08-2021, 0830	19.87	6.80	0.201	2.2	6.75	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-210908 **Time Collected:** 1049

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 9/08/2021 **Time:** 1016

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.55 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.46 feet ____ High ____ Low _X___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Ground stabilization near site has broken in parts. Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-5000 Horiba #047397, 47398	9-08-2021, 0830	19.72	7.78	0.328	1.5	6.88	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU02-210908 **Time Collected:** 1024

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 9/08/2021 **Time:** 0949

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.17152 **(Lat.)** -76.62697 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.55 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.59 feet ____ High ____ Low __X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear, fast moving water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-5000 Horiba #047397, 47398	9-08-2021, 0830	20.24	8.19	0.476	3.2	6.48	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU03-210908 **Time Collected:** 1001

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 9/08/2021 **Time:** 0938

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.17770 **(Lat.)** -76.62106 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.55 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.65 feet ____ High ____Low _X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear and fast-moving water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-5000 Horiba #047397, 47398	9-08-2021, 0830	19.94	8.64	0.392	1.5	6.41	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU04-210908 **Time Collected:** 0940

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 9/08/2021 **Time:** 0919

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.55 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.71 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-5000 Horiba #047397, 47398	9-08-2021, 0830	19.69	8.54	0.375	0.7	6.19	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-210908** **Time Collected:** 0924

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 9/08/2021 **Time:** 0847

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 72 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.55 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.78 feet __X__ High ____Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high; moderate flow; overgrown vegetation throughout site; aquatic vegetation growing in water; minnows observed; dark and murky water; transient encampment spotted along bank and across channel.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-5000 Horiba #047397, 47398	9-08-2021, 0830	23.70	5.69	4.15	9.5	6.28	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-210908** **Time Collected:** 0858

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 9/09/2021 **Time:** 1109

Field Personnel: John Pellegrino and Agrima Poudel **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 70 °F Weather: Cloudy and slight drizzle

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.12 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.83 feet ___ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and high. Trash observed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-500 Horiba #047397, 47398	9-09-2021, 0902	20.79	7.10	0.379	1.0	6.52	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-20210909 **Time Collected:** 1114

QA/QC samples: Duplicate Sample (Yes/No) 1108 Sample ID MADP-20210909 Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 9/09/2021 **Time:** 1032

Field Personnel: John Pellegrino and Agrima Poudel **GPS Coordinates:** **39.14233** **(Lat.)** **-76.60846** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 70 °F Weather: Raining

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.12 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.97 feet ___ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high. Water is slightly turbid. Some trash observed leading to sampling location. Possible transient encampment upstream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-500 Horiba #047397, 47398	9-09-2021, 0902	21.29	6.74	0.394	4.0	6.28	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA02-20210909** **Time Collected:** 1044

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 9/09/2021 **Time:** 1014

Field Personnel: John Pellegrino and Grace Dai **GPS Coordinates:** 39.14378 **(Lat.)** -76.60640 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 70 °F Weather: Drizzle

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.12 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.05 feet ____ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Raining during sampling. Water level is high. Stream is mostly clear. Trash observed in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-500 Horiba #047397, 47398	9-09-2021, 0902	21.43	7.26	0.426	3.5	6.11	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-20210909 **Time Collected:** 1023

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 9/09/2021 **Time:** 0954

Field Personnel: John Pellegrino and Agrima Poudel **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 70 °F Weather: Rain.

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.12 inches Type: __X_ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.18 feet ____ High _____Low _X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Trash observed leading to sampling location. Water level is high and water is slightly turbid.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-500 Horiba #047397, 47398	9-09-2021, 1005	22.38	5.33	0.402	6.8	6.79	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-20210909 **Time Collected:** 0957

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 9/09/2021 **Time:** 0933

Field Personnel: John Pellegrino and Agrima Poudel **GPS Coordinates:** **39.14882** **(Lat.)** **-76.60143** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 70 °F Weather: Drizzle

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.12 inches Type: ___X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.29 feet __X__ High _____Low _____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Trash observed around stream. Water is clear and low. Minnows observed in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-500 Horiba #047397, 47398	9-09-2021, 1005	23.48	5.90	0.390	3.5	6.96	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA05-20210909** **Time Collected:** 0941

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 9/09/2021 **Time:** 0909

Field Personnel: John Pellegrino and Agrima Poudel **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 70 °F Weather: Mostly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.12 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.84 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.40 feet __X__ High ____ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high; a lot of trash and debris on site; vegetation obstructing sampling location; birds observed at sampling location; slightly turbid. Sampled close to shore due to high water level; specific conductivity was higher closer to shore; moved slightly toward channel center and specific conductivity was lower.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
U-500 Horiba #047397, 47398	9-09-2021, 1005	24.60	1.72	5.45	15.1	6.11	N/A
				4.9			

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-20210909 **Time Collected:** 0921

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) MABLK-20210909 at 0908

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

9/8

pH Standard							Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH	Temp (oC)	Date & Time	Result
0830	JP	4 4	21100214	3.86	3.99		0905	4.01
0832	JP	4 7 10		3.89	3.96			
[illegible]	JP	4					1100	4.04

Conductivity							Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal	Temp (oC)	Date & Time	Result
0830	JP 4.49	1.413	21100214	4.90	4.51		0905	4.39
0832	JP	4.49		5.01	4.49			
	JP	4.49					1100	4.31

Turbidity							Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal	Temp (oC)	Date & Time	Result
0830	JP	0	21100214	0.1	0.1		0905	0.5
0832	JP	0 126		0.2	0.0			
	JP	0					1100	0.5

Model: U-5000 Horiba Pace

Calibration Location: Glen Burnie, MD

Rental ID:

Pine Horiba: 047397
Meter: 047398

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: Bump Test conducted after sample collection @ FU-06. (0905 AM)

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time 9/9/21	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time 9/9/21	Result
902	JP	4	21100214	4.17	4.0			
1005	JP	4 ~~7~~	↓	4.03	~~4.00~~ 3.99		1123	3.95
		4 ~~10~~	↓					

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
902	JP 4.49 ~~1.413~~		21100214	4.39	4.49			
1005	JP	4.49		4.78	4.50		1123	4.38

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
902	JP	0	21100214	1.7	0			
1005	JP	0 ~~126~~		0.4	0		1123	1.4

Model: U-500 Horiba
Rental ID: Pine Horiba: 047397
Meter: 47398

Calibration Location: MA-06
Glen Burnie.

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: 1005 calibration @ MA-04
BUMP @ MA-01

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 10/13/2021 **Time:** 1055

Field Personnel: John Pellegrino and Aren Warner **GPS Coordinates:** 39.15013 (Lat.) -76.66172 (Long.)

Weather Conditions:

Ambient Air Temperature: 68 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.02 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.07 feet ____ High ____ Low X Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-13-2021, 0830	17.6	7.71	0.153	0.79	6.27	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-211013 **Time Collected:** 1100

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 10/13/2021 **Time:** 1027

Field Personnel: John Pellegrino and Aren Warner **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 68 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.02 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.98 feet ____ High ____ Low _X___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-13-2021, 0830	17.2	8.78	0.299	3.46	6.30	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU02-211013 **Time Collected:** 1030

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID FUDP-211013 Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 10/13/2021 **Time:** 1004

Field Personnel: John Pellegrino and Aren Warner **GPS Coordinates:** 39.17152 **(Lat.)** -76.62697 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.02 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.93 feet ____ High ____ Low __X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear, fast moving water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-13-2021, 0830	17.6	8.89	0.458	0.84	6.38	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU03-211013 **Time Collected:** 1010

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 10/13/2021 **Time:** 0948

Field Personnel: John Pellegrino and Aren Warner **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 68 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.02 inches Type: __X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.84 feet ____ High ____Low _X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Fast-moving water with foam on the stream's surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-13-2021, 0830	17.6	9.01	0.360	3.23	6.27	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-211013** **Time Collected:** 0950

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 10/13/2021 **Time:** 0926

Field Personnel: John Pellegrino and Aren Warner **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 68 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.02 inches Type: __X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.79 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-13-2021, 0830	17.3	8.90	0.342	2.02	6.38	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-211013** **Time Collected:** 0930

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 10/13/2021 **Time:** 0900

Field Personnel: John Pellegrino and Aren Warner **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 68 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.02 inches Type: __X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.76 feet ____ High __X__Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high; slow moving; transient encampment spotted along bank and across channel.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-13-2021, 0830	19.0	6.86	1.635	1.60	7.14	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-211013** **Time Collected:** 0910

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 10/14/2021 **Time:** 1035

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 65 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.01 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.48 feet ___ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-14-2021, 0830	16.7	8.67	0.308	1.39	6.84	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-20211014 **Time Collected:** 1035

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 10/14/2021 **Time:** 0955

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14233 **(Lat.)** -76.60846 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 65 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.01 inches Type: __X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.43 feet ___ High __X__Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-14-2021, 0830	17.0	8.50	0.301	3.61	6.94	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA02-20211014 **Time Collected:** 0955

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 10/14/2021 **Time:** 0935

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14378 **(Lat.)** -76.60640 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 65 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.01 inches Type: __X___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.44 feet ____ High __X__Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Slow moving water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-14-2021, 0830	17.1	8.74	0.323	3.15	6.84	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-20211014 **Time Collected:** 0935

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 10/14/2021 **Time:** 0915

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 64 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.01 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.47 feet ____ High __X__ Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is slow moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-14-2021, 0830	17.7	5.45	0.313	8.10	6.54	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-20211014 **Time Collected:** 0915

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 10/14/2021 **Time:** 0900

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14882 **(Lat.)** -76.60143 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 62 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.01 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.59 feet ____ High _____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and some accumulation of trash; slight odor.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-14-2021, 0830	18.3	7.59	0.322	3.25	6.80	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA05-20211014 **Time Collected:** 0900

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 10/14/2021 **Time:** 0840

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 62 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.01 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.54 feet ___ High ____ Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high; odor from Marley Station; water is still.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Pro-DSS #46868, Meter #49337	10-14-2021, 0830	17.9	5.54	0.872	4.54	7.29	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-20211014 **Time Collected:** 0840

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
0830	JP, AW	4	16B396	3.97	4.0		0955	3.99
0830	↓	7	16D151	7.01	7.00		↓	7.00
0830	↓	10	16C1067	10.25	10.00		↓	10.08
		4					1110	3.89
		7					↓	7.01
		10					↓	10.12

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0830	JP, AW	1.413	3198	1.571	1.413		1110	1.317

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0830	JP, AW	0	DI	0.60	0.0		0955	0.5
0830	↓	126	20M2047083	124.50	126.0		0955	124.9
		0					1100	-0.9
		126					1110	121.7

Model: PRO DSS

Rental ID: PLNR: SONDE: 46868
METER: 49337

Calibration Location: FU06, CLOCK
BUMP FU01

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

	pH Standard						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
0820	10/14	S+/JP	4	16B896	4.12	4.0		1100	3.99
0825	10/14	S+/JP	7	16D151	6.92	7.0		1100	7.04
0827	10/14	S+/JP	10	16C1067	9.95	10.0		1100	10.02

	Conductivity						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0830	10/14	S+/JP	1.413	31986	1.519	1.413		1100	1.416

	Turbidity						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0831	10/14	S+/JP	0	DI water	0.50	0		1100	-0.31
0832	10/14	S+/JP	126	20120723	124.9	126		1100	124.21

Model: ProDSS
Rental ID: pIDE 46868
meter: 49337

Calibration Location: Marley Station
Bump @ MA01

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 11/10/2021 **Time:** 1050

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 66 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.77 feet __X__ High ____ Low __ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-10-2021, 0845	12.95	8.10	0.153	1.9	7.06	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-211110 **Time Collected:** 1055

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 11/10/2021 **Time:** 1025

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 66 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.75 feet __X__ High ____ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and steady moving. Leaf litter on surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-10-2021, 0845	12.84	9.42	0.245	0.9	7.20	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU02-211110 **Time Collected:** 1030

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 11/10/2021 **Time:** 1013

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** 39.17152 **(Lat.)** -76.62697 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 66 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.74 feet __X__ High ____ Low ___ _ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and steady moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-10-2021, 0845	14.3	9.25	0.377	1.9	6.73	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU03-211110 **Time Collected:** 1015

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 11/10/2021 **Time:** 0955

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.73 feet ____ High ____Low _X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. Some foam present on surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-10-2021, 0845	12.85	10.45	0.294	3.2	6.78	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-211110** **Time Collected:** 1000

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 11/10/2021 **Time:** 0922

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.67 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and steady moving. Leaf litter present on surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-10-2021, 0845	12.94	12.08	0.284	2.4	6.94	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-211110** **Time Collected:** 0925

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 11/10/2021 **Time:** 0900

Field Personnel: John Pellegrino and Stephen Smith **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.60 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and steady moving. Some suspended solids and minor leaf litter. Possible transient encampment along hill and on opposite bank.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-10-2021, 0845	13.21	10.14	2.26	8.9	6.11	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-211013** **Time Collected:** 0910

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 11/11/2021 **Time:** 1030

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 55 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.6 feet ___ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-11-2021, 0830	12.08	8.78	0.275	0.5	7.21	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-211111 **Time Collected:** 1035

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 11/11/2021 **Time:** 1000

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14233 **(Lat.)** -76.60846 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 55 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.51 feet ___ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and steady moving. Leaf debris is present on the surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-11-2021, 0830	11.7	11.54	0.267	1.5	7.22	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA02-211111 **Time Collected:** 1000

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 11/11/2021 **Time:** 0945

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14378 **(Lat.)** -76.60640 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 55 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.43 feet ____ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving. Trash and leaf debris present in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-11-2021, 0830	11.84	10.86	0.286	0.8	7.21	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-211111 **Time Collected:** 0945

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 11/11/2021 **Time:** 0930

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 55 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.33 feet ____ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving. Leaf debris present on surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-11-2021, 0830	11.63	6.90	0.283	4.1	7.01	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-211111 **Time Collected:** 0930

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 11/11/2021 **Time:** 0915

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.14882 **(Lat.)** -76.60143 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 55 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.27 feet ____ High _____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving; stream is covered in leaf litter and trash.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-11-2021, 0830	11.84	7.19	0.265	2.0	7.28	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA05-211111 **Time Collected:** 0915

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID MADP-211111 Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 11/11/2021 **Time:** 0845

Field Personnel: John Pellegrino and Sara Tolnay **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 55 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.14 feet ___ High ____ Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high; fecal odor from Marley Station; water is still. Some suspended sediment in water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
Horiba U-52/U-5000 #045448	11-11-2021, 0830	12.68	11.83	3.62	9.0	6.55	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-211014 **Time Collected:** 0850

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

11/10/21

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
0845	JP	4	21300202	3.99	4.00		1000	4.01
~~↓~~	~~↓~~	~~7~~					1110	3.99
~~↓~~	~~↓~~	~~10~~						

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0845	JP 4.49	~~1.413~~	21300202	4.49	4.49		1000	4.40
							1110	4.57

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0845	JP	0	21300202	0.0	0.0		1000	0.2
~~↓~~		~~126~~					1110	0.0

Model: HORIBA U-52/U-5000
Rental ID: RING #045448

Calibration Location: @ FUOG, CLEAR SUNNY
BUMP @ FUOG
BUMP @ FUOG

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: AUTOCAL SOLUTION

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
11/11/21 0830	SP	4	21300202	~~4.00~~ 4.09	~~4.00~~ 3.99		0930	4.00
		~~7~~ 7					1100	4.08
		~~10~~						

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0830	SP 4.49	~~1.413~~ 1.413	21300202	4.56	4.49		0930	4.49
							1100	4.49

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0830	SP	0	21300202	2.0	0.0		0930	-0.1
		~~126~~				1100	~~0930~~	0.5

Model: Horiba U-52/U-5000
Rental ID: ANE# 045448

Calibration Location: MA-06, Clear & Sunny
Bump @ MA04
Bump @ MA01

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: ~~[illegible]~~ AUTOCAL SOLUTION FOR HORIBA

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 12/08/2021 **Time:** 1142

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 39 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.61 feet ____ High ____ Low _X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. A lot of birds observed around sampling location. Trash observed near sampling location.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/8/2021 @ 0925	8.0	10.74	0.192	5.51	6.83	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-211208 **Time Collected:** 1147

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 12/08/2021 **Time:** 1115

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.16994** **(Lat.)** **-76.63152** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 39 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.72 feet __X__ High ____ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast flowing. Petroleum sheen observed making its way towards sampling location. Iron flocculation observed in stream bed. Some bacterial sheen observed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/8/2021 @ 0925	8.6	10.80	0.291	0.80	6.85	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU02-211208** **Time Collected:** 1121

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 12/08/2021 **Time:** 1053

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.17152 **(Lat.)** -76.62697 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 39 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.8 feet __X__ High ____ Low ___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast flowing. Abandoned ladder upstream. Trash observed in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/8/2021 @ 0925	9.7	10.40	0.467	0.21	6.74	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU03-211208 **Time Collected:** 1100

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 12/08/2021 **Time:** 1036

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 39 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.88 feet __X__ High ____Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. A lot of trash and an old mattress observed in drainage ditch that leads to sampling location. Abandoned shopping cart observed upstream of sampling location.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/8/2021 @ 0925	8.2	11.28	0.350	2.21	6.55	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-211208** **Time Collected:** 1041

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 12/08/2021 **Time:** 1021

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 39 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.9 feet __X__ High ____Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast flowing. A lot of leaf litter observed in the stream and a lot of trash observed en route to the outfall. Used tire observed downstream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/8/2021 @ 0925	8.8	11.01	0.329	1.28	6.58	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-211208** **Time Collected:** 1026

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 12/08/2021 **Time:** 0951

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 39 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.92 feet __X__ High ____Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Transient encampments observed en route to sampling location. Water is moderately flowing. Some trash observed en route to sampling location. Water is very clear and fast flowing.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/8/2021 @ 0925	8.3	10.47	0.811	1.40	5.75	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-211208** **Time Collected:** 1002

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 12/09/2021 **Time:** 1200

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 43 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.73 feet __X_ High ____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast flowing. A lot leaf litter observed in the stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/9/2021 @ 0905	7.1	11.27	0.353	1.99	6.96	N/A
			11.22				

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-211209 **Time Collected:** 1209

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 12/09/2021 **Time:** 1126

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.14233** **(Lat.)** **-76.60846** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 40 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.76 feet __X_ High ____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast flowing. A lot of leaves/debris on the stream bed. Probe showed negative turbidity where significant leaf litter present.

Moved probe around to get second D.O. and turbidity readings.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/9/2021 @ 0905	6.1	11.51	0.344	-1.6	7.16	N/A
			11.47		5.00		

BACTERIA SAMPLE COLLECTION

Sample ID: **MA02-211209** **Time Collected:** 1140

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 12/09/2021 **Time:** 1037

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.14378 **(Lat.)** -76.60640 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 39 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.15 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.74 feet __X__ High ____Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Lots of trash en route to and at sampling location. Stream is clear and fast-flowing.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/9/2021 @ 0905	6.2	11.75	0.363	8.90	7.15	N/A
			11.60				

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-211209 **Time Collected:** 1046

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 12/09/2021 **Time:** 1009

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 37 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.40 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.73 feet __X__ High ____Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Ice and sheen observed on top of stream. Lots of trash observed in and around stream. Water is stagnant. Iron flocculation seen on streambed.

Water is very turbid.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/9/2021 @ 0905	4.8	2.65	0.461	26.97	6.83	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-211209 **Time Collected:** 1020

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 12/09/2021 **Time:** 0949

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.14882 **(Lat.)** -76.60143 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 36 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.15 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.68 feet __X__ High _____Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Stream is covered in leaves and debris. Water level is higher compared to previous sampling events. Flow level is moderate. Took turbidity reading twice – first reading was erroneous. Bacterial sheen on top of stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/9/2021 @ 0905	5.1	9.85	0.415	-1.17	7.15	N/A
					1.01		

BACTERIA SAMPLE COLLECTION

Sample ID: MA05-211209 **Time Collected:** 0959

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID **MADP-211209** Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 12/09/2021 **Time:** 0920

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 33 °F Weather: partly cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.15 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.62 feet _X__ High ____ Low _____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is moderately flowing. Some trash observed near sampling location. Water is clear with some leaf debris observed. A second probe reading was taken to confirm specific conductivity value.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337, 49868	12/9/2021 @ 0905	8.6	5.29	8.048	3.21	6.18	N/A
		7.9	6.23	6.556	1.40	6.49	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-211209 **Time Collected:** 0934

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID **MABLK-211209** collected @0915 Field Blank (Yes/No) Yes

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

1218

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
12/8 ~~0905~~	A. Poudel	4	1GC1084	4.09	4.0		1200	4.12
12/8 ~~0900~~	A. Poudel	7	1GD151	7.26	7.0		1201	6.79
12/8 0910	A Poudel	10	1GC0067	10.36	10.0		1205	9.92
12/8 ~~1800~~	~~S. Smith~~	~~4~~		~~4.12~~	~~4.00~~			

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
12/8 0915	A. Poudel	1.413	1GD033	1.557	1.413		1206	1.340

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
12/8 0920	A. Poudel	0	21300202	-2.02	0.0		1208	1.05
12/8 0925	A. Poudel	126	R0M20470-230	134.22	~~126~~ 126.0		1210	125.61

Model: YSI #19K103 Calibration Location: Furnace Creek Walmart

Rental ID: _____

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time 1219	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time 1219	Result
843	S.S.	4	16C1084	4.09	4.0	1221 →		4.116
845	S.S	7	16D151	6.80	7.0		1223	7.13
852	S.S	10	16C1067	10.01	10.0		1225	9.816

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
856	S.S.	1.413	16D033	1.318	1.413		1230	1.319

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
902	S.S.	0	21302021	2.15	0		1227	1.52
905	S.S.	126	20M20470230	121.32	126		1228	122.162

Model: YSI PRODSS
Rental ID: 49337 (sonde)
49868 (probe)

Calibration Location: Walmart parking lot
MA-01

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: pH took a very long time to calibrate (compared to how long it regularly takes w/ this probe.

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 1/12/2021 **Time:** 1025

Field Personnel: Justin Derato and Stephen Smith **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.35 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.88 feet ____ High ____ Low _X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving with no odor or other indicators of pollution. Some sediment suspended in sample.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/12/2022 @ 0745	3.1	0.191	0.192	9.01	8.00	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-01 **Time Collected:** 1030

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 1/12/2022 **Time:** 1000

Field Personnel: Justin Derato and Stephen Smith **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 30 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.35 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.88 feet ___ High ____ Low _X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast flowing. Minor debris and trash observed in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/12/2022 @ 0745	4.0	12.40	0.363	1.74	8.10	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-02 **Time Collected:** 1005

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 1/12/2022 **Time:** 0945

Field Personnel: Justin Derato and Stephen Smith **GPS Coordinates:** 39.17152 **(Lat.)** -76.62697 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 28 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.35 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.88 feet ____ High ____ Low __X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear with no odor; organic sheen observed along shoreline amidst trash and debris.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/12/2022 @ 0745	5.5	9.66	0.687	0.0	7.52	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-03 **Time Collected:** 0945

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID DUP-01 Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 1/12/2022 **Time:** 0925

Field Personnel: Justin Derato and Stephen Smith **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 27 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.35 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.88 feet ____ High ____Low _X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. No odor or other indicators of pollution.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/12/2022 @ 0745	3.2	12.54	0.450	3.39	7.67	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU-04** **Time Collected:** 0930

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 1/22/2022 **Time:** 0905

Field Personnel: Justin Derato and Stephen Smith **GPS Coordinates:** 39.18275 **(Lat.)** -76.61593 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 27 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.35 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.88 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast flowing. No odor or other indicators of pollution.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/12/2022 @ 0745	4.1	12.60	0.427	1.08	8.26	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-05 **Time Collected:** 0905

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Flow Determination Threshold Rates

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 1/12/2022 **Time:** 0835

Field Personnel: Justin Derato and Stephen Smith **GPS Coordinates:** 39.18181 **(Lat.)** -76.60700 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 25 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.35 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.88 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

New transient encampments observed downstream from sampling location. Ice on shoreline. Water is very clear and fast flowing.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/12/2022 @ 0745	3.2	11.19	2.659	2.51	7.63	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-06 **Time Collected:** 0840

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 1/13/2022 **Time:** 0955

Field Personnel: Justin Derato and Sara Tolnay **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 40 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.11 feet ___ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is murky and slow moving. Suspended sediment observed in the sample.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/13/2022 @ 0800	5.3	11.89	0.487	7.3	8.49	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-01 **Time Collected:** 0955

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 1/13/2022 **Time:** 0930

Field Personnel: Justin Derato and Sara Tolnay **GPS Coordinates:** 39.14233 **(Lat.)** -76.60846 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 40 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.11 feet ___ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is cloudy and slow moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/13/2022 @ 0800	4.6	11.87	0.803	4.9	8.2	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-02 **Time Collected:** 0930

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 1/13/2022 **Time:** 0920

Field Personnel: Justin Derato and Sara Tolnay **GPS Coordinates:** 39.14378 **(Lat.)** -76.60640 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 35 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.11 feet ____ High __X__Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is slow moving. Some trash and debris present; organic sheen observed on surface of stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/13/2022 @ 0800	4.5	12.07	0.571	5.71	8.15	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-03 **Time Collected:** 0920

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 1/13/2022 **Time:** 0905

Field Personnel: Justin Derato and Sara Tolnay **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.11 feet ____ High X Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is murky with an organic swampy odor. Some trash and debris are present.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/13/2022 @ 0800	4.2	11.85	0.392	5.55	8.41	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-04 **Time Collected:** 0905

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 1/13/2022 **Time:** 0850

Field Personnel: Justin Derato and Sara Tolnay **GPS Coordinates:** 39.14882 **(Lat.)** -76.60143 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.11 feet ____ High __X__Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving. Trash and debris present.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/13/2022 @ 0800	3.3	11.55	1.172	0.0	8.17	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-05 **Time Collected:** 0855

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 1/13/2022 **Time:** 0815

Field Personnel: Justin Derato and Sara Tolnay **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.11 feet ___ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Low water level. Mild sewage odor from nearby pump station. Small, dead fish observed in water around sampling site. Sediment observed floating on surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	1/13/2022 @ 0800	5.2	10.2	8.15	24.2	8.06	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-06 **Time Collected:** 0825

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record — January 2022

	pH Standard						Temp (oC)	Bump		
	Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result	
0745	1-12-22	DERATO	4	1GC1084	3.78	4.0	5.3	1-12-22	4.10	10 40
		"	7	1GL340	7.03	7.01	4.8	1-12-22	7.07	
		"	10	1CG1067	10.06	10.00	4.6	1-12-22	10.07	
0800	1-13-22	DERATO	4	SAA	4.08	4.00	5.3	1-13-22	4.15	10:00
			7	"	6.99	7.00	5.2	1-13-22	7.08	
			10	"	10.10	10.00	5.2	1-13-22	10.12	

	Conductivity						Temp (oC)	Bump		
	Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result	
0745	1-12-22	DERATO	1.413	1GD033	.94	1.413	3.9	1-12-22	1.321	10 40
0800	1-13-22	DERATO	1.413	"	1.385	1.413	4.9	1-13-22	1.369	10:00

	Turbidity						Temp (oC)	Bump		
	Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result	
0745	1-12-22	DERATO	0	1GD033	3.5	0.0	4.3	1-12-22	-0.2	10 40
0800	1-13-22	DERATO	126	21L2143694	134	124	4.2	1-12-22	127.2	
	0		0	"	-.4	0.0	4.8	1-13-22	-1.2	10:00
			126	"	125.6	124	4.7	1-13-22	121.6	

Model: YSI ProDSS

Rental ID: 5c755

Calibration Location: FU-06 1/12/2022
MA-06 1/13/2022

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 2/9/2022 **Time:** 1040

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 42 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.27 feet ____ High ____ Low _X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level high in sample area. Wildlife present (birds).

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/9/2022 @ 0826	5.2	11.49	0.339	8.33	7.97	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-01-20220209 **Time Collected:** 1045

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 2/9/2022 **Time:** 1010

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 36 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.14 feet ___ High ____ Low _X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving. No odor or other indicators of pollution

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/9/2022 @ 0826	5.5	11.61	0.511	4.20	7.82	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-02-20220209 **Time Collected:** 1015

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 2/9/2022 **Time:** 0950

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** **39.17152** **(Lat.)** **-76.62697** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.02 feet ____ High ____ Low __X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Evidence of animal activity (racoons). Water is clear and slow moving. Debris and trash present at sampling site.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/9/2022 @ 0826	7.2	9.81	0.852	4.18	7.38	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU-03-20220209** **Time Collected:** 0955

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 2/9/2022 **Time:** 0935

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 33 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.96 feet ____ High ____Low _X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Mild foul odor. Water is clear.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/9/2022 @ 0826	4.9	11.61	0.654	9.71	7.67	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU-04-20220209** **Time Collected:** 0940

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 2/9/2022 **Time:** 0910

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 29 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.85 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear, water levels low. No odor or other indicators of pollution.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/9/2022 @ 0826	5.5	11.50	0.600	6.29	7.59	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU-05-20220209** **Time Collected:** 0915

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID FU-DP-20220209 Field Blank (Yes/No) No

Flow Determination Threshold Rates

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 2/9/2022 **Time:** 0835

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** 39.18181 **(Lat.)** -76.60700 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 28 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.73 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Transient encampments observed near sampling location. Water is turbid. Water levels are low.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/9/2022 @ 0826	5.3	10.18	1.430	37.80	7.07	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU-06-20220209 **Time Collected:** 0840

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 2/10/2022 **Time:** 1020

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 47 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.65 feet ___ High ___Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is cloudy and slow moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/10/2022 @ 0842	6.8	10.94	0.364	10.55	7.51	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-01-20220210 **Time Collected:** 1025

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 2/10/2022 **Time:** 0950

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** **39.14233** **(Lat.)** **-76.60846** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 47 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.54 feet ___ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving with some suspended sediment.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/10/2022 @ 0842	5.8	11.38	0.372	6.87	7.81	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA-02-20220210** **Time Collected:** 0958

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 2/10/2022 **Time:** 0937

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** 39.14378 **(Lat.)** -76.60640 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 47 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.45 feet ____ High __X__Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving. Trash and debris present along bank.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/10/2022 @ 0842	5.9	11.69	0.442	5.49	8.00	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-03-20220210 **Time Collected:** 0941

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 2/10/2022 **Time:** 0922

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.38 feet ____ High X Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Some sheen on the water. Water is slow moving with some suspended sediment.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/10/2022 @ 0842	5.3	5.86	0.425	10.31	7.60	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-04-20220210 **Time Collected:** 0925

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 2/10/2022 **Time:** 0845

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** **39.14882** **(Lat.)** **-76.60143** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.27 feet ____ High __X__Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is low and slow moving, with a foamy surface. Water is slow moving. Trash and debris visible along bank upstream and downstream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/10/2022 @ 0842	4.2	11.16	0.691	5.17	7.97	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-05-20220210 **Time Collected:** 0850

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 2/10/2022 **Time:** 0810

Field Personnel: Sara Tolnay and Stephen Smith **GPS Coordinates:** **39.15116** **(Lat.)** **-76.60172** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.21 feet ___ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Low water level. Mild foul odor. Streambed is exposed in areas.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50758	2/10/2022 @ 0814	6.2	9.39	10.486	15.07	7.40	N/A
	2/10/2022 @ 0842	6.2	9.73	7.502	14.59	7.08	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA-06-20220210 **Time Collected:** 0815

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
2/9 0805	S. Smith	4	1GC1084	3.82	4.00		2/9 1056	4.19
2/9 0811	"	7	0GJ538	6.86	~~7.00~~ 7.04		2/9 1057	6.94
2/9 0814	"	10	1GK654	10.15	10.00		2/9 1059	10.13

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
2/9 0826	S Smith	1.413	16D033	1.082	1.413		2/9 1101	1.325
	"							

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
2/9 0820	S Smith	0	DI water	1.12	0.00		2/9 1103	-0.20
2/9 0824	"	126	21121430190	125.48	126.00		2/9 1104	122.23

Model: YSI ProDSS
Rental ID: 50758

Calibration Location: Furnace Creek FU-06

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments:

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
2/10 08:07	S. Smith	4	16C1084	4.15	4.00		2/10 @ 1034	4.34
2/10 08:10	"	7	06J538	6.97	7.04		1036	6.95
2/10 08:12	"	10	16K654	10.01	10.00		1038	10.18
							~~1040~~	

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
2/10 08:14	S. Smith	1.413	16D033	1.524	1.413			
2/10 08:42	S. Tolnay	1.413	16D033	1.975	1.403		2/10 @ 1040	1.269

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
2/10 08:02	S. Smith	0	DI Water	0.11	0.00		2/10 @ 1030	1.42
2/10 08:04	"	126	21L2143990	113.56	126.00		2/10 @ 1032	124.04

Model: Pro DSS
Rental ID: 50758

Calibration Location: MA-06 Marley Creek

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: High SPC readings at MA-06 prompted recalibration at 08:42. SPC readings remain high for MA-06. Readings at MA-05 w/in range.

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 3/10/2022 **Time:** 1023

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 48 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.85 feet ____ High ____ Low _X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/10/2022 @0840	8.4	11.31	0.325	5.20	8.68	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-20220310 **Time Collected:** 1026

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 3/10/2022 **Time:** 1005

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.16994** **(Lat.)** **-76.63152** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 46 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.71 feet ___ High ____ Low _X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/10/2022 @0840	8.1	11.33	0.551	4.27	8.44	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU02-20220310** **Time Collected:** 1009

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 3/10/2022 **Time:** 0947

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.17152** **(Lat.)** **-76.62697** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 46 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.63 feet ____ High ____ Low __X_ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/10/2022 @0840	9.2	10.20	0.634	3.20	8.12	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU03-20220310** **Time Collected:** 0953

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 3/10/2022 **Time:** 0935

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 46 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.53 feet ____ High ____Low _X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear and fast-moving water. Some trash observed leading up to the sampling location.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/10/2022 @0840	7.7	11.30	0.606	5.28	8.22	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-20220310** **Time Collected:** 0938

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 3/10/2022 **Time:** 0918

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 46 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.5 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving. Some trash observed near sampling location. Birds nearby.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/10/2022 @0840	7.8	11.30	0.596	4.23	8.30	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-20220310** **Time Collected:** 0926

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 3/10/2022 **Time:** 0830

Field Personnel: Agrima Poudel and Stephen Smith **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 46 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.35 feet ____ High ____Low __X__ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Low flow and slow moving water. Water is clear. Transient encampments observed in route to sampling location.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/10/2022 @0840	8.0	10.72	0.576	3.85	7.97	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-20220209** **Time Collected:** 0855

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 3/11/2022 **Time:** 1020

Field Personnel: John Pellegrino **GPS Coordinates:** 39.13693 (Lat.) -76.61356 (Long.)

Weather Conditions:

Ambient Air Temperature: 50 °F Weather: Clear Skies

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.94 feet ___ High ___Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/11/2022 @0800	9.1	10.97	0.413	7.53	8.26	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-20220311 **Time Collected:** 1030

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 3/11/2022 **Time:** 0955

Field Personnel: John Pellegrino **GPS Coordinates:** 39.14233 **(Lat.)** -76.60846 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 46 °F Weather: Clear Skies

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.81 feet ___ High ___Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Sheen and heavy red coloration observed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/11/2022 @0800	8.4	10.85	0.560	9.31	8.20	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA02-20220311 **Time Collected:** 1000

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 3/11/2022 **Time:** 0935

Field Personnel: John Pellegrino **GPS Coordinates:** 39.14378 (Lat.) -76.60640 (Long.)

Weather Conditions:

Ambient Air Temperature: 42 °F Weather: Clear Skies

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.73 feet ____ High ____Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and moderately moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/11/2022 @0800	8.1	10.90	0.680	6.17	8.07	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-20220311 **Time Collected:** 0940

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 3/11/2022 **Time:** 0855

Field Personnel: John Pellegrino **GPS Coordinates:** 39.14841 (Lat.) -76.60388 (Long.)

Weather Conditions:

Ambient Air Temperature: 36 °F Weather: Clear Skies

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.92 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.55 feet ____ High ___Low _X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water was murky with foam visible on surface. Water was slow moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/11/2022 @0800	7.1	11.00	0.670	11.00	7.99	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-20220311 **Time Collected:** 0900

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 3/11/2022 **Time:** 0840

Field Personnel: John Pellegrino **GPS Coordinates:** **39.14882** **(Lat.)** **-76.60143** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 35 °F Weather: Clear Skies

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.48 feet ____ High ____Low __X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving with some foam on the surface.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/11/2022 @0800	7.4	10.86	0.740	4.56	8.07	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA05-20220311** **Time Collected:** 0845

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 3/11/2022 **Time:** 0800

Field Personnel: John Pellegrino **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 34 °F Weather: Clear Skies

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.55 inches Type: _X__ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.66 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.39 feet ___ High ___ Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and slow moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #050110	3/11/2022 @0800	7.2	8.84	1.081	9.25	7.90	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-20220311 **Time Collected:** 0815

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID MADP-20220311 Field Blank (Yes/No) Yes

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
8/10 08:18	S. Smith	4	IGk617	3.81	4.00	13.8	8/10 @ 1044	4.32
0820	S. Smith	7	IGL340	6.86	7.05	13.4	@ 1045	6.90
		10	IGC1067	10.02	10.00	12.9	@ 1047	10.15

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
08 25	S. Smith	1.413	IGD033	1.205	1.413		10/3 @ 1050	1.347

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0835	S. Smith	0	DI H_2O	-6.92	0		3/10 @ 1040	2.99
08:40	S. Smith	126	21421430190	139.62	126.0		@ 1042	116.60

Model: YSI Pro DSS
Rental ID: 050 110

Calibration Location: FU-06

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

	pH Standard						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
3/11/22	0740	JP	4	1GK617	4.01	4.00		1045	4.12
	0746	↓	7	1GL340	6.91	7.00		↓	6.99
	0748	↓	10	1GC1067	10.00	10.00		↓	10.04

	Conductivity						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
3/11/22	0755	JP	1.413	1GD033	1736	1413		1050	1316

			Turbidity			Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
3/11/22	0758	JP	0	DI	1.2	0.0		0.9	1050
	0800	↓	126	21221930140	112.4	126.0		121.7	1055

Model: Pro DSS YSI

Rental ID: 050110

Calibration Location: MA06

BUMP @ MA01

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 4/13/2022 **Time:** 1030

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 66 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.75 feet ____ High __X__ Low ___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear with no odors or discoloration. Aquatic organisms and bugs are present.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/13/2022 @0810	14.0	9.58	0.233	4.92	7.54	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-220413 **Time Collected:** 1030

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 4/13/2022 **Time:** 1000

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.16994** **(Lat.)** **-76.63152** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 64 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.78 feet ___ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear with no odors.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/13/2022 @0810	13.2	9.88	0.396	1.76	7.48	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU02-220413** **Time Collected:** 1000

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 4/13/2022 **Time:** 0945

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.17152** **(Lat.)** **-76.62697** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 63 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.79 feet ____ High __X__ Low ___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

General debris/tires. Water is clear with no odors. Orange iron deposits on sand bar and stream sediment.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/13/2022 @0810	14.13	9.79	0.562	4.63	7.48	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU03-220413** **Time Collected:** 0945

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 4/13/2022 **Time:** 0930

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 62 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.81 feet ____ High __X__Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear with no odors.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/13/2022 @0810	13.2	10.03	0.470	3.08	7.46	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-220413** **Time Collected:** 0930

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID FUDP-220413 Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 4/13/2022 **Time:** 0910

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.85 feet ____ High __X__Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear water. No debris observed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/13/2022 @0810	13.0	9.93	0.444	2.02	7.41	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-220413** **Time Collected:** 0910

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 4/13/2022 **Time:** 0840

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 57 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 0.91 feet ____ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Organic and chemical sheen observed. Small sheen patches < 6 inches in diameter.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/13/2022 @0810	13.6	9.43	1.102	2.27	6.18	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-220413** **Time Collected:** 0840

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 4/14/2022 **Time:** 0955

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.13693** **(Lat.)** **-76.61356** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 75 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.35 feet ___ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is faint yellow/brown in color. Floating sediments and organic materials observed in stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/14/2022 @0825	16.4	9.11	0.361	9.26	7.81	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA01-220414** **Time Collected:** 1005

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 4/14/2022 **Time:** 0935

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14233** **(Lat.)** **-76.60846** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 46 °F Weather: Clear Skies

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.43 feet ___ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is cloudy with floating sediment and organic matter.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/14/2022 @0825	15.9	8.95	0.342	13.25	8.04	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA02-220414 **Time Collected:** 0940

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 4/14/2022 **Time:** 0920

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14378** **(Lat.)** **-76.60640** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0005 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.5 feet ____ High __X__Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Faint yellow/brown in color. Some trash observed on stream bank.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/14/2022 @0825	16.0	9.21	0.381	12.98	8.11	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-220414 **Time Collected:** 0925

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 4/14/2022 **Time:** 0900

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 74 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.55 feet ____ High ___Low _X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/14/2022 @0825	16.7	7.05	1.017	10.42	7.67	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-220414 **Time Collected:** 0910

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 4/14/2022 **Time:** 0850

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14882** **(Lat.)** **-76.60143** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.18 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.67 feet ____ High ____Low __X_ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Low water level. Slightly turbid with organic sheen observed along stream edge.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/14/2022 @0825	15.8	7.72	0.446	9.04	7.76	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA05-220414** **Time Collected:** 0855

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 4/14/2022 **Time:** 0825

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** 39.15116 **(Lat.)** -76.60172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.7 feet ___ High ___ Low __X__ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is faint yellow in color, with some floating solids and organics.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #49337	4/14/2022 @0825	16.0	5.32	4.951	10.48	6.82	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-220414 **Time Collected:** 0840

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID N/A Field Blank (Yes/No) Yes

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record Furnace 4-13-2022

Marley 4-14-2022

	pH Standard						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
8:10	4-13-22	DERATO	4	1GC785	3.72	4.00	16.45	10:30	4.13
	"	"	7	1GL340	6.87	7.02	16.35	"	7.17
	"	"	10	1GC1067	10.07	10.00	16.25	"	10.19
8:15	4-14-22	DERATO	4		4.10	4.00		10:15	4.17
			7		6.97	7.00		"	7.05
			10		9.97	10.00		"	10.17

	Conductivity						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
8:10	4-13-22	DERATO	1.413	1GD033	1.390	1.413	16.31	10:30	1.521
	~~4-132~~								
8:20	4-14-22	DERATO	1.413		1.606	1.413		10:15	1.512

	Turbidity						Temp (oC)	Bump	
	Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
8:10	4-13-22	DERATO	0	1GD033	-3.10	0.0	16.66	10:30	-1.04
	"	"	126	22A2146 03	181.7	126.0	16.59	"	121.6
8:25	4-14-22	DERATO	0		-0.99	0.0		10:15	0.68
			126		112.76	126.0			124.33

Model: YSI ProDSS

Rental ID: # 49337 METER
49869 SONDE

Calibration Location: FU-06 4-13-22
MA-06 4-14-22

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-01 **Date:** 5/11/2022 **Time:** 1115

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** 39.15013 **(Lat.)** -76.66172 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 68 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.08 feet ____ High X Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

High flow with clear, fast-moving current.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/11/2022 @0920	14.8	9.58	0.194	7.11	6.88	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-220511 **Time Collected:** 1120

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 5/11/2022 **Time:** 1050

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.16994** **(Lat.)** **-76.63152** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 66 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.03 feet ___ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear with high water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/11/2022 @0920	13.4	9.69	0.318	2.81	7.02	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU02-220511** **Time Collected:** 10:55

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 5/11/2022 **Time:** 1030

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.17152** **(Lat.)** **-76.62697** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 64 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.03 feet ____ High __X__ Low ___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/11/2022 @0920	14.5	9.43	0.461	6.19	6.94	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU03-220511** **Time Collected:** 1040

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 5/11/2022 **Time:** 1015

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 64 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.45 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.03 feet ____ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/11/2022 @0920	13.6	9.92	0.3	5.33	6.78	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-220511** **Time Collected:** 1020

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 5/11/2022 **Time:** 1000

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 64 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.02 feet ____ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear water. No debris observed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/11/2022 @0920	12.9	10.11	0.362	2.72	6.62	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-220511** **Time Collected:** 1005

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 5/11/2022 **Time:** 0935

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 64 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ___ Rain _____ Snow ____ Mix

Day of Sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 6.00 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.03 feet ____ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is high. Transient encampments observed on opposite bank.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/11/2022 @0920	14.7	7.79	0.610	3.97	6.16	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-220511** **Time Collected:** 0940

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 5/12/2022 **Time:** 1010

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 63 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: _____ Rain _____ Snow ____ Mix

Day of Sampling: 0.01 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.82 feet ____ High X Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear, fast moving and has sand/sediment deposition.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/12/2022 @0815	14.5	9.34	0.349	8.32	7.13	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-220512 **Time Collected:** 1020

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 5/12/2022 **Time:** 0940

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14233** **(Lat.)** **-76.60846** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 63 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.01 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.85 feet ___ High X Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

High flow, murky water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/12/2022 @0815	13.9	9.31	0.324	12.77	7.16	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA02-220512 **Time Collected:** 0945

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 5/12/2022 **Time:** 0925

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14378** **(Lat.)** **-76.60640** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.01 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.89 feet ____ High X Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

High flow, turbid, fast moving water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/12/2022 @0815	14.0	9.45	0.354	10.66	7.10	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-220512 **Time Collected:** 0930

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 5/12/2022 **Time:** 0905

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14841** **(Lat.)** **-76.60388** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.01 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.96 feet ____ High X Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is very high. Brown/murky water observed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/12/2022 @0815	14.1	8.30	0.348	15.02	7.02	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-220512 **Time Collected:** 0910

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 5/12/2022 **Time:** 0850

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14882** **(Lat.)** **-76.60143** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.01 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.00 feet ____ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear, fast moving water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/12/2022 @0815	14.9	8.00	0.370	8.50	6.65	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA05-220512** **Time Collected:** 0855

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 5/12/2022 **Time:** 0825

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.15116** **(Lat.)** **-76.60172** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 61 °F Weather: Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.00 inches Type: ____ Rain _____ Snow ____ Mix

Day of Sampling: 0.01 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 5.72 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 2.05 feet ___ High X Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is murky and light brown in color. Water level is high.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	5/12/2022 @0815	14.9	6.36	0.346	11.48	5.88	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA06-220512 **Time Collected:** 0835

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID MADUP-220512 Field Blank (Yes/No) Yes MABK-052212 @ 08:40

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
0900	JP	4	ZGC574	3.84	4.00		1125	4.13
0905	JP	7	ZGA918	7.15	7.00		1130	~~7.15~~ 7.15
0910	JP	10	ZGD707	10.15	10.00		1135	10.05

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0915	JP	1.413	1GJ479	1.326	1.413		1140	1.530

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0920	JP	0	22010218	-6.25	0.00		1145	-0.50
0920	JP	~~124~~ 126	21430190	125.20	124.0		145	121.8.0

Model: PRO DSS

Rental ID: H45985

Calibration Location: FL06 59°F, Sunny

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Multi-Probe Sonde Calibration Record

5-12-2022
MARLEY

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot # See 5-11-22	Stab pH	Cal pH		Date & Time	Result
0755	Derate	4		4.07	4.00		1030	4.15
0800	"	7		7.06	7.00		1030	708
0805	"	10		9.98	10.00		1030	1008

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot # See 5-11-22	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0810	Derate	1.413		1.553	1.413			1.498
0								

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0815	Derate	0		-.6	0.0		1035	1.15
0815	"	~~124~~ 126		119.6	~~126~~ 124		1035	12665

Model: YSI Pro DSS
Rental ID: Pine # 43195

Calibration Location: MARLEY STATION MALL

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Paving Sampling Station ID: FU-01 **Date:** 6/8/2022 **Time:** 1040

Field Personnel: John Pellegrino and Stephen Bahner **GPS Coordinates: 39.15013 (Lat.) -76.66172 (Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Mostly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 1.35 inches Type: _X_ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.69 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.99 feet ____ High X Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is slow moving and high. A lot of large debris observed. Multiple insects and frogs observed.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/8/2022 @ 0834	17.9	8.85	0.191	1.2	6.78	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU01-220608 **Time Collected:** 1048

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-02 **Date:** 6/8/2022 **Time:** 1019

Field Personnel: John Pellegrino and Stephen Bahner **GPS Coordinates:** 39.16994 **(Lat.)** -76.63152 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Mostly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 1.35 inches Type: _X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.69 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.99 feet ___ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Low and fast-moving water; clear water.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/8/2022 @ 0834	16.8	8.77	0.312	4.27	7.01	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: FU02-220 **Time Collected:** 1025

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-03 **Date:** 6/8/2022 **Time:** 0955

Field Personnel: John Pellegrino and Stephen Bahner **GPS Coordinates:** **39.17152** **(Lat.)** **-76.62697** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Mostly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 1.35 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.69 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.92 feet ____ High __X__ Low ___ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Clear and fast-moving water; water level is low. Dragonflies and other insects present. Tall grass and brush; difficult to access site. Transient encampments observed in woods along stream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/8/2022 @ 0834	17.6	8.59	0.436	3.9	7.06	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU03-220608** **Time Collected:** 0957

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-04 **Date:** 6/8/2022 **Time:** 0934

Field Personnel: John Pellegrino and Stephen Bahner **GPS Coordinates:** **39.17770** **(Lat.)** **-76.62106** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 75 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: _X_ Rain _____ Snow ____ Mix

Day of Sampling: 1.35 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.69 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.92 feet ____ High __X__ Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is clear and fast moving with foam on the surface. Dragonflies observed in the area. Transient encampments downstream.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/8/2022 @ 0834	17.5	8.92	0.361	2.62	7.26	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU04-220608** **Time Collected:** 0940

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-05 **Date:** 6/8/2022 **Time:** 0908

Field Personnel: John Pellegrino and Stephen Bahner **GPS Coordinates:** **39.18275** **(Lat.)** **-76.61593** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 74 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 1.35 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.69 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.87 feet ____ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is low and fast moving. Water is clear with some floating solids.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/8/2022 @ 0834	16.7	8.75	0.345	6.28	6.97	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU05-220608** **Time Collected:** 0912

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: FU-06 **Date:** 6/8/2022 **Time:** 0835

Field Personnel: John Pellegrino and Stephen Bahner **GPS Coordinates:** **39.18181** **(Lat.)** **-76.60700** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Partly Cloudy

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 0.06 inches Type: __X__ Rain _____ Snow ____ Mix

Day of Sampling: 1.35 inches Type: __X__ Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 4.69 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.86 feet ____ High __X__ Low ____ Ebb

(Low Flow (Baseflow) Sample) / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is high, transient encampments along bank and on bank opposite of the stream. Water is murky and slow moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/8/2022 @ 0834	19.5	3.9	2.397	16.06	6.32	N/A
	6/8/2022 @ 0834	19.5	3.87	2.397	15.43	6.35	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **FU06-220608** **Time Collected:** 0852

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-01 **Date:** 6/9/2022 **Time:** 1035

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** 39.13693 **(Lat.)** -76.61356 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 79 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 1.41 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.51 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 17.8 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.67 feet ____ High X Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is cloudy and brown, fast moving.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/9/2022 @ 0852	21.2	7.06	0.166	59.98	6.99	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA01-220609 **Time Collected:** 1040

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-02 **Date:** 6/9/2022 **Time:** 1010

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14233** **(Lat.)** **-76.60846** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 77 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 1.41 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.51 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 18.9 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.7 feet ___ High X Low ____ Ebb

Low Flow (Baseflow) Sample / (High Flow (Storm Event) sample) (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is fast moving, light-brown in color, and very cloudy.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/9/2022 @ 0852	21.2	0.134	0.134	115.7	6.83	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA02-220609 **Time Collected:** 1020

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID MADP-220609 Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-03 **Date:** 6/9/2022 **Time:** 0955

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14378** **(Lat.)** **-76.60640** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 75 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 1.41 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.51 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 19.4 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.73 feet ____ High X Low ____ Ebb

Low Flow (Baseflow) Sample / (High Flow (Storm Event) sample) (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water is fast moving and light brown-yellow.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #45985	6/9/2022 @0815	21.3	7.33	0.129	119.02	6.93	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA03-220609 **Time Collected:** 1000

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-04 **Date:** 6/9/2022 **Time:** 0930

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** 39.14841 **(Lat.)** -76.60388 **(Long.)**

Weather Conditions:

Ambient Air Temperature: 75 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 1.41 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.51 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 19.4 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.75 feet ____ High X Low ____ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Water level is very high; water has significant turbidity. Water is light brown in color and cloudy.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/9/2022 @ 0852	21.4	7.16	0.110	136.04	7.00	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: MA04-220609 **Time Collected:** 0940

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID N/A Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-05 **Date:** 6/9/2022 **Time:** 0915

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.14882** **(Lat.)** **-76.60143** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 1.41 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.51 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 20.0 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.77 feet ____ High X Low ____ Ebb

Low Flow (Baseflow) Sample / (High Flow (Storm Event) sample) (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Fast moving flow; water is cloudy.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/9/2022 @ 0852	22.6	7.02	0.231	17.14	7.05	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA05-220609** **Time Collected:** 0920

QA/QC samples: Duplicate Sample (Yes/No) No Sample ID No Field Blank (Yes/No) No

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Sampling Station ID: MA-06 **Date:** 6/9/2022 **Time:** 0900

Field Personnel: John Pellegrino and Justin Derato **GPS Coordinates:** **39.15116** **(Lat.)** **-76.60172** **(Long.)**

Weather Conditions:

Ambient Air Temperature: 73 °F Weather: Sunny

Precipitation Data (obtain BWI data from https://w2.weather.gov/climate/index.php?wfo=lwx):

Past 72 hours prior to sampling: 1.41 inches Type: X Rain _____ Snow ____ Mix

Day of Sampling: 0.51 inches Type: X Rain _____ Snow ____ Mix

Flow Determination:

USGS Gage Data (obtain from https://waterdata.usgs.gov/usa/nwis/uv?01589500): 20.0 cfs

Tide Level (obtain from https://tidesandcurrents.noaa.gov/stationhome.html?id=8574680): 1.76 feet ___ High X Low ___ Ebb

Low Flow (Baseflow) Sample / High Flow (Storm Event) sample (refer to tables on back and circle one)

Site Condition Observations (note things such as unusual sampling conditions, algal blooms, accumulated debris, presence of transient encampments, congregations or evidence of avian or other wildlife, stream water characteristics [color, turbidity, odor, flow, etc.]):

Sewage odors with high water level and pale-yellow hue. Sewage spill sign at entrance of site.

FIELD MEASUREMENTS

Instrument ID	Last Calibration (Date/Time)	Temp (°C)	DO (mg/L)	Specific Cond. (mS/cm)	Turbidity (NTUs)	pH (SU)	Chlorine (mg/L)
YSI ProDSS #50633, Sonde 45885	6/9/2022 @ 0852	22.2	4.47	0.329	36.50	7.17	N/A

BACTERIA SAMPLE COLLECTION

Sample ID: **MA06-220609** **Time Collected:** 0905

QA/QC samples: Duplicate Sample (Yes/No) Yes Sample ID N/A Field Blank (Yes/No) Yes MABK-220609 @ 08:30

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

Field Data Sheet

Flow Determination Threshold Rates

Monitoring Point Name	High Flow Threshold (cfs)	Low Flow threshold (cfs)
FU-1	> 18.70	<= 18.70
FU-2	> 18.70	<= 18.70
FU-3	> 18.70	<= 18.70
FU-4	> 18.70	<= 18.70
FU-5	> 18.70	<= 18.70
MA-1	> 18.37	<= 18.37
MA-2	> 18.37	<= 18.37
MA-3	> 18.37	<= 18.37
MA-4	> 18.37	<= 18.37
MA-5	> 18.37	<= 18.37

Tidal Monitoring Points Average High/Low Tide

Monitoring Point Name	Average High Tide (feet)	Average Low Tide (feet)
FU-6	1.37	0.22
MA-6	1.37	0.22

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

6/8/22

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
8:15am	JP + SB	4	14K617	3.82	4.00			3.98
8:20am	JP + SB	7	14L340	6.93	7.00			7.20
8:24am	JP + SB	10	14K654	10.28	10.00			10.09

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
8:28am	JP + SB	1.413	14K805	1.530	1.413			1.517

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
8:30am	JP + SB	0	22C8172	1.36	0			-0.20
8:34am	JP + SB	~~124~~ ~~126~~	22A21460 130	138.82	~~126~~ 124			128.09

Model: YSI PRO DSS
Rental ID: #50633, Sonde 45985

Calibration Location: FU06

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Anne Arundel County Bacteria TMDL Monitoring: Marley and Furnace Creek Watersheds

6/9/22

Multi-Probe Sonde Calibration Record

pH Standard						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	pH Std	Lot #	Stab pH	Cal pH		Date & Time	Result
0838	JP & JD	4	1GK~~6~~7	4.00	4.00		1100	4.13
0840	JP + JD	7	1GK340	6.86	7.00		↓	~~6~~ 7.03
0843	JP + JD	10	1GK654	9.98	10.00		↓	10.08

Conductivity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (mS/cm)	Lot #	SC (mS/cm) Stab	SC (mS/cm) Cal		Date & Time	Result
0852	JP	1.413	1GK805	1.555	1.413		1102	1.396

Turbidity						Temp (oC)	Bump	
Date & Time	Calibration Analyst's Name	Std (NTU)	Lot #	NTU Stab	NTU Cal		Date & Time	Result
0847	JD	0	22D8172	5.2	0.0		1101	0.92
0848	JD	~~124~~126	22A446130	109.9	124		1101	129.13

Model: YSI ProDSS
Rental ID: #50633, Sonde 45985

Calibration Location: MA06

Record date, time, and calibration analyst's name as you calibrate.
Record Lot # of each calibration solution.
Record temperature of pH solutions.
Record whether it is a calibration or bump test. If it is a bump test, start on an empty row. Record the result under "Stab" columns and record N/A under "Cal" columns.

Comments: _____

Appendix C
Laboratory Reports and Chain of Custody Forms

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **Manasa Damera/Agrima Poudel**

Tuesday, July 20, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 54665.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero - 7/14/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54665	000001	FU01-20210714, FURNACE CREEK 01	07/14/2021 11:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	102	mpn/100ml	SM Enterolert	1	07/14/2021 14:27 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54665	000002	FU02-20210714, FURNACE CREEK 02	07/14/2021 11:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1200	mpn/100ml	SM Enterolert	1	07/14/2021 14:27 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54665	000003	FU03-20210714, FURNACE CREEK 03	07/14/2021 10:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	411	mpn/100ml	SM Enterolert	1	07/14/2021 14:27 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54665	000004	FU04-20210714, FURNACE CREEK 04	07/14/2021 10:05

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1990	mpn/100ml	SM Enterolert	1	07/14/2021 14:27 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54665	000005	FU05-20210714, FURNACE CREEK 05	07/14/2021 09:35

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1730	mpn/100ml	SM Enterolert	1	07/14/2021 14:27 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54665	000006	FU06-20210714, FURNACE CREEK 06	07/14/2021 09:07

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	980	mpn/100ml	SM Enterolert	1	07/14/2021 14:27 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 54665 Client Code

Client Name/Phone AECOM G 240 409 0227

Client Address 12420 MILESTONE CENTER DR. GERMANTOWN

E-mail Address agrima.poudel@aecom.com MD 20876

Sampler J. PELLEGRINO

Project #/Name AA CO ENTEROLERT JULY 2021

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU01-20210714	FURNACE CREEK 01	W	FLIP TOP BOTTLE	1	7/14/21	1140	IDDEX ENTERO w/ DILUTIONS
FU02-20210714	02	W		1		1110	
FU03-20210714	03	W		1		1045	
FU04-20210714	04	W		1		1005	
FU05-20210714	05	W		1		935	
FU06-20210714	06	W		1		907	

Transferred by:	Received by:	Date	Time
7/14/21 @1345		7/14/21	1345
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? (Yes)/No IR temp = 5.0

Sample containers pres'd? (Yes)/No If No, explain

Custody Seal present? - Yes (No) Intact - Yes/No

Initials: QQ Date: 7/14/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **Manasa Damera/Agrima Poudel**

Tuesday, July 20, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 54694.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero - 7/15/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54694	000001	MA01-20210715, MARLEY CREEK 01	07/15/2021 10:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	2420	mpn/100ml	SM Enterolert	1	07/15/2021 13:40 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54694	000002	MA02-20210715, MARLEY CREEK 02	07/15/2021 09:50

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	19200	mpn/100ml	SM Enterolert	1	07/15/2021 13:40 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54694	000003	MA03-20210715, MARLEY CREEK 03	07/15/2021 09:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	5290	mpn/100ml	SM Enterolert	1	07/15/2021 13:40 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54694	000004	MA04-20210715, MARLEY CREEK 04	07/15/2021 09:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	4570	mpn/100ml	SM Enterolert	1	07/15/2021 13:40 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54694	000005	MA05-20210715, MARLEY CREEK 05	07/15/2021 08:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	2420	mpn/100ml	SM Enterolert	1	07/15/2021 13:40 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54694	000006	MA05-20210715, MARLEY CREEK 06	07/15/2021 08:21

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	2420	mpn/100ml	SM Enterolert	1	07/15/2021 13:40 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
54694	000007	MADP-20210715, MARLEY CREEK DP	07/15/2021 08:35

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	3090	mpn/100ml	SM Enterolert	1	07/15/2021 13:40 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 54694 Client Code

Client Name/Phone AECOM Ca 240-409-0227

Client Address 12420 Milestone Center Dr. Germantown, MD

E-mail Address agrima.poudel@aecom.com

Sampler J. Pellegrino + S. Smith

Project #/Name AACo. ENTERO July 2021

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA01 20210715	Marley Creek 1	W	Flip-Top Bottle	1	7/15/21	10:20	IDDEX ENTERO W/ DILUTIONS
MA02 20210715	2	W		1		9:50	
MA03 20210715	3	W		1		9:30	
MA04 20210715	4	W		1		9:10	
MA05 20210715	5	W		1		8:45	
MA06 20210715	6	W		1		8:21	
MA0P 20210715	DP	W		1		8:35	

		Date	Time
Transferred by:	Received by:	7/15/21	1210
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 6.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 7/15/21

Page 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **Manasa Damera/Agrima Poudel**

Tuesday, August 17, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 55063.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 8/11/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

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Measurement uncertainty for each listed test is available upon request.
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All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55063	000001	FU01-08112021, FURNACE CREEK	08/11/2021 09:52

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	649	mpn/100ml	SM Enterolert	1	08/11/2021 13:15 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55063	000002	FU02-08112021, FURNACE CREEK	08/11/2021 09:25

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	2420	mpn/100ml	SM Enterolert	1	08/11/2021 13:15 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55063	000003	FU03-08112021, FURNACE CREEK	08/11/2021 09:08

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	3310	mpn/100ml	SM Enterolert	1	08/11/2021 13:15 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55063	000004	FU04-08112021, FURNACE CREEK	08/11/2021 08:39

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	3050	mpn/100ml	SM Enterolert	1	08/11/2021 13:15 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55063	000005	FU05-08112021, FURNACE CREEK	08/11/2021 08:19

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	4640	mpn/100ml	SM Enterolert	1	08/11/2021 13:15 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55063	000006	FU06-08112021, FURNACE CREEK	08/11/2021 07:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1220	mpn/100ml	SM Enterolert	1	08/11/2021 13:15 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55063	000007	FUDP-08112021, FURNACE CREEK	08/11/2021 08:29

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	7230	mpn/100ml	SM Enterolert	1	08/11/2021 13:15 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 55063 **Client Code**

Client Name/Phone AECOM

Client Address agrima.poudel@aecom.com

E-mail Address 12420 Milestone Center Drive Germantown MD 20876

Sampler John Pellegrino

Project #/Name AACO Entero Furnace August

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU01-08112021	~~Furnace~~ Furnace Creek	W	Flip-Top	1	08/11/21	0952	IDDEX Entero w/ Dilutions
FU02-08112021				1		0925	
FU03-08112021				1		0908	
FU04-08112021				1		0839	
FU05-08112021				1		0819	
FU06-08112021				1		0755	
FU07-08112021				1		0829	

Transferred by: Grace Dai	Received by:	Date 8/11/21	Time 1050
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 11.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: AL Date: 8/11/21

1 of 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **Manasa Damera/Agrima Poudel**

Tuesday, August 17, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 55086.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 8/12/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

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Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55086	000001	MA01-08122021, MARLEY CREEK	08/12/2021 09:48

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	3840	mpn/100ml	SM Enterolert	1	08/12/2021 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55086	000002	MA02-08122021, MARLEY CREEK	08/12/2021 09:21

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	7330	mpn/100ml	SM Enterolert	1	08/12/2021 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55086	000003	MA03-08122021, MARLEY CREEK	08/12/2021 08:56

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	12500	mpn/100ml	SM Enterolert	1	08/12/2021 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55086	000004	MA04-08122021, MARLEY CREEK	08/12/2021 08:32

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	14700	mpn/100ml	SM Enterolert	1	08/12/2021 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55086	000005	MA05-08122021, MARLEY CREEK	08/12/2021 08:19

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	5560	mpn/100ml	SM Enterolert	1	08/12/2021 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55086	000006	MA06-08122021, MARLEY CREEK	08/12/2021 08:04

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	29100	mpn/100ml	SM Enterolert	1	08/12/2021 13:30 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

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MARTEL Log # 55086 Client Code

Client Name/Phone AECOM

Client Address 12420 Milestone center Dr. Germantown, MD 20876

E-mail Address agrima.poudel@aecom.com

Sampler John Pellegrino

Project #/Name AACO Entero Marley Creek August

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA01-08122021	Marley Creek	W	Flip-Top	1	08/12/21	0948	IDDEX Entero w/ Dilutions
MA02-08122021	↓	↓	↓	↓	↓	0921	↓
MA03-08122021	↓	↓	↓	↓	↓	0856	↓
MA04-08122021	↓	↓	↓	↓	↓	0832	↓
MA05-08122021	↓	↓	↓	↓	↓	0819	↓
MA06-08122021	↓	↓	↓	↓	↓	0804	↓

Transferred by: Grace Dai	Received by:	Date 8/12/21	Time 1050
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 8.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: QQ Date: 8/12/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **Manasa Damera/Agrima Poudel**

Wednesday, September 15, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 55463.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 9/8/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

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All samples tested were in acceptable condition, unless otherwise noted.

Thomas McCarthy
Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55463	000001	FU06-210908 FURNACE CREEK	09/08/2021 08:58

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	687	mpn/100ml	SM Enterolert	1	09/08/2021 13:45 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55463	000002	FU05-210908 FURNACE CREEK	09/08/2021 09:24

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	308	mpn/100ml	SM Enterolert	1	09/08/2021 13:45 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55463	000003	FU04-210908 FURNACE CREEK	09/08/2021 09:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	727	mpn/100ml	SM Enterolert	1	09/08/2021 13:45 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55463	000004	FU03-210908 FURNACE CREEK	09/08/2021 10:01

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	488	mpn/100ml	SM Enterolert	1	09/08/2021 13:45 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55463	000005	FU02-210908 FURNACE CREEK	09/08/2021 10:24

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	308	mpn/100ml	SM Enterolert	1	09/08/2021 13:45 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55463	000006	FU01-210908 FURNACE CREEK	09/08/2021 10:49

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	299	mpn/100ml	SM Enterolert	1	09/08/2021 13:45 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

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MARTEL Log # 55463 Client Code

Client Name/Phone AECOM

Client Address 12420 Milestone Center Dr. Germantown, MD 20876

E-mail Address agrima.poudel@aecom.com

Sampler John Pellegrino

Project #/Name AACo Entero September Furnace Creek ~~08/08/2021~~

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU06-210908	Furnace Creek	W	Flip-Top	1	09/08/21	0858	IDDEX Enterolert w/ Dilutions
FU05-210908	↓	↓	↓	↓	↓	0924	↓
FU04-210908						0940	
FU03-210908						1001	
FU02-210908						1024	
FU01-210908						1049	

Transferred by: GRACE DAI	Received by:	Date 09/08/2021	Time 1140
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 10.5

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: AE Date: 9/8/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **Manasa Damera/Agrima Poudel**

Wednesday, September 15, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 55494.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 9/9/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

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Thomas Mikoloff
Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000001	MA06-20210909, MARLEY 6	09/09/2021 09:21

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	488	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000002	MA05-20210909, MARLEY 5	09/09/2021 09:41

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	461	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000003	MA04-20210909, MARLEY 4	09/09/2021 09:57

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	2420	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000004	MA03-20210909, MARLEY 3	09/09/2021 10:23

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	579	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000005	MA02-20210909, MARLEY 2	09/09/2021 10:44

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1410	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000006	MA01-20210909, MARLEY 1	09/09/2021 11:14

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	517	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000007	MADP-20210909, MARLEY DUP	09/09/2021 11:08

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	816	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55494	000008	MABLK-20210909, MARLEY BLANK	09/09/2021 09:08

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	<1	mpn/100ml	SM Enterolert	1	09/09/2021 13:17 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 55494 **Client Code**

Client Name/Phone AECOM GERMANTOWN

Client Address 12420 MILESTONE CENTER DR., GERMANTOWN MD

E-mail Address agrima.poudel@aecom.com

Sampler John Pellegrino

Project #/Name AA CO ENTERO SEPTEMBER - MARLEY CREEK

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA06-20210909	Marley 6	W	Sterile Bottle Flip Top	1	9/9/21	921	Entero w/ Dilutions
MA05-20210909	Marley 5	↓	↓	↓	↓	941	↓
MA04-20210909	Marley 4					957	
MA03-20210909	Marley 3					1023	
MA02-20210909	Marley 2					1044	
MA01-20210909	Marley 1					1114	
MADP-20210909	Marley Dup	↓	↓	↓	↓	1108	
MABLK-20210909	Marley Blank	↓	↓	↓	↓	908	↓

Transferred by: JP	Received by:	Date 9/9/21	Time 1215
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 8.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: AE Date: 9/9/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: John Pellegrino/Agrima Poudel

Monday, October 25, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 55970.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 10/13/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

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Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55970	000001	FU01-211013, FURNACE CREEK 01	10/13/2021 11:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	43	mpn/100ml	SM Enterolert	1	10/13/2021 14:32 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55970	000002	FU02-211013, FURNACE CREEK 02	10/13/2021 10:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	162	mpn/100ml	SM Enterolert	1	10/13/2021 14:32 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55970	000003	FU03-211013, FURNACE CREEK 03	10/13/2021 10:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	87	mpn/100ml	SM Enterolert	1	10/13/2021 14:32 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55970	000004	FU04-211013, FURNACE CREEK 04	10/13/2021 09:50

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	687	mpn/100ml	SM Enterolert	1	10/13/2021 14:32 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55970	000005	FU05-211013, FURNACE CREEK 05	10/13/2021 09:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	727	mpn/100ml	SM Enterolert	1	10/13/2021 14:32 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55970	000006	FU06-211013, FURNACE CREEK 06	10/13/2021 09:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	649	mpn/100ml	SM Enterolert	1	10/13/2021 14:32 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
55970	000007	FUDP-211013, FURNACE CREEK DP	10/13/2021 10:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	276	mpn/100ml	SM Enterolert	1	10/13/2021 14:32 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 559-10 Client Code

Client Name/Phone AECOM GERMANTOWN

Client Address 12420 MILESTONE CENTER DR, GERMANTOW

E-mail Address agrima.poudel@gmail.com

Sampler J. PELLEGRINO

Project #/Name AA Co ENTERO - OCT. FURNACE

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU01-211013	Furnace Creek 01	W	Flip-top bottle	1	10/13/21	1100	IDDEX Entrolert w. dilutions
FU02-211013	02			1		1030	
FU03-211013	03			1		1010	
FU04-211013	04			1		0950	
FU05-211013	05			1		0930	
FU06-211013	06			1		0910	
FUDP-211015	DP			1		1015	

Transferred by:	Received by:	Date	Time
		10/13/21	1210
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue Ice? - Yes/No IR temp = 3.9

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 10/13/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Thursday, November 4, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 56005.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 10/14/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

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All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56005	000001	MA-01-20211014, MARLEY CREEK 01	10/14/2021 10:35

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	488	mpn/100ml	SM Enterolert	1	10/14/2021 14:56 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56005	000002	MA-02-20211014, MARLEY CREEK 02	10/14/2021 09:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	161	mpn/100ml	SM Enterolert	1	10/14/2021 14:56 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56005	000003	MA-03-20211014, MARLEY CREEK 03	10/14/2021 09:35

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	387	mpn/100ml	SM Enterolert	1	10/14/2021 14:56 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56005	000004	MA-04-20211014, MARLEY CREEK 04	10/14/2021 09:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1730	mpn/100ml	SM Enterolert	1	10/14/2021 14:56 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56005	000005	MA-05-20211014, MARLEY CREEK 05	10/14/2021 09:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	387	mpn/100ml	SM Enterolert	1	10/14/2021 14:56 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56005	000006	MA-06-20211014, MARLEY CREEK 06	10/14/2021 08:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1730	mpn/100ml	SM Enterolert	1	10/14/2021 14:56 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 56065 Client Code

Sampler John Pellegrino

Client Name/Phone ABCOM G

Project #/Name AA Co ENTERO - OCT. MARLEY

Client Address 12420 MILESTONE CENTER DR, SUITE 150 GERMANTOWN, MD

Contract/P.O #

E-mail Address agrima.poudel@gmail.com

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA-01-20211014	Marley Creek 01		Flip top bottle; screw top w/ HNO3	2	10/14	10:35	Entero w/ dilutions; Boron
MA-02-20211014	" 02		"	2	10/14	9:55	"
MA-03-20211014	" 03		"	2	10/14	9:35	"
MA-04-20211014	" 04		"	2	10/14	~~9:00~~ ST 9:15	"
MA-05-20211014	" 05		"	2	10/14	9:00	"
MA-06-20211014	" 06		"	2	10/14	8:40	"

Transferred by:	Received by:	Date	Time
Sara Tolnay	[signature]	10/14	11:20

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - (Yes)/No IR temp = 5.5

Sample containers pres'd? - (Yes)/No If No, explain

Custody Seal present? - Yes/(No) Intact - Yes/No

Initials: ae Date: 10/14/21

Pg. 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, November 16, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 56366.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 11/10/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

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All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56366	000001	FU01-211110, FURNACE 01	11/10/2021 10:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	8	mpn/100ml	SM Enterolert	1	11/10/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56366	000002	FU02-211110, FURNACE 02	11/10/2021 10:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	43	mpn/100ml	SM Enterolert	1	11/10/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56366	000003	FU03-211110, FURNACE 03	11/10/2021 10:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	61	mpn/100ml	SM Enterolert	1	11/10/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56366	000004	FU04-211110, FURNACE 04	11/10/2021 10:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	153	mpn/100ml	SM Enterolert	1	11/10/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56366	000005	FU05-211110, FURNACE 05	11/10/2021 09:25

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	111	mpn/100ml	SM Enterolert	1	11/10/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56366	000006	FU06-211110, FURNACE 06	11/10/2021 09:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	411	mpn/100ml	SM Enterolert	1	11/10/2021 13:25 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 56366 **Client Code**

Client Name/Phone AECOM G 240 409-0227

Client Address 12420 MILESTONE CENTER DR. SUITE 150 ~~GERMANTOWN, MD 20876~~

E-mail Address john.pellegrino@aecom.com

Sampler J. PELLEGRINO

Project #/Name AA 60 ENTERO NOVEMBER - FURNACE

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU01-211110	FURNACE 01	W	Flip-top bottle	1	2021-11-10	10:55	IDDEX INTERDLERT w/ Dilutions
FU02-211110	02			1		10:30	
FU03-211110	03			1		10:15	
FU04-211110	04			1		10:00	
FU05-211110	05			1		9:25	
FU06-211110	06			1		9:10	

Transferred by: Stephan Smith	Received by:	Date 11/10/21	Time 1140
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 3.5

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 11/10/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, November 16, 2021

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 56396.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 11/11/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

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Notices:

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All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56396	000001	MA-01-211111, MARLEY CREEK 01	11/11/2021 10:35

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	172	mpn/100ml	SM Enterolert	1	11/11/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56396	000002	MA-02-211111, MARLEY CREEK 02	11/11/2021 10:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	120	mpn/100ml	SM Enterolert	1	11/11/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56396	000003	MA-03-211111, MARLEY CREEK 03	11/11/2021 09:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	129	mpn/100ml	SM Enterolert	1	11/11/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56396	000004	MA-04-211111, MARLEY CREEK 04	11/11/2021 09:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	866	mpn/100ml	SM Enterolert	1	11/11/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56396	000005	MA-05-211111, MARLEY CREEK 05	11/11/2021 09:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	125	mpn/100ml	SM Enterolert	1	11/11/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56396	000006	MA-06-211111, MARLEY CREEK 06	11/11/2021 08:50

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	488	mpn/100ml	SM Enterolert	1	11/11/2021 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56396	000007	MA-DP-211111, MARLEY CREEK DP	11/11/2021 09:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	55	mpn/100ml	SM Enterolert	1	11/11/2021 13:25 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 56396 Client Code

Client Name/Phone AECOM & 2404090227

Client Address 12420 MILESTONE CENTER DR. SUITE 150 GERMANTOWN, MD, 20876

E-mail Address johnpellegrino@aecom.com

Sampler J. PELLEGRINO

Project #/Name AA CO MARLEY NOVEMBER

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA-01-211111	marley creek 01		plastic tab container	1	11/11/21	~~10:35~~ 10:30	enterolert w/ dilutions
MA-02-211111	marley creek 02		"	1	"	10:00	"
MA-03-211111	" 03		"	1	"	9:45	"
MA-04-211111	" 04		"	1	"	9:30	"
MA-05-211111	" 05		"	1	"	9:15	"
MA-06-211111	" 06		"	1	"	8:50	"
MA-DP-211111	" DP		"	1	"	9:15	"

Transferred by: Sara Tolray	Received by:	Date 11/11/21	Time 1120
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 1.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: AE Date: 11/11/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: John Pellegrino/Agrima Poudel

Wednesday, January 5, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 56781.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 12/8/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

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Thomas Mensah
Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56781	000001	FU01-211208, FURNACE 01	12/08/2021 11:47

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	8	mpn/100ml	SM Enterolert	1	12/08/2021 14:23 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56781	000002	FU02-211208, FURNACE 02	12/08/2021 11:21

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	214	mpn/100ml	SM Enterolert	1	12/08/2021 14:23 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56781	000003	FU03-211208, FURNACE 03	12/08/2021 11:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	25	mpn/100ml	SM Enterolert	1	12/08/2021 14:23 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56781	000004	FU04-211208, FURNACE 04	12/08/2021 10:41

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	199	mpn/100ml	SM Enterolert	1	12/08/2021 14:23 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56781	000005	FU05-211208, FURNACE 05	12/08/2021 10:26

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	105	mpn/100ml	SM Enterolert	1	12/08/2021 14:23 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56781	000006	FU06-211208, FURNACE 06	12/08/2021 10:02

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	199	mpn/100ml	SM Enterolert	1	12/08/2021 14:23 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

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MARTEL Log # 56781 Client Code

Client Name/Phone AECOM 5712969547

Client Address 12420 Milestone Centre Dr Suite 150

E-mail Address agrima.poudel@aecom.com

Sampler Stephen Smith

Project #/Name AALO

Contract/P.O #

Sample Turnaround Time

Sample No.		Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU01-21	11208	Furnace 01	W	Sterile bottle	1	12/8	1147	Entero
FU02-21	11208	Furnace 02	W	flip top	1	12/8	1121	
FU03-21	11208	Furnace 03	W		1	12/8	1100	
FU04-21	11208	Furnace 04	W		1	12/8	1041	
FU05-21	11208	Furnace 05	W		1	12/8	1026	
FU06-21	11208	Furnace 06	W		1	12/8	1002	

Transferred by: Stephen Smith	Received by:	Date 12/8/21	Time 1253
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 4.5

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 12/8

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: John Pellegrino/Agrima Poudel

Wednesday, January 5, 2022

Certificate of Analysis
FINAL

Samples analyzed according to method requirements and QC exceptions available.

Project Information:

Report for Lab No: 56807.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 12/9/21

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

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Project Manager

MARTEL

Certificate of Analysis

MARTEL NO. 56807 000001 — CLIENT SAMPLE IDENTIFICATION: MA01-211209, MARLEY CREEK 01 — Sample Date/Time: 12/09/2021 12:09

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	71	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA
Boron	0.008	mg/l	EPA 200.8	0.005	01/04/2022 13:19 BJ

MARTEL NO. 56807 000002 — CLIENT SAMPLE IDENTIFICATION: MA02-211209, MARLEY CREEK 02 — Sample Date/Time: 12/09/2021 11:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	52	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA
Boron	0.010	mg/l	EPA 200.8	0.005	01/04/2022 13:32 BJ

MARTEL NO. 56807 000003 — CLIENT SAMPLE IDENTIFICATION: MA03-211209, MARLEY CREEK 03 — Sample Date/Time: 12/09/2021 10:46

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	47	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA
Boron	0.009	mg/l	EPA 200.8	0.005	01/04/2022 13:35 BJ

MARTEL NO. 56807 000004 — CLIENT SAMPLE IDENTIFICATION: MA04-211209, MARLEY CREEK 04 — Sample Date/Time: 12/09/2021 10:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	5	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA
Boron	0.011	mg/l	EPA 200.8	0.005	01/04/2022 13:38 BJ

MARTEL NO. 56807 000005 — CLIENT SAMPLE IDENTIFICATION: MA05-211209, MARLEY CREEK 05 — Sample Date/Time: 12/09/2021 09:59

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	23	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA
Boron	0.009	mg/l	EPA 200.8	0.005	01/04/2022 13:40 BJ

MARTEL NO. 56807 000006 — CLIENT SAMPLE IDENTIFICATION: MA06-211209, MARLEY CREEK 06 — Sample Date/Time: 12/09/2021 09:34

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	36	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA
Boron	0.056	mg/l	EPA 200.8	0.005	01/04/2022 13:43 BJ

MARTEL NO. 56807 000007 — CLIENT SAMPLE IDENTIFICATION: MADP-211209, MARLEY CREEK DP — Sample Date/Time: 12/09/2021 09:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	33	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
56807	0O0008	MABLK-211209, MARLEY CREEK BLANK	12/09/2021 09:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	<1	mpn/100ml	SM Enterolert	1	12/09/2021 15:24 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 56807 **Client Code**

Client Name/Phone AECOM Germantown

Client Address 12420 Milestone Center Dr Suite 150

E-mail Address agrima.poudel@aecom.com

Sampler Stephen Smith

Project #/Name AACO Entero - December Marley

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA01-211209	Marley 01	W	Flip top bottle; screw top w/ HNO_3	2	12/9	1209	Entero w/ dilutions; Boron
MA02-211209	Marley 02	W	↓	2	12/9	1140	↓
MA03-211209	Marley 03	W		2	12/9	1046	
MA04-211209	Marley 04	W		2	12/9	1028	
MA05-211209	Marley 05	W		2	12/9	0959	
MA06-211209	Marley 06	W	↓	2	12/9	934	↓
MADP-211209	Marley DP	W	flip top bottle	1	12/9	920	Entero w/ dilutions
MABLK-211209	Marley Blank	W	↓	1	12/9	915	↓

Transferred by: Stephen Smith SS	Received by:	Date 12/9/21	Time 1311
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information (LAB USE ONLY)

Received on ice/blue ice? - Yes/No IR temp = 3.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 12/9/21

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, January 18, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 57195.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 1/12/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57195	000001	FU-01, FURNACE CREEK 01	01/12/2022 10:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	46	mpn/100ml	SM Enterolert	1	01/12/2022 13:54 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57195	000002	FU-02, FURNACE CREEK 02	01/12/2022 10:05

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	23	mpn/100ml	SM Enterolert	1	01/12/2022 13:54 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57195	000003	FU-03, FURNACE CREEK 03	01/12/2022 09:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	186	mpn/100ml	SM Enterolert	1	01/12/2022 13:54 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57195	000004	FU-04, FURNACE CREEK 04	01/12/2022 09:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	53	mpn/100ml	SM Enterolert	1	01/12/2022 13:54 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57195	000005	FU-05, FURNACE CREEK 05	01/12/2022 09:05

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	26	mpn/100ml	SM Enterolert	1	01/12/2022 13:54 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57195	000006	FU-06, FURNACE CREEK 06	01/12/2022 08:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	25	mpn/100ml	SM Enterolert	1	01/12/2022 15:31 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57195	000007	DUP-01 (Blank), FURNACE CREEK	01/12/2022 00:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	122	mpn/100ml	SM Enterolert	1	01/12/2022 13:54 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 57195 Client Code

Client Name/Phone AECOM Germantown

Client Address 12420 Milestone Center Drive, Ste 150 Germantown, MD

E-mail Address agrima.poudel@aecom.com

Sampler Justin Derato and Stephen Smith

Project #/Name AA Co. Entero January 2022 Furnace

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU-01	Furnace Creek 01	Water	Flip-Top Bottle | sod. thio	1	1-12-22	10:30	Entero w/ Dilutions
FU-02	" 02	Water		1	1-12-22	10:05	"
FU-03	" 03	Water		1	1-12-22	9:45	"
FU-04	" 04	Water		1	1-12-22	9:30	"
FU-05	" 05	Water		1	1-12-22	~~8:40~~ 9:05	"
FU-06	" 06	Water		1	1-12-22	8:40	"
DUP-01	"	Water		1	1-12-22	~~1032~~	"
							samp 7 → blank

Transferred by:	Received by:	Date 1/12/22	Time 1130
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 2.5

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 1/12/22

Page 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, January 18, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 57226.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 1/13/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

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The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57226	000001	MA-01, MARLEY CREEK	01/13/2022 09:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	57	mpn/100ml	SM Enterolert	1	01/13/2022 11:28 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57226	000002	MA-02, MARLEY CREEK	01/13/2022 09:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	86	mpn/100ml	SM Enterolert	1	01/13/2022 11:28 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57226	000003	MA-03, MARLEY CREEK	01/13/2022 09:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	107	mpn/100ml	SM Enterolert	1	01/13/2022 11:28 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57226	000004	MA-04, MARLEY CREEK	01/13/2022 09:05

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	326	mpn/100ml	SM Enterolert	1	01/13/2022 11:28 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57226	000005	MA-05, MARLEY CREEK	01/13/2022 ~~08:58~~ 08:55 - annotated 2/2/2022

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	24	mpn/100ml	SM Enterolert	1	01/13/2022 11:28 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57226	000006	MA-06, MARLEY CREEK	01/13/2022 08:25

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	345	mpn/100ml	SM Enterolert	1	01/13/2022 11:28 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

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MARTEL Log # S7726 **Client Code**

Client Name/Phone AECOM

Client Address 12420 Milestone Center Dr, Germantown MD

E-mail Address agrima.poudel@aecom.com

Sampler Sara Tolnay, Justin Derato

Project #/Name Anne Arundel County Bacteria Monitoring

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA-01	Marley Creek	W	Flip Top	1	1/13/22	9:55	Entero w/ dilutions
MA-02	"	"	"	1	"	9:30	"
MA-03	"	"	"	1	"	9:20	"
MA-04	"	"	"	1	"	9:05	"
MA-05	"	"	"	1	"	~~8:50~~	08:55 " annotated 2/22/2022
MA-06	"	"	"	1	"	8:25	"

Transferred by: Sara Tolnay	Received by:	Date 1/13/22	Time 10:30
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? Yes/No IR temp = 5.5

Sample containers pres'd? Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: AP Date: 1/13/22

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, February 15, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 57541.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 2/9/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57541	000001	FU-01-20220209	02/09/2022 10:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	13	mpn/100ml	SM Enterolert	1	02/09/2022 13:38 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57541	000002	FU-02-20220209	02/09/2022 10:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	11	mpn/100ml	SM Enterolert	1	02/09/2022 13:38 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57541	000003	FU-03-20220209	02/09/2022 09:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	3	mpn/100ml	SM Enterolert	1	02/09/2022 13:38 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57541	000004	FU-04-20220209	02/09/2022 09:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	25	mpn/100ml	SM Enterolert	1	02/09/2022 13:38 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57541	000005	FU-05-20220209	02/09/2022 09:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	13	mpn/100ml	SM Enterolert	1	02/09/2022 13:38 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57541	000006	FU-05 DP-20220209	02/09/2022 09:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	12	mpn/100ml	SM Enterolert	1	02/09/2022 13:38 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57541	000007	FU-06-20220209	02/09/2022 08:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	13	mpn/100ml	SM Enterolert	1	02/09/2022 13:38 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 57541 Client Code

Client Name/Phone AECOM, 301-8207 3000

Client Address 12420 Milestone Center Dr #150, Germantown MD

E-mail Address aprima.poudel@aecom.com

Sampler S. Smith, S. Tolnay

Project #/Name Anne Arundel County Bacteria Monitoring

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU-01-20220209	FU-01	W	Flip-top container	1	2/9	10:45	Entero w/ dilutions
FU-02-20220209	FU-02	W	"	1	"	10:15	"
FU-03-2022-0209	FU-03	W	"	1	"	9:55	"
FU-04-20220209	FU-04	W	"	1	"	9:40	"
FU-05-20220209	FU-05	W	"	1	"	9:15	"
FU-DP-20220209	FU-05	W	"	1	"	9:15	"
FU-06-20220209	FU-06	W	"	1	"	8:40	"

Transferred by: Sara Tolnay	Received by:	Date 2/9	Time 11:30
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - (Yes)/No IR temp = 5.0

Sample containers pres'd? (Yes)/No If No, explain

Custody Seal present? - Yes/(No) Intact - Yes/No

Initials: QQ Date: 2/9/22

Page 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, February 15, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 57572.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 2/10/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

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Measurement uncertainty for each listed test is available upon request.
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All samples tested were in acceptable condition, unless otherwise noted.

Thomas McCarthy
Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57572	000001	MA-01-20220210	02/10/2022 10:25

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	108	mpn/100ml	SM Enterolert	1	02/10/2022 13:47 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57572	000002	MA-02-20220210	02/10/2022 09:58

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	133	mpn/100ml	SM Enterolert	1	02/10/2022 13:47 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57572	000003	MA-03-20220210	02/10/2022 09:41

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	150	mpn/100ml	SM Enterolert	1	02/10/2022 13:47 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57572	000004	MA-04-20220210	02/10/2022 09:25

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	3	mpn/100ml	SM Enterolert	1	02/10/2022 13:47 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57572	000005	MA-05-20220210	02/10/2022 08:50

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	51	mpn/100ml	SM Enterolert	1	02/10/2022 13:47 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57572	000006	MA-06-20220210	02/10/2022 08:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	179	mpn/100ml	SM Enterolert	1	02/10/2022 13:47 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

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MARTEL Log # 57572 Client Code

Client Name/Phone AECOM 301-820-3000

Client Address 12420 Milestone Center Dr #150, Germantown MD

E-mail Address agrima.paudel@aecom.com

Sampler S. Smith, S. Tolnay

Project #/Name Anne Arundel County Bacteria Monitoring

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA-01-20220210	MA-01	W	Flip top container	1	2/10	1025	Entero w/ dilutions
MA-02-20220210	MA-02	W	"	1	2/10	09:58	"
MA-03-20220210	MA-03	W	"	1	2/10	09:41	"
MA-04-20220210	MA-04	W	"	1	2/10	09:25	"
MA-05-20220210	MA-05	W	"	1	2/10	08:50	"
MA-06-20220210	MA-06	W	"	1	2/10	08:15	"

Transferred by: Sara Tolnay	Received by:	Date 2/10	Time 11:15
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 3.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 2/10/22

Pg 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Monday, March 14, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 57956.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 3/10/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

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Measurement uncertainty for each listed test is available upon request.
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All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57956	000001	FU06-20220310, FURNACE CREEK 06	03/10/2022 08:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	205	mpn/100ml	SM Enterolert	1	03/10/2022 13:57 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57956	000002	FU05-20220310, FURNACE CREEK 05	03/10/2022 09:26

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	435	mpn/100ml	SM Enterolert	1	03/10/2022 13:57 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57956	000003	FU04-20220310, FURNACE CREEK 04	03/10/2022 09:38

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	387	mpn/100ml	SM Enterolert	1	03/10/2022 13:57 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57956	000004	FU03-20220310, FURNACE CREEK 03	03/10/2022 09:53

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	36	mpn/100ml	SM Enterolert	1	03/10/2022 13:57 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57956	000005	FU02-20220310, FURNACE CREEK 02	03/10/2022 10:09

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	186	mpn/100ml	SM Enterolert	1	03/10/2022 13:57 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57956	000006	FU01-20220310, FURNACE CREEK 01	03/10/2022 10:26

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	17	mpn/100ml	SM Enterolert	1	03/10/2022 13:57 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 57956 **Client Code**

Client Name/Phone Agrima Poudel 571-296-9547

Client Address 12420 Milestone Center Dr Suite 150

E-mail Address agrima.poudel@aecom.com

Sampler Stephen Smith

Project #/Name Anne Arundel Bact. Sampling

Contract/P.O # 128358 # 6006360047

Sample Turnaround Time 2 Business Days

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU00-20220310	Furnace Creek DUP	W	Flip-top	1	3/10	0855	Entero w/ dilutions
FU05-20220310	Furnace Creek 05	W	Flip-top	1	3/10	0920	Entero w/ dilutions
FU04-20220310	Furnace Creek 04	W	Flip-top	1	3/10	0938	Entero w/ dilutions
FU03-20220310	Furnace Creek 03	W	Flip-top	1	3/10	0953	Entero w/ dilutions
FU02-20220310	Furnace Creek 02	W	Flip-top	1	3/10	1009	Entero w/ dilutions
FU01-20220310	Furnace Creek 01	W	Flip-top	1	3/10	1026	Entero w/ dilutions

Transferred by: Stephen Smith	Received by:	Date 3/10/22	Time 1130
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - (Yes)/No IR temp = 4.5

Sample containers pres'd? - (Yes)/No If No, explain

Custody Seal present? - Yes/(No) Intact - Yes/No

Initials: AL Date: 3/10/22

Pg 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Monday, March 14, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 57984.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 3/11/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000001	MA01-20220311, MARLEY CREEK 01	03/11/2022 10:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	57	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000002	MA02-20220311, MARLEY CREEK 02	03/11/2022 10:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	4	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000003	MA03-20220311, MARLEY CREEK 03	03/11/2022 09:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	88	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000004	MA04-20220311, MARLEY CREEK 04	03/11/2022 09:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	88	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000005	MA05-20220311, MARLEY CREEK 05	03/11/2022 08:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	93	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000006	MA06-20220311, MARLEY CREEK 06	03/11/2022 08:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	131	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000007	MADP-20220311, MARLEY CREEK DP	03/11/2022 08:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	146	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
57984	000008	MAFB-20220311, MARLEY CREEK FB	03/11/2022 08:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	<1	mpn/100ml	SM Enterolert	1	03/11/2022 13:30 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 52984 Client Code

Client Name/Phone AECOM (

Client Address 12420 MILESTONE CENTER DR SUITE 150 GERMANTOWN MD

E-mail Address AGEIMD.BOUDEL@AECOM.COM

Sampler J PELLEGRINO

Project #/Name AA CO BACTERIA MONITORING - MARLEY MARSH TOTS

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA01-20220311	MARLEY CREEK 01	W	FLIP-TOP PLASTIC	1	3/11	1030	IDDEX ENTEROVERT w/ DILUTIONS
MA02-20220311	02			1		1000	
MA03-20220311	03			1		0940	
MA04-20220311	04			1		0900	
MA05-20220311	05			1		0845	
MA06-20220311	06			1		0815	
MADP-20220311	DP			1		0820	
MAFB-20220311	FB			1		0900	

Transferred by: J PELLEGRINO	Received by:	Date 3/11	Time 1200
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 3

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 3/11/22

pg 3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Monday, April 18, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 58416.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 4/13/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

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Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Thomas Mellott
Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58416	000001	FU01-220413, FURNACE CREEK 01	04/13/2022 10:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	16	mpn/100ml	SM Enterolert	1	04/13/2022 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58416	000002	FU02-220413, FURNACE CREEK 02	04/13/2022 10:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	24	mpn/100ml	SM Enterolert	1	04/13/2022 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58416	000003	FU03-220413, FURNACE CREEK 03	04/13/2022 09:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	28	mpn/100ml	SM Enterolert	1	04/13/2022 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58416	000004	FU04-220413, FURNACE CREEK 04	04/13/2022 09:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	99	mpn/100ml	SM Enterolert	1	04/13/2022 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58416	000005	FU05-220413, FURNACE CREEK 05	04/13/2022 09:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	99	mpn/100ml	SM Enterolert	1	04/13/2022 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58416	000006	FU06-220413, FURNACE CREEK 06	04/13/2022 08:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	79	mpn/100ml	SM Enterolert	1	04/13/2022 13:25 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58416	000007	FUDP-220413, FURNACE CREEK DP	04/13/2022 00:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	154	mpn/100ml	SM Enterolert	1	04/13/2022 13:25 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

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MARTEL Log # 58416 Client Code

Client Name/Phone AECOM G

Client Address 12420 MILESTONE CENTER DR. SUITE 150 GERMANTOWN MD

E-mail Address AGRIMA.POUDEL@AECOM.COM

Sampler J PELLEGRINO

Project #/Name AA Co ENTEROLERT BACTERIA SAMPLING

Contract/P.O # 60636047

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU01-220413	FURNACE CREEK 01	W	FLIP TOP BOTTLE	1	4/13	10:30	IDDEX ENTEROLERT W/ DILUTIONS
FU02-220413	02			1		10:00	
FU03-220413	03			1		9:45	
FU04-220413	04			1		9:30	
FU05-220413	05			1		9:10	
FU06-220413	06			1		8:40	
FUDP-220413	DP			1			

Transferred by:	Received by:	Date 4-13-22	Time 11:30
Transferred by:	Received by:	Date	Time
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 1.3

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 4/13/22

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Monday, April 18, 2022

Certificate of Analysis
FINAL

Project Information:

Report for Lab No: 58454.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 4/14/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58454	000001	MA01-220414, MARLEY CREEK 01	04/14/2022 10:05

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	125	mpn/100ml	SM Enterolert	1	04/14/2022 13:34 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58454	000002	MA02-220414, MARLEY CREEK 02	04/14/2022 09:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	225	mpn/100ml	SM Enterolert	1	04/14/2022 13:34 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58454	000003	MA03-220414, MARLEY CREEK 03	04/14/2022 09:25

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	365	mpn/100ml	SM Enterolert	1	04/14/2022 13:34 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58454	000004	MA04-220414, MARLEY CREEK 04	04/14/2022 09:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	111	mpn/100ml	SM Enterolert	1	04/14/2022 13:34 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58454	000005	MA05-220414, MARLEY CREEK 05	04/14/2022 08:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	517	mpn/100ml	SM Enterolert	1	04/14/2022 13:34 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58454	000006	MA06-220414, MARLEY CREEK 06	04/14/2022 08:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	3230	mpn/100ml	SM Enterolert	1	04/14/2022 13:34 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 58454 Client Code

Client Name/Phone AECOM G

Client Address 12420 MILESTONE CENTER DR. SUITE 150 GERMANTOWN, MD

E-mail Address AGRIMA.POUDEL@AECOM.COM

Sampler J. PELLEGRINO / J. DERATO

Project #/Name AA Co ENTERO

Contract/P.O # 60636047

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA01-220414	MARLEY CREEK 01	W	FLIP TOP BOTTLE	1	4/14	10:05	IDDEX ENTEROLERT w/ DILUTIONS
MA02-220414	02			1		9:40	
MA03-220414	03			1		9:25	
MA04-220414	04			1		9:10	
MA05-220414	05			1		8:55	
MA06-220414	06			1		8:40	

Transferred by:	Received by:	Date	Time
	Mary Adelman	4-14-22	11:00
Transferred by:	Received by:	Date	Time
		4/14/22	1113
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 10.5°C

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: MA Date: 4/14/22

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, May 17, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 58825.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 5/11/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

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Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58825	000001	FU06-220511, FURNACE CREEK 06	05/11/2022 09:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	82	mpn/100ml	SM Enterolert	1	05/11/2022 13:46 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58825	000002	FU05-220511, FURNACE CREEK 05	05/11/2022 10:05

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	172	mpn/100ml	SM Enterolert	1	05/11/2022 13:46 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58825	000003	FU04-220511, FURNACE CREEK 04	05/11/2022 10:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	127	mpn/100ml	SM Enterolert	1	05/11/2022 13:46 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58825	000004	FU03-220511, FURNACE CREEK 03	05/11/2022 10:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1050	mpn/100ml	SM Enterolert	1	05/11/2022 13:46 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58825	000005	FU02-220511, FURNACE CREEK 02	05/11/2022 10:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	186	mpn/100ml	SM Enterolert	1	05/11/2022 13:46 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58825	000006	FU01-220511, FURNACE CREEK 01	05/11/2022 11:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	17	mpn/100ml	SM Enterolert	1	05/11/2022 13:46 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 58825 **Client Code** _____ **Sampler** J PELLEGRINO

Client Name/Phone AECOM G **Project #/Name** AA CO - FURNACE BACTERIA MON

Client Address 12420 MILESTONE CENTER DR. SUITE 150 GERMANTOWN MD **Contract/P.O #** 60636047

E-mail Address AGRIMA.POUDEL@AECOM.COM **Sample Turnaround Time**

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU06-220511	FURNACE CREEK 06	W	FLIP TOP PLASTIC	1	5/11/22	0940	IDDEX ENTEROLERT W/DILUTIONS
FU05-220511	05			1		1005	
FU04-220511	04			1		1020	
FU03-220511	03			1		1040	
FU02-220511	02			1		1055	
FU01-220511	01			1		1120	
FUDP-220511	DP			1			JP 5/10

Transferred by: JOHN PELLEGRINO	Received by: 5/10/22 @ 1150	Date 5-11-22	Time 11:50
Transferred by: JUSTIN DERATO	Received by:	Date 5/11/22	Time 1245
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 2.0

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 5/11/22

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Tuesday, May 17, 2022

Certificate of Analysis
FINAL

Project Information:

Report for Lab No: 58849.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 5/12/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

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Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000001	MA01-220512, MARLEY CREEK 01	05/12/2022 10:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	225	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000002	MA02-220512, MARLEY CREEK 02	05/12/2022 09:45

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	345	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000003	MA03-220512, MARLEY CREEK 03	05/12/2022 09:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	248	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000004	MA04-220512, MARLEY CREEK 04	05/12/2022 09:10

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	261	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000005	MA05-220512, MARLEY CREEK 05	05/12/2022 08:55

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	210	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000006	MA06-220512, MARLEY CREEK 06	05/12/2022 08:35

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	6700	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000007	MADUP-220512, MARLEY CREEK DP	05/12/2022 00:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	11000	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
58849	000008	MABK-220512, MARLEY CREEK BLK	05/12/2022 08:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	<1	mpn/100ml	SM Enterolert	1	05/12/2022 14:05 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

Martel Laboratories JDS Inc. • 1025 Cromwell Bridge Road • Baltimore, MD 21286 • (410) 825-7790 • FAX (410) 821-1054 • martel@martellabs.com

MARTEL Log # 588419 **Client Code**

Client Name/Phone 12420 MILESTONE CENTER DR. SUITE 150 GERMANTOWN MD

Client Address AECOM 6

E-mail Address

Sampler J. PELLEGRINO

Project #/Name AA Co Entero - MARLEY, MAY 2022

Contract/P.O #

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA01-220512	MAPLEY CREEK 01	W	FLIP TOP PLASTIC	1	5/12/22	10:20	1DDCX ENTERO w/ DILUTIONS
MA02-220512	02			1		09:45	
MA03-220512	03			1		0930	
MA04-220512	04			1		0910	
MA05-220512	05			1		0855	
MA06-220512	06			1		0835	
MADUP-220512	DUP			1			
MABK-220512	BLANK			1		0840	

Transferred by: J PELLEGRINO	Received by: J. DERATO	Date 5-12-22	Time 1035
Transferred by: J. DERATO	Received by:	Date 5-12-22	Time 1200
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - (Yes)/No IR temp = 1.5

Sample containers pres'd? - (Yes)/No If No, explain

Custody Seal present? - Yes/(No) Intact - Yes/No

Initials: Date: 5/12/22

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Monday, June 13, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 59215.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Furnace - 6/8/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Thomas Murtagh
Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59215	000001	FU01-220608, FURNACE CREEK 01	06/08/2022 10:48

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	70	mpn/100ml	SM Enterolert	1	06/08/2022 14:07 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59215	000002	FU02-220608, FURNACE CREEK 02	06/08/2022 10:25

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	435	mpn/100ml	SM Enterolert	1	06/08/2022 14:07 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59215	000003	FU03-220608, FURNACE CREEK 03	06/08/2022 09:57

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	214	mpn/100ml	SM Enterolert	1	06/08/2022 14:07 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59215	000004	FU04-220608, FURNACE CREEK 04	06/08/2022 09:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1200	mpn/100ml	SM Enterolert	1	06/08/2022 14:07 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59215	000005	FU05-220608, FURNACE CREEK 05	06/08/2022 09:15

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	649	mpn/100ml	SM Enterolert	1	06/08/2022 14:07 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59215	000006	FU06-220608, FURNACE CREEK 06	06/08/2022 08:52

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	1990	mpn/100ml	SM Enterolert	1	06/08/2022 14:07 MA

MARTEL *CHAIN OF CUSTODY / SAMPLE INFORMATION FORM*

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MARTEL Log # 59215 Client Code

Client Name/Phone AECOM (

Client Address 12420 MILESTONE CENTER DR. SUITE 150, GERMANTOWN MD

E-mail Address AGRIMA.POUDEL@AECOM.COM

Sampler J. PELLEGRINO

Project #/Name AA CO ENTERO - FURNACE JUNE '22

Contract/P.O # 60636047

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
FU01-220608	FURNACE CREEK 01	W	FLIP TOP PLASTIC	1	6/8/22	1048	IDDEX ENTEROLERT W/DILUTIONS
FU02-220608	02			1		1025	
FU03-220608	03			1		0957	
FU04-220608	04			1		0940	
FU05-220608	05			1		0912	
FU06-220608	06			1		0852	

Transferred by: JP	Received by: Steven Bahre	Date 6/8/22	Time 1100
Transferred by: SB	Received by:	Date 6/8/22	Time 1135
Transferred by:	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp = 5.5

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 6/8/22

3

MARTEL

1025 Cromwell Bridge Road - Baltimore, Maryland 21286
PH 410-825-7790 martel@martellabs.com

AECOM
12420 Milestone Center Dr, Suite 150

Germantown, MD 20876
Attention: **John Pellegrino/Agrima Poudel**

Monday, June 13, 2022

Certificate of Analysis

FINAL

Project Information:

Report for Lab No: 59260.
P.O. Number: 128358
Project Identification: #60636047, AA County Entero, Marley - 6/9/22

Samples received by Martel and the results apply to the samples as received. Martel is not responsible for sample collection or transportation to the laboratory. Sampling Plan and Sampling Method are the responsibility of the client. Received dates are included in the chain of custody portion of the report.

References and Important Notes:

40CFR136=U.S. "Code of Federal Regulations", Title 40, Protection of the Environment, Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. SM="Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, and Water Environment Federation.

Notices:

Chain of Custody Form(s) are attached and are an integral part of this report.
This report will be retained for at least five years and will be disposed of without notice.
Measurement uncertainty for each listed test is available upon request.
The results presented herein relate only to the samples or items tested.
All samples tested were in acceptable condition, unless otherwise noted.

Project Manager

MARTEL

Certificate of Analysis

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000001	MA01-220609, MARLEY CREEK 01	06/09/2022 10:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	22500	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000002	MA02-220609, MARLEY CREEK 02	06/09/2022 10:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	48800	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000003	MA03-220609, MARLEY CREEK 03	06/09/2022 10:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	15500	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000004	MA04-220609, MARLEY CREEK 04	06/09/2022 09:40

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	29100	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000005	MA05-220609, MARLEY CREEK 05	06/09/2022 09:20

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	38700	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000006	MA06-220609, MARLEY CREEK 06	06/09/2022 09:05

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	23600	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000007	MADP-220609, MARLEY CREEK DP	06/09/2022 00:00

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	24900	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

MARTEL NO.		CLIENT SAMPLE IDENTIFICATION	Sample Date/Time
59260	000008	MAFB-220609, MARLEY CREEK FB	06/09/2022 08:30

Compound	Test Value	Test Unit	Method	LOQ/PQL	Analysis Date/Time/Initial
Enterococcus, Quantitray	<1	mpn/100ml	SM Enterolert	1	06/09/2022 14:10 MA

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Sampler J. PELLEGRINO

Project #/Name AA CO ENTERO - MARLEY JUN '22

Contract/P.O # 60636047

Sample Turnaround Time

Sample No.	Sample Location	Matrix	Container Description/Preservation Status	# of Containers	Date	Time	Analyses Required/Comments
MA01-220609	MARLEY CREEK 01	W	FLIP TOP PLASTIC	1	6/9/22	10:40	IDDEX ENTERO W/DILUTIONS
MA02-220609	02			1		10:20	
MA03-220609	03			1		10:00	
MA04-220609	04			1		9:40	
MA05-220609	05			1		9:20	
MA06-220609	06			1		9:05	
MADP-220609	DP			1		-	
MAFD-220609	FB			1		0830	

Transferred by: J. PELLEGRINO	Received by: J. Derato	Date 6/9/2022	Time 11:45
Transferred by: J. Derato	Received by:	Date 6/9/22	Time 1240
Transferred by: FD	Received by:	Date	Time

Cooler Receipt Information **(LAB USE ONLY)**

Received on ice/blue ice? - Yes/No IR temp =

Sample containers pres'd? - Yes/No If No, explain

Custody Seal present? - Yes/No Intact - Yes/No

Initials: Date: 6/9/22

Appendix D
Electronic Database
(Provided separately)