STORMWATER POLLUTION PREVENTION PLAN
FOR
FORT BELVOIR, VA

March 2017

Individual VPDES Industrial Stormwater Major Permit
VPDES Permit VA0092771

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

Prepared for:

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LIST OF ACRONYMS

AAFES	Army and Air Force Exchange Service
AR	Army Regulation
AST	Aboveground Storage Tank(s)
BMPs	Best Management Practices
BOD	Biochemical Oxygen demand
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DAAF	Davison Army Airfield
DECA	Defense Commissary Agency
DLA	Defense Logistics Agency
DMR	Discharge Monitoring Report
DPW	Directorate of Public Works
DOD	Department of Defense
ENRD	Environmental Natural Resources Division
FBNA	Fort Belvoir North Area
ID	Identifier
ISW	Industrial Stormwater
LID	Low Impact Development
MP	Military Police
MS4	Municipal Separate Storm Sewer System
MSP	Master Spill Plan
NCDC	National Climatic Data Center
NPDES	National Pollutant Discharge Elimination System
OWS	Oil/Water Separator
PCB	Polychlorinated Biphenyls
POLs	Petroleum, Oil, & Lubricants

RO	Representative Outfall
SARA	Superfund Amendments and Reauthorization Act
SIC	Standard Industrial Classification
SPCC	Spill Prevention, Control, and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
SWPPT	Stormwater Pollution Plan Team
TDS	Total Suspended Solids
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
UST	Underground Storage Tank(s)
USEPA	United Stated Environmental Protection Agency
VADEM	Virginia Department of Emergency Management
VADEQ	Virginia Department of Environmental Quality
VPDES	Virginia Pollutant Discharge Elimination System

STORMWATER POLLUTION PREVENTION PLAN CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Insert Signed Sheet _____ _____

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AMENDMENT LOG

Fill in the appropriate columns of this table for each amendment to the SWPPP.

Amend. No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]
1	Insert description of amendment	Insert date	Insert name/title
2	Insert description of amendment	Insert date	Insert name/title
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1 INTRODUCTION

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 almost 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. Development along US Route 1 consists of mixed use commercial businesses and scattered residences. The surrounding area is developed with residential and commercial/retail businesses.

Fort Belvoir consists of approximately 8,500 acres and is divided into two separated land areas, as shown in Figure 1-1. 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.

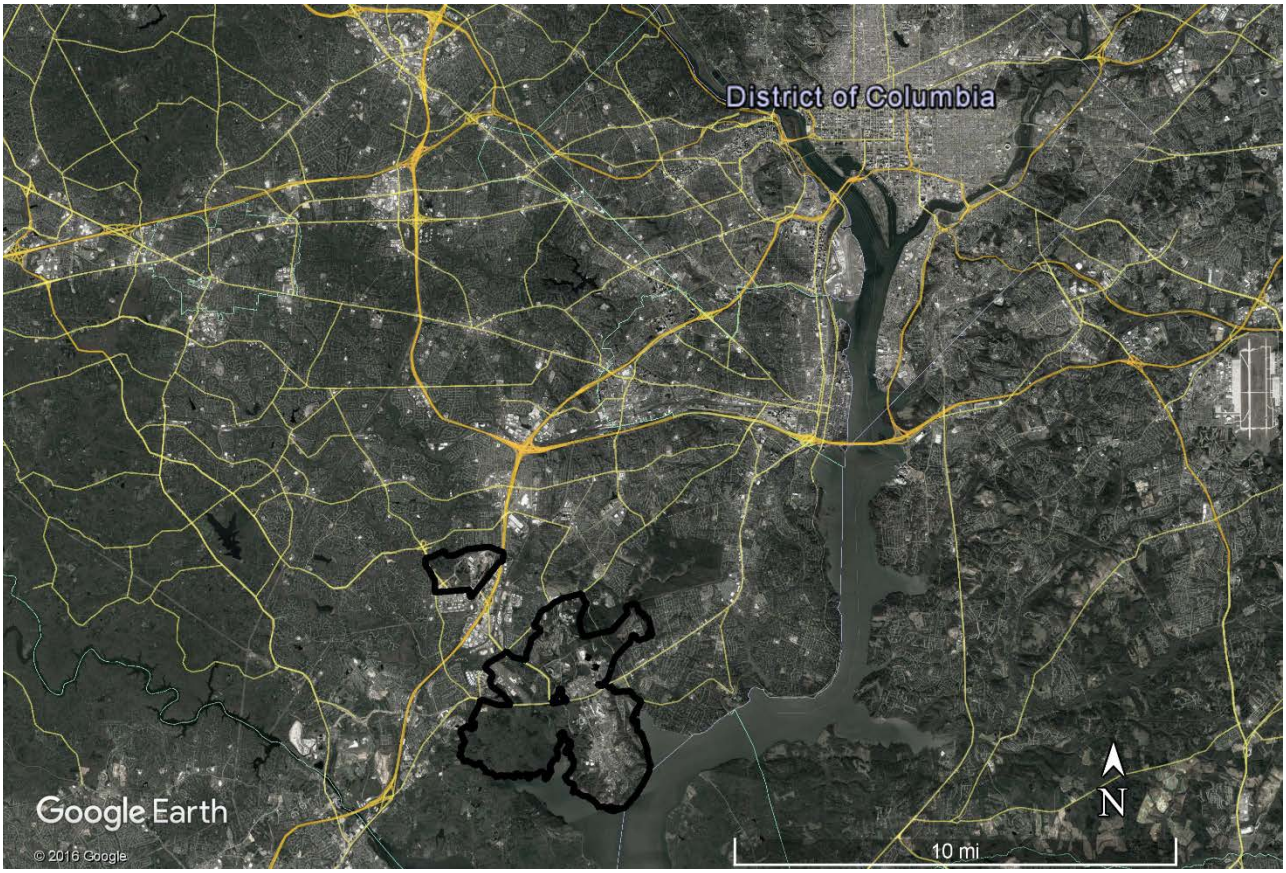

Figure 1-1: General Location Map

1.1 PURPOSE AND OBJECTIVES

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared consistent with the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer System (MS4) Permit Number VAR040093 and the Industrial Stormwater (ISW) Major Permit Number VA0092771. Fort Belvoir's ISW discharges are currently covered under Permit Number VA0092771, which came into effect January 1st, 2017, to regulate stormwater discharges from Fort Belvoir. The ISW Individual Major Permit VA0092771 includes 32 representative outfalls (RO) throughout Fort Belvoir's Main Post and Belvoir North Area.

This SWPPP serves as a guidance document to identify issues to be addressed and/or components to be included in each Facility-Specific SWPPP. The intent of these Individual Facility-Specific SWPPPs is to identify how stormwater run–off from all Fort Belvoir facilities will be managed so that pollution from stormwater run–off is reduced or eliminated. The Directorate of Public Works, Environmental Natural Resources Division (DPW-ENRD) is responsible for environmental compliance for several types of industrial and MS4 high priority facilities/activities such as: airfield operations, fueling areas, petroleum storage areas, vehicle repair/washing facilities, solid waste handling and transfer facilities, salt storage areas, operations/maintenance activities, power/steam generating facilities, composting facilities, pesticide storage facilities, recycling facilities, vehicle storage and maintenance yard and hazardous materials/waste storage areas.

This overall Fort Belvoir SWPPP addresses these specific types of facilities/activities and summarizes all permit required information. Individual Facility-Specific SWPPPs will be issued to facility managers and will further detail individual site characteristics and site specific requirements. The overall Fort Belvoir SWPPP will be maintained by DPW-ENRD's ISW and MS4 stormwater program managers, while the Facility-Specific SWPPPs will be maintained by the individual facility managers. DPW-ENRD will offer assistance and training to applicable installation personnel as needed.

The development of this SWPPP required assessment of all the operations performed at all installation facilities and properties. In general, the assessment addressed the following questions:

- What materials are used and/or stored where they're exposed to precipitation?
- What potential pollutants are contained in these materials?
- What steps are currently being taken to minimize the exposure of these materials to precipitation and run–off?
- What additional opportunities or Best Management Practices (BMPs) are available to reduce or eliminate the amount of material exposed to precipitation and run–off?
- Which agency operations or facilities have the potential to influence the quality of stormwater and the surrounding environment?

This SWPPP will be updated by the DPW-ENRD's Stormwater Program Managers periodically when new or additional techniques to control run–off and pollution are identified and are implemented.

This SWPPP was written to incorporate specific VPDES permit requirements as they apply to the operations at Fort Belvoir. Implementation of this SWPPP, the associated Facility-Specific SWPPPs, and the designated BMPs will allow Fort Belvoir to maintain compliance with the VPDES requirements.

The SWPPP is intended to achieve three main objectives. These are:

- To identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges associated with activities at a facility/location;
- To document the implementation of BMPs which are to be used to reduce the pollutants in stormwater discharges; and
- To ensure compliance with the terms and conditions of the Fort Belvoir MS4 Stormwater Permit and the ISW Major Permit.

Copies of the Individual Facility-Specific SWPPPs will be available for review during normal working hours in the Facility Manager's office for each of the individual outfalls and a complete copy of the SWPPPs will be available for review during normal working hours at the Directorate of Public Works (DPW), Building 1442.

1.2 REGULATORY BACKGROUND

Stormwater is rainwater and melted snow runoff that comes into contact with a facility and its surrounding grounds, equipment, and vehicles, which then discharges from the site, flowing into any nearby storm drain or water body. Stormwater discharges have been increasingly identified as a significant source of water pollution in numerous nationwide studies on water quality. To address this issue, the Clean Water Act Amendments of 1987 required the United States Environmental Protection Agency (USEPA) to publish regulations to control stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) permit program. The USEPA has delegated authority to implement the NPDES stormwater permit programs to 48 states including the Commonwealth of Virginia.

Virginia regulates stormwater through the VPDES Program. The Virginia Department of Environmental Quality (VADEQ) administers the VPDES program and the State Water Control Law for stormwater associated with both industrial and small MS4 activities.

The stormwater system at Fort Belvoir is governed under two separate VPDES permits, ISW Individual Major Permit VA0092771 and the VPDES General Permit for Discharge of Stormwater from an MS4 (VPDES Permit No. VAR040093). Each permit covers unique areas of Fort Belvoir and includes requirements to reduce and/or eliminate pollutants entering the stormwater system. All the stormwater outfalls not specifically mentioned in the VPDES permit for stormwater associated with specific industrial activities are regulated under the MS4 General Permit. Both permits are provided in Appendix A.

The VPDES ISW Individual Major Permit VA0092771, Part III.C (Page 7 of 22), states:

> *"A stormwater pollution prevention plan (SWPPP) shall be developed and implemented for the facility. The SWPPP is intended to document the selection, design, and installation of control measures, including BMPs to eliminate or reduce the pollutants in all stormwater discharges from the facility and to meet applicable water quality standards. Permittees shall implement the provisions of the stormwater pollution prevention plan as a condition of this permit."*

The VPDES General Permit for Discharge of Stormwater from MS4s VAR040093 (9VAC25–890–40, Part II. B.6.b. (3) states:

> *"The operator shall develop and implement specific stormwater pollution prevention plans for all high priority facilities identified. The operator shall complete SWPPP development and implementation shall be completed within 48 months of coverage under this state permit."*

1.3 LEGAL AUTHORITY

1.3.1 US Army Regulation (AR) 200-1, Environmental Protection and Enhancement

The AR 200-1 defines the framework for the Army Environmental Management System (EMS). It implements Federal, State, and local environmental laws and DOD policies for preserving, protecting, conserving, and restoring the quality of the environment. This regulation addresses environmental responsibilities of all Army organizations and agencies. Specifically, this regulation applies to Active Army, Army National Guard, United States Army Reserve, as well as Tenants, contractors, and lessees performing functions on real property under the jurisdiction of the Department of the Army (for example, Army and Air Force Exchange Services (AAFES), Defense Commissary Agency (DECA)). (Army, 2007).

Chapter 4-2.e of the AR requires compliance with all requirements, substantive and procedural, for control and abatement of water pollution, as outlined in the CWA, including obtaining and complying with State discharge permits. It also calls for controlling or eliminating sources of pollutants and contaminants to protect water bodies and groundwater. Employing abatement measures for non-point source runoff from construction, facility operations, and land management activities and to encourage reuse or recycling whenever economically feasible and environmentally beneficial.

AR 200-1 also sets program goals, requirements and policies in regards to stormwater management. The major goal for the program is to reduce the pollutant loadings in point source and non-point source discharges and to ensure efficient water reuse. In order to assist in doing so, chapter 4-2.e.4.e requires the program to:

> *"Develop and implement a Stormwater Pollution Prevention Plan(s) (SWPPP) as required, in accordance with the installation's industrial, construction, or Municipal Separate Storm Sewer (MS4) storm water permit(s)."*

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

The program requirements found within the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems at 9VAC-25-890-40 Section II.B.6.b require that High-Priority facilities, not covered under another VPDES permit, are identified. Section II.B.6.b (3) and (4) require that a SWPPP be developed and implemented at the identified high priority facilities and set forth the content requirements. Subsection f.(2) of the minimum control measure six (6) requirements states:

> *"Upon completion of a SWPPP, the SWPPP shall be part of the MS4 Program Plan."*

As required by Fort Belvoir's MS4 permit, pollution prevention and good housekeeping at these facilities are specifically addressed through the iterative implementation of programmatic Best Management Practices (BMPs) included herein. Only failure to implement the programmatic BMPs identified in this plan would be considered a permit noncompliance issue.

1.3.3 Fort Belvoir Individual VPDES for Discharges of Industrial Stormwater (ISW) Individual Major Permit #VA0092771

All industrial activity stormwater permits include the requirement that a stormwater pollution prevention plan (SWPPP) be developed for the permitted facility. Part I.C of the ISW major permit, effective January 1, 2017, requires the development and implementation of a stormwater pollution prevention plan (SWPPP) and states the following:

> *"Permittees shall implement the provisions of the stormwater pollution prevention plan as a condition of this permit."*

In the development of a SWPPP, the permit allows for the incorporation of other plans by reference. These already developed plans must be able to act as BMPs as defined by the permit for the facilities covered in the SWPPP. As such:

> *"All plans incorporated by reference into the stormwater pollution prevention plan become enforceable under this permit."*

1.3.4 Fort Belvoir Garrison Policy Memorandum #28, Environmental Policy

Fort Belvoir's Environmental Policy was signed and took effect on June 24, 2014, the most up to date policy can be seen in Appendix B. Section 4 of this policy restates Fort Belvoir's commitment to the protection of the environment and accountability 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, including:

> *"Proactively manage environmental issues and act promptly and responsibly to correct incidents or conditions that endanger health, safety, or the environment."*

This policy provides an avenue of enforcement for requirements set forth by AR 200-1.

1.3.5 Fort Belvoir Garrison Policy Memorandum #71, Stormwater Pollution Prevention

An installation-wide stormwater policy was developed to address compliance with the MS4 Permit, the ISW major permit and other stormwater regulations. The policy was signed and took effect on October 31, 2016 and the most up to date policy can be seen in Appendix B. The policy outlines proper protocols for minimizing stormwater pollution during activities that directly and indirectly impact water quality of the receiving waters. Section 5 of this policy states:

> *"Fort Belvoir is committed to protecting water quality of waterways on and surrounding Fort Belvoir to ensure that human health, ecosystem health, and the ability to conduct recreational opportunities are not impacted by stormwater pollution"*

This policy provides an avenue of enforcement for requirements set forth by Fort Belvoir's CWA permits, the Master Spill Plan (MSP), and Fort Belvoir's Hazardous Waste Management and Minimization Plan (HWMMP).

1.3.6 Fort Belvoir Policy Memorandum #72, Hazardous Waste Management and Minimization Policy

A hazardous waste minimization program has been developed for Fort Belvoir to meet the certification requirements of Section 3002(b) of the RCRA. The Fort Belvoir Hazardous Waste Management and Minimization Plan (HWMMP) details the program requirements for hazardous waste minimization and management as per AR 200-1 Chapter 10. The HWMMP outlines proper protocols for reducing the volume and toxicity of waste generated as well procedures for hazardous waste management including storage, handling, disposal, and training requirements.

Policy memorandum #72 was developed to address compliance with the RCRA requirements and applies to any agency, activity, company, or individual performing any and all types of hazardous waste and management on Fort Belvoir. The policy was signed and took effect on August 23rd, 2016 and the most up to date policy can be seen in Appendix B. Section 4.b of this policy requires that:

> *All commanders and supervisors on Fort Belvoir shall ensure implementation of all requirements of the plan that are applicable to their operations."*

This policy provides an avenue of enforcement for requirements set forth by Fort Belvoir's RCRA Part B Permit and HWMMP.

1.3.7 Fort Belvoir Policy Memorandum #73, Stormwater Pollution Prevention Plan Requirements

An installation-wide stormwater policy was developed to address compliance with the MS4 Permit and the ISW major permit by providing guidance on the implementation and maintenance of the required SWPPPs. The policy was signed and took effect on February 9, 2016 and the most up to date policy can be seen in Appendix B. The policy outlines the requirements of the SWPPP and the responsibilities of all military and civilian personnel, tenant and satellite organizations, mission partners, and contractors conducting work at Fort Belvoir. Section 6.a. of this policy states:

> *"All Commanders, supervisors, and facility operators shall implement and maintain the facility-specific SWPPP and shall provide trained and capable personnel to actively participate on the Fort Belvoir Pollution Prevention Team, to complete facility inspections, maintain operational compliance, and provide all required documentation in a timely manner."*

This policy provides an avenue of enforcement for requirements set forth by Fort Belvoir's CWA permits, this SWPPP, the Master Spill Plan, and Fort Belvoir's Hazardous Waste Management and Minimization Plan (HWMMP).

All current Garrison policies can be found in Appendix B and at http://www.belvoir.army.mil/Belvoir/PL/_PDF_TableofContentsPL.html.

1.4 DISCHARGES AUTHORIZED BY THE ISW MAJOR PERMIT

VPDES Industrial Stormwater Major Permit VA0092771, Part III.A.6 (Page 2 of 22), Section on Allowed *Non–Stormwater Discharges* states the following:

a. The following non–stormwater discharges are authorized by this permit:

(1) Discharges for firefighting activities,
(2) Fire hydrant flushing (must be de-chlorinated),
(3) Potable water including water line flushing,
(4) Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids,
(5) Irrigation drainage,
(6) Landscape watering provided all pesticides, herbicides and fertilizers have been applied in accordance with the approved labeling,
(7) Pavement wash waters where NO detergents are used and NO spills or leaks of toxic or hazardous materials have occurred (unless all spill material has been removed),
(8) Routine external building wash down which does not use detergents,
(9) Uncontaminated ground, wash, or spring water,
(10) Foundation on footing drains where flows are not contaminated with process materials such as solvents, and
(11) Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but NOT intentional discharges from the cooling tower (e.g. "piped" cooling tower blow down or drains).

Note: If the facility is covered under Permit #VA0092771 VPDES Industrial Stormwater Major Permit, then allowable stormwater discharges must meet the above referenced criteria. The Individual Facility-Specific SWPPP will be designated with an ISW Representative Outfall (RO) ID number(s) in the top right corner (ex. RO-001). See Table 3-2 for a list of facilities covered under this permit.

1.5 DISCHARGES AUTHORIZED BY THE MS4 GENERAL PERMIT

The Small Municipal Separate Storm Sewer (MS4) General Permit # VAR040093 (9VAC25–890–40, Section II, B.3.b. which references 9VAC25–870–400D.2.c.(3), allows for the following non–stormwater discharges provided that the following categories of non-stormwater discharges or flows have not been identified by the MS4 as significant contributors of pollutants to the MS4:

a) Water line flushing,
b) Landscape irrigation,
c) Diverted stream flows,
d) Rising groundwater,
e) Uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)),
f) Uncontaminated pumped groundwater,
g) Potable water sources,
h) Foundation drains,
i) Air conditioning condensation,
j) Irrigation water,
k) Springs,
l) Crawl space pumps,
m) Footing drains,
n) Lawn watering,
o) Individual residential car washing,
p) Flows from riparian habitats and wetlands,
q) De-chlorinated swimming pool discharges,
r) Street wash water, and
s) Discharges or flows from emergency fire–fighting activities.

Note: If the facility is covered under Permit #VAR040093 MS4 Stormwater General Permit, then allowable stormwater discharges must meet the above referenced criteria. The Individual Facility-Specific SWPPP will be designated with an MS4 high priority facility ID number(s) in the top right corner (ex. HPF-001). See Table 3-5 for a list of the identified high priority facilities covered under this permit.

2 STORMWATER POLLUTION PREVENTION TEAM

The Stormwater Pollution Prevention Team (SWPPT) includes members from DPW-ENRD and managers/supervisors from multiple facilities conducting activities that have the potential to impact stormwater quality. The role of the SWPPT is to identify and address stormwater pollution concerns and to ensure that the SWPPP is implemented quickly and adequately.

DPW-ENRD's Industrial Stormwater (ISW) Program Manager, 703-806-0627, shall act as team lead and will be responsible for the implementation, maintenance and revision of the overall and facility specific SWPPPs for all facilities covered under the ISW Major Permit. DPW-ENRD's Stormwater (MS4) Program Manager, 703-805-3406, shall act as an alternate in case the team leader is unavailable and will be responsible for the implementation, maintenance and revision of the overall and facility specific SWPPPs for all identified High Priority facilities covered under the MS4 General Permit.

Other DPW-ENRD Program Managers will also play a major role on the SWPPT as their responsibilities either directly affect performance at a facility or ensure that plans incorporated by reference remain current and applicable.

Each facility discussed in Section 3 below, shall assign a Facility Site Coordinator that is familiar with the site and its daily operation. The Facility Site Coordinator is responsible for ensuring that the SWPPP is being implemented at the facility, notifying the SWPPT of changes and/or issues, and ensuring that proper controls are in place to eliminate or minimize the impacts from the facility. The Facility Site Coordinator has the primary responsibility for meeting SWPPP obligations at their sites.

Each facility shall also assign someone as the On-Site Supervisor, this should be someone who is on-site on a daily basis and has the primary function of overseeing personnel, inspecting concern areas and ensuring compliance with BMPs on a regular basis. There may be multiple On-site supervisors for each area. The On-site Supervisor shall act as an alternate in case the Facility Site Coordinator is unavailable. The Facility Site Coordinator and/or On-Site Supervisor shall:

i. Ensure good housekeeping practices;
ii. Coordinate and/or conduct annual comprehensive site evaluations;
iii. Coordinate and/or conduct annual employee stormwater training;
iv. Conduct and document required on–site inspections;
v. Update material inventories;
vi. Report all spills of potentially polluting materials to the SWPPT Leader;
vii. Assist the SWPPT Leader in preparing annual reports;
viii. Attend SWPPT meetings

All members of the team should have access to either an electronic or paper copy of the applicable Permits and the appropriate Facility-Specific SWPPP issued to the sites. Members of the SWPPT from DPW-ENRD are listed below in Table 2-1 along with their responsibilities. Due to high turnover rates at facilities Site Coordinator(s), Names and Phone numbers are subject to change. The current list of Facility Site Coordinators and On-Site Supervisors is provided in Appendix C.

Table 2-1: DPW-ENRD SWPPT Members

DPW SWPPT Leaders	Responsibilities
ISW Program Manager DPW–ENRD 703-806–0627	- Implementation, maintenance and revision of the SWPPP including reviewing and approving all plan modifications and updates - Coordination of annual employee training programs - Coordinating quarterly visual observations of stormwater runoff and semi-annual sampling - Conducting annual comprehensive site inspections and certifications of non–stormwater discharges - Coordination of SWPPT meetings as necessary - Maintain updated spill records and update the overall SWPPP to reflect new spills - Maintain records of stormwater utility maintenance and submit required reports - Ensure Corrective Actions are taken
MS4 Program Manager DPW–ENRD 703-806-3406	
Other DPW SWPPT Members	**Responsibilities**
Restoration Program Manager DPW–ENRD 703-806-0030	- Notify the SWPPT of known site changes - Notify the Team Lead of spills that occur - Ensure RCRA inspections are being conducted as prescribed and corrective actions are taken when needed - Ensure LUCs are being upheld through the DPW excavation permit procedure
Air and Petroleum Tank Program Manager DPW–ENRD 703-806-0021	- Notify the SWPPT of known site changes - Notify the Team Lead of spills that occur - Ensure Tank compliance inspections are conducted - Ensure Master Spill Plan is updated as needed
Wastewater and Spill Response Program Manager DPW–ENRD 703–806–0137	- Notify the SWPPT of known site changes - Notify the Team Lead of spills that occur - Assist in Illicit connection investigations and corrective actions - Respond to spills and maintain overall Fort Belvoir Spill Database
EPCRA/HazWaste Program Manager DPW–ENRD 703–806–2119	- Notify the SWPPT of known site changes - Notify the Team Lead of spills that occur - Ensure <90 day HazWaste storage and RCRA Part B Permitted facilities remain in compliance - Conduct Satellite Accumulation Area inspections - Coordinate annual EPCRA data gathering and reporting
Solid Waste Program Manager DPW–ENRD 703-806-0061 or 703-806-0684	- Notify the SWPPT of known site changes - Notify the Team Lead of spills that occur - Ensure solid waste and recycling containers provided to facilities are proper and adequate - Ensure compliance with the SWPPP for the Recycling facility and the 21st Street Waste Collection Area

3 SITE AND FACILITIES DESCRIPTIONS

Fort Belvoir is located in the Mid-Atlantic Region of the US and covers approximately 8,500 acres. The watersheds of Fort Belvoir are part of the Middle Potomac–Anacostia–Occoquan sub basin (HUC8:02070010). Fort Belvoir is drained by four (4) watersheds, Accotink Creek, Dogue Creek, Pohick Creek and, Little Hunting Creek-Potomac River as shown in Figure 3-2. These watersheds contribute to the Lower Potomac River sub basin and, ultimately, to the Chesapeake Bay.

Accotink Creek, Dogue Creek, and Pohick Creek drain most of Fort Belvoir, while a small portion of the Garrison, about 3%, in the southeast drains directly into the Potomac. Accotink Creek drains to Accotink Bay and receives drainage from approximately 65% of Fort Belvoir, including the Belvoir North Area. Dogue Creek receives drainage from approximately 20% of the Garrison, a majority of which are housing areas. Pohick Creek which drains to Pohick Bay covers roughly 12% with much of the area being heavily forested. Accotink Bay and Pohick Bay both drain to Gunston Cove and then the Potomac River. A map of the watersheds and 53 sub watersheds assessed within Fort Belvoir is shown in Figure 3-1.

The Accotink Creek watershed also receives drainage from a portion of Eastern Fairfax County. This area of Fairfax County is primarily urban and approximately 80% developed north and west of the installation. In between the Main Post and the Belvoir North Area there are five (5) permitted facilities that may be considered sources of run-on to Fort Belvoir from adjacent properties that may contain significant quantities of pollutants.

Table 3-1: Summary of Potential Run-on Sources

Facility Name	Facility Address	Permit Number
Virginia Concrete Company Inc. - Newington Plant 1	8413 Terminal Rd. Newington, VA 22122	VAG110046
VA Concrete Co - Mid Atlantic Materials-Newington	8201 Terminal Rd Newington, VA 22122	VAG110069
HD Supply - White Cap	8090 Alban Rd Springfield, VA 22153	VAR051795
Newington Solid Waste Vehicle Facility	6901 Allen Park Rd Alexandria, VA 22315	VAR052223
SICPA Securink Corporation	8000 Research Way Springfield, VA 22153	VAR051042

Because these waters drain into the Potomac, Fort Belvoir is considered a direct drainage contributor in the Total Maximum Daily Load (TMDL) of Polychlorinated Biphenyls (PCBs) to the Tidal Potomac and currently has an approved PCB TMDL Action Plan. Fort Belvoir is also located within the Chesapeake Bay Watershed and therefore both the ISW and the MS4 permits define special conditions specifically related to the Chesapeake Bay TMDL.

The following sections contain a summary of site information and descriptions for facilities covered under this SWPPP. Each site discussed will be issued an Individual Facility-Specific SWPPPs that is catered to that facility and its activities.

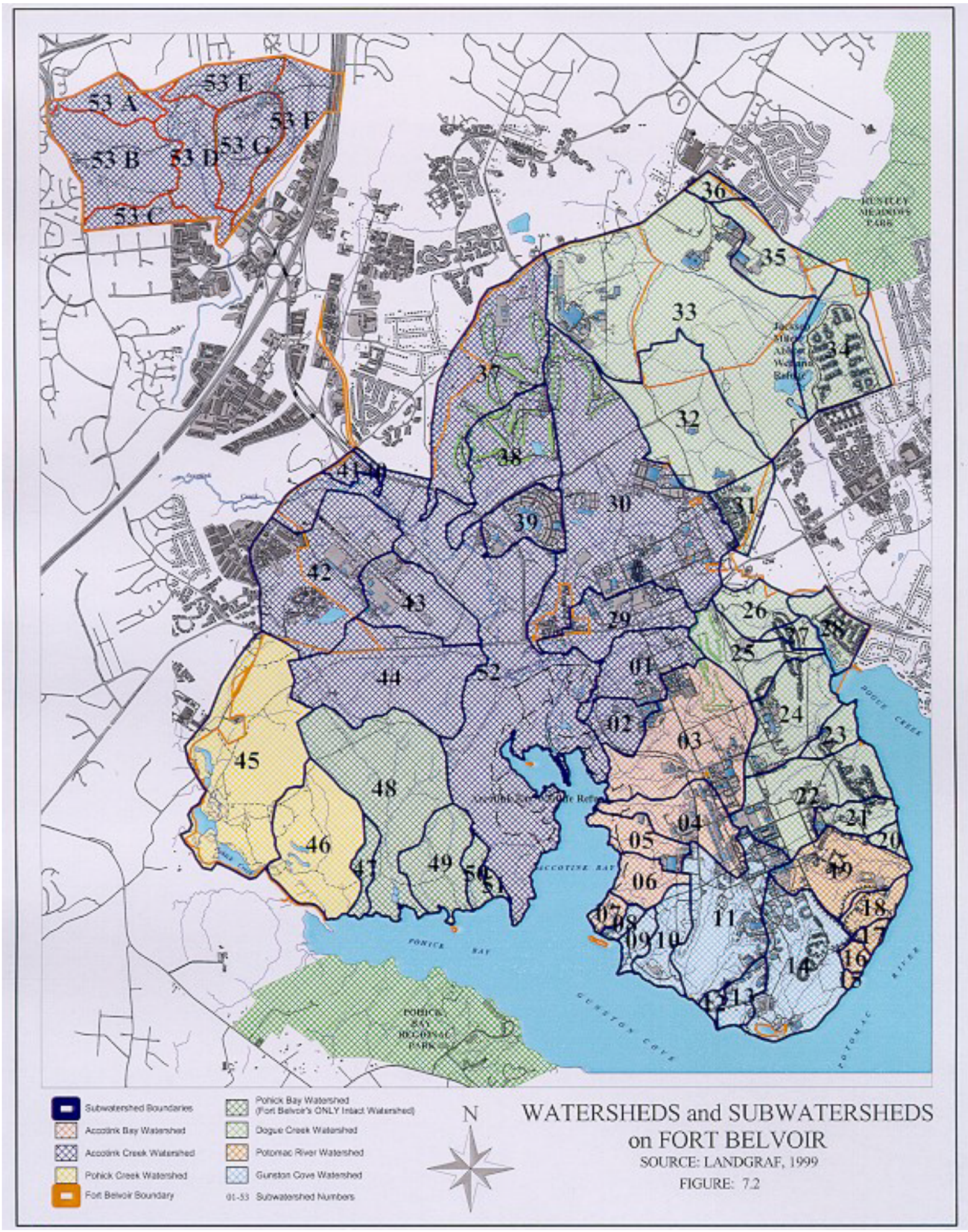

Figure 3-1: Watershed and Sub Watershed Map

3.1 FACILITIES COVERED UNDER ISW PERMIT #VA0092771

There are ten categories of industrial activity that require storm water discharge permits, referred to as ‘Sectors’. The primary Standard Industrial Classification (SIC) code, or the specific industrial activities occurring at a facility determine whether or not the facility is required to be permitted. Some common "industrial activities" that should be assessed are:

(i) Hazardous waste treatment, storage, or disposal facilities;
(ii) Landfills that receive or have received "industrial activity" wastes;
(iii) Recycling facilities;
(iv) Transportation facilities with maintenance activities on site; and
(v) Domestic sewage treatment plants greater than 1.0 Millions of gallons per day (MGD).

Fort Belvoir has assessed its facilities to determine which facilities required permit coverage and was recently issued an ISW Major permit VA0092771, effective January 1st 2017. A copy of the full permit is provided in Appendix A.

Table 4-1 summarizes the SIC codes and sectors that each site is regulated under. The sites within Fort Belvoir covered under this permit are detailed in this section and those that follow. Each of these sites will be issued an Individual Facility-Specific SWPPP detailing the requirements of this overall SWPPP to their facilities.

All industrial activity stormwater permits include the requirement that a SWPPP must be developed for the permitted facility. This document was created based on these requirements. The stormwater pollution prevention plan identifies all stormwater discharges at the facility, actual and potential sources of stormwater contamination, and requires the implementation of both structural and non-structural BMPs to reduce the impact of stormwater runoff on the receiving stream to the maximum extent practicable, and to meet water quality standards.

3.1.1 Locations of ISW Outfalls

Table 3–2 provides the Representative Outfall (RO) Identifier (ID) for permitted outfalls, the associated stormwater utility structure ID, the facility discharging to that RO, approximate coordinates of the RO location and locations, and the map grid where the facility can be found in the Fort Belvoir Stormwater Utility Map Book.

Figure 3-2 shows the overall locations of these ROs within Fort Belvoir along with their approximate drainage areas, and locations of outfalls deemed Substantially Identical (SI) as defined in Part III.A.4 of the ISW Major Permit.

Table 3-2: Locations of ISW Permitted Outfalls

ISW RO-ID	Structure ID	Facility Name	Representative Outfall Location *State Plane (NAD 83)*		Map Grid
ISW RO-001	4944	Davison Army Airfield (N)	38° 43' 14" N	–77° 11' 19" W	06D
ISW RO-002	4951	Davison Army Airfield (E)	38° 43' 06" N	–77° 10' 41" W	07E
ISW RO-003	4991	Davison Army Airfield (S)	38° 42' 37" N	–77° 10' 15" W	08F
ISW RO-004	4437	Belvoir Training Area	38° 42' 26" N	–77° 10' 21" W	08E
ISW RO-005	2758	HazWaste Facility (<90 day)	38° 42' 05" N	–77° 9' 15" W	09G
ISW RO-006	2944	National Guard Motor Pool	38° 41' 22" N	–77° 8' 43" W	11H
ISW RO-007	2822	21st Street Waste Facility	38° 41' 03" N	–77° 8' 28" W	11H
ISW RO-008*	2523	Aerospace Data Facility (NE)	38° 44' 15" N	–77° 9' 15" W	03G
ISW RO-009	5724	Swank/Snyder Golf Course	38° 43' 55" N	–77° 10' 04" W	05F
ISW RO-010[1]	3244	249th Prime Power Motor Pool (Meade Road)	38° 42' 39" N	–77° 09' 00" W	08H
ISW RO-011	3204	VARNG/ 911th Motor Pool and Washrack	38° 42' 36" N	–77° 09' 12" W	08G
ISW RO-012	5511	Mosby Reserve Center	38° 42' 57" N	–77° 10' 04" W	07F
ISW RO-013	3761	Arby's/ AAFES Class Six	38° 43' 13" N	–77° 09' 07" W	06G
ISW RO-014	3755	AAFES Class Six	38° 43' 16" N	–77° 09' 11" W	06G

ISW RO-ID	Structure ID	Facility Name	Representative Outfall Location *State Plane (NAD 83)*		Map Grid
ISW RO-015	2179	16th Street Storage Area (Base Operations)	38° 41' 36" N	–77° 08' 49" W	10H
ISW RO-016	4471	Dogue Creek Marina	38° 42' 24" N	–77° 07' 49" W	08I
ISW RO-017	7243	Recycling Center and Compost Yard	38° 41' 56" N	–77° 08' 54" W	09H
ISW RO-019	2196	300 Area – North (Building 326)	38° 40' 54" N	–77° 08' 08" W	12I
ISW RO-020	2192	300 Area – East (Building 324)	38° 40' 43" N	–77° 08' 10" W	12I
ISW RO-021	2189	300 Area – South (Building 305)	38° 40' 39" N	–77° 08' 12" W	12I
ISW RO-022	2128	300 Area – Marina	38° 40' 28" N	–77° 08' 26" W	13I
ISW RO-023	2775	Sharon Lane Storage (HazWaste and Pest Control)	38° 42' 08" N	–77° 09' 10" W	09G
ISW RO-024*	5243	Aerospace Data Facility (SW)	38° 44' 15" N	–77° 09' 15" W	04G
ISW RO-025	3339	Meade Road Contractor Lot	38° 42' 53" N	–77° 09' 29" W	07G
ISW RO-026	7246	Closed Landfills A08/A09 (Markham School)	38° 42' 08" N	–77° 07' 50" W	09I
ISW RO-027	7245	Closed Landfill A02 (Theote Road)	38° 41' 17" N	–77° 09' 01" W	11H
ISW RO-028	4334	A06 Closed Landfill A06 (Kingman Road)	38° 43' 30" N	–77° 08' 47" W	06H
ISW RO-029	6004	Closed Landfills A07/A25 (Jeff Todd Way)	38° 43' 37" N	–77° 08' 31" W	05H
ISW RO-030	2725	Closed Landfill A26 (Pohick Road)	38° 41' 48" N	–77° 09' 13" W	10G
ISW RO-031	6438	Belvoir NGA (Reflecting Pond 6)	38° 45' 11" N	–77° 11' 54" W	02C
ISW RO-032	6207	Belvoir NGA (Pond 8)	38° 44' 57" N	–77° 11' 44" W	02C
ISW RO-033[1]	TBD	249th Prime Power Motor Pool (Pohick Road)	38º 41' 45" N	–77º 08' 53" W	10H

* Due to Security restrictions exact coordinates are not be provided

[1] Valid from January 1, 2017 through June 30, 2017; Outfall shall be removed due to construction of new installation entrance; all activities are being moved to a new facility within the drainage area for ISW RO-033 (Valid July 1st, 2017 through permit term).

3.1.2 Description of ISW Drainage Areas

In compliance with Part III.A.4 of the permit Table 3–3 gives an estimate of the size of the drainage area and an estimate of the runoff coefficient, or C Factor. The Rational Method was used to determine the C factor for each site using the inputs presented in the Table 3-3. Because land cover is not homogeneous across the drainage areas a weighted average was calculated using equation below.

$$Weighted\ Avarage\ \text{C Factor"} = \frac{(Area\ with\ landuse_1 \times C_1) + (Area\ with\ landuse_2 \times C_2)}{Total\ Area}$$

Area with landuse$_1$ = Impervious Acres;
C_1 = 0.9 assuming these areas would be heavy industrial;
Area with landuse$_2$ = Total Drainage Acres - Impervious Acres;
C_2 = 0.3 assuming these areas are undeveloped; and
Total Area = Total Drainage Acres

Also presented in the table is a brief description of the general stormwater drainage from each ISW outfall and its direct drainage watershed.

Table 3-3: Summary of Drainage Area Descriptions for ISW Permitted Outfalls

ISW RO-ID	Drainage Area Description and C factor	Watershed	Drainage Description
ISW RO-001	Total of 14.4 acres 0.86 impervious acre (6%) 0% MS4, 100% industrial C Factor: low ~ 34%	Accotink Creek	Water flows off the site in a northwest direction towards Accotink Creek, which flows into the Potomac River
ISW RO-002	Total of 180 acres 46.8 impervious acres (26%) 0% MS4, 100% industrial C Factor: medium ~ 46%	Accotink Creek	Water flows off the site in an eastern direction towards Accotink Creek, which flows into the Potomac River
ISW RO-003	Total of 132 acres 30.4 impervious acres (23%) 0% MS4, 100% industrial C Factor: medium ~ 44%	Accotink Creek	Water flows off the site in a southeast direction towards an unnamed tributary to Accotink Creek, which flows into the Potomac River
ISW RO-004	Total of 34 acres 0 impervious acres (0%) 0% MS4, 100% industrial C Factor: low ~ 30%	Accotink Creek	Water flows off the site in a northeast direction towards an unnamed tributary to Accotink Creek, which flows into the Potomac River
ISW RO-005	Total of 1 acre 0.41 acres (41%) impervious 0% MS4, 100% industrial C Factor: medium ~ 55%	Accotink Creek	Water flows off the site in a western direction towards an unnamed tributary to Accotink Creek, which flows into the Potomac River

ISW RO-ID	Drainage Area Description and C factor	Watershed	Drainage Description
ISW RO-006	Total of 1.1 acres 0.61 impervious acres (55%) 0% MS4, 100% industrial C Factor: medium ~ 63%	Accotink Creek	Water flows off the site in a southern direction towards an unnamed stream to Gunston Cove, which flows into the Potomac River
ISW RO-007	Total of 56.1 acres 7.9 impervious acres (14%) 90% MS4, 10% industrial C Factor: low ~ 39%	Accotink Creek	Water flows off the site in a southwest direction towards an unnamed stream to Gunston Cove, which flows into the Potomac River
ISW RO-008	Total of 70.2 acres 14.7 impervious acres (21%) 0% MS4, 100% industrial C Factor: medium ~ 43%	Dogue Creek	Water flows off the site in a northeast direction towards an unnamed tributary to Dogue Creek, which flows into the Potomac River
ISW RO-009	Total of 103 acres 6.2 impervious acres (6%) 75% MS4, 25% industrial C Factor: low ~ 34%	Accotink Creek	Water flows off the site in a southwest direction towards Kernan Run, a tributary to Accotink Creek, which flows into the Potomac River
ISW RO-010[1]	Total of 3.9 acres 2.2 impervious acres (56%) 40% MS4, 60% industrial C Factor: medium ~ 64%	Accotink Creek	Water flows off the site in a southern direction towards an unnamed tributary to Accotink Creek, which flows into the Potomac River
ISW RO-011	Total of 3.1 acres 2.8 impervious acres (91%) 6% MS4, 94% industrial C Factor: high ~ 85%	Accotink Creek	Water flows off the site in a southern direction towards an unnamed tributary to Accotink Creek, which flows into the Potomac River
ISW RO-012	Total of 5.4 acres 2.6 impervious acres (48%) 49% MS4, 51% industrial C Factor: medium ~ 59%	Accotink Creek	Water flows off the site in a southern direction towards Accotink Creek, which flows into the Potomac River
ISW RO-013	Total of 0.95 acres 0.69 impervious acres (73%) 0% MS4, 100% industrial C Factor: high ~ 74%	Accotink Creek	Water flows off the site in a southern direction towards an unnamed tributary to Mason Run which flows to Accotink Creek, which flows into the Potomac River
ISW RO-014	Total of 1.89 acres 1.5 impervious acres (79%) 5% MS4, 90% industrial C Factor: high ~ 77%	Accotink Creek	Water flows off the site in a northern direction towards an unnamed tributary to Mason Run which flows to Accotink Creek, which flows into the Potomac River
ISW RO-015	Total of 54.7 acres 28.4 impervious acres (52%) 20% MS4, 80% industrial C Factor: medium ~ 61%	Accotink Creek	Water flows off the site in a western direction towards an unnamed stream to Accotink Bay, which flows into the Potomac River
ISW RO-016	Total of 2.3 acres 0.72 impervious acres (32%) 0% MS4, 100% industrial C Factor: medium ~ 49%	Dogue Creek	Water flows off the site in a western direction towards Dogue Creek, which flows into the Potomac River

ISW RO-ID	Drainage Area Description and C factor	Watershed	Drainage Description
ISW RO-017	Total of 4.3 acres 0.64 impervious acres (15%) 0% MS4, 100% industrial C Factor: low ~ 39%	Accotink Creek	Water flows off the site in a northwest direction towards an unnamed stream to Accotink Bay, which flows into the Potomac River
ISW RO-019	Total of 7.9 acres 2.3 impervious acres (29%) 27% MS4, 73% industrial C Factor: medium ~ 47%	Accotink Creek	Water flows off the site in an eastern direction towards an unnamed stream flowing south to Ponton Basin to Gunston Cove, which flows into the Potomac River
ISW RO-020	Total of 8.3 acres, 2.6 impervious acres (32%) 0% MS4, 100% industrial C Factor: medium ~ 49%	Accotink Creek	Water flows off the site in an eastern direction towards an unnamed stream flowing south to Ponton Basin to Gunston Cove, which flows into the Potomac River
ISW RO-021	Total of 4.1 acres, 1.0 impervious acres (23%) 59% MS4, 41% industrial C Factor: medium ~ 44%	Accotink Creek	Water flows off the site in an eastern direction towards an unnamed stream flowing south to Ponton Basin to Gunston Cove, which flows into the Potomac River
ISW RO-022	Total of 3.6 acres, 1.4 impervious acres (39%) 30% MS4, 70% industrial C Factor: medium ~ 53%	Accotink Creek	Water flows off the site in a western direction towards an unnamed tributary to Gunston Cove, which flows into the Potomac River
ISW RO-023	Total of 1.2 acres, 0.5 impervious acres (42%) 0% MS4, 100% industrial C Factor: medium ~ 55%	Accotink Creek	Water flows off the site in a western direction towards an unnamed tributary to Accotink Creek, which flows into the Potomac River
ISW RO-024	Total of 11.1 acres, 7.8 impervious acres (70%) 70% MS4, 30% industrial C Factor: high ~ 72%	Dogue Creek	Water flows off the site in a northeast direction towards an unnamed tributary to Dogue Creek, which flows into the Potomac River
ISW RO-025	Total of 4.7 acres, 4.1 impervious acres (87%) 3% MS4, 97% industrial C Factor: high ~ 82%	Accotink Creek	Water flows off the site in a southwest direction towards Mason Run then to Accotink Creek, which flows into the Potomac River
ISW RO-026	Total of 14.8 acres, 1.6 impervious acres (11%) 6% MS4, 94% industrial C Factor: low ~ 37%	Dogue Creek	Water flows off the site in a northeast direction towards an unnamed tributary to Dogue Creek that flows into the Potomac River
ISW RO-027	Total of 2.1 acres, 0.0 impervious acres (0%) 0% MS4, 100% industrial C Factor: low ~ 30%	Accotink Creek	Water flows off site in a southern direction to an unnamed tributary to Accotink Bay, which flows into the Potomac River
ISW RO-028	Total of 15 acres, 1.4 impervious acres (9%) 10% MS4, 90% industrial C Factor: low ~ 35%	Dogue Creek	Water flows off the site in a southern direction towards an unnamed tributary to Dogue Creek, which flows into the Potomac River

ISW RO-ID	Drainage Area Description and C factor	Watershed	Drainage Description
ISW RO-029	Total of 2.6 acres, 0.0 impervious acres (0%) 40% MS4, 60% industrial C Factor: low ~ 30%	Dogue Creek	Water flows off the site in a southern direction towards an unnamed tributary to Dogue Creek, which flows into the Potomac River
ISW RO-030	Total of 4.2 acres, 0.0 impervious acres (0%) 15% MS4, 85% industrial C Factor: low ~ 30%	Accotink Creek	Water flows off the site in a southwestern direction towards Accotink Bay, which flows into the Potomac River
ISW RO-031	Total of 2.0 acres, 0.0 impervious acres (0%) 0% MS4, 100% industrial C Factor: low ~ 30%	Accotink Creek	Water flows off the site in a northwestern direction towards Accotink Creek, which flows into the Potomac River
ISW RO-032	Total of 9.4 acres, 4.9 impervious acre (52%) 0% MS4, 100% industrial C Factor: medium ~ 61%	Accotink Creek	Water flows off the site in a southeastern direction towards Accotink Creek, which flows into the Potomac River
ISW RO-033[1]	***Unknown.*** *(To be updated upon completion of project)* X impervious acres (X %) 0% MS4, 100% industrial	Accotink Creek	Water flows off the site in a southwestern direction towards Accotink Creek, which flows into the Potomac River

[1] Valid from January 1, 2017 through June 30, 2017; Outfall shall be removed due to construction of new installation entrance; all activities are being moved to a new facility within the drainage area for ISW RO-033 (Valid July 1st, 2017 through permit term).

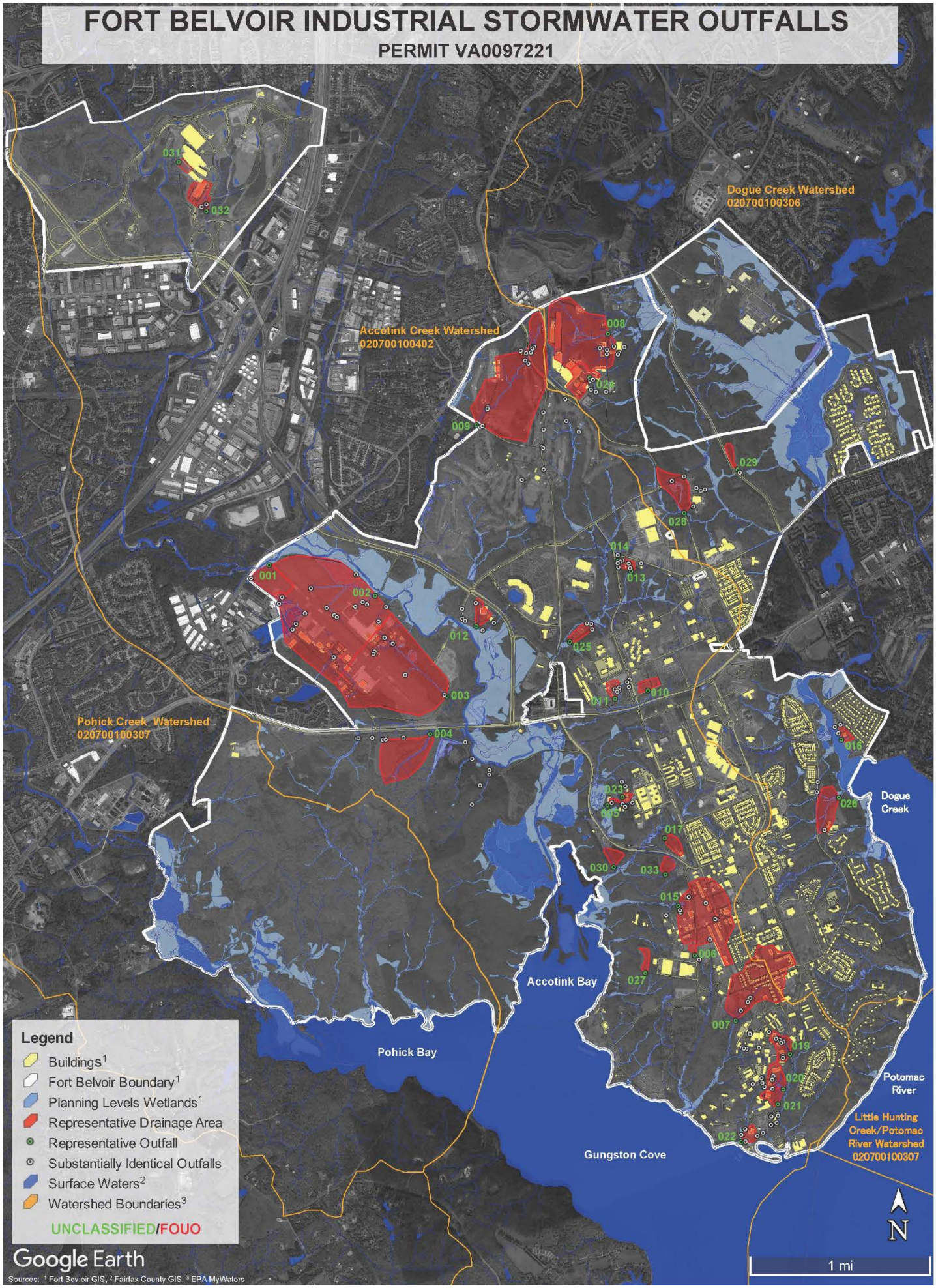

Figure 3-2: Locations of Industrial Stormwater Outfalls and Associated Drainage Areas

3.2 HIGH PRIORITY FACILITIES COVERED UNDER MS4 PERMIT #VAR040093

The MS4 General Permit requires implementation of six (6) minimum control measures (MCM) as outlined in Section II.B.1-6. MCM-6 details requirements of a pollution prevention and good housekeeping program. Section II.B.6.b.1 requires that MS4 operators evaluate their service areas and identify municipal High-Priority facilities (HPF). These facilities should include:

(i) Composting facilities,
(ii) Equipment storage and maintenance facilities,
(iii) Materials storage yards,
(iv) Pesticide storage facilities,
(v) Public works yards,
(vi) Recycling facilities,
(vii) Salt storage facilities,
(viii) Solid waste handling and transfer facilities, and
(ix) Vehicle storage and maintenance yards.

In addition to facilities on this list, Fort Belvoir also considered sites where either an illicit discharge has been reported or there is a high potential for spills, leaks, or unauthorized discharges. Some examples are:

(x) Public pools where de-chlorination is required,
(xi) Commercial food services where there may be outdoor grease storage,
(xii) Animal care facilities where pet waste or manure may accumulate
(xiii) Car wash facilities that may have illicit connections

Section II.B.6.b.2 then requires that these sites be evaluated for their potential of discharging pollutants. The permit considers any site identified above, not covered under another VPDES permit a High-Priority Facility, if the following materials or activities occur and are expected to have exposure to stormwater resulting from rain, snow, snowmelt or runoff,

a) Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;
b) Materials or residuals on the ground or in stormwater inlets from spills or leaks;
c) Material handling equipment (except adequately maintained vehicles);
d) Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt);
e) Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
f) Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
g) Waste material except waste in covered, non-leaking containers (e.g., dumpsters);
h) Application or disposal of process wastewater (unless otherwise permitted); or
i) Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.

A modified Virginia DEQ No Exposure Certification Form was used to determine and document whether individual sites are to be considered to be a HPF or if they can be considered for the non-exposure exemption. Table 3-4 shows all sites that were identified as a HPF for the MS4 service area and the final determination made after the exposure assessment was conducted. The map grid where the facility can be found in the Fort Belvoir Stormwater Utility Map Book is also shown.

Sites noted as meeting the exemption are not considered to have a significant source of pollutants. The non-exposure certifications can be found in Appendix E. Sites that were evaluated to have a high chance to discharge pollutants received a HPF ID number and are highlighted in bold, these sites are covered in this SWPPP. These HPFs received a baseline facility inspection which are also presented in Appendix E.

Table 3-4: Summary of Results from the MS4 HPF Assessment

MS4 HPF ID	Facility Address/Name	Map Grid	Exposure Assessment Determination
MS4 HPF-001	**Golf Course (Building 2920)**	05F	High-Priority Facility
MS4 HPF-002	**AAFES (Building 2321)**	06G	High-Priority Facility
MS4 HPF-003	**DLA Contract Yard**	06G	High-Priority Facility
N/A	DFMWR Carwash (Building 2318)	06H	No Exposure
N/A	North Post Pool (Building 2430)	06H	No Exposure
MS4 HPF-004	**AMSA 91 Motorpool (Building 2292)**	07G	High-Priority Facility
N/A	Dining Facility (Building 1822)	07H	No Exposure
MS4 HPF-005	**Caisson Stables (Building 3045)**	08D	High-Priority Facility
MS4 HPF-006	**Auto Skills Center (Building 1462)**	08H	High-Priority Facility
N/A	Fort Belvoir Community Hospital	08H	No Exposure
N/A	Community Club (Building 1200)	08I	No Exposure
MS4 HPF-007	**Theote Road Housing Storage Yard**	10H	High-Priority Facility

MS4 HPF ID	Facility Address/Name	Map Grid	Exposure Assessment Determination
MS4 HPF-008	**Housing Annex (Building 1108)**	10H	High-Priority Facility
N/A	AAFES (Building 1135)	10H	No Exposure
N/A	Bowling Alley (Building 1199)	10H	No Exposure *Drains to ISW RO-015*
N/A	Dominos (Building 3304)	10H	No Exposure
N/A	Dunkin Donuts (Building 1196)	10H	No Exposure *Drains to ISW RO-015*
N/A	Military K9 Facility (Building 1102)	10H	No Exposure
N/A	Rice King (Building 3302)	10H	No Exposure
N/A	Starbucks (Building 3304)	10H	No Exposure
N/A	Subway (Building 3301)	10H	No Exposure
N/A	RV Storage Lot	11H	No Exposure
N/A	Vet Clinic (Building 610)	11H	No Exposure
N/A	Benyard Pool (Building 182)	11I	No Exposure
N/A	Connelly Outdoor Pool Complex	11J	No Exposure
N/A	Officers Club (Building 20)	11J	No Exposure
N/A	300 Area Cafeteria (Building 321)	12I	No Exposure *Drains to ISW RO-019*

3.2.1 Locations of Identified MS4 High Priority Facilities

Table 3–5 summarizes the MS4 high priority facilities identified at Fort Belvoir, that are not covered under a separate VPDES permit as required by the MS4 permit. It provides the High-Priority Facility (HPF) Identifier (ID) for sites that did not meet the non-exposure exemption, the facility name, and facility location. The stormwater utility structure ID and location for the MS4 outfall potentially affected by the facility is also provided.

Figure 3-3 shows the overall locations of these HPFs within Fort Belvoir along with the location of the potentially affected MS4 outfall and their approximate drainage areas. The area associated with the facility is shown in green.

Table 3-5: Locations of MS4 Permitted High Priority Facilities and Potentially Affected MS4 Outfalls

MS4 HPF ID	Facility Name	Facility Location *State Plane (NAD 83)*		Structure ID	Outfall Location *State Plane (NAD 83)*	
MS4 HPF-001	Golf Course (Building 2920)	38° 43' 40" N	–77° 09' 42" W	5788	38° 43' 39" N	–77° 09' 47" W
MS4 HPF-002	AAFES (Building 2321)	38° 43' 28" N	–77° 09' 01" W	7290	38° 43' 32" N	–77° 08' 58" W
MS4 HPF-003	DLA Contract Yard	38° 43' 17" N	–77° 09' 38" W	5581	38° 43' 20" N	–77° 09' 40" W
MS4 HPF-004	AMSA 91 Motorpool (Building 2292)	38° 42' 44" N	–77° 09' 17" W	3356	38° 42' 47" N	–77° 09' 22" W
MS4 HPF-005[1]	Caisson Stables[1] (Building 3045)	38° 42' 20" N	–77° 11' 33" W	9000[1]	38° 42' 17" N	–77° 11' 34" W
MS4 HPF-006	Auto Skills Center (Building 1462)	38° 42' 20" N	–77° 09' 00" W	2996	38° 42' 20" N	–77° 09' 02" W
MS4 HPF-007	Theote Road Yard	38° 41' 45" N	–77° 08' 49" W	2025	38° 41' 45" N	–77° 08' 50" W
MS4 HPF-008	Housing Annex (Building 1108)	38° 41' 29” N	–77° 08' 49" W	2176	38° 41' 34" N	–77° 08' 53" W

[1] There is no actual structure at this location, runoff drains as sheet flow and begins a natural channel, and approximate location provided is associated with this channel

3.2.2 Description of MS4 High Priority Facilities Drainage

In compliance with Section II.B.6.b.4.a of the MS4 General Permit Table 3-6 presents a summary of the receiving waterbodies for discharges from each of the HPFs and a brief description of the general stormwater drainage from each HPF. Figure 3-3 shows the watershed boundaries and receiving waters, along with the locations of potentially affected MS4 Outfalls.

Table 3-6: Summary of Drainage Area Descriptions for MS4 Priority Facilities and Potentially Affected MS4 Outfalls

MS4 HPF ID	Structure ID	Facility Name	Watershed	Drainage Description
MS4 HPF-001	5788	Golf Course (Building 2920)	Accotink Creek	Water flows off the site in a southern direction towards some an unnamed tributary of Accotink Creek, which flows into the Potomac River
MS4 HPF-002	7290	AAFES (Building 2321)	Dogue Creek	Water flows off the site in an eastern direction towards a storm pond discharging to an unnamed tributary to Dogue Creek, which flows south into the Potomac River
MS4 HPF-003	5581	DLA Contract Yard	Accotink Creek	Water flows off the site in a northwestern direction towards an unnamed tributary to Accotink Creek, which flows into the Potomac River
MS4 HPF-004	3356	AMSA 91 Motorpool (Building 2292)	Accotink Creek	Water flows off the site in a northwestern direction towards a stormwater pond discharging into Mason Run, a tributary to Accotink Creek, which flows into the Potomac River
MS4 HPF-005	9000[1]	Caisson Stables (Building 3045)	Pohick Creek	Water flows off the site in a southern direction towards an unnamed tributary to Pohick Creek, which flows into the Potomac River
MS4 HPF-006	2996	Auto Skills Center (Building 1462)	Accotink Creek	Water flows off the site in a eastern direction towards an unnamed stream to Accotink Creek, which flows into the Potomac River
MS4 HPF-007	2025	Theote Road Housing Storage Yard	Accotink Creek	Water flows off the site in a eastern direction towards an unnamed stream to Accotink Bay, which flows into the Potomac River
MS4 HPF-008	2176	Housing Annex (Building 1108)	Accotink Creek	Water flows off the site in a northwestern direction towards a storm pond which discharges to an unnamed tributary flowing west to Accotink Bay, which flows into the Potomac River

[1] There is no actual structure at this location, runoff drains as sheet flow and begins a natural channel, and approximate location provided is associated with this channel

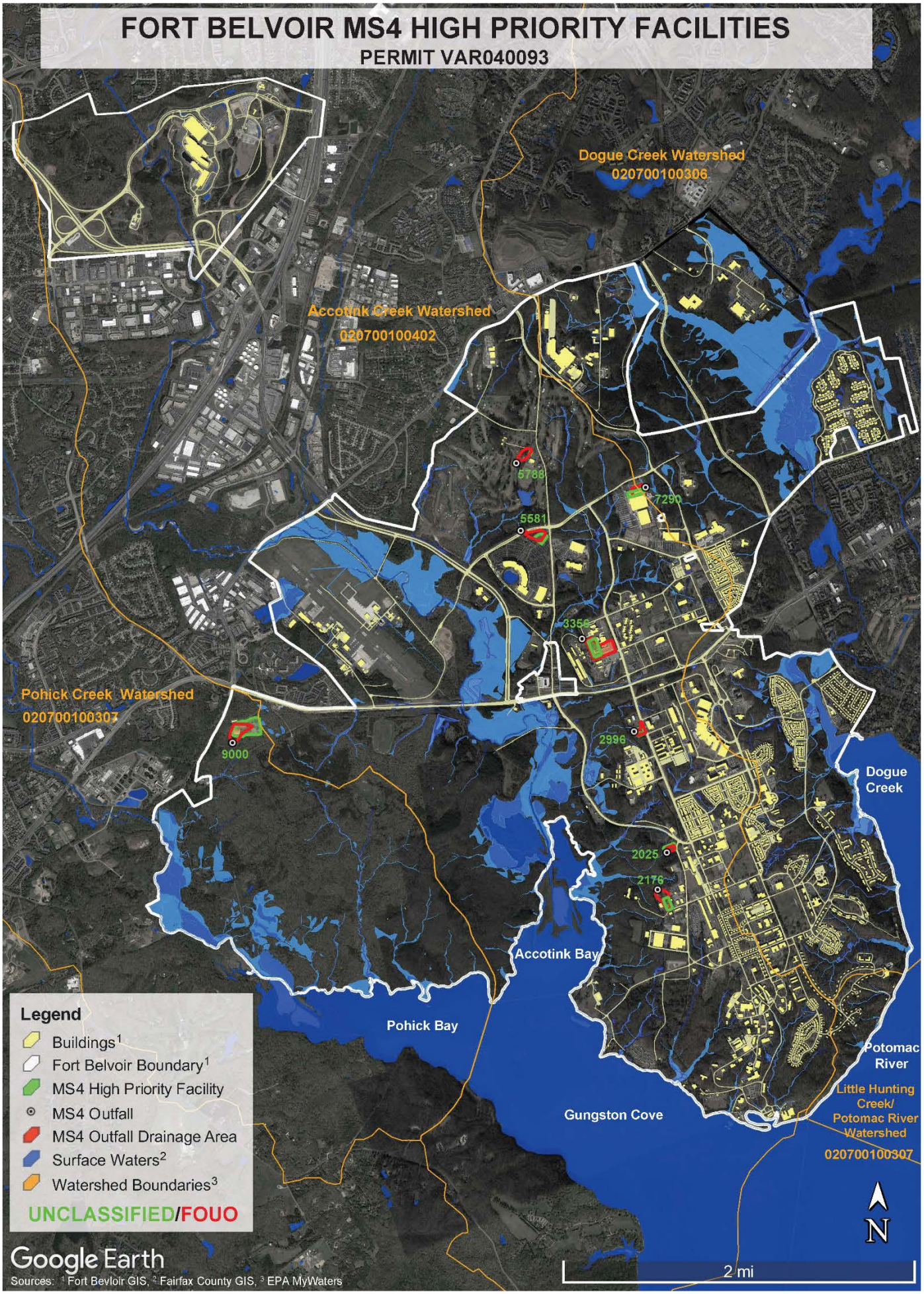

Figure 3-3: Locations of MS4 outfalls Potentially Affected by High-Priority Facilities

4 DESCRIPTION OF POTENTIAL POLLUTANT SOURCES

4.1 POTENTIAL STORMWATER POLLUTANT SOURCES AT FORT BELVOIR

The U.S. EPA SWPPP Guidance defines "significant materials" from 40 CFR 122.26(b)(12) as substances related to industrial activities such as process chemicals, raw materials, fuels, solvents, hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Any chemical the facility is required to report pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA), pesticides, and fertilizers.

Based on the results of previous facility assessments, Fort Belvoir has the potential to influence stormwater through the discharge of pollutants (i.e., significant materials) from day to day operations. As such, operations with the most significant potential for stormwater impacts are listed below and represent the general activities performed at Fort Belvoir.

Significant materials include, but are not limited to:

- Various fuels including gasoline, diesel, and JAA/F–24
- Antifreeze
- Various petroleum, oil, and lubricants (POLs)
- Materials used for painting/coatings, including thinners and solvents
- Pesticides/fertilizers
- Salt storage (winter usage for snow removal)
- E36/ Alpine RF 11 Liquid Runway Deicer or comparable product
- SAFETEMP ES PLUS Aircraft Deicer or comparable product
- Commercial food waste (fats, oils, and greases)
- Equestrian manure waste
- Mulch/Compost storage/piles
- Sediment
- Various solvents

This SWPPP describes activities, materials and physical features at regulated industrial facilities/activities and MS4 High Priority Facilities on Fort Belvoir. The potential pollutant sources for each of the industrial activities or high priority facilities within an outfall are described in the Individual Facility-Specific SWPPPs located in Appendices A–AQ. Narrative assessments of the stormwater pollution risk associated with each source are also included. Additionally, visual observations and pollutants of concern are addressed for all potential sources. The description of potential pollutant sources are provided in sections 4.1.1 - 4.1.12 below and will be updated annually in the Facility SWPPPs to reflect any changes that occur.

4.1.2 Vehicle, Aircraft and Equipment Maintenance Operations

Due to the nature of the activities performed at Fort Belvoir, vehicle maintenance operations can include heavy equipment, aircraft, and light duty vehicles (i.e., trucks and vans). Maintenance operations may include, but are not limited to general maintenance and repairs, complete engine and parts replacement, and bodywork. All vehicle and equipment maintenance must be performed indoors. However, minor maintenance may be performed outdoors on vehicles that are too large for the indoor maintenance areas. Vehicles awaiting maintenance must be visually inspected regularly for leaks. Therefore, indoor vehicle maintenance activities have a low potential for generating pollutants while the outdoor storage of vehicles awaiting maintenance has a moderate potential for generating pollutants that may come into contact with stormwater.

4.1.3 Vehicle, Aircraft and Equipment Fueling Operations

Fueling operations occur frequently at Fort Belvoir. Fueling stations for general consumers (i.e., privately owned cars and trucks) as well as fueling for light duty government vehicles (i.e., cars and trucks), large equipment and bulk fueling (military vehicles) are present at the installation. Fueling operations occur in a variety of locations and not all fueling islands are covered by canopies. Because fueling activities are highly dependent on operator use and some fueling islands are not under cover, these activities are considered to have a high potential for generating pollutants that may come into contact with stormwater. Fort Belvoir is currently has a VADEQ approved plan to upgrade/replace the Defense Logistics Agency's (DLA) main fueling facility associated with building 1124, construction of the new facility is planned for 2017/2018.

4.1.1 Vehicle, Aircraft and Equipment Washing

All vehicles, aircraft, and equipment are required to be washed on designated compliant areas and/or approved washracks. The washrack discharge process water is piped to an oil/water separator before it is discharged to the sanitary sewer system. Washracks on Fort Belvoir that did not contain an OWS were closed and capped to prevent unauthorized use. Fort Belvoir is currently working to repair/replace any washrack that did not have a compliant OWS. Outdoor washracks have a moderate potential for generating pollutants that may come into contact with stormwater.

4.1.1 Vehicle, Aircraft and Equipment Painting

Various military vehicles and equipment are painted at Fort Belvoir as part of testing operations and general maintenance. In most instances, painting occurs indoors within spray booths. Indoor spray booths are equipped with particulate filters. Because these activities occur inside these activities have a low potential for generating pollutants that may come into contact with stormwater.

4.1.2 Outdoor Storage of Materials

Fort Belvoir commonly stores materials such as various metals, wood, and glass both new and used outdoors. These materials are typically stored under cover or canopy when possible, or are elevated off the ground by wooden pallets or blocks. All liquids are required to be kept in secondary containment in addition to the container being covered when stored outside. If not properly elevated and covered the outdoor material storage areas have a moderate to high potential for generating pollutants that may come into contact with stormwater.

4.1.1 Aboveground/Underground Storage Tanks

Liquid and chemical storage tanks are present throughout the installation and are utilized for a variety of operations, mostly fuel and used oil storage. Used oil above ground storage tanks (ASTs) are required to be registered as SAAs and are inspected at least monthly. DPW-ENRD personnel conduct inspections of all ASTs at a site while performing site visits. However, this activity is largely dependent upon operator diligence and therefore is considered as having a moderate potential for generating pollutants that may come into contact with stormwater during material transfer operations.

4.1.1 Petroleum, Oil, and Lubricant (POL) Dispensing

POLs are dispensed regularly as part of vehicle maintenance and testing operations from pressurized systems within maintenance shops. Storage of POLs typically occurs in bulk quantities of 55 gallons or more within secondary containment. Because these products are dispensed indoors via a system with controls and shutoffs the potential for generating pollutants that may come into contact with stormwater is low to moderate.

4.1.2 Materials Loading / Unloading Areas

Materials loading and unloading operations are specific to the sites at which they occur. Large quantities of materials are typically loaded or unloaded via truck or forklift through outdoor loading docks or terminals. Activities at the Army and Air Force Exchange Service (AAFES), Recycling Center, the Building 1495 HazWaste Storage, Base Operations Storage Yard/16th Street Operations Area, and 21st Street Debris Collection Facility involve intensive loading or unloading operations. With any loading or unloading operation, there is always the potential for accidental spills or releases of materials. Because these activities happen outside and accidental spills or leaks may occur these are considered to have a high potential for generating pollutants that may come into contact with stormwater.

4.1.3 Peeling Paint

Due to the age of some of the older structures on Fort Belvoir, lead–based paint has the potential to be found on structures that have not been renovated. Most buildings are new or in good condition, Fort Belvoir also has an active lead remediation program which involves all buildings on post that were built prior to 1978. Therefore there is a low potential for generating pollutants that may come into contact with stormwater.

4.1.4 Floor Drains

Open floor drains within older buildings at Fort Belvoir are of particular concern because these floor drains were typically designed either to discharge into the ground or to surface waters. All floor drains need to either be sealed or piped to the sanitary sewer. Because unknown discharge locations are still being identified the potential for generating pollutants that may come into contact with stormwater is moderate.

4.1.5 Animal Wastes

Many parks, trails, and facilities on Ft. Belvoir are pet-friendly and pet-waste is one of the largest contributors of bacterial pollution. It is Fort Belvoir policy to pick up and properly dispose of pet-waste when using any community areas or within any housing district. There are also multiple working animal facilities across the installation including the Caisson Stables and the FBNA working animal support building. Because manure is accumulated outside for disposal/recycling and pet-waste pickup is dependent on the owner these are considered to have a moderate potential for generating pollutants that may come into contact with stormwater.

4.1.6 Commercial Food Waste

Fats, oil, and grease (FOG) are byproducts of restaurant activities and if handled incorrectly they can have negative impacts on wastewater collection, treatment facilities, and natural waterways. These type of contaminants can degrade water quality and impair the health of fish and wildlife habitats. Most wastewater collection system blockages can be traced to FOG. Blockages in the wastewater collection system are serious, because they cause sewage spills, manhole overflows, or raw sewage backups in homes and businesses. All food service locations across the installation are fitted with grease traps and/or grease collection bins that are required to be kept closed when not in use. Because the grease traps rely on proper maintenance and spills may occur during transfer to collection bins these are considered to have a low to moderate potential for generating pollutants that may come into contact with stormwater.

4.1.1 Salt/Deicing Storage

Fort Belvoir Base Operations maintains stockpiles of salt for application to roadway surfaces and E36/Alpine RF–11 liquid runway deicing material for application onto the airfield runway, during the winter. Davison Army Airfield (DAAF) stores SAFETEMP ES PLUS, approved in the ISW Major Permit, for aircraft deicing. All salt storage is required to occur within designated structures with impervious surfaces and adequate containment to prevent any discharge into the stormwater conveyance system. Locations with dedicated salt storage buildings are considered to have a low potential for generating pollutants that may come into contact with stormwater, as long as the salt is properly stored. However, there are multiple locations across the installation where there is not a dedicated salt storage facility and therefore salt is stored in piles or pallets and are required to be covered. Because runoff may come into direct contact with these storage piles they are considered to have a moderate potential for generating pollutants that may come into contact with stormwater.

4.1.2 De-watering Activities

De-watering activities such as tank drawn downs, fire hydrant flushing, and pool draining have the potential to negatively impact stormwater by introducing large quantities of harmful constituents like chlorine and sediment if the correct measures are not taken prior to de-watering. De-chlorination procedures, including the use of diffusers, to decrease Cl so that only acceptable limits are discharged into stormwater conveyance systems are currently implemented by personnel who are responsible for conducting the activities listed above. When draining large tanks or pools it is imperative to not only preform de-chlorination procedures but to also to install erosion and sediment control measures so that sediment does not pollute stormwater conveyance systems. Because these measures may not always be implemented these activities are considered to have a low to moderate potential for generating pollutants that may come into contact with stormwater.

4.1.3 Spill and Leaks

Due to the nature of fueling and material handling activities on Fort Belvoir, the potential exists for spills and leaks that have a moderate to high potential for generating pollutants that may come into contact with stormwater.

Fort Belvoir maintains a record of all reportable spills and leaks as per the Fort Belvoir Master Spill Pollution Control and Countermeasures (SPCC) Plan at DPW–ENRD and the Fort Belvoir Fire Department. It is the responsibility of the site coordinator and/or the Building Custodian to ensure that the spill report is completed and submitted to the DPW–ENRD within 48 hours of the incident.

The known and reported spills and leaks from the last three years that occurred on Fort Belvoir are presented in Appendix G. Fort Belvoir maintains a current list of all spills and leaks, the list is updated whenever a report of a spill is made, and is available at DPW-ENRD during normal business hours. Appendix G will be updated at least quarterly with any newly documented spills or leaks. Refer to the Fort Belvoir Master Spill Plan, available under Environmental Documents on the Fort Belvoir Homepage, for specific spill response and reporting procedures.

4.2 FACILITIES COVERED UNDER ISW PERMIT #VA0092771

Part III.C.2.c requires a summary of identified potential pollutant sources for each facility. Table 4-1 provides a summary of the evaluation results for each permitted outfall including any applicable SIC Codes and the primary industrial sector. In addition, a brief description of activities conducted in each area that may be exposed to stormwater is provided along with a list of potential pollutants associated with the activities, in compliance with subsections one (1) and two (2). Detailed Site maps are provided on Appendix D.

A more detailed description of site activities and a material inventory will be included in each Individual Facility-Specific SWPPP to be issued. It is the Facility Site Coordinators' responsibility to maintain an updated material inventory and accompanying Safety Data Sheet for any hazardous material. Each Facility-Specific SWPPP will also contain a spill log for the facility and a summary of past analytical sample results.

Table 4-1: Summary of Potential Pollutant Sources from Permitted ISW Outfalls

ISW RO ID	Primary Industrial Sector	Applicable SIC Codes	Description of Activities	Potential Pollutants
ISW RO-001	**SECTOR S** Air Transportation Facilities	4581, 5541, 7538	Aircraft/Vehicle Maintenance Areas, Equipment Cleaning Areas, and deicing of runways	Jet fuel, fuel additives, oils, lubricants, heavy metals, chemical solvents, batteries, oil and fuel filters, oily rags, deicing products
ISW RO-002	**SECTOR S** Air Transportation Facilities	4581, 5541, 7538, 7542	Aircraft/Vehicle Maintenance Areas, Equipment Cleaning Areas, and deicing of runways and aircrafts	Jet fuel, fuel additives, oils, lubricants, heavy metals, chemical solvents, batteries, oil and fuel filters, oily rags, deicing products
ISW RO-003	**SECTOR S** Air Transportation Facilities	4581, 5541, 7538, 7542	Aircraft/Vehicle Maintenance Areas, Equipment Cleaning Areas, and deicing of runways	Jet fuel, fuel additives, oils, lubricants, heavy metals, chemical solvents, batteries, oil and fuel filters, oily rags, deicing products
ISW RO-004	**SECTOR L** Landfills and Land Application Sites	4953	Area associated with a closed landfill	TSS, TDS, turbidity, nutrients
ISW RO-005	**SECTOR K** Hazardous Waste Treatment, Storage or Disposal Facilities	4953	Hazardous waste storage and management	Acids, solvents, ammonia, hydroxides, detergents, fuels, pesticides, oxygen-demanding substances, nutrients, organics, Oil and grease, fuels, TSS, antifreeze

ISW RO ID	Primary Industrial Sector	Applicable SIC Codes	Description of Activities	Potential Pollutants
ISW RO-006	**SECTOR P** Land Transportation and Warehousing	7538	vehicle and equipment maintenance shops, vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication equipment cleaning operations	Fuel, oil, greases, heavy metals, spent solvents, acid/alkaline wastes, ethylene glycol, paint solids, TSS, nutrients
ISW RO-007	**SECTOR L** Landfills and Land Application Sites	4953	Area classified as an open dump, and the presence of SWMUs	TSS, TDS, turbidity, nutrients, TPH, PCBs, oil and grease, lubricants, paints, heavy metals, transmission and brake fluids, fuel, battery acid, lead acid, antifreeze, benzene, petroleum products
ISW RO-008	**SECTOR K** Hazardous Waste Treatment, Storage or Disposal Facilities	4953, 5541, 7538	Hazardous waste storage and management; Salt Storage, Fueling Station, Equipment repair shops	Acids, solvents, ammonia, hydroxides, detergents, fuels, pesticides, oxygen-demanding substances, nutrients, organics, Oil and grease, fuels, TSS, antifreeze
ISW RO-009	**Non–classified SECTOR** Pesticide storage	4953	Hazardous material storage, wash rack, and the presence of SWMUs	fuels, pesticides, oxygen-nutrients, Oil and grease, fuels, TSS, antifreeze
ISW RO-010[1]	**SECTOR P** Land Transportation and Warehousing	7538	Vehicle and equipment maintenance shops, vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication equipment cleaning operations	Fuel, oil, greases, heavy metals, spent solvents, acid/alkaline wastes, ethylene glycol, paint solids, TSS, nutrients
ISW RO-011	**SECTOR P** Land Transportation and Warehousing	7538	Vehicle and equipment maintenance shops, vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication equipment cleaning operations	Fuel, oil, greases, heavy metals, spent solvents, acid/alkaline wastes, ethylene glycol, paint solids, TSS, nutrients
ISW RO-012[2]	**SECTOR P** Land Transportation and Warehousing	7538	Vehicle and equipment maintenance shops, vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication equipment cleaning operations	Fuel, oil, greases, heavy metals, spent solvents, acid/alkaline wastes, ethylene glycol, paint solids, TSS, nutrients
ISW RO-013	**Non–classified SECTOR** Gasoline Service Station	5541, 5812	vehicle fueling operations	Oils, greases, heavy metals
ISW RO-014	**Non–classified SECTOR** Gasoline Service Station	5541	vehicle fueling operations and dining facility	Oils, greases, heavy metals

ISW RO ID	Primary Industrial Sector	Applicable SIC Codes	Description of Activities	Potential Pollutants
ISW RO-015	**SECTOR P** Land Transportation and Warehousing	4212, 7538, 5541, 7542	Vehicle and equipment maintenance shops, vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication, equipment cleaning operations, salt storage, fire emergency services	Fuel, oil, greases, heavy metals, spent solvents, acid/alkaline wastes, ethylene glycol, paint solids, TSS, nutrients, salt/deicing products
ISW RO-016	**SECTOR Q** Water Transportation Facilities	4493	Water transportation facilities with vessel maintenance shops and/or equipment cleaning operations	Paint solids, spent solvents, heavy metals, dust, debris, fuels, oils, spent abrasives
ISW RO-017	**SECTOR A** Mulching Facilities **SECTOR C** Chemical and Allied Products Manufacturing	24991303, 2875	Mulching activities on site, outdoor storage of mulch, wood, and bark. Collection and sorting of recyclables	TSS, TDS, turbidity, nutrients, TPH, PCBs, oil and grease, lubricants, paints, heavy metals, transmission and brake fluids, fuel, battery acid, lead acid, antifreeze, benzene, petroleum products, Bark and wood debris, and leachates that affect the Biochemical Oxygen Demand (BOD)
ISW RO-019	**SECTOR AA** Fabricated Metal Products Manufacturing Facilities	Major Group 34, 8731, 8734	loading and unloading operations for paints, chemicals and raw materials; outdoor storage activities for raw materials, paints, empty containers, corn cob, chemicals, scrap metals; outdoor manufacturing or processing activities such as grinding, cutting, degreasing, buffing, brazing, etc.; and on-site waste disposal practices for spent solvents, sludge, pickling baths, shavings, ingots pieces, refuse and waste piles; dining facility	Paints, spent solvents, heavy metals, TSS, thinner, varnish, spent solvents, acids/alkalis, lubricants, sand, pH, nitrates, nitrites, carbon,, oils, organics, fuels, nutrients
ISW RO-020	**Non–classified SECTOR** Physical/Biological Research Testing Laboratories	8731, 8734, 4953	loading and unloading operations for paints, chemicals and raw materials; outdoor storage activities for raw materials, paints, empty containers, corn cob, chemicals, scrap metal Fueling facility, presence of SWMU	Paints, spent solvents, heavy metals, TSS, thinner, varnish, spent solvents, acids/alkalis, lubricants, sand, pH, nitrates, nitrites, carbon,, oils, organics, fuels, nutrients

ISW RO ID	Primary Industrial Sector	Applicable SIC Codes	Description of Activities	Potential Pollutants
ISW RO-021	**Non–classified SECTOR** Physical/Biological Research Testing Laboratories	8731, 8734	loading and unloading operations for paints, chemicals and raw materials, on-site waste disposal practices	Paints, spent solvents, heavy metals, TSS, thinner, varnish, spent solvents, acids/alkalis, lubricants, sand, pH, nitrates, nitrites, carbon, oils, organics, fuels, nutrients
ISW RO-022	**SECTOR Q** Water Transportation Facilities	4493	Vehicle, equipment, vessel maintenance shops and/or equipment cleaning and fueling operations. Material storage and collection for disposal	Paint solids, spent solvents, heavy metals, dust, debris, fuels, oils, spent abrasives
ISW RO-023	**SECTOR K** Hazardous Waste Treatment Storage or Disposal Facilities	4953	Hazardous material and waste storage and/or management	Acids, solvents, ammonia, hydroxides, detergents, fuels, pesticides, oxygen-demanding substances, nutrients, organics, Oil and grease, fuels, TSS, antifreeze
ISW RO-024	**SECTOR K** Hazardous Waste Treatment Storage or Disposal Facilities	4953	Hazardous material and waste storage and/or management. on-site waste disposal practices	Acids, solvents, ammonia, hydroxides, detergents, fuels, pesticides, oxygen-demanding substances, nutrients, organics, Oil and grease, fuels, TSS, antifreeze
ISW RO-025	**SECTOR L** Landfills and Land Application Sites	4953	This site serves/served as accumulation points for trash. The landfill has potentially received industrial waste, and therefore is covered under VPDES.	TSS, TDS, turbidity, nutrients, TPH
ISW RO-026	**SECTOR L** Landfills and Land Application Sites	4953	These sites serve/served as accumulation points for trash. The landfill has potentially received industrial waste, and therefore is covered under VPDES	TSS, TDS, turbidity, nutrients
ISW RO-027	**SECTOR L** Landfills and Land Application Sites	4953	These sites serve/served as accumulation points for trash. The landfill has potentially received industrial waste, and therefore is covered under VPDES	TSS, TDS, turbidity, nutrients
ISW RO-028	**SECTOR L** Landfills and Land Application Sites	4953	These sites serve/served as accumulation points for trash. The landfill has potentially received industrial waste, and therefore is covered under VPDES	TSS, TDS, turbidity, nutrients

ISW RO ID	Primary Industrial Sector	Applicable SIC Codes	Description of Activities	Potential Pollutants
ISW RO-029	**SECTOR L** Landfills and Land Application Sites	4953	These sites serve/served as accumulation points for trash. The landfill has potentially received industrial waste, and therefore is covered under VPDES	TSS, TDS, turbidity, nutrients
ISW RO-030	**SECTOR L** Landfills and Land Application Sites	4953	These sites serve/served as accumulation points for trash. The landfill has potentially received industrial waste, and therefore is covered under VPDES	TSS, TDS, turbidity, nutrients
ISW RO-031	**Non–classified SECTOR** Facility Designated by the Permitting Authority	9511	The use of pond treatment products including dyes	TSS, dyes
ISW RO-032	**SECTOR P** Land Transportation and Warehousing	5541	Motor freight transportation facilities, passenger transportation facilities. Supporting activities such as equipment maintenance, rehabilitation, mechanical repairs, painting, fueling, parking of vehicles and cleaning activities are also covered	Fuel, oil, greases, heavy metals, spent solvents, acid/alkaline wastes, ethylene glycol, paint solids, TSS, nutrients, salt
ISW RO-033[1]	**SECTOR P** Land Transportation and Warehousing	7538	Motor freight transportation facilities, passenger transportation facilities. Supporting activities such as equipment maintenance, rehabilitation, mechanical repairs, painting, fueling, parking of vehicles and cleaning activities are also covered	Fuel, oil, greases, heavy metals, spent solvents, acid/alkaline wastes, ethylene glycol, paint solids, TSS, nutrients

[1] Valid from January 1, 2017 through June 30, 2017; Outfall shall be removed due to construction of new installation entrance; all activities are being moved to a new facility within the drainage area for ISW RO-033 (Valid July 1st, 2017 through permit term).

[2] Although RO-012 is listed under Sector K in Part III.A.6.c (3) for unauthorized discharges it is noted on the permit Fact Sheet that the primary activities with the potential to impact stormwater quality at RO-012 and its substantially identical outfalls is that associated with vehicle maintenance activities which are covered under Sector P., therefore monitoring requirements found in Sector P are applied. See Appendix A for applicable portions of the permit Fact Sheet.

4.3 HIGH PRIORITY FACILITIES COVERED UNDER MS4 PERMIT #VAR040093

In compliance with Section II.B.6.4.b Table 4-2 provides a brief discussion of potential pollutant sources and their associated pollutants. Also provided is the facility type as defined in subpart two (2) of MCM-6 and why they did not qualify for the non-exposure exemption. Detailed site maps are provided in Appendix F.

Table 4-2: Summary of Potential Pollutant Sources from MS4 High Priority Facilities

MS4 high priority facility ID	Facility Name	Facility type	Potential Sources	Potential Pollutants
MS4 HPF-001	Golf Course (Building 2920)	Equipment storage and maintenance facilities	Small quantities of gasoline and oils are stored, maintenance and fueling may be conducted outdoors	Motor oil, fuels, hydraulic fluids, antifreeze
MS4 HPF-002	AAFES (Building 2321)	Materials storage yards, pesticide storage facilities	Prepackaged bags of mulch and fertilizer are stored outside; Outdoor commercial food waste collection	Nutrients, Fats, Oils & Greases (FOGs)
MS4 HPF-003	DLA Contract Yard	Materials storage yards, Salt storage facilities	An open area is used to store construction and landscaping materials, a 500 gal gasoline AST for fueling and bags of salt stored	Sediment, Nutrients, Fuels, Salt
MS4 HPF-004	AMSA 91 Motorpool (Building 2292)	Vehicle/Equipment storage and maintenance yards	An open area is used to store tactical vehicles, heavy equipment, generator sets and water buffalos tanks	Motor oil, fuels, hydraulic fluids, antifreeze, and metals
MS4 HPF-005	Caisson Stables (Building 3045)	*Non-classified type* Outdoor manure storage	A large fenced in open pasture with horse manure accumulated in dumpsters	Bacteria, Sediment, Nutrients
MS4 HPF-006	Auto Skills Center (Building 1462)	Vehicle/Equipment storage and maintenance yards	Oil/water separator, 500 gal tank for used oil, used antifreeze tank, scrap trailer yard, hazardous material storage cabinets (6) storing motor oils	Motor oil, Fuels, Hydraulic fluids, Antifreeze, and Metals
MS4 HPF-007	Theote Road Yard	Materials storage yards, Salt storage facilities	Construction and landscaping materials such as gravel and mulch piles that are stored in 3-sided bins outside. Piles of salt and bags of salt are stored under tarps outside	Bacteria, Sediment, Nutrients, Salt
MS4 HPF-008	Housing Annex (Building 1108)	Equipment storage and maintenance facilities, Salt storage facilities	An open area is used to store construction vehicles and small quantities (bags) of salt	Motor oil, Fuels, Hydraulic fluids, Antifreeze, Metals, Salt

5 BEST MANAGEMENT PRACTICES (BMPs) FOR STORMWATER POLLUTION PREVENTION

BMPs are defined as physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution from entering stormwater discharges. BMPs may include processes, procedures, activities, prohibitions on practices and other management practices. The BMPs are divided into the following categories: Good Housekeeping, Preventive Maintenance, Spill Prevention and Response Procedures, Inspections, Employee Training, Reporting and Recordkeeping, Stormwater Diversion, Sediment and Erosion Prevention, Non–Stormwater Discharges Identification, Stormwater Run–Off Management, and the use of Other/Advanced Pollution Prevention Measures. These BMPs are detailed in Sections 5.1.1–5.1.11.

5.1.1 Good Housekeeping

Good housekeeping requires areas which may contribute pollutants to stormwater discharges to be maintained in a clean, orderly manner. Poor housekeeping can result in more pollutants being exposed to stormwater than necessary which can increase the potential for stormwater contamination. A clean and orderly work area reduces the possibility of accidental spills caused by mishandling of chemicals and equipment, and should reduce safety hazards to site personnel. Well–maintained material and chemical storage areas will reduce the possibility of stormwater mixing with pollutants. General good housekeeping measures, (i.e. regular cleaning, proper equipment storage, proper spill containment material, etc.) are outlined in each Individual Facility-Specific SWPPP. Security measures are also in place at most sites to prevent an accidental or intentional release of materials. When feasible, the volume of waste generated is minimized by recycling, reclaiming, and/or reusing materials. Designated waste storage areas are designed to prevent contact with stormwater run–off. Waste materials are required to be containerized and stored in the appropriate waste material storage areas to reduce the risk of accidental spills and stormwater contamination.

5.1.2 Preventive Maintenance

Preventive maintenance involves the regular inspection and testing of equipment and operational systems (see Section 5.1.4 *Inspections* below). These inspections should reveal conditions such as cracks or slow leaks that could cause breakdowns or failures that result in discharges of materials to the MS4 and surface waters. The program prevents breakdowns and failures by adjustment, repair, or replacement of equipment. Preventive maintenance measures exist at all sites. Inspecting and maintaining oil/water separators, vehicle/aircraft/equipment wash areas, above ground storage tanks (ASTs), and secondary containment structures are common practices. Other preventive measures that are implemented include the following: repairs on equipment and stormwater diversionary and conveyance structures, such as curbing, ditches, swales; promoting stormwater pollution prevention with signs at vehicle/aircraft/equipment wash areas, fueling areas and vehicle maintenance areas; proper material handling; storm drain labeling and educational program; and storm drain maintenance.

5.1.3 Spill Prevention and Response Procedures

Spills and leaks are one of the largest industrial sources of stormwater pollutants. However, by establishing spill prevention procedures and training employees, DPW-ENRD has reduced the potential for these accidental releases. Avoiding spills and leaks is preferable to cleaning them up afterward, not only from an environmental standpoint, but also because spills cause increased operating costs and lower productivity. Spill prevention and response procedures are important elements of an effective SWPPP. The Spill Prevention Control and Countermeasures (SPCC) Plan for Fort Belvoir addresses the objectives of the SWPPP, and includes a majority of the industrial activity sites. The spill prevention and response BMPs at Fort Belvoir identify and characterize potential spills, eliminate or reduce spill potential, and instruct how to respond when spills occur. As noted in the SPCC Plan, emergency spill control stations, absorbent materials, drip pans, "In the event of spill" signs, emergency shut–off valves, overflow trip devices, covered areas for waste materials, and secondary containment structures (if applicable) are required to be used at all facilities. Other BMPs that will reduce the potential for spills, leaks, and stormwater contamination include emptying, sealing and/or removing unused ASTs and oil/water separators, and parking vehicles in curbed areas.

5.1.4 Inspections

Regular visual inspections help ensure that the SWPPP BMPs are in place and working properly. Routine visual inspections should identify conditions that could cause the contamination of stormwater run–off. Stormwater inspections are incorporated with security inspections at all sites.

5.1.5 Employee Training

Employee training is essential to effective implementation of the SWPPP. When properly trained, personnel are more capable of preventing spills, responding safely and effectively to an accident, and recognizing situations that could lead to stormwater pollution. SWPPP training is required to be conducted at each site at least once a year and is further discussed in Section 8.0.

5.1.6 Reporting Requirements

Reporting requirements for Fort Belvoir are not limited to reporting discharges of hazardous substances or oil. Fort Belvoir's DPW-ENRD must be notified of any oil spill or discharge of oil, sewage, any wastes, or any noxious or deleterious substances immediately after the notification of the Fort Belvoir's Fire Department (as per the 'In Case of A Spill' instructions).

Personnel on Fort Belvoir should report a spill immediately to the appropriate authorities as noted in the Fort Belvoir Master SPCC Plan. In addition, personnel can refer to the Fort Belvoir Spill Response Procedures Cards that have been distributed throughout the installation. In short, they should report any spill to the following:

- Fort Belvoir Fire Department: (703) 781–1800
- Fort Belvoir DPW-ENRD, Notify one of the following:
    - Spill Response Manager: (703) 806–3694

    - Compliance Branch Manager: (703) 806–0020
    - Hazardous Waste Manager: (703) 806–2119

Fort Belvoir's DPW–ENRD has the responsibility to respond to reports of spills and/or discharges and to complete required documentation. Fort Belvoir DPW–ENRD must report spills to the following:

- Fort Belvoir Fire Department: (703) 781–1800
- National Response Center: 1–800–424–8802;
- VADEQ, Northern Regional Office PREP: (703) 583–3864 (0830 – 1630 M–F)
- Virginia Department of Emergency Management (VADEM), In–State only 24 hour telephone service: 1–800–468–8892
- U.S. Environmental Protection Agency Region III: (215) 597–9898
- Fort Belvoir Fire and Rescue:
    - Emergency: (703) 806–3104/3105
    - Fire Emergency: (703) 781–1800
    - Non–Emergency: (703) 806–6911
    - North Post:(703) 806–6911
    - Belvoir North: (703) 806–1913
    - South North: (703) 805–4911
    - Davison Airfield: (703) 806–7095

Report pollution or questionable discharges to storm drains or waterways to:

- Fort Belvoir Police, MP Desk Sergeant: (703) 806–3104
- Fort Belvoir's MS4 Program Manager: (703) 806–3406

Report leaking sewer lines or water mains to:

- Fort Belvoir Fire and Rescue – Non–Emergency: (703) 806–6911
- Fort Belvoir's Work Order Request Desk (relay to American Water): (703) 806–3109

Report illegal dumping of solid waste to:

- Spill Response Manager: (703) 806–3694
- Hazardous Waste Storage: (703) 806–4537/2119

Fort Belvoir is required via multiple VPDES permits with VADEQ to report any 'unauthorized discharge' of sewage, industrial waste, other wastes, or any noxious or deleterious substance into or upon state waters. Fort Belvoir must notify VADEQ immediately upon discovery of the discharge, but in no case later than 24 hours after discovery. A written report of the discharge and/or spill must be submitted to VADEQ within five days of the discharge or the discovery of the discharge. The written report shall contain the following:

- A description of the nature and location of the discharge and/or spill;
- The cause of the discharge and/or spill;

- The date on which the discharge and/or spill occurred;
- The length of time that the discharge and/or spill continued;
- The volume/amount of the discharge and/or spill;
- If the discharge and/or spill is continuing, how long is it expected to continue;
- If the discharge and/or spill continuing, what the expected total volume of the discharge and/or spill will be; and
- Any steps planned or taken to reduce, eliminate, and prevent a recurrence of the present discharge or any future discharges not authorized by the permit(s).

5.1.7 Recordkeeping Requirements

Fort Belvoir VPDES Permits require that records generated in accordance with this SWPPP be maintained by Fort Belvoir for a minimum of five years and/or the life of the permit. These records include, but are not limited to:

- Records of spills or other discharge incidences,
- Information describing the quality and quantity of stormwater discharges,
- Records of routine inspection and maintenance activities,
- Annual site inspection records,
- Records of any site inspections,
- Records for deicing and anti-icing operations
- Records of all stormwater Discharge Monitoring Reports (DMRs),
- Records of all stormwater DMRs for TMDL monitoring, and,
- Construction records (approved plans, erosion and sediment control/stormwater management inspections, construction site–specific SWPPP).

5.1.8 Stormwater Diversion

Traditional stormwater management practices at Fort Belvoir sites (practices other than those which control the source of pollutants) that divert, retain, reuse, or otherwise manage stormwater run–off are used in a manner that reduces pollutants in stormwater discharges. Traditional management practices are used to direct stormwater away from areas of exposed materials or potential pollutants. In addition, traditional management practices are used to direct stormwater to natural or other types of treatment locations. This is further discussed in Section 5.1.8, *Sediment, and Erosion Prevention*. Diverting stormwater from materials stored in maintenance areas, vehicle wash areas, vehicle parking, fueling areas with OWSs, and waste transfer/recycling areas helps minimize stormwater contact with potential pollutants.

5.1.9 Sediment and Erosion Prevention

Fort Belvoir's uplands are underlain by sands, silts, and clays of riverine origin. Uplands underlain by sands and silts tend to be more stable than those underlain by clays. Uplands that are underlain by clayey soils form undulating and rolling hills where the dominant land–forming process is mass wasting, which includes downhill creep, landslides, slumping, and rock falls. Lowlands and valley bottoms are typically underlain with sediments deposited by moving water.

Fort Belvoir used a variety of erosion and sediment control BMPs necessary to prevent off–site sedimentation and violations of water quality standards. Fort Belvoir has implemented and maintains: Sediment control BMPs such as stormwater conveyance systems, retention ponds, vegetated filter strips, dry swales, bio-swales, and other permanent sediment control BMPs to minimize sediment loads in stormwater discharges. In addition: preserving natural vegetation, seeding, mulching and matting, plastic covering, filter fences, vegetating steep slopes and sediment traps and ponds help reduce erosion and sedimentation. Erosion and sediment control plans are also required for active construction projects that are greater than 2,500 square feet.

Other structural sediment and erosion control practices at several sites include grading and paving surfaces, which divert stormwater away from exposed areas, convey run–off and prevent sediments from moving off–site. Multiple stream restoration projects are also being implemented or planned, in order to manage stormwater that could not be contained on-site due to development.

5.1.10 Non–Stormwater/Illicit Discharge Identification

Identifying and eliminating non–stormwater discharges (illicit discharges) to storm sewers is important and very cost–effective BMPs for improving run–off water quality. Illicit discharges can include discharges of process water, air conditioner condensate, air conditioner and boiler blow–downs, non–contact cooling water, illegal dumping of cleaners and cleaning solutions, and vehicle/ aircraft/equipment wash water or sanitary wastes. These illicit discharges are typically the result of unauthorized connections of sanitary or process wastewater drains to storm sewers. These connections are common, yet often go undetected. Typically these discharges are significant sources of pollutants, and, unless regulated by a VPDES permit, are illegal and unauthorized discharges into state waters (as defined by the Stormwater VPDES permits).

5.1.11 Stormwater Run–Off Management

Stormwater run–off can be managed by curbing to redirect stormwater, through the use of OWSs to catch run–off from areas affected by POLs, the use of pervious areas to allow stormwater to soak into the ground surface, and in certain limited problem areas, construction of sedimentation basins to remove floatables (including POLs) and settleable solids. A significant fraction of the heavy metals, oils, and nutrients have the potential to be removed as they can be adsorbed by the soils.

5.1.12 Other/Advanced Pollution Prevention Measures

By managing runoff close to its source though intelligent site design Fort Belvoir can enhance the local environment, protect public health, and make way towards meeting the water quality goals set by the Chesapeake Bay TMDL and the ISW and MS4 permits. It is DPW-ENRDs goal to review or evaluate at least one (1) new product or engineering control a year for potential Low Impact Development (LID) opportunities to be implemented. LID is aimed towards mimicking a site’s predevelopment hydrology by using techniques that are designed to infiltrate, filter, store, evaporate, or detain run-off. This directly aligns with the Energy Independence and Security Act (EISA) section 438 requirements, whose basic principle requires new development and redevelopment projects, over 5,000 square feet, to be modeled after nature.

6 STORMWATER COMPLIANCE INSPECTIONS

In compliance with Part III.C.e of the ISW Major Permit and Section II.B.6.4.(f) and (g) of the MS4 General permit, this section presents the procedures and schedule for all compliance inspections. The MS4 also requires that procedures are in place for conducting an annual comprehensive site compliance evaluation. Section 6.2 below details the requirements and procedures for all annual evaluations.

6.1 ROUTINE FACILITY INSPECTIONS

Facility personnel who represent each site, and have the knowledge and skills to assess conditions and activities that could influence stormwater at each site, should be present for their routine facility inspection. The routine facility inspection shall be at a minimum quarterly when the facility is in operation for any facility covered under the ISW Major Permit. Facility inspections may be more frequent, and shall be done at the frequency described in the associated Individual Facility-Specific SWPPP, and summarized in Table 6-1 below. At least once per calendar year, the routine facility inspection shall be conducted during a period when a stormwater discharge is occurring. Blank inspection and corrective action forms can be found in Appendix H, signed and certified inspections shall be submitted to DPW/ENRD ISW Program Manager within 48 hours of conducting the inspection, for facilities listed in Table 6-1.

Table 6-1: Summary of Routine Inspection Frequency at ISW Permitted Facilities

ISW RO ID	Facility	Buildings in Drainage	Frequency
ISW RO-001[1]	Davison Army Airfield (N)	No facilities or structures	Quarterly (Monthly during deicing season)
ISW RO-002[1]	Davison Army Airfield (E)	3231, 3232, 3121, 3123, 3125, 3126, 3130, 3146, 3138, 3161, 3162	Quarterly (Monthly during deicing season)
ISW RO-003[1]	Davison Army Airfield (S)	3151, 3153, 3155, 3154, 3232, 3233, 3240, 3242	Quarterly (Monthly during deicing season)
ISW RO-004	Belvoir Training Area	No facilities or structures	Quarterly
ISW RO-005	HazWaste Facility (<90 day)	1495	Quarterly
ISW RO-006	National Guard Motor Pool	No facilities or structures	Quarterly
ISW RO-007	21st Street Waste Facility	605, 606	Weekly
ISW RO-008	Aerospace Data Facility (NE)	2851, 2857, 2834, 2808, 2808A, 2841, 2860	Quarterly
ISW RO-009	Swank/Snyder Golf Course	2990, 2991, 2292, 2993	Quarterly
ISW RO-010[2]	249th Prime Power Motor Pool (Meade Road)	1905	Quarterly
ISW RO-011	911th Motor Pool and Washrack	1984, 1949, 1950	Quarterly

ISW RO ID	Facility	Buildings in Drainage	Frequency
ISW RO-012	Mosby Reserve Center	2470, 2473	Quarterly
ISW RO-013	Arby's/ AAFES Class Six	2304	Quarterly
ISW RO-014	AAFES Class Six	2304, 2304A	Quarterly
ISW RO-015	16th Street Storage Area (Base Operations)	1110, 1113, 1114, 1117, 190, 1192	Quarterly
ISW RO-016	Dogue Creek Marina	1696, 1695	Quarterly
ISW RO-017	Recycling Center and Compost Yard	1089	Monthly
ISW RO-019	300 Area – North (Building 326)	321, 326, 330, 331, 330, 331, 351, 381	Quarterly
ISW RO-020	300 Area – East (Building 324)	324, 362, 7362	Quarterly
ISW RO-021	300 Area – South (Building 305)	357, 305, 309	Quarterly
ISW RO-022	300 Area – Marina	392, 341, 338	Quarterly
ISW RO-023	Sharon Lane Storage (HazWaste and Pest Control)	1497, 1491, 1490, 1496, 1484	Quarterly
ISW RO-024	Aerospace Data Facility (SW)	2842, 2826, 2824	Quarterly
ISW RO-025	Meade Road Contractor Lot	No facilities or structures	Weekly
ISW RO-026	Closed Landfills A08/A09 (Markham School)	950	Quarterly
ISW RO-027	Closed Landfill A02 (Theote Road)	No facilities or structures	Quarterly
ISW RO-028	A06 Closed Landfill A06 (Kingman Road)	2310	Quarterly
ISW RO-029	Closed Landfills A07/A25 (Jeff Todd Way)	No facilities or structures	Quarterly
ISW RO-030	Closed Landfill A26 (Pohick Road)	No facilities or structures	Quarterly
ISW RO-031	Belvoir NGA (Reflecting Pond 6)	No facilities or structures	Quarterly
ISW RO-032	Belvoir NGA (Pond 8)	5104	Quarterly
ISW RO-033[1]	249th Prime Power Motor Pool (Pohick Road)	TBD	Quarterly

[1] For the purposes of this SWPPP the de-icing/ anti-icing season is considered to be from October to April every year. If deicing occurs before or after this period, the inspections shall be expanded to include all months during which deicing chemicals may be used.

[2] Valid from January 1, 2017 through June 30, 2017; Outfall shall be removed due to construction of new installation entrance; all activities are being moved to a new facility within the drainage area for ISW RO-033 (Valid July 1, 2017 through permit term).

All identified High-Priority facilities shall begin with an annual inspection frequency, as shown in Table 6-2 below. A baseline facility inspection was conducted as a part of the site evaluation and is provided in Appendix E.

If further inspections show signs of non-compliance or illicit discharges are reported at a site the SWPPT may consider a more frequent schedule and/or additional training.

Table 6-2: Summary of Routine Inspection Frequency at MS4 High Priority Facilities

MS4 HPF ID	Facility Name	Building Number	Frequency
MS4 HPF-001	Golf Course	2920	Annual
MS4 HPF-002	AAFES	2321	Annual
MS4 HPF-003	DLA Contract Yard	No Structures	Annual
MS4 HPF-004	AMSA 91 Motorpool	2292	Annual
MS4 HPF-005	Caisson Stables	3045	Annual
MS4 HPF-006	Auto Skills Center	1462	Annual
MS4 HPF-007	Theote Road Yard	No Structures	Annual
MS4 HPF-008	Housing Annex	1108	Annual

6.2 ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION

Fort Belvoir DPW–ENRD is required to conduct a comprehensive site compliance evaluation/inspection at least once each calendar year. The evaluations shall be done by the Fort Belvoir DPW–ENRD SWPPP Team Leaders and any facility site personnel responsible for on–site operations. Where compliance evaluation schedules overlap with routine inspections required under the VPDES ISW Permit, the annual comprehensive site compliance evaluation/ inspection may be used as one of the routine inspections. In addition, an Annual Facility SWPPP Questionnaire (Appendix H) will be provided to facility personnel for self evaluation providing an avenue to show site changes in between annual inspections conducted by DPW.

The scope of the compliance evaluation/inspection shall include all areas where industrial materials or activities are exposed to stormwater. The evaluation/inspection shall evaluate:

- Industrial materials, reside or trash that may have or could come into contact with stormwater;
- Leaks or spills from industrial equipment, drums, barrels, tanks or other containers that have occurred within the past five years and/or the life of the permit;
- Off–site tracking of industrial or waste materials or sediment where vehicles enter or exit the site;
- Tracking or blowing of raw, final, or waste materials from areas of no exposure to exposed areas;
- Evidence of, or the potential for, pollutants entering the drainage system;
- Evidence of pollutants discharging to surface waters at all facility outfalls, and the condition of and around the outfall, including flow dissipation measures to prevent scouring;
- Review of stormwater related training performed, inspections completed, maintenance performed, quarterly visual inspections, and effective operation of control measures, including BMPs;
- A summary of the annual outfall evaluation for unauthorized discharges required by the VPDES ISW Major Permit;
- Results of both visual and any analytical monitoring completed during the last year shall be taken into consideration during the evaluation of the sites, the SWPPP and the associated BMPs at each facility location.

Based upon the results of the comprehensive site compliance evaluation/inspection, the SWPPP shall be modified as necessary (e.g. show additional controls on the facility maps, revise the description of the controls to include additional or modified control measures designed to correct problems identified), Revisions to the SWPPP shall be completed within 30 days following the evaluation, unless permission for a later date is granted in writing by VADEQ. If existing control measures need to be modified or id additional control measures are necessary, implementation shall be completed before the next anticipated storm event, if practicable, but not more than 60 days after completion of the comprehensive site compliance evaluation/inspection, unless permission for a later date is granted in writing by VADEQ.

A written comprehensive site compliance evaluation/inspection report shall be written summarizing the scope of the evaluation, name(s) of the personnel making the evaluation/inspection, the date of the evaluation/inspection, and all observations relating to the implementation of the SWPPP, including elements stipulated in the VPDES ISW Permit. Observations shall include such things as:

- location(s) of discharges of pollutants from the site;
- location(s) of previously unidentified sources of pollutants';
- location(s) of control measures that need to be maintained or repaired;
- location(s) of failed control measures that need replacement, and;
- location(s) where additional control measures are needed.

The report shall identify any incidents of noncompliance that were observed. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and the permits. This shall be accomplished by using a Non-exposure form to be included in the report. The full report shall be kept on file in Appendix I of the appropriate Facility-Specific SWPPP

Any deficiencies in the implementation of the SWPPP that are found shall be corrected as soon as practicable, but no later than within 30 days of the inspection, unless permission for a later date is granted in writing by VADEQ. A Record of Corrective Action form (Part A) shall be submitted to DPW/ENRD for each deficiency noted during the inspection, describing the issue and actions to be taken by the facility. Once implemented, the corrective actions will be documented in Part B of the form and be resubmitted to DPW/ENRD to close out the deficiency. The Record of Corrective Action form can be found in Appendix H.

All reports, including inspections and corrective action documentation, shall be signed in accordance with the VPDES ISW Permit certification statement and maintained in Appendix F of the appropriate Facility Specific SWPPP for the minimum of five years and/or the life of the permit.

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6.3 INSPECTION REPORT CERTIFICATION

All inspection reports conducted as a part of the ISW Major Permit must be signed and certified in accordance with Part II.K and maintained in the SWPPP. To assist in meeting these requirements all inspection forms provided in Appendix H contain the certification statement required as per Part II.K.4.

All compliance reports shall be signed by authorized personnel deemed capable to conduct and document compliance inspections. All MS4 and ISW program staff, including active qualified contractors, have been authorized to complete and sign inspection forms. The Memorandum for Record is provided in Appendix J.

7 MONITORING REQUIREMENTS

Under the VPDES Stormwater Industrial Major Permit, industrial activities at facilities at Fort Belvoir are subject to the stormwater monitoring and reporting requirements outlined for Sectors A, K, L, N, O, P, S, T, and AA. Table 7–1 summarizes the visual and analytical monitoring requirements for each industrial activity sector. In addition to sector specific requirements water quality-based effluent limits were developed for individual site discharges based on initial screening data. Specific requirements for each ISW outfall are summarized in section 7.1.1 below and can be found in Parts A.1-A.32 of the ISW permit. The Individual Facility-Specific SWPPPs, that will be issued, will include details on the requirements applicable to that facility.

Currently the VPDES MS4 Stormwater General Permit does not have analytical monitoring requirements. Should this change with future permit renewals, this section will be updated accordingly.

Fort Belvoir also has an approved PCB TMDL Action plan dated March 2013, which requires sampling for stormwater characterization from historical and active PCB contamination sites. This plan is currently being updated and the 2013 plan is included in Appendix I. Expected sampling requirements from the updated Action Plan are summarized section 5.1.2. The updated plan will be submitted to VADEQ with the 2016/2017 Annual Report for review and approval, once approved Appendix I will be updated.

7.1 ANALYTICAL MONITORING

Analytical monitoring requirements for each industrial activity are summarized below. Monitoring will be conducted as required under the VPDES Industrial Permit; all analytical results, past and present, will be maintained on–site at DPW-ENRD in Appendix H of the applicable Facility-Specific SWPPP.

Table 7-1: Summary of Stormwater Sampling Requirements

Description	Sector	Analytical Monitoring Requirements*	Minimal Frequency of Monitoring[1]	Additional Monitoring[1,2]
Mulching Operation (SIC 2499)	Sector A	BOD5, TSS	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Hazardous Waste, Storage and Management	Sector K	TKN, TSS, TOC, Mg (T), As (T), Cd (T), Cyanide, Pb (T), Hg (T), Sb (T), Ag (T)	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Landfills (Inactive, unstaffed)	Sector L (Inactive, unstaffed)	TSS	As per permit	As per permit (usually once/year) or per permit
Landfills (with other operations)	Sector L	TSS	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)

Description	Sector	Analytical Monitoring Requirements*	Minimal Frequency of Monitoring[1]	Additional Monitoring[1,2]
Scrap Recycling Facilities (SIC 5093)	Sector N	Cu (T), Al (T), Fe (T), Pb (T), Zn (T), TSS, Cd, Cr	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Steam Electric Generating Facilities	Sector O	Fe (T)	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Land Transportation and Warehousing	Sector P	TPH, TSS	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Water Transportation Facilities	Sector Q	TSS, Cu, Zn (T)	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Airports with deicing activities[3]	Sector S	TSS, TPH	Semi–Annually	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Treatment Works (SIC 4952)	Sector T	NA, no treatment is occurring, sewage pumping stations only	NA	As per permit
Fabricated Metal Products Except Coating	Sector AA	Fe (T), Al (T), Zn (T)	As per permit	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Chesapeake Bay TMDL	TMDL	TSS, TN and TP	Semi–Annually	Quarterly visual observations of stormwater run–off (during all years of permit coverage)
Potomac–Anacostia Rivers PCB TMDL	TMDL	PCB	Semi–Annually to initially characterize	As per permit required PCB TMDL Action Plan

Explanation of terms & abbreviations:
Cu – Copper,
Al – Aluminum,
Fe – Iron,
Pb – Lead,
Zn – Zinc,
As – Arsenic,
Mg – Magnesium,
Cd – Cadmium,
Cr – Chromium,
Hg – Mercury,
Se – Selenium,
Ag – Silver,
TPH – Total Petroleum Hydrocarbons,
TKN – Total Kjeldahl Nitrogen,
TSS– total suspended solids,
TN – Total Nitrogen,
TP – Total Phosphorous,
T – Total recoverable,
NA = Not Applicable for this sector

[1] = Visual monitoring is required for all sites

[2] = Monitoring beginning the first full quarter following the date of discharge authorization. (Refer to 9VAC25–151–70, Part I–Effluent Limitations, Monitoring Requirements, and Special Conditions)

[3]= Refer to the ISW Permit, 9VAC25–151–70, Part I–Effluent Limitations, Monitoring Requirements and Special Conditions. All airports with air transportation are required to complete the benchmark monitoring

7.1.1 Sampling under the ISW Permit

All samples shall be collected in accordance with the VPDES ISW Permit, Part I.A.2. Specific requirements for a qualifying rain event, documentation of the storm event data, documentation of an adverse climatic waiver and documentation for explaining the inability to obtain a sample are detailed below. Specific requirements for each ISW outfall are summarized in Table 7-2.

Any sampling, including visual sampling, shall be a minimum of one grab sample taken from the discharge associated with industrial activity resulting from a storm event that results in an actual discharge from the site (defined as a "measurable event"), providing the interval from the preceding measurable storm event is at least 72 hours. The 72–hour storm interval is waived if Fort Belvoir is able to document that less than a 72–hour interval is representative for local storm events during the sampling period. In the case of snowmelt, the monitoring shall be performed at a time when a measurable discharge occurs at the site. For discharges from a stormwater management structure, the monitoring shall be performed at a time when a measurable discharge occurs from the outfall structure.

The grab sample shall be taken during the first 30 minutes of the discharge. If it is not practicable to take the sample during the first 30 minutes, the sample may be taken during the first three hours of the discharge, if Fort Belvoir DPW–ENRD explains why a grab sample during the first 30 minutes was impracticable. This information shall be submitted on or with the Discharge Monitoring Reports (DMRs), and maintained with the SWPPP. If the sample discharge comingles with process or non-process water, Fort Belvoir DPW–ENRD shall attempt to sample the stormwater discharge before it mixes with the non–stormwater.

For each monitoring event, Fort Belvoir DPW–ENRD (except snowmelt monitoring) along with the monitoring results, the following shall be documented: the date and duration (in hours) of the storm event(s) sampled; rainfall total (in inches) of the storm event that generated the sampled runoff; and the duration between the storm event sampled and the end of the previous measurable storm event.

To document an explanation of a facilities inability to obtain a sample (including dates and times the outfalls were viewed or sampling was attempted), of no rain event, or of no "measurable" storm event shall be maintained with the SWPPP. Acceptable documentation includes, but is not limited to, National Climatic Data Center (NCDC) weather station data, local weather station data, facility rainfall logs, and other appropriate supporting data.

To document an adverse climatic conditions waiver that prevents the collection of samples, a substitute sample may be taken during a qualifying storm event in the next monitoring period. Adverse weather conditions are those that are dangerous or create inaccessibility for personnel, and may include such things as local flooding, high winds, electrical storms, or situations that otherwise make sampling impracticable, such as drought or extended frozen conditions. Unless specifically stated otherwise, this waiver can be applied to any other monitoring required in this SWPPP.

Table 7-2: Summary of Site Specific Sampling Requirements for ISW Outfalls

ISW RO ID	Facility Name	Frequency[1]	Permit Required Analytical Monitoring
ISW RO-001	Davison Army Airfield (N)	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus, Copper(D), Hardness
ISW RO-002	Davison Army Airfield (E)	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus, Propylene Glycol, Specific Conductance, DO
ISW RO-003	Davison Army Airfield (S)	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus
ISW RO-004	Belvoir Training Area	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus, Lead (D), Hardness
ISW RO-005	HazWaste Facility (<90 day)	Semi–Annually	pH, TSS, TOC, Nitrogen, Phosphorus, Arsenic(R), Cadmium(R), Chromium(D), Copper(D), Lead(D), Lead(R), Magnesium(R), Mercury(R), Nickel(D), Selenium(R), Silver(R), Hardness, Cyanide(T)
ISW RO-006	National Guard Motor Pool	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus
ISW RO-007	21st Street Waste Facility	Semi–Annually	pH, TSS, Nitrogen, Phosphorus, Copper(D), Lead(D), Nickel(D), Hardness,
ISW RO-008	Aerospace Data Facility (NE)	Semi–Annually	pH, TSS, TPH, TOC, Chloride, TDS, Specific Conductance, Nitrogen, Phosphorus, Arsenic(R), Cadmium(R), Copper(D), Lead(R), Magnesium(R), Mercury(R), Nickel(D), Selenium(R), Silver(R), Hardness, Cyanide(T)
ISW RO-009	Swank/Snyder Golf Course	Semi–Annually	pH, TSS, Chloride, TDS, Specific Conductance, TPH, Nitrogen, Phosphorus, Copper(D), Nickel(D), Hardness
ISW RO-010[1]	249th Prime Power Motor Pool (Meade Road)	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus
ISW RO-011	911th Motor Pool and Washrack	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus
ISW RO-012	Mosby Reserve Center	Semi–Annually	pH, TSS, TPH, TOC, Nitrogen, Phosphorus, Arsenic(R), Cadmium(R), Chromium(D), Copper(D), Lead(R), Magnesium(R), Mercury(R), Nickel(D), Selenium(R), Silver(R), Hardness, Cyanide(T)
ISW RO-013	Arby's/ AAFES Class Six	Semi–Annually	pH, TSS, TPH, Oil and Grease, Nitrogen, Phosphorus, Chromium(D), Copper(D), Lead(D), Nickel(D), Hardness
ISW RO-014	AAFES Class Six	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus, Chromium(D), Copper(D), Lead(D), Nickel(D), Hardness
ISW RO-015	16th Street Storage Area (Base Operations)	Semi–Annually	pH, TSS, TPH, Oil and Grease, Chloride, TDS, Specific Conductance, Nitrogen, Phosphorus, Chromium(D), Copper(D), Lead(D), Hardness

ISW RO ID	Facility Name	Frequency[1]	Permit Required Analytical Monitoring
ISW RO-016	Dogue Creek Marina	Semi–Annually	pH, TSS, Nitrogen, Phosphorus, Chromium(D), Copper(D), Copper(R), Lead(D), Nickel(D), Zinc(D), Hardness
ISW RO-017	Recycling Center and Compost Yard	Semi–Annually	pH, TSS, BOD_5, COD, Ammonia, Nitrogen, Phosphorus
ISW RO-019	300 Area – North (Building 326)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus, Aluminum(R), Cadmium(R), Chromium(D), Copper(D), Copper(R), Iron(R), Lead(D), Mercury(D), Nickel(D), Silver(D), Zinc(R), Hardness
ISW RO-020	300 Area – East (Building 324)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus, Mercury(D), Hardness
ISW RO-021	300 Area – South (Building 305)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus, Chromium(D), Hardness
ISW RO-022	300 Area – Marina	Semi–Annually	pH, TSS, Nitrogen, Phosphorus, Copper(R), Zinc(R), Hardness
ISW RO-023	Sharon Lane Storage (HazWaste and Pest Control)	Semi–Annually	pH, TSS, TOC, Nitrogen, Phosphorus, Arsenic(R), Cadmium(R), Chromium(D), Copper(D), Lead(D), Lead(R), Magnesium(R), Mercury(R), Nickel(D), Selenium(R), Silver(R), Hardness, Cyanide(T)
ISW RO-024	Aerospace Data Facility (SW)	Semi–Annually	pH, TSS, TOC, Nitrogen, Phosphorus, Arsenic(R), Cadmium(R), Chromium(D), Copper(D), Lead(R), Magnesium(R), Mercury(R), Selenium(R), Silver(R), Hardness, Cyanide(T)
ISW RO-025	Meade Road Contractor Lot	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus
ISW RO-026	Closed Landfills A08/A09 (Markham School)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus
ISW RO-027	Closed Landfill A02 (Theote Road)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus
ISW RO-028	A06 Closed Landfill A06 (Kingman Road)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus
ISW RO-029	Closed Landfills A07/A25 (Jeff Todd Way)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus
ISW RO-030	Closed Landfill A26 (Pohick Road)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus
ISW RO-031	Belvoir NGA (Reflecting Pond 6)	Semi–Annually	pH, TSS, Nitrogen, Phosphorus
ISW RO-032	Belvoir NGA (Pond 8)	Semi–Annually	pH, TSS, TPH, Chloride, TDS, Specific Conductance, Nitrogen, Phosphorus
ISW RO-033[1]	249th Prime Power Motor Pool (Pohick Road)	Semi–Annually	pH, TSS, TPH, Nitrogen, Phosphorus

[1] The semi-annual monitoring period shall be January 1 – June 30 and July 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period

7.1.2 Sampling under the PCB TMDL Action Plan

In compliance with Sections I.B.2.e and I.B.3 of the MS4 General Permit and Part I.C.4 of the ISW Major Permit, the updated 2016 PCB TMDL Action Plan (2013 plan provided in Appendix I) documents the PCB sampling requirements for sites assessed as needing monitoring or stormwater characterization due to historical PCB releases. A total of 14 sites were assessed and two (2) were evaluated as requiring monitoring or stormwater runoff characterization, MP11 and MP13. MP11 was a former outdoor transformer storage area outside of building 1495 and MP13 is the Warren road and Theote Road wash yard. The remaining 12 historic PCB locations are recommended for "No Additional Actions" required under the TMDL Action Plan based on historical records of remediation, past sampling results, and current site conditions limiting the potential for these sites to discharge PCBs to impaired water bodies.

A sampling plan detailing requirements for continued monitoring at MP11 and stormwater runoff characterization and monitoring at MP13 is available in Section 10 of the Action Plan. As per Part III.A.1 of the ISW Individual Permit and Section I.B.3 of the MS4 general permit, for all stormwater monitoring a minimum of one instantaneous grab sample shall be collected from the discharge resulting from a "measurable storm event" that occurs at least 72 hours from the previously measurable storm event. where a grab sample and measurable event are defined as stated in section 7.1.1 above. The samples will be analyzed by a VELAP certified laboratory using EPA Method 1668A for PCB congeners. The unadjusted and appropriately qualified individual PCB congener analytical results, laboratory and field QA/QC documentation, and results shall be reported. Total PCBs are to be computed as the summation of the reported, quantified congeners following the procedures outlined in VADEQ's TMDL Guidance Memo No. 14-2004. Table 7-3 below summarizes the sampling requirements.

Table 7-3: Summary of Expected Sampling in Updated PCB TMDL Action Plan

PCB Site ID	Facility Name	Sampling Requirement	Potentially Effected Outfalls
MP11	Former Building 1495 Outdoor Transformer Storage Area	Annual Monitoring to confirm downward trends toward WQC	ISW RO-005 Structure ID: 2758
MP13	Theote Road/Warren Road Wash Yard	Stormwater Run-off Characterization Required. Semi-annual sampling	MS4 Outfalls Structure ID: 1466, 8003

Site Specific BMPs were also recommended to minimize potential PCB discharge from the MP13. Additionally, general BMPs to address PCB awareness, their hazards, and reporting across the installation were also developed. Future MS4 Annual Reports will provide BMP status updates as well as new sampling data and site determinations as they are available. Any new data will also be used to update the appropriate appendices of the Action Plan. The results of all sampling completed during the initial five year term of the ISW permit shall be submitted to VADEQ along with an updated version of the plan with the next application for reissuance which is due at least 180 days prior to the expiration of the ISW permit (July 4, 2021). The Action Plan will also be updated, as needed, to reflect new or revised TMDL requirements that occur as a result of new TMDL information.

7.2 VISUAL MONITORING

7.2.1 Quarterly Visual Monitoring for Industrial Facilities

All industrial facilities covered under the permit must perform quarterly visual examinations of their stormwater discharges from the permitted outfalls. These visual examinations provide Fort Belvoir DPW–ENRD with a tool for evaluating the effectiveness of the Fort Belvoir SWPPP.

The quarterly visuals shall be made at least once in each of the following three-month periods: January–March; April–June; July–September; October–December. The visual examination shall be made during normal working hours, where practicable, and when considerations for safety and feasibility allow. If no storm event resulted in runoff from the facility during a monitoring quarter, then Fort Belvoir DPW–ENRD is excused from the visual monitoring for that quarter if documentation is included with the monitoring records indicating that no runoff occurred. The documentation shall be signed and certified in accordance with the VPDES ISW Permit, Part II.K.

The samples shall be collected in accordance with the VPDES ISW Permit, Part I.A.2 as noted in section 5.1.1 above. The examination shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution. The examination shall be conducted in a well–lit area. No analytical tests are required to be performed on the samples.

The visual examination reports shall be maintained on–site with the SWPPP and should be documented on the Fort Belvoir Visual Assessment Form, a blank form can be found in Appendix H. The report shall include the outfall location, the examination date and time, examination personnel, the nature of the discharge (i.e. runoff or snow melt), visual quality of the stormwater discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution), and probable sources of any observed stormwater contamination.

7.2.2 Annual Outfall Evaluation for Unauthorized Discharges from Industrial Facilities

All stormwater outfalls associated with the industrial facilities covered under the ISW Major permit have to be evaluated annually for the presence of unauthorized discharges, in compliance with Part III.C.2.g. This includes both representative and substantially identical outfalls. Record keeping requirements include:

- The date of the evaluation;
- A description of the evaluation criteria used;
- A list of the outfalls or on-site drainage points that were directly observed during the evaluation;
- A description of the results of the evaluation for the presence of unauthorized discharges; and
- The actions taken to eliminate unauthorized discharges if any were identified (i.e., a floor drain was sealed, a sink drain was rerouted to sanitary, or a VPDES permit application was submitted for a cooling water discharge).

These evaluations shall be conducted using the same procedures used for the quarterly visual monitoring, as discussed above. Part III.C.h.(3) states that once all stormwater conveyance systems at each site are evaluated for the presence of non–stormwater discharges, therefore the Fort Belvoir Visual Monitoring Form shall be used to document the visual sampling event, with one form being used for each outfall evaluated. A Corrective Action Form shall be used to document any deficiencies as discussed in Section 10.

Section 8 – *Identification of Non-Stormwater/Illicit Discharges* Below details the evaluation criteria to be used. Part III.A.6 lists the following as non-stormwater discharges specifically not authorized by the ISW Major Permit:

- Discharges of stormwater from areas where there may be contact with chemical formulations sprayed to provide surface protection at mulching facilities.
- Inks, paints, or substances (hazardous, nonhazardous, etc.) resulting from an on-site spill, including materials collected in drip pans;
- Wash waters from material handling and processing areas;
- Wash waters from drum, tank, or container rinsing and cleaning.
- Leachate, gas collection condensate, drained free liquids, contaminated ground water
- Laboratory-derived wastewater
- Contact wash water from washing truck, equipment
- Vehicle, equipment, or surface wash water, including tank cleaning operations.
- Bilge and ballast water, sanitary wastes, pressure wash water, and cooling water originating from water vessels.
- Aircraft, ground vehicle, runway and equipment wash waters; and
- Dry weather discharges of deicing and anti-icing chemicals.

This part of the permit also allows the permittee to request that the facility be allowed to conduct annual outfall evaluations at 20% of the outfalls, if a plan is developed. If approved, the permittee can evaluate at least 20% of the facility outfalls each year on a rotating basis such that all facility outfalls will be evaluated during the period of coverage under this permit. This section shall be updated with a schedule if a plan is developed and approved.

7.2.3 Outfall Reconnaissance as per MS4 Illicit Discharge Detection and Elimination (IDDE) Plan

The MS4 Stormwater General Permit 9VAC25–890–40 Section II, B.3 requires that a minimum of 50 outfalls be monitored annually for the presence of illicit discharges. Specific monitoring requirements for annual outfall reconnaissance inventories are found in the Fort Belvoir Illicit Discharge Detection and Elimination Plan dated June 2015.

7.3 CERTIFICATION OF NON–STORMWATER DISCHARGES

Where a report does not identify any incidents of noncompliance, the report will contain no deficiencies and shall certify that the facility is in compliance with the SWPPP and this permit. A non-exposure exemption form shall be filled out and included in the report, if applicable, when site or operational changes occur. The full report shall be kept on file in Appendix I of the appropriate Facility-Specific SWPPP.

8 IDENTIFICATION OF NON–STORMWATER/ILLICIT DISCHARGES

All stormwater discharges covered by the VPDES ISW Major Permit and the MS4 Stormwater Permit shall be composed entirely of stormwater. See page 9 for a list of authorized discharges. All other non–stormwater discharges are not authorized and shall either be eliminated or have coverage sought under either VPDES Stormwater permit that Fort Belvoir currently holds with VADEQ. As part of the permitting process, all stormwater conveyance systems at Fort Belvoir DPW–ENRD industrial activity sites were evaluated for the presence of non–stormwater or illicit discharges.

An illicit discharge is defined as any discharge to the MS4 that is not composed entirely of storm water, except for discharges allowed under a VPDES permit or waters used for firefighting operations. These non-stormwater discharges occur due to illegal connections to the storm drain system from business or commercial establishments. As a result of these illicit connections, contaminated wastewater enters into storm drains or directly into local waters before receiving treatment from a wastewater treatment plant (USEPA, 2014). These discharges may also include illegal dumping of oil, paint, washing fluids or illegal connections that result in discharges of pollutants. There should be no discharge of waste, garbage, or floatable debris in other than trace amounts.

By paying attention to outfalls and streams, many illicit charges can be detected through visual and physical clues. In general, what to look for in the field during the course of the day includes:

- Unusual odors, colors or conditions in the water, storm drain outfalls or inlets
- Cloudy or murky water
- Floatables, such as toilet paper, suds or excessive trash
- Unnatural (excessive or dead) vegetation near an outfall pipe
- Odd deposits or stains on an outfall pipe
- Leaks, spills and dumping of damaging fluids and/or materials

If any of these characteristics are encountered in the field they shall be reported as per section 5.1.6 *Reporting Requirements.* When reporting an illicit discharge be prepared to provide details on:

- The location of the problem
- The time observed
- Any distinguishing characteristics (i.e. odor, color, floatables)
- Photos (if possible)
- Any other relevant information (i.e. possible sources)

8.1 COMMON SOURCES OF ILLICIT DISCHARGES

Table 8-1 below provides an overview of common pollution problems along with the expected water discoloration associated with the polluting activity. Figure 8.1 shows examples of a natural vs synthetic sheens as well as different severities of oil pollution. Figure 8.2 shows examples of natural vs synthetically produced foams or suds. Sections 8.1.1-8.1.6 describe common sources of illicit discharges and provide examples of how the discharges may be seen in the field.

Table 8-1: Water Discoloration Associated With Polluting Activities

COLOR	POSSIBLE POLLUTION SOURCE
Brown	Construction Printing facilities Concrete, Stone, Clay, and/or Glass cutting Metal grinding
Green	Chemical usage/leaks, textiles Algae or plankton bloom Antifreeze Fertilizer
Gray to White	Dairy / food processing Sewage Concrete wash-out
Milky white	Paint, lime, grease, concrete Swimming pool filter backwash Concrete wash-out Stone cutting
Red, purple, blue, black	Fabric dyes Inks from paper and cardboard manufacturers

Figure 8-1 Natural vs. Synthetic Oil Sheens

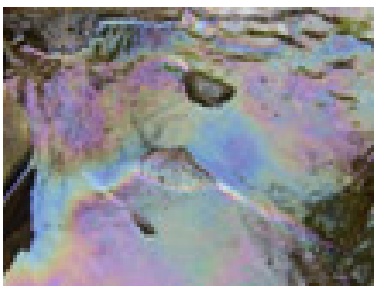
Sheen from bacteria such as iron floc forms a sheet-like film that cracks if disturbed

Synthetic oil forms a swirling pattern and comes back together when disturbed

Figure 8-2 Severity of Contamination From Oil Sheens

Low Severity Oil Sheen

Moderate Severity Oil Sheen



High Severity Oil Film

Figure 8-3 Natural vs. Synthetic Foams

Natural Foam - Do not record.
Note: Suds caused by turbulence

Low Severity Suds
Note: Suds do not appear to travel; very thin foam layer

Moderate severity suds (suds persist)

High severity suds

8.1.1 Pool Discharges

Pool water being drained to the street or storm drain is considered an illicit discharge (**unless properly de-chlorinated**). An example of illicit discharges from pools can be seen in Figure 8-4.

Figure 8-4 Pool Discharge Sources

8.1.2 Sewage Discharges

Sanitary sewage can enter the storm drain and streams through cracks in the pipes, an illicit connection, sanitary sewer overflow and/or straight pipes. Field crews may see any of these sources of discharges during routine activities. Some examples are shown in Figure 8-5 which show typical white or gray discharges which also often exhibit a sewage smell.

Figure 8-5 Sanitary Sewage Discharge Sources

Sanitary pipe break

Illicit sewage connection

Sanitary straight pipe

Illicit connection, downstream of source

Surcharging sanitary manhole in parking lot.

8.1.3 Waste Management

Trash and dumping areas are often found in vacant or infrequently visited parts of Fort Belvoir, including rarely used lots and yards and heavily forested and steeply sloped areas. Trash and dumping attracts rodents, can wash into the storm drains and streams, and signals to others that it is acceptable to dump in the area. Improper dumpster and grease container management can also result in pollution that can wash into the storm drains and streams.

8.1.4 Hazardous Waste

Hazardous waste is waste that is dangerous or potentially harmful to our health or the environment. Hazardous wastes can be liquids, solids, gases, or sludge. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes. This type of discharge is usually seen coming from vehicles/equipment, construction sites, motor pools, and other commercial and residential businesses. It is usually seen in the form of paint, oil, vehicle parts, gas, construction material, and abandoned chemical storage containers. These pollutants will produce various type of physical characteristics depending on the waste it can be greasy, oily, milky, or fluorescent and may carry odors associated with chemicals or solvents. See Figure 8-6 for examples of mismanaged hazardous waste at different severities.

Figure 8-6 Hazardous Waste Discharge Sources

Low Severity Hazardous Waste – Contained used oil, under partial cover

Moderate Severity Hazardous Waste – Batteries outside without cover, on pallets

High Severity Hazardous Waste – Uncovered, unlabeled leaking barrels

High Severity Hazardous Waste – Used oil container open with spills

8.1.5 Sediment Discharge

Sediment or dirt should stay contained in a construction site and should not be tracked on the streets where it can enter the storm drain. Sediment problems are most likely to occur during or after rain, but may also occur if a site is being dewatered or if equipment is being washed down. Sediment discharges originate on the landscape and have a light brown to reddish brown color depending on the color of the soil they come into with. Sediment discharges tend to occur due to either a mismanaged site, an inadequate construction entrance, or erosion from high flow waters.

Figure 8-7 Sediment Tracking and Discharge Sources

Unprotected storm drain inlet

Sediment pile on the street

Construction site runoff

Failing silt fence

8.1.6 Washing Activities

Outdoor washing may or may not be problematic. For example, hosing off a sidewalk or driveway may not generate significant flows or pollutant loads. These examples are not problematic unless done on an ongoing or chronic basis close to a waterway or storm drain. However, washing fueling areas or un-swept roads and power washing construction equipment in parking lots can generate significant flows or pollutant loads and are therefore not authorized. Wash water dumping and vehicle washing at commercial establishments is *not* acceptable.

Figure 8-8: Building power washing and outdoor vehicle washing

	**Low Severity** Individual power washing building side without soap
	**Moderate Severity** Suds accumulating at outfall
	**High Severity** Fleet vehicle washing next to storm drain

9 EMPLOYEE TRAINING

Stormwater pollution prevention training will be provided to all military, civilian, government, and contracted personnel who work at, or oversee, industrial facilities and any MS4 high priority facilities covered under this SWPPP. The intent of the training is to inform personnel at all levels about stormwater pollution prevention. The training will be conducted at least once a year and as necessary for all temporary and new personnel. Training will be coordinated by the Fort Belvoir DPW–ENRD SWPPT Leader and provided by the DPW SWPPT members to at least the assigned facility site coordinator and on-site supervisor from each industrial facility and MS4 high priority facility. The SWPPP will be the basis for stormwater management training.

The overall objectives and content of the SWPPP Training are:

- Explain and enhance the understanding of the SWPPP
- Cover all components and goals of the SWPPP
- SWPPP Maintenance
- Prevention and elimination of illicit discharges
- Spill Response
- Good Housekeeping
- Material Management Practices
- Control Measures and Operational Controls
- Regular Maintenance
- Ensure proper implementation of the SWPPP
- Improve stormwater quality
- Ensure permit compliance
- Site/Sector Specific requirements

Employee attendance at annual training will be documented. All personnel who work in areas who are responsible for implementing activities identified in the SWPPP are key personnel that need to undergo this training annually. Attendance records will be maintained. Contractor or temporary personnel will be informed of SWPPP operations and procedures as soon as possible.

Employee training records will be maintained at DPW–ENRD and a summary will be provided to the individual facilities for insertion into the Facility-Specific SWPPP. Records will be maintained for a minimum of 5 years after employee training and/or for the life of the permit. A summary of employee training shall be kept in Appendix E of the appropriate Facility Specific SWPPP.

Training will be accomplished through visual–based lessons, a site walk around the facility, and written support materials. The lessons will consist of presentations detailing current and new SWPPP requirements, applicable TMDLs, BMPs that can be used, and reviews of past inspection results. The site walk through will be conducted and site specific activities will be evaluated for potential way to minimize or eliminate materials and activities from exposure. In addition, BMP factsheets shall be developed and distributed for all common pollutant sources, detailing requirements and BMPs that should be implemented on-site.

10 CORRECTIVE ACTIONS

Any deficiencies in the implementation of the SWPPP that are found shall be corrected as soon as practicable, but no later than within 30 days of the inspection, unless permission for a later date is granted in writing by VADEQ. A Record of Corrective Action form (Part A) shall be submitted to DPW/ENRD for each deficiency noted during the inspection, describing the issue and actions to be taken by the facility. Once implemented, the corrective actions taken will be documented in Part B of the Record of Corrective Action form and the form shall be resubmitted to DPW/ENRD to close out the deficiency with a final inspection.

Corrective actions are required if:

- A deficiency is noted during an inspection;
- An exceedance of benchmark concentrations or waste load allocations is discovered; or
- VADEQ determines, or the permittee becomes aware, that the stormwater control measures are not stringent enough for the discharge to meet applicable water quality standards.

10.1 INSPECTION DEFICIENCY

The results of the inspections and corrective action documentation shall be maintained along with the initial inspection report in Appendix F of the applicable Facility-Specific SWPPP for the minimum of five years and/or the life of the permit. The report documentation shall include at a minimum:

- The inspection date and time;
- The name(s) and signature(s) of the inspector(s);
- Weather information and a description of any discharges occurring at the time of the inspection;
- Any previously unidentified discharges of pollutants from this site;
- Any control measures needing maintenance or repairs;
- Any failed control measures that need replacement;
- Any incidents of noncompliance observed; and
- Any additional control measures needed to comply with the VPDES permits requirements.

10.2 EXCEEDING BENCHMARK CONCENTRATIONS OR LOCAL TMDL WASTE LOAD ALLOCATIONS.

If the analytical monitoring result exceeds the benchmark concentration value for a parameter established in Part I.A.1 – Part I.A.32 of the ISW permit or any waste load allocation (WLA) assigned to Fort Belvoir, the permittee shall review the SWPPP and modify it as necessary to address any deficiencies that caused the exceedance. Revisions to the SWPPP shall be completed as described above.

If the concentration of a pollutant exceeds a benchmark concentration, and it is determined that the exceedance is attributable solely to the presence of that pollutant in the natural background, corrective action is not required provided that the action level is less than or equal to natural background levels.

If background levels are to be used as justification for exceedances, a memorandum for record shall be kept in the SWPPP documenting the rationale behind any conclusions. All supporting documentation shall be included in the memorandum. In addition to noting on the DMR that the action level exceedances are attributable solely to natural background pollutant levels, as per Part III.A.9.c.3, the memorandum for record and supporting documentation shall be included in the submittal.

10.3 EXCEEDING ASSIGNED LOADING VALUE FOR THE CHESAPEAKE BAY TMDL

Part III.B.1.b requires that nutrient and sediment data collected, during the first four monitoring periods of the ISW Major Permit, be analyzed to determine if additional corrective actions are needed. The facility loadings shall be calculated for Total Phosphorus (TP), Total Nitrogen (TN), and TSS using the following equation:

$$L = 0.226 \times R \times C$$

L = The facility loading value
R = Annual runoff (in/yr) = 44.3 in/yr in Virginia; and
C = Average concentration of all facility samples (mg/L)

These calculated loading values shall be compared to the following:

TP – High (80%) imperviousness industrial; 1.5 lb/ac/yr
TN – High (80%) imperviousness industrial; 12.3 lb/ac/yr
TSS – High (80%) imperviousness industrial; 440 lb/ac/yr

If there is an exceedance of any of the pollutants of concern (POCs) listed above, a Chesapeake Bay TMDL Action plan will be required for the facility where the exceedance occurred. The Action Plan shall be submitted to VADEQ within 90 days from the end of the fourth monitoring period for review and approval.

If it is determined that a Chesapeake Bay TMDL Action Plan is necessary for any site whose discharges are covered under the ISW Major Permit, the approved plan and it's requirements shall be incorporated by reference into this SWPPP.

10.4 CORRECTIVE ACTION REPORT CERTIFICATION

All corrective action reports completed as a part of the ISW Major Permit must be signed and certified in accordance with Part II.K and maintained in the SWPPP. To assist in meeting these requirements all corrective action forms provided in Appendix H contain the certification statement required as per Part II.K.4.

All corrective action reports shall be signed by authorized personnel deemed capable of evaluating final implementation of the actions taken. All MS4 and ISW program staff, including active qualified contractors, have been authorized to complete and corrective action forms. The Memorandum for Record is provided in Appendix J.

11 MAINTAINING AN UPDATED SWPPP

Fort Belvoir DPW–ENRD shall review and amend the SWPPP as appropriate whenever:

- There is construction or a change in design, operation, or maintenance at the facility that has a significant effect on the discharge, or the potential for the discharge, of pollutants from the facility;
- Routine inspections or compliance evaluations determine that there are deficiencies in the control measures, including BMPs;
- Inspections by local, state, or federal officials determine that modifications to the SWPPP are necessary;
- Annual Facility SWPPP Questionnaire shows significant site changes
- There is a spill, leak or other release at the facility;
- There is an unauthorized discharge from the facility; or
- VADEQ notifies Fort Belvoir that a TMDL has been developed and applies to the permitted facility.

SWPPP modifications shall be made within 30 calendar days after the discovery, observation, or event requiring a SWPPP modification. All amendments will be noted on the amendment log located at the beginning of this SWPPP. Implementation of new or modified control measures (distinct from regular preventative maintenance of existing control measures described in the Appendices shall be initiated before the next storm event if possible, but no later than 60 days after discovery, or as otherwise provided or approved by VADEQ. The amount of time taken to modify a control measure or implement additional control measures shall be documented in the routine facility evaluation/inspection and/or the annual comprehensive site compliance evaluation/inspection (whichever comes first).

In cases where construction is necessary to implement control measures, the permittee shall include a schedule in the SWPPP that provides for the completion of the control measures as expeditiously as practicable, but no later than three years after an exceedance is discovered. Where a construction compliance schedule is included in the SWPPP, the plan shall include appropriate nonstructural and temporary controls to be implemented in the affected portion(s) of the facility prior to completion of the permanent control measure. Any control measure modification(s) shall be documented and dated, and retained with the SWPPP.

If the SWPPP modification is based on a release or an unauthorized discharge, include a description and date of the release, the circumstances leading to the release, actions taken in the response to the release, the date/time the release was reported to VADEQ and the person that the release was reported to and measures to prevent the recurrence of such releases.

12 CONSISTENCY WITH OTHER FORT BELVOIR PLANS

This SWPPP has, as necessary, incorporated relevant information of other required plans. This SWPPP also incorporates relevant information and requirements from the Fort Belvoir Master Spill Plan, the Fort Belvoir Illicit Discharge Detection and Elimination Plan, and the Fort Belvoir PCB TMDL Action Plan by reference. These incorporations are reflected throughout the document. If changes to these plan occur, the SWPPP shall be updated and notification of changes will be provided to all facilities covered in this SWPPP within 30 days, as stated above.

13 REFERENCES

432_StormMapbook_MS4.pdf, Fort Belvoir, VA, created by Paciulli Simmons & Associates, 2013.

Clean Water Act. Section 311: Oil and Hazardous Substances Liability, 1972 Spill Prevention, Control and Countermeasures Plan (SPCCP). Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices. U.S. Environmental Protection Agency, Office of Water. EPA 832–R92–006. September 1992.

Horne Engineering Services, Incorporated. 2001. *Integrated Natural Resources Management Plan.* Prepared for the Fort Belvoir Directorate of Installation Support, Environmental and Natural Resources Division, Fort Belvoir, Virginia.

Title 40 CFR Part 110.10: TITLE 40—Protection of Environment, Chapter I—Environmental Protection Agency, Subchapter D—Water Programs, Part 110—Discharge of Oil. http://ecfr.gpoaccess.gov

Title 40 CFR Part 112– Protection of Environment – Oil Pollution Prevention
http://ecfr.gpoaccess.gov

Title 40 CFR Part 117.21: Protection of Environment – Determination of Reportable Quantities for Hazardous Substances, http://ecfr.gpoaccess.gov

Title 40 CFR Part 122.26(ii), Protection of Environment – Stormwater discharges (applicable to State VPDES programs) http://ecfr.gpoaccess.gov

Title 40 CFR Part 302.4: Subchapter J—Superfund, Emergency Planning, and Community Right–To–Know Programs, Designation, Reportable Quantities, and Notification http://ecfr.gpoaccess.gov

U.S. Army Garrison Fort Belvoir, Virginia Master Spill Plan. Department of the Army. U.S. Garrison, Fort Belvoir, VA, Revised September 2014. AMEC Earth & Environmental, Inc.
http://www.belvoir.army.mil/docs/environdocs/Fort%20Belvoir%20MSP%20Final,%20Feb%202015.pdf

U.S. Army Garrison Fort Belvoir, Virginia, MS4 Program Plan. Virginia General Permit for Small MS4 VPDES Permit #VAR040093. Regulated Small MS4: Fort Belvoir Military Installation Fairfax County, Virginia September 2015.
http://www.belvoir.army.mil/environmental/stormwater/MS4%20Program%20Plan%20Revised%20September%202015.pdf

U.S. Army Garrison Fort Belvoir, Virginia, Virginia Individual Major VPDES Permit #VA0092771 for discharges from Industrial Activities: Effective January 1, 2017

U.S. Army Garrison Fort Belvoir, Virginia. Virginia Pollutant Discharge Elimination System (VPDES) MS4 Permit Fort Belvoir PCB TMDL Action Plan. March 2013.
http://www.belvoir.army.mil/docs/environdocs/PCB%20TMDL%20Action%20Plan%20Final_130312.pdf

United States Environmental Protection Agency, "Developing Your Stormwater Pollution Prevention Plan – A Guide for Industrial Operators" – February 2009 – EPA–833–B–09–002.
http://water.epa.gov/polwaste/npdes/stormwater/upload/industrial_swppp_guide.pdf

United States Environmental Protection Agency, "Guidance Manuel for Conditional Exclusion from Stormwater Permitting Based on "No Exposure" of Industrial Activities to Stormwater", EPA 833–B–00–001, June 2000.

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity. Chapter 151. General Virginia Pollutant

Discharge Elimination System (VPDES) Permit for Discharges of Stormwater Associated with Industrial Activity.
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector A –
"Timber Products Facilities (Including Mulch, Wood, and Bark Facilities and Mulch Dyeing Facilities)" – 9VAC25–151–90.
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section90/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector K – "Hazardous Waste Treatment, Storage, Or Disposal Facilities" – 9VAC25–151–180
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section180/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector L – "Landfills, Land Application Sites and Open Dumps" – 9VAC25–151–190
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section190/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector N – "Scrap Recycling and Waste Recycling Facilities and Material Recovery Facilities" – 9VAC25–151–210
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section210/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector O – "Steam Electric Generating Facilities" – 9VAC25–151–220
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section220/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector P – "Land Transportation and Warehousing" – 9VAC25–151–230
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section230/
http://lis.virginia.gov/cgi–bin/legp604.exe?000+reg+9VAC25–151–230

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector Q – "Water Transportation" – 9VAC25–151–240
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section240/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector T – "Treatment Works" – 9VAC25–151–270
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section270/

Virginia Administrative Code – "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Industrial Activity– Sector AA – "Fabricated Metal Products" – 9VAC25–151–340
http://law.lis.virginia.gov/admincode/title9/agency25/chapter151/section340/

Virginia Clean Marina Guidebook. 2013. 136 Pages.
http://www.virginiacleanmarina.com/documents/cleanmarinaguidefinal.pdf