

BACTERIA TOTAL MAXIMUM DAILY LOAD (TMDL) ACTION PLAN FOR THE LOWER ACCOTINK CREEK

**FOR
U.S. ARMY GARRISON FORT BELVOIR, VIRGINIA**

March 2020

General VPDES Permit for Discharges of
Stormwater from Small Municipal
Separate Storm Sewer Systems
VPDES Permit VAR040093

Prepared For:



Directorate of Public Works
Environmental and Natural Resources Division
Fort Belvoir
9430 Jackson Loop
Fort Belvoir, VA 22060-5116

Prepared By:



7217 Lockport Place, Suite 201
Lorton, VA

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List of Acronyms

AW	American Water
BASH	Bird Air Strike Hazard
BMP	Best Management Practices
BRAC	Base Realignment and Closure
CWA	Clean Water Act
DAAF	Davison Army Airfield
DEQ	Department of Environmental Quality
DoD	Department of Defense
DPW	Directorate of Public Works
EPA	Environmental Protection Agency
FBNA	Fort Belvoir North Area
IDDE	Illicit Discharge Detection and Elimination
ISW	Industrial Stormwater
MS4	Municipal Separate Storm Sewer System
MWR	Directorate of Morale, Welfare, and Recreation
NPDES	National Pollutant Discharge Elimination System
R&D	Research and Development
SSO	Sanitary Sewer Overflow
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
VADEQ	Virginia Department of Environmental Quality
VDOT	Virginia Department of Transportation
VPDES	Virginia Pollutant Discharge Elimination System
WLA	Waste Load Allocation
WHMP	Wildlife Hazard Management Plan
WWG	Wildlife Working Group

1 INTRODUCTION AND BACKGROUND

The U.S. Army Garrison Fort Belvoir is located in southeastern Fairfax County, Virginia, approximately 16 miles southwest of Washington D.C. and 80 miles north of Richmond, Virginia. Fort Belvoir's military history dates to the early 1900s, when the facility was known as Camp Belvoir and used as an Army rifle range and training camp. The post was re-named Fort Humphreys in 1922, and became Fort Belvoir in 1935. Since 1935, Fort Belvoir has supported major U.S. military operations throughout the world.

In recent years, Fort Belvoir has functioned primarily as an administrative and logistics support center for the Army and as a host to 150 mission partner organizations. The current population at Fort Belvoir includes approximately 49,000 military, civilians and contractor personnel and provides support services for approximately 68,000 military personnel, dependents and retirees in the region.

Fort Belvoir consists of approximately 8,500 acres and is divided into two separated land areas, as shown in Figure 1. The Fort Belvoir North Area (FBNA), located just northwest of I-95, encompasses roughly 800 acres; while the Main Post, located between I-95 and the Potomac River, accounts for the remaining acreage. U.S. Route 1 (Richmond Highway) further divides the Main Post into two distinct geographical areas, referred to as North Post and South Post.

All urban area, as characterized by the 2010 census, of Fort Belvoir is covered under a General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), Permit #VAR040093. Fort Belvoir also holds a VPDES Industrial Stormwater (ISW) Individual Major Permit # VA0092771. This permit covers 31 industrial facilities located throughout the garrison and their associated drainage areas as shown in Figure 1. The ISW Permit covers approximately 770 acres of land on Fort Belvoir Main Post and North Area. Therefore, these areas are not included in the Fort Belvoir MS4 Permit or addressed in this TMDL action plan. Both Permits were issued by The Virginia Department of Environmental Quality (VADEQ).

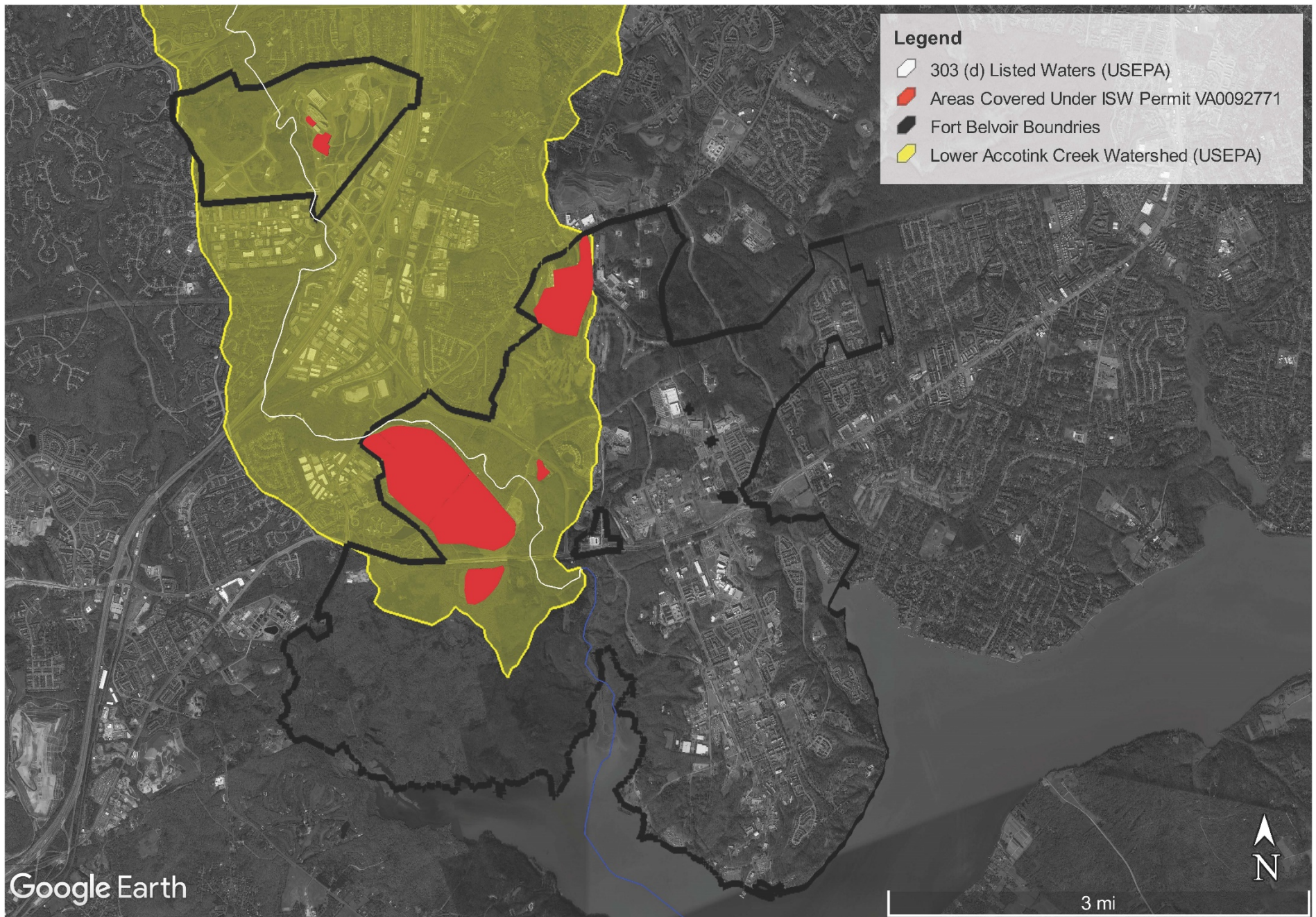
Under the Clean Water Act, States are required to develop a list of impaired waters based on the State's established water quality standards. The VADEQ states, "All Virginia waters are designated for the following uses: recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish." The VADEQ identified stream segments within the Lower Accotink Creek watersheds that did not meet the *Escherichia coli* (*E. coli*) standard and therefore did not protect the recreation beneficial use. A TMDL was developed and implemented for these impaired segments in 2008. The TMDL developed for bacteria reduction provides the means for Virginia to meet the *E. coli* water quality standards.

The goal of the Fort Belvoir Bacteria TMDL Action Plan for the Lower Accotink Creek Watershed is to implement measures that will assist in restoring water quality in the impaired water body and to potentially de-list the impaired segments of the Accotink from the Virginia 303(d) List of Impaired Waters for bacteria impairments.

The 2018-2023 MS4 General Permit was approved by the State Water Control Board on November 1, 2018 and the Permit reissued to Fort Belvoir on November 29, 2018. Part II.B of the permit covers requirements and TMDL special conditions as they relate to local TMDLs. This calls for the permittee to update any previously approved TMDL Action Plans to meet the conditions of Parts II.B.3 and B.4, which cover the requirements for all TMDL Action Plans and those in relation to Bacterial TMDLs. Table 1 below summarizes the requirements set forth within the permit and where in the action plan the requirement is met.

Table 1: Summary of Permit Requirements and Action Plan Location

Reference	Requirement	Action Plan Section
Part II.B.1.a	For TMDLs approved by the EPA prior to July 1, 2013, and in which an individual or aggregate wasteload has been allocated to the permittee, the permittee shall update the previously approved local TMDL action plans to meet the conditions of Part II B.3, B.4, B.5, B.6, and B.7 as applicable, no later than 18 months after the permit effective date and continue implementation of the action plan	Action Plan in its entirety
Part II.B.3.a	The TMDL project name	1 – Introduction and Background
Part II.B.3.b	The EPA approval date of the TMDL	2.1 - Section 303(d) of the Clean Water Act
Part II.B.3.c	The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable	2.1 - Section 303(d) of the Clean Water Act
Part II.B.3.d	Identification of the significant sources of the pollutants of concern discharging to the permittee's MS4 and are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL	4 – Bacteria Source Assessment
Part II.B.3.e	The BMPs designed to reduce the pollutants of concern in accordance with Parts II.B.4-6;	5 – Best Management Practices
Part II.B.3.f	Any calculations required in accordance with Part II B.4-6	N/A
Part II.B.3.g	For action plans developed in accordance with Part II.B.4 and B.5, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants; and	5.1.3 – BMP BAC.3: Education and Outreach
Part II.B.3.h	A schedule of anticipated actions planned for implementation during this permit term.	6.1 – Implementation Schedule and Assessment of the Action Plan
Part II.B.4	If the permittee is not an approved VSMP authority, the permittee shall select at least one strategy listed in Table 5 (Appendix A) designed to reduce the load of bacteria to the MS4 relevant to sources of bacteria applicable within the MS4 regulated service area. Selection of the strategies shall correspond to sources identified in Part II.B.3.e.	5.1 – Recommended BMPs for TMDL Compliance



Produced using EPA's MyWATERS KMZ and WATERS Geospatial Tools (U.S. Environmental Protection Agency (EPA), 2018)

Created For:
U.S. Army Garrison
Fort Belvoir

Figure 1-1: Fort Belvoir and the Lower Accotink Creek Watershed

Created By: **SES**
Construction and
Fuel Services LLC



2 LEGAL AUTHORITIES

2.1 Section 303(d) of the Clean Water Act (CWA) and the U.S. Environmental Protection Agency's (EPA's) Water Quality Planning and Management Regulations (40 CFR Part 130)

The CWA and EPA's Management regulations direct States to identify and list water bodies in which current required controls of a specified pollutant are inadequate to achieve water quality standards. For the Commonwealth of Virginia, Impaired waters are outlined in the biennial Virginia Water Quality Assessment 305(b)/303(d) Integrated report. Segment VAN-A15R-01 of Accotink Creek (See Figure 2-1) was first listed as impaired for bacteria on Virginia's 2004 305(b)/303(d) Water Quality Assessment Integrated Report.

States are then required to establish Total Maximum Daily Loads (TMDLs) for water bodies that are exceeding water quality standards. TMDLs represent the total pollutant loading that a water body can receive without violating water quality standards. The TMDL process establishes the allowable loadings of pollutants, or the waste load allocation (WLA), needed to achieve and maintain water quality standards. In September 2008, the Bacteria TMDL for the Lower Accotink Creek Watershed was developed by Virginia Department of Environmental Quality, George Mason University and The Louis Berger Group, Inc. The U.S. EPA approved the TMDL on December 18, 2008 and the State Water Control Board approved the TMDL shortly after on April 28, 2009.

The allocated *Escherichia coli* (E. coli) load from five MS4 sources in the Lower Creek Watershed was set at 1.73E+12 cfu/year. The five MS4 sources contributing to the load included the Phase I permit for Fairfax County and four Phase II permits for VDOT Northern Urban Area, Fairfax County Public Schools, Northern Virginia Community College and Fort Belvoir. (VADEQ, 2008)

2.2 40 CFR §122.44 Establishing limitations, standards and other permit conditions applicable to State NPDES programs

Section (d) (1) (vii) (B) requires that all new or revised National Pollutant Discharge Elimination System (NPDES) permits must be consistent with assumptions and requirements of any applicable TMDL WLA. The Commonwealth of Virginia, Virginia Department of Environmental Quality (VADEQ), regulates the management of pollutants carried by stormwater runoff under the Virginia Pollutant Discharge Elimination System (VPDES) program.

2.3 Fort Belvoir General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), MS4 Permit #VAR040093

As required by Fort Belvoir's MS4 permit, TMDL WLAs are specifically addressed through the iterative implementation of programmatic Best Management Practices (BMPs). Only failure to implement the programmatic BMPs identified in this plan would be considered a permit noncompliance issue. The local TMDL special conditions found within the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems at 9VAC-25-890-40 Part II.B.2 is stated as follows:

"TMDL action plans may be implemented in multiple phases over more than one permit cycle using the adaptive iterative approach provided adequate progress is achieved in the implementation of BMPs designed to reduce pollutant discharges in a manner that is consistent with the assumptions and requirements of the applicable TMDL."

2.4 Fort Belvoir Bacteria TMDL Action Plan

This action plan addresses the requirement to minimize the pollutant of concern, E. coli, by identifying legal authorities, Best Management Practices (BMPs) and measurable goals for achieving compliance in accordance with 9VAC25-890-40, Part II.B.1 through 4 of the Local TMDL Special Conditions of the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), MS4 Permit #VAR040093.

2.5 Fort Belvoir Policy Memorandum #28, Environmental Policy

Section 4.a. of this policy states:

“Fort Belvoir is committed to the protection of the environment, within mission and funding constraints, and will be accountable for its decisions. In support of this environmental policy, Fort Belvoir will: Comply with legal and other requirements applicable to the conduct of Fort Belvoir’s mission while continually improving Fort Belvoir’s environmental performance.”

2.6 Fort Belvoir Policy Memorandum #71, Stormwater Pollution Prevention

This policy establishes an enforceable policy that prohibits illicit discharges and connections across the installation. Section 5.a. of the policy states:

“The following are common sources of illicit discharges/illegal dumping at Fort Belvoir that are prohibited from entering the storm sewer system: sanitary sewer overflows, trash, paint, grease, motor oil or other lubricants, fuel, cooking oil, salt, fertilizer, pesticides, chemicals, liquid materials, lawn wastes (grass clippings and leaves), mulch, cigarette butts, sand, soil, construction materials, wash waters containing soaps, detergents and degreasers of any kind, fire hydrant and water line flushing and potable water tank discharge without prior de-chlorination, and pet/animal waste.”

This and other current policy memorandums may be found in full at:

<https://home.army.mil/belvoir/index.php/about/us-army-garrison-policy-memorandums>.

2.7 Fort Belvoir Regulation 40-905, Medical Services Animal Control

This regulation governs prohibition of feeding wildlife. Section 8.b. of this regulation states:

“Except for the use of bird feeders, all persons are prohibited from feeding any wildlife on the installation without approval of the Department of Defense (DoD) Game Warden, 703-806-4007.”

This and other current regulations may be found in full at:

<https://home.army.mil/belvoir/index.php/about/fort-belvoir-regulations>.

3 LOWER ACCOTINK CREEK WATERSHED AND LAND USE

The Lower Accotink Creek Watershed receives drainage from approximately 11,700 acres of land which includes about 1,700 acres of Fort Belvoir Main Post (including 635 acres covered under the ISW Permit) and most of FBNA's 800 acres (including 12 Acres covered under the ISW Permit). Approximately 1,850 acres of the MS4 drains into the lower Accotink.

FBNA is split almost evenly in the middle by the Accotink Creek. Currently, land use for FBNA is designated as Professional/Institutional use. East of Accotink Creek is a campus for a major mission partner and associated support facilities (fire department and child development center). Land use west of Accotink Creek at FBNA is minimal with approximately 300 acres that are undeveloped. Virginia Department of Transportation (VDOT) holds right-of way for the portion of land to the west associated with the Fairfax County Parkway (see Figure 3-1). Fairfax County holds a Public Utility easement for a major sanitary sewer gravity line that runs along the Accotink Creek on FBNA. (Atkins, 2014)

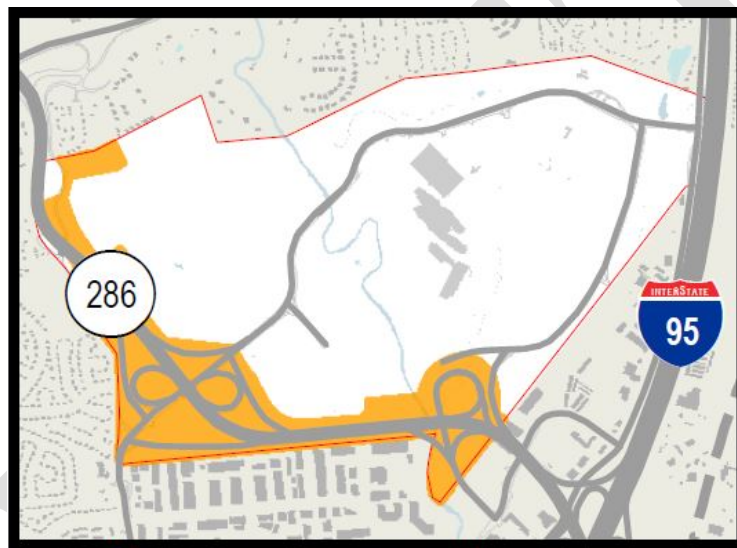


Figure 3-1: VDOT Right-of-way at FBNA

On Fort Belvoir Main Post, this watershed includes a major mission partner requiring a secure campus, a 36-hole golf course, Davison Army Air Field (DAAF), and a portion of the Accotink Bay Wildlife Refuge. Accotink Creek runs east of the Wildlife Refuge and DAAF, which is covered under the ISW Permit, and therefore is not addressed in this TMDL Action Plan. Richmond Highway runs east of the creek and provides access to the North Post and Route 1. VDOT holds right-of way and maintains both the Fairfax County Parkway and Route 1. Further east, the land use designation is divided between Community (area housing the golf course) and Professional/Institutional. Located on North Post between the Fairfax County Parkway and Gunston Road, the Professional/Institutional area houses a major mission partner that is one of three large research and development (R&D) clusters on Main Post. (Atkins, 2014)

4 BACTERIA SOURCE ASSESSMENT

Potential bacteria sources identified in the Bacteria TMDL for the Lower Accotink Creek Watershed dated September 2008 include the following: permitted sources, human sources, livestock, and land application of manure and Biosolids, wildlife and pets. The location and boundary of the Lower Accotink Creek Watershed receiving discharge from Fort Belvoir is shown in Figure 1-1. Potential bacteria sources from Fort Belvoir, within this watershed, were considered and their bacteria contribution is detailed below as required under Part II.B.3.d of the General MS4 Permit.

4.1 Permitted Facilities

Fort Belvoir does not own nor operate any sewage treatment works. All domestic sewage generated by Fort Belvoir goes to the Noman M. Cole Jr. Pollution Control Plant located at 9399 Richmond Highway, Lorton, Virginia 22079. Therefore, sewage treatment works are not considered a bacteria source in the portion of the Lower Accotink Watershed encompassing Fort Belvoir.

4.2 Wildlife

There are no anthropogenic activities which would influence the congregation of wildlife. Fort Belvoir Regulation 40-905 dated February 2000 prohibits feeding of wildlife in Section 8.b.

“Except for the use of bird feeders, all persons are prohibited from feeding any wildlife on the installation without the approval of the Department of Defense (DoD) Game Warden”

Fort Belvoir also implements a Weekly Windshield Inspection through the MS4 Program at DPW that focuses on the identification of stormwater issues. The program works to enforce proper trash management across the installation, at restaurants in particular, where food dumpsters and grease management areas may attract unwanted wildlife. Therefore, direct in stream loading from wildlife because of anthropogenic activities is not considered a substantial bacteria source in the portion of the Lower Accotink Watershed encompassing Fort Belvoir.

Although Fort Belvoir discourages tenants and staff from feeding wildlife there is still a large portion of the Accotink Creek watershed that belongs to Fort Belvoir where wildlife occurs naturally. The Accotink Creek Wildlife Refuge and Wildlife Corridor run from the southwestern portion of the watershed to the west just south of the golf course. These areas are maintained forested space and are designed to support natural wildlife and allow for a contiguous space that wildlife can use to freely move across the installation. Due to this, Fort Belvoir Directorate of Public Works (DPW) implements a program for reporting and removing animal carcasses from roadways and disposing of them off site. This practice limits bacteria being released due to wildlife carcasses and therefore is not considered a substantial bacteria source in the portion of the Lower Accotink Watershed encompassing Fort Belvoir.

4.3 Livestock

Fort Belvoir does not own or care for livestock within the Lower Accotink Creek Watershed. Therefore, livestock is not considered a bacteria source in the portion of the Lower Accotink Creek Watershed encompassing Fort Belvoir.

4.4 Land Application of Biosolids

Fort Belvoir does not conduct land application of Biosolids on either FBNA or Fort Belvoir Main Post. Therefore, land application of Biosolids is not a bacteria source in the Lower Accotink Creek Watershed on Fort Belvoir.

4.5 Land Application of Manure

Fort Belvoir has one horse stable, Cassion Stables, located just west of the Accotink Creek watershed, east of Old Colchester Road, and south of Route 1. Manure from this facility is collected daily and stored in roll-off dumpsters for weekly pickup. Bates, Fort Belvoir's Solid Waste contractor, collects the manure and takes it offsite for disposal. Fort Belvoir does not conduct land application of manure on either FBNA or Fort Belvoir Main Post. Therefore, land application of manure is not considered a bacteria source in the portion of the Lower Accotink Watershed encompassing Fort Belvoir.

4.6 Domestic Pets

There are no residential housing areas located at either FBNA or the portion of Fort Belvoir Main Post within the Lower Accotink Creek Watershed. However, on June 30, 2016 construction of a Working Animal Support Building was completed on the western side of FBNA. This facility houses on average 10 working dogs. As per Fort Belvoir Regulation 40-905 section 5.d and 5.e.

"Pet owners must immediately clean-up and properly dispose of all fecal waste created by their pet animal in public areas, yard areas of other residents and in their own yard. All feces an animal generates will be disposed of in a trash receptacle within a 24-hour period in order to reduce disease being spread from animals to humans."

"Pet owners must not allow their pet animals to create an unsightly, offensive, or potentially unhealthy environment with their excrement. Excrement must be picked up and disposed of daily."

As such, handlers are responsible for immediately picking up dog waste using the bags provided and placing the waste in the disposal container. A dog waste disposal container is permanently mounted outside in the dog exercise area. Once full, the container is emptied into a dumpster for final disposal.

Although no housing areas exist within the Accotink Creek Watershed, The Villages, Fort Belvoir's housing partners have a clear pet policy applicable to all tenants across the installation. The Villages provides dog parks and pet waste stations at all the neighborhoods for tenant use. The also require that all pets be registered by tenants, and that tenants follow the housing Pet Policy and Addendum. The policy states:

"Pets must be on a leash at all times when outside the fenced area of a Premises. Pets cannot be tied or staked outside of the home or left outside of the home unattended. Residents who walk their pets must carry a plastic bag or other appropriate container to retrieve and dispose of any droppings. Tenant shall promptly collect and remove all pet defecation from the grounds of the Community."

Because handlers dispose of dog waste correctly and tenants are provided with pet waste stations and required per their leases to collect any and dispose of any waste, pet waste is not considered a substantial bacteria source in the portion of the Lower Accotink Creek Watershed encompassing Fort Belvoir.

4.7 Birds

Geese and other like birds are seen as a problem in two sections of the Accotink Creek Watershed belonging to Fort Belvoir, The Airfield and stormwater ponds at FBNA. Although both of these areas are covered under the ISW permit, they still implement measures as deterrents for these birds, as discussed in detail in Section 5.3 below. Therefore, birds are not considered a bacteria source in the portion of the Lower Accotink Creek Watershed encompassing Fort Belvoir.

4.8 Sanitary Sewer Systems

4.8.1 Main Post

Fort Belvoir facilities located on Main Post within the Lower Accotink Creek Watershed are connected to a sanitary sewer system which is privatized. American Water (AW) Military Services purchased facilities and equipment from the U.S. Army on March 3, 2010. Because the assets were located on Fort Belvoir, the U.S. Army entered into a 50-year lease agreement with AW to allow them to own, operate, construct, repair, replace and maintain the system that was purchased. AW is responsible for reporting any sanitary sewer overflows to the Virginia Department of Environmental Quality. Under the Utility Privatization Contract, the U.S. Army pays AW for services. Public Utility Easements on the main post consist of a recently installed sewer force main that runs south of Route 1.

American Water implements a program to identify aging and comprised sanitary sewer lines for replacement. This practice has led to the identification and replacement of aging infrastructure, upgrading existing or constructing new facilities, ensuring fire protection and complying with the latest water quality standards. These infrastructure upgrades worked to limit the occurrences of sanitary sewer overflow (SSOs) across Fort Belvoir Main Post. AW also responds to SSO as they occur under emergency procedures. For all SSO they shut down and divert sanitary sewage around the break point, use cameras to perform probing and assess damage, submit for emergency dig permits which are expedited, and then complete any replacements or repairs needed. AW collects and disposes of any contaminated soils in the vicinity of the SSO and use lyme to disinfect any residual sewage that may remain before backfilling and restoring usage on the line.

Due to AW's ongoing work and emergency response procedures SSO's on Fort Belvoir Main Post systems are not considered a bacteria source in the portion of the Lower Accotink Creek Watershed encompassing Fort Belvoir.

4.8.2 Fort Belvoir North Area

Fort Belvoir North Area was not privatized during this Utility Privatization effort because construction for facilities at FBNA was not completed until September 2011 after the Base Realignment and Closure action (BRAC). The FBNA sanitary sewer system services a child development center, an office complex and a Fire Department. Portions of the FBNA sanitary sewer system tie into a main Fairfax County sewer line that runs adjacent to Accotink Creek with portions of the line being located on U.S. Army land on the east side of Accotink Creek. In addition, portions of the FBNA sanitary sewer system tie into a major Fairfax County trunk line running adjacent to the northern boundary of FBNA which services housing areas to the north of FBNA property line. Public Utility Easements at FBNA consist of a major sanitary sewer gravity line that runs along Accotink Creek on FBNA. These County-maintained lines flow to the Noman M. Cole Jr. Pollution Control Plant located at 9399 Richmond Highway, Lorton, Virginia 22079.

Sanitary sewer overflows (SSO) are not considered to be a source of bacteria at FBNA because Fairfax County is responsible for all SSOs associated with these two mainlines. The sanitary sewer system at FBNA owned by the Army is not currently considered to be a bacteria source because the system is relatively new (Construction completed September 2011 and later).

4.8.3 Septic Systems

There are no known facilities that are on septic systems. Therefore, failed septic systems are not considered a bacteria source in the portion of the Lower Accotink Creek Watershed encompassing Fort Belvoir.

5 BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) can be either structural/engineered or operational control measures that are put in place in order to mitigate the effects of pollutant sources on water quality. The selection of BMPs is dependent on the site characteristics and the pollutant of concern. For this TMDL Action Plan the pollutant of concern is bacterial loads largely due to fecal coliform. As discussed in Section 4, Bacteria Source Assessment, none of the considered sources caused a substantial bacterial discharge to the Lower Accotink Creek Watershed. Therefore, the focus of the BMPs selected for implementation will be operational controls and involve educating Fort Belvoir tenants, partners, employees, and residents of the bacteria water quality issue and what their role is in mitigating and reporting.

5.1 Recommended BMPs for TMDL Compliance

5.1.1 BMP BAC.1 Bacteria TMDL Action Plan Revision and Reporting

- ✚ **Measurable Goal:** Consider potential bacteria sources for any new or proposed projects occurring within the Lower Accotink Creek Watershed. Ensure that proper control measures/strategies are selected and implemented as required by Part II.B.4.b and detailed in Table 5 of the MS4 General Permit (Appendix A). Update the Action Plan as needed to include new sources and controls.
- ✚ **Reporting and Record Keeping:** In the annual report, provide a summary of any projects considered to be a potential source of bacteria and the strategies used for bacteria reduction and management.
- ✚ **Responsible Party:** Directorate of Public Works (DPW) Environmental Division

5.1.2 BMP BAC.2 Incorporate Bacteria TMDL Information into MS4 Training Program

- ✚ **Measurable Goal:** Include information on the Accotink TMDL, the most common sources of bacteria and strategies for bacteria reduction within the Stormwater Pollution Prevention Plan (SWPPP) Training (Levels 1 and 2), General SWPPP Training (Level 3), and Pre-Construction Training (Level 5). Levels of training are summarized in Appendix B.
- ✚ **Reporting and Record Keeping:** In the annual report, provide a summary of the audiences reached via the training program.
- ✚ **Responsible Party:** DPW Environmental Division

5.1.3 BMP BAC.3 Public Education and Outreach

- ✚ **Measurable Goal:** Publish one article annually in the *Fort Belvoir Eagle* that discusses the bacteria water quality issue, sources of bacteria, reporting information and steps that can be taken to reduce bacteria sources. Distribute Pet Waste brochures throughout the housing communities and at facilities operated by the Directorate of Moral, Welfare, and Recreation (MWR). Brochures are included in Appendix C.
- ✚ **Reporting and Record Keeping:** In the annual report, provide a summary of the audiences reached and methods used via the Education and Outreach program.
- ✚ **Responsible Party:** DPW Environmental Division

5.2 Illicit Discharge Detection and Elimination Program

In addition to the Bacteria BMPs listed above, Fort Belvoir implements an Illicit Discharge Detection and Elimination (IDDE) Program, in accordance with Part I.E.3 of the MS4 General Permit. The following BMPs are already being implemented under this IDDE program that relate to reducing bacteria loads:

- **Annual Outfall Reconnaissance Inventory:** In accordance with the *U.S. Army Fort Belvoir, Virginia Illicit Discharge Detection and Elimination Plan* dated September 2019, a minimum of 50 outfalls are screened per year for the presence of illicit discharges which includes identification of sanitary sewage and illicit connections;
- **IDDE Training:** Illicit Discharge Detection and Elimination Training is provided on an annual basis to various audiences either through classroom training or through publication of newspaper articles in the *Fort Belvoir Eagle*. Emphasis is placed on preventing and reporting illicit discharges, including reporting of sanitary sewer overflows (SSO) and pet waste pickup/disposal.
- **Weekly Windshield Inspections:** Weekly inspections are conducted to identify potential locations for intermittent illicit discharges or physical indications of any materials being discharged into surface drains. Results from inspections are used to identify organizations and/or personnel that would require IDDE training. If a sanitary sewer overflow is discovered during a weekly windshield inspection, the SSO is reported immediately to the appropriate operator of the particular sanitary system. Windshield inspections are also used to identify and enforce proper trash management across the installation, at restaurants in particular, where food dumpsters and grease management areas may attract unwanted wildlife.

5.3 BMPs in Areas Covered by ISW Individual Major Permit VA0092771

Areas covered under the Industrial Stormwater Permit cover approximately 442 acres of the drainage area to the Lower Accotink Creek Watershed. These areas have facility specific SWPP Plans which require regular inspections, training, and monitoring. BMPs being implemented at these sites that assist in reducing the bacteria load include:

- **Davison Army Airfield BASH Program:** The Fort Belvoir Wildlife Hazard Management Plan (WHMP) for Davison Army Airfield (DAAF) was established in June of 2015. The purpose of the plan is to minimize the potential of a bird/wildlife strike to aircraft using an integrated approach of techniques and entities. The WHMP establishes a Wildlife Working Group (WWG) comprised of installation and airfield staff and designates responsibilities to its members. To reduce hazards, the WHMP also establishes active and passive techniques to disperse birds and wildlife from the airfield as well as decreasing the attractiveness of the airfield to birds and wildlife through the use of deterrents.
- **Fort Belvoir North Area Signage and Deterrents:** The area is reasonably new construction, mostly completed in 2011, with a design that incorporated multiple BMPs along with chained treatment facilities. Because these BMPs lead to an increase in ponding areas, including a reflecting pond, some of the areas are known to attract birds, especially geese. Signs have been installed around the ponds to prohibit the feeding of geese. FBNA also uses other bird deterrents including geese deterrent lights and coyote decoys.

6 IMPLEMENTATION SCHEDULE

Educational programs work best when they increase the level of environmental awareness in the target audience and convey a clear link between people's everyday activities and stormwater quality impacts. The program should raise the environmental awareness and knowledge level of program participants with respect to stormwater management issues. Education programs can also increase the public scrutiny of industrial and municipal practices, with a resulting increase in the reporting of incidents such as spills, SSO, or illegal discharges to storm drains.

Fort Belvoir will implement the program components discussed above to order to bring awareness to and reduce the potential of E. coli discharge to surface waters from installation personnel. Table 2 below summarizes the BMPs that are in the MS4 Program Plan and within this Action Plan, as well as a schedule for when they will be implemented during the permit cycle. Control Measures listed under 'Year 0' have already been developed and/or implemented, 'Year 1' reflects the first permit year July 2018-June 2019.

Table 2: BMP Implementation Schedule

MS4 Program Plan BMP	Control Measures	Yr. 0	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
BMP 1.1	Prepare a Pet Waste BMP fact sheet for distribution in facility SWPPPs	X					
BMP 1.1	Review Fort Belvoir Responsibility Guide for new housing residents and revise fact sheets, as needed;	X	X	X	X	X	X
BMP 2.1	Participate in local activities (i.e. Career Day, Earth Day) and provide brochures on pet waste and bacteria water quality concerns	X	X	X	X	X	X
BMP 2.2	Maintain Updated Plans and Annual Reports on Fort Belvoir website	X	X	X	X	X	X
BMP 3.2	Update Training Plan, as needed, to address target organizations identified through windshield inspections	X	X	X	X	X	X
BMP 6.1	Update training to include Bacteria TMDL information	X					
BMP BAC.1	Consider potential bacteria sources for any new or proposed projects occurring within the Lower Accotink Creek Watershed. Ensure that proper control measures/strategies are selected and implemented as required by Part II.B.4.b and detailed in Table 5 of the MS4 General Permit	X	X	X	X	X	X
BMP BAC.1	Post Bacteria TMDL Action Plan on Fort Belvoir website for Public Comment and once finalized			X			

MS4 Program Plan BMP	Control Measures	Yr. 0	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
BMP BAC.1	Report on implementation of TMDL Action Plan in the MS4 Annual Report			X	X	X	X
BMP BAC.2	Incorporate Bacteria TMDL information into ISW SWPPP Training. Training shall bring awareness to the impairment. Target audience will include industrial facilities	X					
BMP BAC.2	Incorporate Bacteria TMDL information into MS4 SWPPP Training. Training shall include information on sanitary sewer overflows and bacteria impacts on water quality. Target audience will include MS4 High Priority Facilities	X					
BMP BAC.2	Incorporate Bacteria TMDL information into Pre-Construction Training. Training shall cover material management strategies to include portable toilets. Target audience will include construction contractors	X					
BMP BAC.2	Implement Written Training Plan	X	X	X	X	X	X
BMP BAC.3	Publish at least 1 article annually on water quality issues associated with bacteria loads	X	X	X	X	X	X
BMP BAC.3	Revise the Public Education and Outreach Plan to incorporate the goal to publish one article annually in the <i>Fort Belvoir Eagle</i> that discusses the bacteria water quality issue, sources of bacteria, reporting information and steps that can be taken to reduce bacteria sources	X					
BMP BAC.3	Publish fact sheets, articles and notices in the <i>Eagle</i> and other sources about the bacteria water quality issue	X	X	X	X	X	X

7 ASSESSMENT OF THE ACTION PLAN

As per MS4 Permit Part I.D.5, this Action Plan will be assessed for its effectiveness through the MS4 annual reporting process which covers activities that occur from July 1st to June 30th, and due to DEQ by October 1st of each year. Both the Program Plan and Annual Report include the components of the Bacteria TMDL Action Plan, including the status of implementation, a description of activities, and any revisions to the plan. Table 3 below summarizes the measures used to address each component.

Table 3: Measures of Effectiveness

MS4 Program Plan BMP	Description	Measure of Effectiveness
BMP 1.1	Develop and Implement a Public Education and Outreach Plan	Prepare a Pet Waste BMP fact sheet for distribution in facility SWPPPs; Review Fort Belvoir Responsibility Guide for new housing residents and revise fact sheets as needed
BMP 2.1	Public Participation	Participate in local activities (i.e. Career Day, Earth Day, Cleanups, etc.) provide brochures on pet waste and bacteria water quality concerns
BMP 2.2	Publish the MS4 Program Plan and Annual Reports on the Fort Belvoir Website	Maintain Updated Plans and Annual Reports on Fort Belvoir website
BMP 3.2	Implement and Update the IDDE Plan	Screened outfalls with potential bacteria discharges investigated and resolved; Update Training Plan, as needed, to address organizations identified through windshield inspections
BMP 6.1	Implement Written Training Plan	Update training to include any new source controls and updates to the Bacteria TMDL impairment
BAC BMP.1	Bacteria TMDL Action Plan Revision and Reporting	Maintain Updated Bacteria TMDL Action Plan on website; Implementation status in Annual Reports
BAC BMP.2	Incorporate Bacteria TMDL Information into MS4 Program Training Program	Update and revise slides to incorporate Bacteria TMDL information as applicable for each target audience
BAC BMP.3	Public Education and Outreach	Publish at least 1 article annually on water quality issues associated with bacteria loads. Distribute brochures to housing neighborhoods and recreational facilities

8 PUBLIC COMMENT

Part II B.7 of the General Permit requires that Fort Belvoir provides an opportunity for receipt and consideration of public comment regarding the proposed actions to meet the local TMDL for no less than 15 days. The EPA states in Federal Register Volume 64, No. 235, page 68,750 on December 8, 1999, regarding "public" and its applicability to MS4 programs, the following:

"EPA agrees with the suggested interpretation of "public" for DOD facilities as "the resident and employee population within the fence line of the facility." The department recommends that nontraditional MS4 operators, such as state and federal entities and local school districts, utilize this statement as guidance when determining their applicable "public" for compliance with this permit"

Therefore, Fort Belvoir has adopted this definition and defines the "public" as anyone who lives or works within the jurisdictional boundary of the Garrison as shown in Figure 1.

For this 2020 Update to the Bacteria TMDL Action Plan for the Lower Accotink Creek, finalized in March 2020, the public comment period involved the posting of the Draft plan on the Fort Belvoir Home Page under Environmental Documents for Stormwater (<http://www.belvoir.army.mil/environdocs.asp>) on March 18, 2020. A Notice of Availability for the document was:

- Posted on the main Fort Belvoir Facebook page on March 18, 2020
- Published in the Fort Belvoir newspaper, *The Belvoir Eagle*, on March XX, 2020.

The public review period for the Draft PCB plan will close on April 15, 2020 and the Plan will be finalized on April 30, 2020 after addressing any comments received.

References

Atkins. (2014). *Real Property Master Plan; Installation Vision and Development Plan*. Fort Belvoir, Virginia: Installation Management Command.

U.S. Environmental Protection Agency (EPA). (2016). EPA MyWATERS Mapper. Fort Belvoir, Virginia, Region III.

VADEQ. (2008). *Bacteria TMDL for the Lower Accotink Creek Watershed*. Richmond: Virginia Department of Environmental Quality.

Table 5 from 2018 MS4 General Permit
Strategies for Bacteria Reduction Stormwater Control/Management Strategy

Source	Strategies <i>(provided as an example and not meant to be all inclusive or limiting)</i>
Domestic pets (dogs and cats)	<ul style="list-style-type: none"> ▪ Provide signage to pick up dog waste, providing pet waste bags and disposal containers. ▪ Adopt and enforce pet waste ordinances or policies, or leash laws or policies. ▪ Place dog parks away from environmentally sensitive areas. ▪ Maintain dog parks by removing disposed of pet waste bags and cleaning up other sources of bacteria. ▪ Protect riparian buffers and provide un-manicured vegetative buffers along streams to dissuade stream access.
Urban wildlife	<ul style="list-style-type: none"> ▪ Educate the public on how to reduce food sources accessible to urban wildlife (e.g., manage restaurant dumpsters and grease traps, residential garbage, feed pets indoors). ▪ Install storm drain inlet or outlet controls. ▪ Clean out storm drains to remove waste from wildlife. ▪ Implement and enforce urban trash management practices. ▪ Implement rooftop disconnection programs or site designs that minimize connections to reduce bacteria from rooftops ▪ Implement a program for removing animal carcasses from roadways and properly disposing of the same (either through proper storage or through transport to a licensed facility).
Illicit connections or illicit discharges to the MS4	<ul style="list-style-type: none"> ▪ Implement an enhanced dry weather screening and illicit discharge, detection, and elimination program beyond the requirements of Part I E 3 to identify and remove illicit connections and identify leaking sanitary sewer lines infiltrating to the MS4 and implement repairs. ▪ Implement a program to identify potentially failing septic systems. ▪ Educate the public on how to determine whether their septic system is failing. ▪ Implement septic tank inspection and maintenance program. ▪ Implement an educational program beyond any requirements in Part I E 1 through E 6 to explain to citizens why they should not dump materials into the MS4. ▪ Marinas.
Dry weather urban flows (irrigations, car washing, power washing, etc.)	<ul style="list-style-type: none"> ▪ Implement public education programs to reduce dry weather flows from storm sewers related to lawn and park irrigation practices, car washing, power washing and other non-stormwater flows. ▪ Provide irrigation controller rebates. ▪ Implement and enforce ordinances or policies related to outdoor water waste. ▪ Inspect commercial trash areas, grease traps, wash-down practices, and enforce corresponding ordinances or policies.
Birds (Canadian geese, gulls, pigeons, etc.)	<ul style="list-style-type: none"> ▪ Identify areas with high bird populations and evaluate deterrents, population controls, habitat modifications and other measures that may reduce bird-associated bacteria loading. ▪ Prohibit feeding of birds.

Table 5 from 2018 MS4 General Permit
Strategies for Bacteria Reduction Stormwater Control/Management Strategy

Source	Strategies <i>(provided as an example and not meant to be all inclusive or limiting)</i>
Other sources	<ul style="list-style-type: none"> ▪ Enhance maintenance of stormwater management facilities owned or operated by the permittee. ▪ Enhance requirements for third parties to maintain stormwater management facilities. ▪ Develop BMPs for locating, transporting, and maintaining portable toilets used on permittee-owned sites. Educate third parties that use portable toilets on BMPs for use. ▪ Provide public education on appropriate recreational vehicle dumping practices.

Table 1 from MS4 Training Plan

Level of Training	Type of Training	Content of Training
1	ISW SWPPP	<ul style="list-style-type: none"> ▪ Stormwater Basics ▪ Applicable Regulations ▪ ISW Basics ▪ Stormwater Impacts on Waterways ▪ SWPPP Basics ▪ Illicit Discharge Basics ▪ Applicable TMDLs ▪ Good Housekeeping & Preventative Maintenance ▪ Spill Prevention/Response ▪ Inspection Information ▪ Applicable Structural and Operational Controls ▪ Erosion & Sediment Control Basics ▪ Stormwater Sampling/Monitoring Information ▪ Required Reporting
2	MS4 SWPPP	<ul style="list-style-type: none"> ▪ Stormwater Basics ▪ Applicable Regulations ▪ MS4 Basics ▪ Stormwater Impacts on Waterways ▪ SWPPP Basics ▪ Illicit Discharge Basics ▪ Applicable TMDLs ▪ Good Housekeeping & Preventative Maintenance ▪ Spill Prevention/Response ▪ Inspection Information ▪ Applicable Structural and Operational Controls ▪ Erosion & Sediment Control Basics ▪ Stormwater Monitoring Information ▪ Required Reporting
3	General Stormwater Pollution Prevention	<ul style="list-style-type: none"> ▪ Stormwater Basics ▪ Applicable Regulations ▪ Stormwater Impacts on Waterways ▪ Illicit Discharge Basics ▪ Applicable TMDLs ▪ Good Housekeeping & Preventative Maintenance ▪ Spill Prevention/Response ▪ Applicable Operational Controls ▪ Erosion & Sediment Control Basics
4	Illicit Discharge	<ul style="list-style-type: none"> ▪ Illicit Discharge Basics ▪ Good Housekeeping & Preventative Maintenance ▪ Spill Prevention/Response ▪ Procedures for Reporting Illicit Discharges

Table 1 from MS4 Training Plan

Level of Training	Type of Training	Content of Training
5	Pre-Construction	<ul style="list-style-type: none">▪ Stormwater Basics▪ Applicable Regulations▪ SWPPP Basics▪ Erosion & Sediment Control Basics▪ On Site Sediment and Erosion Control Requirements▪ Materials Storage Information▪ Illicit Discharge Basics▪ Industrial Stormwater Outfall Information▪ Site Closure Procedure
6	Corrective Action	<ul style="list-style-type: none">▪ Stormwater Basics▪ Applicable Regulations▪ Stormwater Impacts on Waterways▪ Illicit Discharge Basics▪ Good Housekeeping & Preventative Maintenance▪ Spill Prevention/Response▪ Applicable BMPs▪ Erosion & Sediment Control Basics▪ Corrections to specific reported unauthorized action(s)