JBLE- Eustis, Virginia

VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM (VPDES) SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4) PERMIT

ANNUAL REPORT

For

Virginia General Permit for Small Municipal Separate Storm Sewer Systems VPDES Permit #VAR040035

30 September 2022

733d Civil Engineer Squadron
Environmental Element CEIE
1407 Washington Blvd
Fort Eustis, VA

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List of Acronyms and Abbreviations

733 CES/CEIE	733d Civil Engineer Squadron/Environmental Element
AAFES	Army and Air Force Exchange Service
AEM	Advanced Environmental Management
BMP	Best Management Practice
ESC	Erosion and Sediment Control
EMAC	Environmental Management Awareness and Competency
EMP	Environmental Management Procedure
EMS	Environmental Management System
FOG	Fats, Oil and Grease
FSE	Food Service Establishments
FSS	Force Support Squadron
GIS	Geographic Information System
HRSD	Hampton Roads Sanitation District
IDDE	Illicit Discharge Detection and Elimination
ISO	International Organization of Standardization
JBLE–Eustis	Joint Base Langley Eustis – Eustis
MCM	Minimum Control Measure
MFH	Military Family Housing
MS4	Municipal Separate Storm Sewer System
NMP	Nutrient Management Plan
O&M	Operation and Maintenance
POC	Pollutants of Concern
PY	Permit Year
SC	Special Condition
SWCB	State Water Control Board
SWPPP	Stormwater Pollution Prevention Plan
TA	Training Area
TEACH	The Environmental Awareness Course Hub
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
VDEQ	Virginia Department of Environmental Quality
VESCL	Virginia Erosion and Sediment Control Law
VESCP	Virginia Erosion and Sediment Control Program
WOAC	Warrant Officers Advanced Course

Municipal Separate Storm Sewer System Registration Statement

As required by Part III.K.2. of General Permit No. VAR040035, all reports required by state permits and other information requested by the board shall be signed by a principal executive office or ranking elected official as described in Part III.K.1.c., or a duly authorized representative.

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.

Type or Print the following information:

Name: Miguel L. Capellan

Area Code and Telephone No.: (757) 878-3642

Official Title: Director, 733d Civil Engineer Squadron

Signature:

Date Signed: 9/21/22

Permit Number: VAR040035

MS4 Name: JBLE–Eustis

Section 1: Introduction

Joint Base Langley-Eustis – Fort Eustis (JBLE–Eustis), Virginia, holds a General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), General Permit No. VAR040035, issued by the Commonwealth of Virginia Department of Environmental Quality (VDEQ) on 01 November 2018. In accordance with provisions outlined in this MS4 permit, JBLE–Eustis has continued implementing their comprehensive stormwater management program designed to prevent or reduce the discharge of sediment and other pollutants into the base's stormwater conveyance system. General Permit No. VAR040035 Part I.D.2.e. requires JBLE– Eustis to evaluate the MS4 program on an annual basis to assess program compliance, the appropriateness of the identified Best Management Practices (BMP), and progress towards achieving the identified measurable goals.

This report describes the progress and status of the JBLE–Eustis MS4 Program during Permit Year (PY) 4 from 01 July 2021 to 30 June 2022.

The remainder of this annual report is presented as follows:

- Section 2 – Provides an overview of the MS4 including its physical characteristics
- Section 3 – Presents a listing of the base's stormwater program guidance
- Section 4 – Discusses the minimum control measures (MCM) JBLE–Eustis is implementing under the MS4 permit
- Section 5 – Reviews the special conditions (SC) JBLE–Eustis is implementing under this MS4 permit

These sections are supported by the following attachments:

- Appendix A – PY4 Outreach
- Appendix B – Illicit Discharge Investigation Details
- Appendix C – Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan Implementation Status Memo
- Appendix D – Bacteria TMDL Action Plan Implementation Status Memo

Section 2: Storm Sewer System Information

Permit Holder

Commanding Officer, 633 Air Base Wing

JBLE–Eustis

Fort Eustis, Virginia

Facility Information

JBLE–Eustis

Fort Eustis, Virginia

MS4 General Permit No. VAR040035

Mailing Address

Director, 733d Civil Engineering Squadron

1407 Washington Blvd.

Fort Eustis, VA 23604

Population Served

The total population attached to the base is approximately 22,090, comprised of approximately 7,160 military personnel and 11,428 dependents, as well as approximately 3,500 civilian non-residents who commute to the base daily.

MS4 Service Area

JBLE–Eustis is located adjacent to the City of Newport News, Virginia which is part of the Norfolk, Hampton, and Newport News metropolitan area. The base is located on Mulberry Island, a small peninsula bordered by the James River to the west, Warwick River to the east, and Skiffes Creek toward the north. Smaller waterbodies on or bordering the base include Jail Creek, Morrison's Creek, Island Creek, Bailey Creek, and Eustis Lake. The base occupies approximately 8,000 acres and houses a variety of military organizations and support activities. Most of the development is located at the northern end of the base, while the southern portion of the peninsula remains largely undeveloped. A golf course and an airfield are located near the center of the base.

The base does not rely on another government entity to satisfy MS4 permit obligations. In addition, no program approvals are required as specified in Part I.C.5. of the MS4 permit.

MS4 Conveyance System

JBLE–Eustis' stormwater conveyance system consists of sheet flow areas, swales, ditches, and pipes. In addition, the base has mapped the stormwater system for JBLE–Eustis as well as the structural Best management Practices (BMP) using Geographic Information System (GIS).

Part I.E.3.a(1) of MS4 Permit No. VAR040035 requires that JBLE–Eustis maintain a stormwater drainage system map that shows the location of all MS4 outfalls as well as the name and location of all waters receiving discharges from the MS4 outfalls and the associated hydrologic unit code. No new outfalls were identified during the MS4 stormwater drainage system mapping update by 733d Civil Engineer Squadron/Environmental Element (733 CES/CEIE) staff. In addition to the installation map, a stormwater information table is also utilized and regularly updated as needed.

Section 3: Water Quality Programs and Guidance

This section discusses the local and commonwealth water quality programs that are implemented by JBLE–Eustis or the commonwealth, respectively, within the base boundaries.

Local Programs and Guidance

JBLE–Eustis has developed and implements local programs and guidance in order to comply with the MS4 permit. These programs and guidance documents are listed below.

- JBLE–Eustis Environmental Policy Statement (7 February 2022)
- JBLE–Eustis Environmental Management Procedures (EMP) (updated annually)
- JBLE-Eustis Illicit Discharge Detection and Elimination Procedures (2022)
- JBLE–Eustis Structural BMP Inventory, Annual Inspection and Management Plan (June 2022)
- JBLE–Eustis MS4 Program Plan (updated annually)

Commonwealth Programs

In addition to the local programs that the base is implementing, there are commonwealth programs established by VDEQ, which are also being implemented. These programs are listed below.

- **Erosion and Sedimentation Program** – Because JBLE–Eustis is a federal facility, the Base utilizes the Virginia Erosion and Sediment Control Regulations (9 VAC 25.840). The base utilizes EMP 4.4.6.2.2, Stormwater Management, to outline roles and responsibilities, as well as procedures related to erosion and sediment control.
- **Stormwater Permitting Program** – The VDEQ Water Division implements the stormwater permitting program to develop, plan, and implement commonwealth-wide stormwater control policies, strategies, and rules designed to protect the commonwealth surface waters from the impacts of stormwater pollutants and runoff.

Section 4: Minimum Control Measures

MCM 1: Public Education and Outreach

JBLE–Eustis has developed and implements a public education and outreach program with the objective to comply with Commonwealth and local requirements to educate the base community regarding the impacts of stormwater discharges on the receiving waters, as well as measures that the community can take to reduce the introduction of pollutants to the stormwater drainage system.

JBLE–Eustis utilizes a combination of relevant messages and outreach materials to educate target audiences for each of the three high priority water quality issues, as well as other stormwater topics of interest to the public, using a minimum of two of the strategies listed in Part I.E.1.d, Table 1 - Strategies for Public Education and Outreach. Additional details are included in the JBLE–Eustis MS4 Program Plan. Based on an assessment of the program achievements for MCM 1 outlined in the table below, the base Public Education and Outreach Program is considered to be effective with achieving permit compliance.

MCM 1: Public Education and Outreach		
Permit Reference	**Required Action(s)**	**PY4 Measurable Goal(s)**
Part I.E.1.g (1)	Identify three high priority water quality issues	1. Curb illegal fats, oils, and grease (FOG) disposal at food service establishments (FSE), including food trucks, to the stormwater drainage system 2. Curb illegal dumping within military family housing (MFH) and the dormitories. 3. Training Area (TA) erosion and sediment control.
Part I.E.1.g (2)	A list of the strategies used to communicate each high-priority stormwater issue.	1. Traditional written materials: Handouts during public events. 2. Alternative materials: Pet waste bags/holders 3. Signage: FOG Management in FSEs. 4. Social Media Campaigns (See Appendix A for more information) 5. Personnel training opportunities

JBLE – Eustis High Priority Water Quality Issues	
High Priority Issue 1: Curb illegal fats, oils, and grease disposal at FSE, including food trucks, to the stormwater drainage system. *Target Audience:* JBLE– Eustis FSE workers, food truck vendors. *Goal:* Provide information regarding proper washing procedures to target audience.	1. The FSE Inventory identified which FSEs had trained workers in FOG management, and which had not. It also identified the procedures Army Air Force Exchange Service (AAFES) has in place for food trucks doing business on the base. 2. FSEs must have two workers trained in FOG management using the training provided by Hampton Roads Sanitation District (HRSD) at www.hrfog.com. (Part I E.1.d Table 1 – Training Materials) 3. Food truck workers may take either the HRSD FOG training or must have ServSafe training before entering into a contract with AAFES. 4. Signage is posted in kitchens regarding FOG BMPs and grease management. (Part I E.1.d Table 1 – Signage) 5. Recommendations for FOG management have been provided to entities performing food preparation related activities (Part I E.1.d Table 1 - Signage). 6. JBLE-Eustis' Environmental Facebook page published a post informing the public on storm drain awareness and another post to properly dispose of FOG waste and not to pour it directly into kitchen sinks.
High Priority Issue 2: Curb illegal dumping within MFH and the dormitories. *Target Audience:* JBLE– Eustis MFH residents and dormitory residents. *Goal:* Provide information regarding proper disposal procedures to target audience.	Stormwater pollution prevention training was provided to base personnel (active duty, civilian, and contractor). Training activities include Environmental Management Awareness and Competency (EMAC) and Advanced Environmental Management (AEM). The EMAC course is provided in an online format through The Environmental Awareness Course Hub (TEACH) website (https:\\usaf.learningbuilder.com) and is required for all base personnel within 30 days of arrival and annually thereafter. The AEM training is conducted in a classroom setting for initial training with annual refresher training provided via TEACH. 733 CED/EE also provided environmental awareness training, including stormwater pollution prevention training, for the US Army Transportation School, Advanced Marine Warrant Officers Advanced Course (WOAC).
High Priority Issue 3: Address TA erosion and sediment control *Target Audience*: JBLE–Eustis senior leadership, 733 CES/CEIE, Range Control personnel, and the Force Support Squadron (FSS) *Goal*: Provide information regarding reducing erosion and providing sediment control procedures to target audience.	733 CES/CEIE continued to pursue an opportunity to partner with the Virginia Institute of Marine Science to obtain Legacy Department of Defense funding to develop an oyster reef at TA 1 to resolve erosion issues. A project is underway to create an artificial oyster reef bed utilizing "Coral Castles". The living shorelines will consist of approximately 3,000 oyster castles acting as sills. The living shoreline will be located on two disjunct sections of the western shoreline of Warwick River. At one site, the living shoreline will be approximately 200 feet long and placed 3 feet from the edge but above mean low tide. On an additional site, the living shoreline will be approximately 600 feet long and placed 3 feet from the edge of the shore. Training Area personnel are a part of a water quality working group that engages in erosion and sediment discussion and problem solving.

MCM 2: Public Involvement/Participation

The base cultivates a public involvement and participation program with the objective to provide a place for the public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns, and provide input on JBLE-Eustis' MS4 program plan. JBLE–Eustis has taken steps to implement the program BMPs as specified in Part I.E.2 of the MS4 permit. Based on an assessment of the program achievements for MCM 2 outlined in the table below, the base Public Involvement/Participation Program is considered to be effective with achieving permit compliance.

MCM 2: Public Involvement/Participation		
Permit Reference	**Required Action(s)**	**PY4 Measurable Goal(s)**
Part I.E.2.f (1)	A summary of any public input on the MS4 program received (including stormwater complaints) and how the permittee responded	JBLE–Eustis posted documents related to the MS4 Program on the JBLE–Eustis Environmental website (https://www.jble.af.mil/Units/Army/Eustis-Enviromental/) for public review and comment. There were no comments received on the MS4 Program in PY4. Contact information for 733 CES/CEIE staff is also posted to the website if there are further comments or questions from the public.
Part I.E.2.f (2)	Maintain a website with the MS4 Program and stormwater pollution prevention.	The 733 CES/CEIE maintains a website that 1. Provides information to the public, including the MS4 Permit, Program Plan, and Annual Reports. 2. Includes a mechanism for the public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns. 3. Includes methods for how the public can provide input on the permittee's MS4 program plan. The website is located at: https://www.jble.af.mil/Units/Army/Eustis-Enviromental/
Part I.E.2.f (3)	A description of the public involvement activities implemented by the permittee	See Table 1
Part I.E.2.f (4)	A report of the metric as defined for each activity and an evaluation as to whether or not the activity is beneficial to improving water quality	See Table 1
Part I.E.2.f (5)	The name of other MS4 permittees with whom the permittee collaborated in the public involvement opportunities	JBLE-Eustis did not collaborate with other MS4 permittees during PY4.

Table 1: JBLE-Eustis Public Involvement Opportunities PY4

Date	Event	Audience/ Participants	#Attending (Metric)	Materials/Goodies Distributed	Location	Metric	Other (Metrics)	Involvement Type	Improves Water Quality?
26-Aug	Community School Supply Drive-Thru	Military families	94	Reusable bottles, reusable lunch boxes, reusable straws, reusable storage bags, brochures	MFH	Have meaningful communications with >100 civilians, soldiers, and families about pollution prevention	Messages: Energy Conservation, Pollution prevention, Recycling, and Stormwater, Only rain in the drain	Educational	Yes - meaningful conversations about pollution prevention can alter water polluting behaviors
23-Sep	National Public Lands Day	Active Duty Personnel, Civilians	22	N/A	Nature Trail entrance	At least 20 Volunteers can plant native plants and a pollinator garden	Planted 12 native shrubs, 1 River Birch, and 1/4 acre pollinator garden	Restoration	Yes - establishes soil and prevents erosion
29-Oct	Fall Fest/Trunk or Treat	Military families	200	Reusable storage bags, pet waste holders, brochures	MFH	Have meaningful communications with >100 civilians, soldiers, and families about pollution prevention	Messages: Energy Conservation, Pollution prevention, Recycling, and Stormwater, Only rain in the drain	Educational	Yes - meaningful conversations about pollution prevention can alter water polluting behaviors
20-Apr	Clean the Bay Day	Active Duty Personnel, Civilians	25	Reusable bottles, reusable lunch boxes, reusable straws, reusable storage bags, pet waste holders, brochures	Post-wide, around dumpster areas, along James River	At least 20 volunteers can participate in a clean-up event	Volunteers cleaned up 7 truckloads, 3 trailers, additional 14 bags of trash, wheels, tires, mattresses, furniture	Restoration	Yes - prevents stormwater from carrying trash and debris into the river
21-Apr	Environmental Booth at Commissary	Active Duty Personnel, Civilians	40	Reusable bottles, reusable lunch boxes, reusable straws, reusable storage bags, pet waste holders, brochures	Commissary	Have meaningful communications with >100 civilians, soldiers, and families about pollution prevention	Messages: Proper yard care/fertilization, pollution prevention, FOG	Educational	Yes - meaningful conversations about pollution prevention can alter water polluting behaviors
22-Apr	Tree and Shrub Planting	Civilians	6	N/A	Near The Pines Golf Course, B1407 and B2015	At least 20 Volunteers can plant native plants and a pollinator garden	62 native shrubs, 4 River Birch	Restoration	Yes - establishes soil and prevents erosion
22-Apr	Earth Day Social	Military families, Civilians	75	Reusable bottles, reusable lunch boxes, reusable straws, reusable storage bags, pet waste holders, brochures	Military Family Housing	Have meaningful communications with >100 civilians, soldiers, and families about pollution prevention	Informational Displays, crafts, plantings	Educational	Yes - meaningful conversations about pollution prevention can alter water polluting behaviors

MCM 3: Illicit Discharge Detection and Elimination

The base has developed, implements, and enforces a program to detect and eliminate illicit discharges into the MS4. This permit year, the IDDE procedures manual was discarded due to outdated material, and a new procedures document was created - the JBLE-Eustis Illicit Discharge Detection and Elimination Procedures – and contains the most up-to-date requirements. JBLE–Eustis has taken steps to implement the IDDE program BMPs as specified in Part I.E.3 of the MS4 permit. Based on an assessment of the program achievements for MCM 3 outlined in the table below, the base IDDE Program is considered to be effective with achieving permit compliance.

MCM 3: Illicit Discharge Detection and Elimination		
Permit Reference	**Required Action(s)**	**PY4 Measurable Goal(s)**
Part I.E.3.e (1)	Confirmation statement that the MS4 map and information table have been updated to reflect any changes to the MS4 occurring on or before 30 June of the reporting year by 1 October.	JBLE-Eustis has updated the MS4 map to reflect all changes prior to the end of the PY (30 June 2022) as required by Part I.E.3.a (4).
Part I.E.3.e (2)	The total number of outfalls screened during the reporting period as part of the dry weather screening program	1. Fifty (50) of the 83 non-industrial outfalls were inspected during PY4. Details regarding the inspection findings are included on the outfall inspection forms and in the Dry Weather Outfall Monitoring Report. 2. Copies of the outfall inspection records are maintained by 733 CES/CEIE and will be made available upon request. 3. The IDDE Procedure Manual was evaluated to determine if updates to the MS4 outfalls were needed.
Part I.E.3.e (3)	A list of illicit discharges to the MS4 including spills reaching the MS4	1. See Table 2. 2. JBLE–Eustis personnel utilized the IDDE Procedure Manual to investigate potential illicit discharges. 3. Reports of all spills or unauthorized releases, whether it enters the MS4 or not, in accordance with JBLE–Eustis EMP 4.4.7, Spill Prevention and Response, as well as a log the incident in the spill database are maintained by the 733 CES/CEIE Spill Program Manager. Detailed descriptions of each of the illicit discharge investigations are included in Attachment 2.

Table 2: Illicit Discharges to the MS4 on JBLE-Eustis PY4

Date of Spill	Source	Discovery Method	Resolution Method	Follow-up Activities	Date of Closure
10/17/21	2.75 gallons of firefighting foam	Purposeful discharge for fire response	A hose dam was built to collect runoff; 2 55-gallon drums of contaminated water/foam were collected and disposed of	The spill was contained and did not enter WOTUS. Base personnel were quick to clean up and prevent water quality issues	Information entered into Air Force spill database "Easier" on 10/19 and then updated on 10/22
3/10/22	< 1 quart machine oil	Port personnel noticed a sheen at an outlet	Spill kits are on site at the port. A boom and absorbent material was put out to contain the oil immediately	The inlet near the leaking dumpster/roll off container was covered to prevent any other leaks from getting into the creek in the future. Spill was reported to state authorities as required.	Information entered into Air Force spill database "Easier" on 3/15 and then updated on 7/28

MCM 4: Construction Site Stormwater Runoff Control

The base complies with the Virginia Stormwater Management Program in order to manage the Construction Site Runoff Controls. These controls are designed to assist with the development, implementation and enforcement of an ESC Program to reduce the pollutants related to land-disturbing activities including clearing, grading, or excavation that results in a land disturbance equal to or greater than 10,000 acres. The base has taken steps to implement the program BMPs as specified in Part I.E.4 of the MS4 permit. Based on an assessment of the program achievements for MCM 4 outlined in the table below, the base is considered to be effective with achieving permit compliance.

MCM 4: Construction Site Stormwater Runoff Control		
Permit Reference	**Required Action(s)**	**Measurable Goal(s)**
Part I.E.4.d (2)	Total number of inspections conducted	The total number of internal CGP inspections conducted in PY4 is 118.
Part I.E.4.d (3)	The total number and type of enforcement actions implemented and the type of enforcement actions	There were no enforcement actions in PY4 resulting from internal inspections. A VDEQ inspection was performed on 01 Feb 22 which resulted in a warning letter to the contractor to re-install silt fence around soils and to protect wetland. Contractor complied immediately. DEQ re-inspected and approved the site.

MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands

The base has developed, implements, and enforces a program to address stormwater runoff related to new development and redevelopment projects throughout the service area, including a combination of structural and non-structural BMPs. In addition, JBLE–Eustis ensures that the structural BMPs are functional through long term operation and maintenance (O&M) practices. The base has taken steps to implement the program BMPs as specified in Part I.E.5 of the MS4 permit. Based on an assessment of the program achievements for MCM 5 outlined in the table below, the base is considered to be effective with achieving permit compliance.

MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands		
Permit Reference	**Required Action(s)**	**PY4 Measurable Goal(s)**
Part I.E.5.i (2)	Total number of inspections conducted on stormwater management facilities owned or operated by JBLE-Eustis	Qualified personnel Inventoried and completed annual inspection of all 114 BMPs on base.
Part I.E.5.i (3)	A description of the significant maintenance, repair, or retrofit activities performed on the stormwater management facilities.	No BMP rehab was completed during PY4; however, updates to the maintenance contract were made to perform the required BMP maintenance.
Part I.E.5.i (4)	Confirmation statement that all BMP data was entered into the Virginia Construction Stormwater General Permit database when a CGP was required	On 22 July 22, Base personnel reached out to VDEQ to obtain permissions to utilize the CGP Database. At that time, Personnel was made aware by VDEQ that only VDEQ may enter information into this database because VDEQ is the VSMP Authority for the Base. Personnel can confirm that all appropriate information relating to the CGP has been provided throughout PY4 to VDEQ for CGP database submission.
Part I.E.5.i (5)	Provide confirmation of VDEQ BMP Warehouse Submission.	The electronically reported BMPs (i.e., BMPs and other non-structural BMPs [street sweeping]) were submitted to the VDEQ for inclusion in the BMP Warehouse in accordance with Part I.E.5.g in September 2022.

MCM 6: Pollution Prevention / Good Housekeeping for Municipal Operations

The base is required to develop and implement a program to address pollution prevention and good housekeeping procedures, including a training program for base personnel and the JBLE- Eustis community. JBLE–Eustis has taken steps to implement the program BMPs as specified in Part I.E.6 of the MS4 permit. Based on an assessment of the program achievements for MCM 6 outlined in the table below, the base is considered to be effective with achieving permit compliance.

Stormwater pollution prevention training was provided to base personnel (i.e., active duty, civilian, and contractor). Training activities include EMAC and AEM training.

1. The EMAC course is provided in an online format through the TEACH website (https:\\usaf.learningbuilder.com) and is required for all base personnel within 30 days of arrival and annually thereafter.

2. The AEM training is conducted in a classroom setting for initial training with annual refresher training provided via TEACH.

The Environmental Element provided environmental awareness training, including stormwater pollution prevention training, for the US Army Transportation School, Advanced Marine WOAC. Training was made available via the TEACH website during PY4.

Newcomer's orientation is given to enlisted and newly assigned officers and contained sections pertaining to EMS, stormwater, and associated required trainings.

Additional relevant environmental courses were available to personnel on TEACH. These courses cover the following environmental topics: water; wastewater; spill response; and petroleum, oils and lubricant management.

MCM 6: Pollution Prevention / Good Housekeeping for Municipal Operations		
Permit Reference	**Required Action(s)**	**PY4 Measurable Goal(s)**
Part 1.E.6.q (1)	A summary of any operational procedures developed or modified: Implementation of Environmental Management System (EMS) and Implementation of Environmental Management Procedures (EMP)	1.JBLE–Eustis utilizes an EMS that conforms to International Organization of Standardization (ISO) 14001:2004, to manage environmental program requirements. 2.All base environmental and management requirements are codified in JBLE–Eustis Environmental Management Procedures (EMP). 3.EMPs have been developed and are used to implement the Environmental Program. These EMPs are reviewed and updated (as required) on an annual basis. EMPs that are related to the Stormwater Management Program include: a. EMP 4.4.2 Environmental Awareness & Competency Training b. EMP 4.4.6.2 Wastewater-Stormwater Management c. EMP 4.4.6.5 Pollution Prevention d. EMP 4.4.6.6 Installation Hazardous Materials Program – IHMP e. EMP 4.4.6.7 Solid Waste and Recycling Management f. EMP 4.4.6.12 Integrated Pest Management g. EMP 4.4.6.14 Storage Tank Management – AST and UST h. EMP 4.4.6.16 Contracting JBLE-Eustis Environmental Special Conditions i. EMP 4.4.7 Spill Prevention and Response j. EMP 4.5.2 Activity Inspections 4.EMPs are posted on the JBLE–Eustis Environmental website (https://www.jble.af.mil/About-Us/Units/Army/Eustis-Enviromental/EMPs/).
Part 1.E.6.q (2)	A summary of any new SWPPPs developed in accordance Part I E 6 c during the reporting period	High priority non-industrial facilities included in the SWPPP include the Pines Golf Course Maintenance Facility and AAFES Shoppette/Car Wash. No new SWPPPs were developed, but the high priority SWPPPs were updated during PY4. After careful review, in accordance with Part 1.E.6.h, it was determined that the Aafes Car Wash is no longer operating, and therefore not a valid facility. Therefore, a SWPPP will be created for the Operations Yard on Monroe Avenue, as this is an appropriate High-Priority Facility. The SWPPP will be created as per Permit Section Part 1.E.6.e by the end of Calendar Year 22.
Part 1.E.6.q (3)	A summary of any SWPPPs modified or the rationale of any delisted high priority sites	No SWPPPs were delisted, however the high priority SWPPPs were updated during PY4, to be in compliance with the Permit and the goals of the program.

Part 1.E.6.q (4)	A summary of any new NMP to include: Location and total acreage, date of the approved NMP	1.Pine Golf Course Nutrient Management Plan: Acres: 70.8 acres 2.Valid 01 August 2021 - 01 August 2026
Part 1.E.6.q (5)	A list of the training events conducted, including the following information: (a) The date of the training event; (b) The number of employees who attended the training event; and (c) The objective of the training event.	See Table 3.

Table 3: PY4 Training - JBLE-Eustis

Date	Training Type	Presenter	# of Attendees	Training Objective
13-Jul-21	Newcomers Briefing	Joanna Bateman	24	EMS, Training, SW, Pollution Prevention, IDDE
27-Jul-21	Newcomers Briefing	Ken Dunn	33	EMS, Training, SW, Pollution Prevention, IDDE
Jul	Newcomers Briefing	Virtual	56	EMS, Training, SW, Pollution Prevention, IDDE
10-Aug-21	Newcomers Briefing	Joanna Bateman	32	EMS, Training, SW, Pollution Prevention, IDDE
19-Aug-21	Marine Warrant Officer Advanced Course	Joanna Bateman, Chris McDaid, & Ken Dunn	11	Env Laws/Regs, EIAP/NEPA, Solid Waste, HM, HW, NR, PM, CR, SW/WW, Pollution Prevention, IDDE
24-Aug-21	Newcomers Briefing	Joanna Bateman	17	EMS, Training, SW, Pollution Prevention, IDDE
Aug	Newcomers Briefing	Virtual	53	EMS, Training, SW, Pollution Prevention, IDDE
7-Sep-21	Newcomers Briefing	Joanna Bateman	21	EMS, Training, SW, Pollution Prevention, IDDE
21-Sep-21	Newcomers Briefing	Joanna Bateman	42	EMS, Training, SW, Pollution Prevention, IDDE
Sep	Newcomers Briefing	Virtual	66	EMS, Training, SW, Pollution Prevention, IDDE
5-Oct-21	Newcomers Briefing	Joanna Bateman	44	EMS, Training, SW, Pollution Prevention, IDDE
19-Oct-21	Newcomers Briefing	Joanna Bateman	28	EMS, Training, SW, Pollution Prevention, IDDE
Oct (Virtual Training)	Newcomers Briefing	Virtual	26	EMS, Training, SW, Pollution Prevention, IDDE
2-Nov-21	Newcomers Briefing	Joanna Bateman	22	EMS, Training, SW, Pollution Prevention, IDDE
16-Nov-21	Newcomers Briefing	Joanna Bateman	31	EMS, Training, SW, Pollution Prevention, IDDE

30-Nov-21	Newcomers Briefing	Joanna Bateman	36	EMS, Training, SW, Pollution Prevention, IDDE
Nov (virtual Training)	Newcomers Briefing	Virtual	38	EMS, Training, SW, Pollution Prevention, IDDE
14-Dec-21	Newcomers Briefing	Joanna Bateman	35	EMS, Training, SW, Pollution Prevention, IDDE
Dec (Virtual Training)	Newcomers Briefing	Virtual	19	EMS, Training, SW, Pollution Prevention, IDDE
Jan (Virtual Training)	Newcomers Briefing	Virtual	97	EMS, Training, SW, Pollution Prevention, IDDE
Feb (Virtual Training)	Newcomers Briefing	Virtual	66	EMS, Training, SW, Pollution Prevention, IDDE
1-Mar-22	Newcomers Briefing	Joanna Bateman	16	EMS, Training, SW, Pollution Prevention, IDDE
15-Mar-22	Newcomers Briefing	Ken Dunn	33	EMS, Training, SW, Pollution Prevention, IDDE
29-Mar-22	Newcomers Briefing	Tim Christensen	16	EMS, Training, SW, Pollution Prevention, IDDE
Mar (Virtual Training)	Newcomers Briefing	Virtual	32	EMS, Training, SW, Pollution Prevention, IDDE
12-Apr-22	Newcomers Briefing	Chris McDaid	28	EMS, Training, SW, Pollution Prevention, IDDE
26-Apr-22	Newcomers Briefing	Ken Dunn	16	EMS, Training, SW, Pollution Prevention, IDDE
Apr (Virtual Training)	Newcomers Briefing	Virtual	21	EMS, Training, SW, Pollution Prevention, IDDE
10-May-22	Newcomers Briefing	Joanna Bateman	40	EMS, Training, SW, Pollution Prevention, IDDE
24-May-22	Newcomers Briefing	Ken Dunn	23	EMS, Training, SW, Pollution Prevention, IDDE
May (Virtual Training)	Newcomers Briefing	Virtual	19	EMS, Training, SW, Pollution Prevention, IDDE
7-Jun-22	Newcomers Briefing	Tim Christensen	25	EMS, Training, SW, Pollution Prevention, IDDE
21-Jun-22	Newcomers Briefing	Chris McDaid	21	EMS, Training, SW, Pollution Prevention, IDDE
Jun (Virtual Training)	Newcomers Briefing	Virtual	13	EMS, Training, SW, Pollution Prevention, IDDE
Virtual Throughout the Year	AEM Initial/Refresher	Virtual	98	EMS, Training, SW, Pollution Prevention, IDDE
Virtual Throughout the Year	Good Housekeeping Training	Virtual	146	Good Housekeeping/Pollution prevention/IDDE
Virtual Throughout the Year	IDDE-Specific Training	Virtual	144	Pollution Prevention/IDDE
Virtual Throughout the Year	EMAC	Virtual	1206	Good Housekeeping/Pollution prevention/IDDE

Section 5: Special Conditions

SC1: TMDL Special Conditions Compliance for the Chesapeake Bay TMDL

JBLE–Eustis' Phase II Chesapeake Bay TMDL Action Plan was developed and submitted November 2019. The Action Plan presented a discussion of the compliance requirements for JBLE–Eustis.

The Action Plan presents the JBLE–Eustis estimated load contribution, required load reductions and pollutant reduction credits. The plan also reported progress made toward meeting the 40% cumulative pollutant reduction requirement for the first and second MS4 permit cycles.

The Chesapeake Bay TMDL Action Plan Implementation Status Memo summarizes the actions taken during PY4 and is included as Attachment 4. Implementation will continue in PY5.

SC2: TMDL Special Conditions Compliance other than the Chesapeake Bay TMDL

Part II.B. of the JBLE–Eustis MS4 permit, Permit No. VAR040035, requires the base to maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan for pollutants allocated to the MS4 in an approved TMDL.

As part of maintaining its MS4 Program Plan, JBLE–Eustis has developed the Bacteria TMDL Action Plan to address bacteria impairment in those water bodies. Implementation continued in PY4 and will continue in PY5. The Bacteria TMDL Action Plan Implementation Status Memo summarizes the actions taken during PY4 and is included as Attachment 5. Implementation will continue in PY5.

Appendix A:
JBLE - Eustis PY4 Outreach

FY22 Social Media Outreach

Social Media Topic (Facebook Posts)	Posting Date	Reach	Reactions/ Impressions
What do you know series: Storm Drains	23-Feb-22	27	40
Sign up for Earth Week Events	14-Mar-22	660	723
Household Hazardous Waste Recycling	1-Apr-22	23	30
Clean the Bay Day Sign ups	11-Apr-22	94	120
Earth Day Social	12-Apr-22	29	35
Sign up for Earth Week Events	12-Apr-22	N/A	N/A
Spring Cleanup- bulk item removal	13-Apr-22	N/A	N/A
Spring Cleanup- bulk item removal	18-Apr-22	N/A	N/A
Earth Day Awareness	22-Apr-22	N/A	N/A
Earth Day Celebration Invite	22-Apr-22	N/A	N/A
Don’t Pour Grease down the Drain	23-May-22	N/A	N/A
World Turtle Day	25-May-22	N/A	N/A
Pick up after your pet	31-May	N/A	N/A

Appendix B:
Illicit Discharge Investigation Details

Summary | Materials | Release Details | External Communications | Attachments | Related Events | Corrective Actions | Notifications | History/Upd

Installation Details

Installation:	JB Langley-Eustis	**Service/Command:**	ACC	**State:**	VA
Sub Location:	Eustis	**Branch:**	East Branch	**EPA Region:**	3
		ISS:	JBLE		

Points of Contact

Type	Name	Email
Author	JAMES, PAUL A GS-11 USAF ACC 733 MSG/CEIEC	paul.james.4@us.af.m

Spill Details

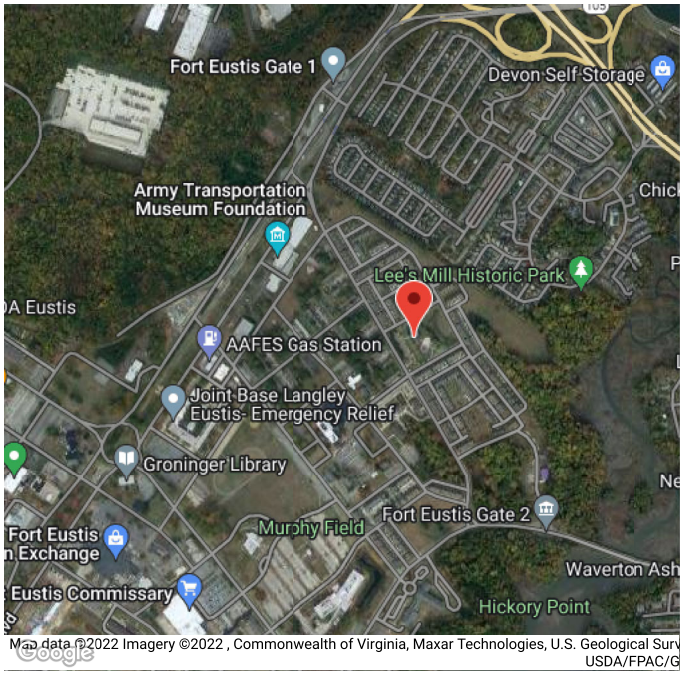
Fiscal Year:	2022
Classification:	Reviewable
Closed Date:	02/02/2022 8:07:46
Reported to HAF?:	Yes
Report to HAF Determination Date:	02/02/2022
Read/Received Date:	10/19/2021
Estimated Clean-up Date:	10/17/2021
Updated in EASIER:	02/02/2022
Entered in EASIER:	10/19/2021
Spill/Release Date:	10/17/2021 17:00
Was the release cleaned up within 24 hours?:	Yes
Did process owner have sufficient clean-up capabilities?:	Yes
Class:	CLASS II: Area < 10 lineal ft in any plane dimension, or < 50 sq ft and not a continuous nature.
Overall Root Cause:	(U) Unknown
Specific Root Cause:	(U1) Unknown
Equipment/Facility Involved:	Privately owned Vehicle
Equipment Type:	Other (Add Description Below)
Aircraft Type	N/A
FES Incident Number	21-1372
Cause of Release	Purposeful Discharge for Fire Response

Location Map

Reset Map

Latitude: 37.1638757344036

Longitude: -76.570762542



Description:

At approximately 1700 on 17 October 2021 Fire and Emergency services responded to a vehicle fire in the residential area. They attempted to extinguish the fire utilizing water fog, and then two 15 lbs ABC fire extinguishers. At this point the vehicle was fully engulfed and encroaching on a housing structure so the decision was made to use foam. They built a hose dam to contain run off, extinguished the fire with 2.75 gallons of foam, and collected two 55 gallon drums of water contaminated with foam

Summary | Materials | Release Details | External Communications | Attachments | Related Events | Corrective Actions | Notifications | History/Upd

Installation Details

Installation:	JB Langley-Eustis	**Service/Command:**	ACC	**State:**	VA
Sub Location:	Eustis	**Branch:**	East Branch	**EPA Region:**	3
		ISS:	JBLE		

Points of Contact

Type	Name	Email
Author	JAMES, PAUL A GS-11 USAF ACC 733 MSG/CEIEC	paul.james.4@us.af.m

Spill Details

Fiscal Year:	2022
Classification:	Reviewable
Closed Date:	07/28/2022 6:07:56
Reported to HAF?:	Yes
Report to HAF Determination Date:	03/15/2022
Read/Received Date:	03/10/2022
Estimated Clean-up Date:	03/11/2022
Updated in EASIER:	07/28/2022
Entered in EASIER:	03/10/2022
Spill/Release Date:	03/10/2022 9:00
Was the release cleaned up within 24 hours?:	Yes
Did process owner have sufficient clean-up capabilities?:	Yes
Class:	CLASS II: Area < 10 lineal ft in any plane dimension, or < 50 sq ft and not a continuous nature.
Overall Root Cause:	(I) Infrastructure
Specific Root Cause:	(I3) Improper equipment installation
Equipment/Facility Involved:	Scrap Metal Dumpster near building 448
Equipment Type:	Other (Add Description Below)
Aircraft Type	N/A
FES Incident Number	N/A
Cause of Release	Accidental Discharge due to Faulty Procedure

Description:

A scrap metal roll off is uncovered and collects rain water. When the roll off is removed the rain water which is contaminated with cutting fluid leaks from the roll off and into a storm drain which discharges into Skiffes Creek.

Location Map

Reset Map

Latitude: 37.1690644622081

Longitude: -76.6047413(

Appendix C:
Chesapeake Bay TMDL Action Plan Implementation Status Memo

Date: 22 June 2022

Subject: **Chesapeake Bay Phase II Total Maximum Daily Load (TMDL) Action Plan Implementation Progress for JBLE–Eustis**

1.0 INTRODUCTION

In 2010 the United States Environmental Protection Agency (EPA) established the Chesapeake Bay Total Maximum Daily Load (TMDL) to address excess nitrogen, phosphorus, and total suspended solids (pollutants of concern or POCs) in the Chesapeake Bay (EPA, 2010). A TMDL is the maximum amount of a pollutant that a waterbody can assimilate and still support its designated use. The Chesapeake Bay watershed encompasses over 64,000 square miles across the District of Columbia and large sections of Delaware, Maryland, New York, Pennsylvania, West Virginia, and Virginia.

In the Phase I and Phase II Chesapeake Bay Watershed Implementation Plan (WIP) for the Chesapeake Bay TMDL, the Commonwealth of Virginia committed to a phased approach to reducing nutrients and suspended solids discharging from Municipal Separate Storm Sewer Systems (MS4). Section I.C of the Joint Base Langley Eustis – Eustis (JBLE–Eustis) MS4 permit (Permit No. VAR040035, effective 01 November 2018) requires the base to prepare a Chesapeake Bay TMDL Action Plan that demonstrates future plans to meet the required nutrient and suspended solids reductions for each permit cycle as specified in the 2012 Phase II WIP (VDEQ, 2012).

JBLE–Eustis developed a Chesapeake Bay TMDL Action Plan for the installation's MS4 area (JBLE–Eustis, 2022). The Action Plan is an annual report on the progress made by the base in meeting the Chesapeake Bay TMDL pollutant reduction requirements, specifically the Level 2 (L2) scoping run as specified in the 2010 Phase I WIP (VDEQ, 2010). The L2 reductions are to be met in phases corresponding to the permit cycles, as outlined in Table 1-1.

Table 1-1. Pollutant Percent Reduction Requirements by Permit Cycle

Permit Cycle	Timeframe	Cycle Percent Reduction	Cumulative Percent Reduction
1	2013-2018	5%	5%
2	2018-2023	35%	40%
3	2023-2028	60%	100%

The purpose of this memorandum is to document progress toward implementing the Chesapeake Bay TMDL Action Plan. The objectives of this memorandum are to present the required pollutant reduction requirements for the second permit cycle and discuss strategies that have been implemented or will be implemented by the Air Force Civil Engineer Center (AFCEC) and JBLE–Eustis to reduce nutrient and sediment loads.

This memorandum is organized into the following sections:

- Section 1.0 presents the background, purpose and objectives.
- Section 2.0 describes the pollutant load reduction requirements.
- Section 3.0 describes the pollutant credits achieved by the base.
- Section 4.0 describes future best management practices (BMP).
- Section 5.0 presents the progress summary.
- Section 6.0 contains a list of references associated with this memorandum.

2.0 POLLUTANT LOAD REDUCTION REQUIREMENTS

The methodology used to calculate the pollutant loads and credits is based on Virginia Department of Environmental Quality (VDEQ) Guidance Memo No. 20-2003 (Guidance Document) (VDEQ, 2021). The base's pollutant loads for existing sources (contributed by the base as of 30 June 2009) and new sources (contributed by the base between 01 July 2009 and 30 June 2021) were calculated from impervious and pervious land use area and loading rates for the James River Basin as specified in the Guidance Document (VDEQ, 2015). Estimated loads for 2009 and 2021 are presented in Table 2-1.

Table 2-1. Existing and New Loads and Total Load Change at JBLE-Eustis

Land Cover (Subsource)	Pollutant	Estimated Total Load as of 30 June 2022 (lbs/yr)	Estimated Total Load as of 30 June 2009 (lbs/yr)	Total Load Change (lbs/yr)	
Regulated Urban Impervious	Nitrogen	5,860	5,251	609	914
Regulated Urban Pervious		8,706	8,401	304	
Regulated Urban Impervious	Phosphorus	1,098	984	114	136
Regulated Urban Pervious		623	601	22	
Regulated Urban Impervious	Total Suspended Solids	422,484	378,571	43,913	48,315
Regulated Urban Pervious		125,889	121,487	4,402	

Note and Acronym:
[1] Minor calculation discrepancies are accounted for in rounding.
lbs/yr – Pounds per year

The Total Load Change is adjusted by any credits earned from BMPs implemented during the 2009–2021 timeframe to arrive at the Net Load Change. BMPs installed after 01 July 2009 were included in this analysis when they were implemented under conditions of redevelopment. The base is required to offset 40% of the net load change by the end of the second permit cycle, as shown in Table 2-2.

Table 2-2. Net Load Changes from New Sources and Additional Reductions Required

Pollutant	Total Load Change (lbs/yr)[1]	Reductions from BMPs Installed between 01 July 2009 and 30 June 2021 (lbs/yr)[1]	Net Load Change (lbs/yr)[1]	Required Reduction by End of Second Permit Cycle	Additional Reductions Required between 01 July 2021 and 30 June 2023 (lbs/yr)[1]
Nitrogen	914	466	448	40%	179
Phosphorus	136	82	53	40%	21
Total Suspended Solids	48,315	38,292	10,023	40%	4,009

Note and Acronym:
[1] Minor calculation discrepancies are accounted for in rounding.
lbs/yr – Pounds per year

3.0 LOAD REDUCTION CREDITS ACHIEVED

This section describes load reduction credits achieved by JBLE–Eustis from post-construction BMPs, street sweeping, land use change, and shoreline management.

3.1 Existing Post-Construction BMPs (Post-2006)

A geographic information system (GIS) inventory of existing post-construction BMPs present at JBLE–Eustis and their drainage areas, which was developed in 2021, was used to help calculate existing credits for the Chesapeake Bay TMDL Action Plan. BMPs installed between 01 January 2006 and 30 June 2009 were included in this analysis. BMPs installed prior to 01 January 2006 are not eligible for credit and were thus excluded from consideration for this Action Plan. BMPs installed after 30 June 2009 were tracked separately to facilitate the calculation of new source loads. For BMPs installed after 30 June 2009, only those implemented under conditions of redevelopment were eligible for credits, as described in the Guidance Document (VDEQ, 2021). Summaries of existing BMP types and credits are given in Table 3-1 and 3-2 respectively.

Table 3-1. Summary of Existing BMP Types

BMP Type	Timeframe Implemented		
	01 Jan 2006 to 30 June 2009	01 July 2009 to 30 June 2021	Total
Bioretention	2	21	23
Dry Detention Pond	2	7	9
Dry Extended Detention Pond	1	7	8
Permeable Pavement	0	8	8
Rainwater Harvesting	0	1	1
Swale	2	10	12

Wet Pond or Wetland	1	2	3
Infiltration Pond	1	2	3
Hydrodynamic Device	0	6	6
Filtering Device	4	0	4
Total	**13**	**64**	**77**

Table 3-2. Summary of Credits from Existing Post-Construction BMPs

BMP Timeframe	Number of BMPs	Credits (lbs/yr)		
		Nitrogen	Phosphorus	Total Suspended Solids
2006–2009	13	144	34	15,571
2009–2021	64	466	82	38,292

Acronym:
lbs/yr – Pounds per year

3.2 Street Sweeping

The base performs vacuum powered street sweeping on primary roads, secondary roads, and parking lots on a regular basis. Street sweeping credits are calculated based on the methodology described in *Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices* (Donner et al., 2016). Data on frequency and linear miles of sweeping was provided by JBLE–Eustis and is used to calculate load reduction credits. A summary of street sweeping credits is presented in Table 3-3.

Table 3-3. Summary of Annual Street Sweeping Credits

Lane-Miles Swept	Acres Swept	Credits (lbs/yr)		
		Nitrogen	Phosphorus	Total Suspended Solids
1,383.6	1,686.6	431	154	207,361

Acronym:
lbs/yr – Pounds per year

3.3 Storm Drain Cleaning

The base removes debris from outfalls on an annual basis. The base follows the Standard Operating Procedure provided in Appendix B to keep track of the mass of debris that is removed and to ensure the debris is disposed properly to avoid washing back into the watershed. The percent composition of the debris was estimated using the methods described by Law, DiBlasi and Ghosh (2008), where sediment, organic matter, and trash accounted for 39.0%, 52.1%, and 8.9% of the debris respectively. The method used to calculate credits for the storm drain cleaning BMP is described in Appendix V.G of the Guidance Document (VDEQ, 2021). A summary of the Storm Drain Cleaning BMP credits is provided in Table 3-4.

Table 3-4. Summary of Storm Drain Cleaning

Wet Weight (lbs/yr)	Dry Weight (lbs/yr)		Nutrients Removed (lbs/yr)					
			Sediment		Organic Matter		Total	
Debris Collected	Sediment	Organic Material	TN	TP	TN	TP	TN	TP
15,400.0	4,204.2	1,604.7	11.4	2.5	17.8	1.9	29.2	4.4

Acronyms:
lbs/yr – Pounds per year
TN – Total nitrogen
TP – Total phosphorus

3.4 Land Use Change

The base is restoring various parcels of turf into native forb and grassland habitats. Approximately 15.33 acres of restoration are currently underway at seven locations. The goal at all locations is to promote early successional habitats made of native species, with no fertilization and minimal maintenance. Periodic maintenance involves removing invasive species and reseeding native species. The land use change credited at all locations is thus based on the turf to mixed-open land use, and the credit reductions were calculated per Appendix V.H of the Guidance Document (VDEQ, 2021). A summary of land use change credits is presented in Table 3-4.

Table 3-4. Summary of Land Use Change Credits

Pollutant	Turf to Mixed Open Area (acres)	Credit (lbs/yr)
Nitrogen	15.33	90.3
Phosphorus	15.33	17.2
Total Suspended Solids	15.33	0.0

Acronym:
lbs/yr – Pounds per year

3.5 Shoreline Management

Pollutant load reductions from the 40 linear feet of shoreline restoration activities on the base are presented in Table 3-5.

Table 3-5. Summary of Shoreline Management Reductions

Pollutant	Shoreline Restoration (linear feet)	Loading Rate (lbs/ft/yr)[1]	Credit (lbs/yr)
Nitrogen	40	0.01218	0.5
Phosphorus	40	0.00861	0.3
Total Suspended Solids	40	42.0	1,680.0

Note and Acronyms:
[1] Source: Forand et al., 2017
lbs/ft/yr: Pounds per foot per year

lbs/yr: Pounds per year

4.0 FUTURE BMPs

The base will continue to investigate the applicability and feasibility of additional BMPs and BMP types in order to meet the pollutant load reduction requirements of the Chesapeake Bay TMDL. The base is planning to convert additional turf areas into native species grass lands in the coming years. The base is also considering additional shoreline restoration opportunities. Opportunities for effective retrofit options will be explored and prioritized to make the best use of available resources.

5.0 PROGRESS SUMMARY

A summary of the required load reductions is presented in Table 5-1, and the second permit cycle pollutant credits are presented in Table 5-2.

Table 5-1. Summary of Permit Cycles 1, 2 and 3 Reduction Requirements

Pollutant	Required Load Reduction by 2018 (lbs/yr)	Required Load Reduction by 2023 (lbs/yr)	Required Load Reduction by 2028 (lbs/yr)
Nitrogen	71	570	1,425
Phosphorus	13	102	255
Total Suspended Solids	4,818	38,547	96,367

Acronym:
lbs/yr – Pounds per year

Table 5-2. Summary of Second Permit Cycle Reduction Requirements and Credits

Pollutant	Second Permit Cycle Cumulative Percent Reduction Requirement	Required Load Reduction by 2023 (lbs/yr)	Credits from Existing BMPs (lbs/yr)[1]	Second Permit Cycle Target Met?
Nitrogen	40%	570	694	Yes
Phosphorus	40%	102	210	Yes
Total Suspended Solids	40%	38,547	228,816	Yes

Note and Acronym:
[1] Does not include credits related to new sources that were previously accounted for in Table 2-2.
lbs/yr – Pounds per year

Assuming the BMPs considered in this analysis are maintained and fully functional to provide the design performance, it is the conclusion of this analysis that the base currently meets the second permit cycle reduction requirement goals for nitrogen, phosphorus, and total suspended solids. However, the base does not currently meet the third permit cycle reduction goals for nitrogen or phosphorus. Additional reductions could be achieved through more frequent street sweeping schedules and additional post-construction BMPs.

6.0 REFERENCES

Donner, S., Frost, B., Goulet, N., Hurd, M., Law, N., Maguire, T., Selbig, B., Shafer, J., Stewart, S., and Tribo, J. 2016. *Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices*. Chesapeake Bay Program Office. Accessed at https://www.chesapeakebay.net/channel_files/23064/final_street_cleaning_expert_panel_report.pdf.

EPA. 2010. *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment*. 29 December 2010.

JBLE–Eustis. 2022. *Draft Chesapeake Bay Phase II Total Maximum Daily Load Action Plan for Joint Base Langley Eustis - Eustis*. June 2022.

Law, N., DiBlasi, K., Ghosh, U. 2008. *Deriving Reliable Pollutant Removal Rates for Municipal Street Sweeping and Storm Drain Cleanout Programs in the Chesapeake Bay Basin*. September 2008.

VDEQ. 2010. *Chesapeake Bay TMDL Phase I Watershed Implementation Plan*. 29 November 2010.

VDEQ. 2018. *General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, General Permit No. VAR040035*. Effective Date 1 July 2013.

VDEQ. 2021. *Guidance Memo No. 20-2003*. 6 February, 2021.

ACRONYMS

AFCEC	Air Force Civil Engineer Center
BMP	Best Management Practice
EPA	Environmental Protection Agency
GIS	Geographic Information System
JBLE–Eustis	Joint Base Langley Eustis – Eustis
L2	Level 2
lbs/ft/yr	Pounds per foot per year
lbs/yr	Pounds per year
MS4	Municipal Separate Storm Sewer System
POC	Pollutant of Concern
TMDL	Total Maximum Daily Load
VDEQ	Virginia Department of Environmental Quality
WIP	Watershed Implementation Plan

Appendix D:
Bacteria TMDL Action Plan Implementation Status Memo

Date: 22 June 2022

Subject: **Warwick River and Skiffes Creek Bacteria TMDL Action Plan Implementation Progress for Joint Base Langley Eustis – Eustis**

1.0 INTRODUCTION

In 2008, the United States Environmental Protection Agency (EPA) approved Total Maximum Daily Loads (TMDL) for Warwick River and Skiffes Creek to address excess fecal coliform bacteria in these waterbodies (VDEQ, 2007). The TMDL report assigned individual wasteload allocations (WLA) for bacteria to the city of Newport News, York County, and Joint Base Langley Eustis – Eustis (JBLE–Eustis). The WLA is a portion of the TMDL load and represents the allowable load a permittee may discharge to the waterbody and still meet water quality standards.

JBLE–Eustis is authorized to discharge stormwater from the installation in accordance with a Virginia Pollutant Stormwater Discharge Elimination (VPDES) industrial stormwater permit (Permit No. VA0025216) and a Municipal Separate Storm Sewer System (MS4) permit (Permit No. VAR040035), both issued by the Virginia Department of Environmental Quality (VDEQ). The MS4 permit identifies minimum control measures (MCM) and special condition requirements, measurable goals and best management practices (BMP) selected for implementation at JBLE–Eustis. Special Condition 1 found in Section II.B.1 of the JBLE–Eustis MS4 permit requires the installation to maintain a specific TMDL Action Plan for pollutants allocated to the MS4 in an approved TMDL. On 30 November 2015, VDEQ notified JBLE–Eustis that, as part of maintaining its MS4 Program Plan, the installation is required to develop TMDL Action Plans for the Warwick River and Skiffes Creeks to address bacteria impairment in those waterbodies.

JBLE–Eustis updated their Bacteria TMDL Action Plan for the installation's MS4 area. The TMDL Action Plan describes the TMDL waterbodies, JBLE–Eustis installation, existing and proposed bacteria control measures and an implementation schedule for addressing bacteria sources for the Warwick River and Skiffes Creeks watersheds (JBLE–Eustis, 2022b).

The purpose of this memorandum is to document progress toward implementing the Warwick River and Skiffes Creek Bacteria TMDL Action Plan. The objectives of this memorandum are to present the results of the bacteria source assessment at JBLE–Eustis and discuss strategies that have been implemented or will be implemented by the Air Force Civil Engineer Center (AFCEC) and JBLE–Eustis to reduce bacteria sources.

This memorandum is organized into the following sections:

- Section 1.0 presents the background, purpose and objectives
- Section 2.0 describes the schedule and actions for addressing bacteria sources
- Section 3.0 describes the bacteria source assessment

- Section 4.0 describes the bacteria action plan implementation progress
- Section 5.0 describes bacteria-reducing actions in progress
- Section 6.0 presents the summary and next steps
- Section 7.0 contains a list of references associated with this memorandum

2.0 ACTION PLAN FOR ADDRESSING BACTERIA IN WARWICK RIVER AND SKIFFES CREEK

JBLE–Eustis developed an implementation schedule for addressing bacteria impairments in Warwick River and Skiffes Creek as part of the Warwick River and Skiffes Creek Bacteria TMDL Action Plan (JBLE–Eustis, 2020b). During the first MS4 permit cycle (2013 – 2018), the Action Plan lists the following JBLE–Eustis implementation actions:

- Reviewed the final TMDL report to inform actions taken by the base to address sources of bacteria and update this Action Plan.
- Developed the Bacteria TMDL Action Plan and implementation schedule (JBLE–Eustis, 2016c)
- Identified and maintained a list of existing source controls and management practices that are applicable to reducing fecal coliform bacteria.
- Identified opportunities for enhancing education and outreach programs to address bacteria impairment.
- Assessed significant sources of bacteria using desktop evaluations, field investigations and collaboration with key base staff.
- Determined if additional source controls are needed. If additional controls were needed, a summary of potential controls and identified programs and activities to support their implementation was prepared.
- Evaluated new bacteria-related datasets for the watersheds collected by other agencies (e.g., VDEQ) as available.

As described in the updated Warwick River and Skiffes Creek Bacteria TMDL Action Plan, bacteria-reducing activities to be performed during the second MS4 permit cycle (2018 – 2023) include:

- As funding permits, implement activities identified in the implementation schedule (from previous years) as appropriate.
- Evaluate new bacteria-related datasets for the Warwick River and Skiffes Creek watersheds collected by other agencies as available.
- Identify any current or additional activities to be performed during the subsequent permit cycle.
- Update the Bacteria TMDL Action Plan to reflect activities performed during the year. Adjust the implementation schedule as needed to reflect findings from field and desktop assessments. Report on progress annually.

3.0 BACTERIA SOURCE ASSESSMENT

The Warwick River and Skiffes Creek TMDL report identifies both natural and anthropogenic sources of bacteria in the watershed (Table 3-1).

Table 3-1. Fecal Bacteria Source Allocations (%) in the Warwick River and Skiffes Creek Watersheds
(Source: VDEQ 2007, Table 3.7 and Table 3.8)

Watershed	Wildlife	Human	Livestock	Pet
Warwick River	18	35	23	24
Skiffes Creek	3	21	36	40

The values presented in Table 3-1 are watershed averages across multiple MS4s. JBLE–Eustis conducts an annual evaluation of local fecal bacteria sources with the goal of identifying potential pollutant "hot spots" or sources across the base. The evaluation conducted in 2022 included field assessments of potential point and nonpoint sources of bacteria. Potential sources of bacteria include wildlife, horse stables, pet waste at the dog park, and the resident housing area. The sources identified, and strategies taken to address these sources are described in Sections 4 and 5.

4.0 BACTERIA ACTION PLAN IMPLEMENTATION PROGRESS

This section describes programs and activities that are being implemented at JBLE–Eustis to address bacteria sources and accomplish the goals set forth in the JBLE–Eustis Bacteria Action Plan.

4.1 Domestic Animals

Pet waste is the largest contributor of non-human bacteria within the Warwick River and Skiffes Creek watershed. Unlike wildlife, pet waste can be effectively controlled using a variety of management approaches. Military Family Housing (MFH) allows domestic pets and residents are permitted to walk them throughout the base. Pet waste disposal receptacles are available along walking paths to provide convenient disposal of dog waste. Pet waste bag dispensers are made available to residents throughout the year and distributed at environmental awareness events where residents are briefed on the impact of pet waste on stormwater and water quality. To help educate dog owners on the importance of proper waste disposal, the Pet Waste Pollution and Prevention Brochure is handed out at base events and to new residents of base housing.

A community dog park was opened at JBLE–Eustis in May 2015. Access to the dog park is restricted, and residents must apply, register pets, pay a registration fee, and sign a receipt acknowledging the rules of the dog park. The area is fenced and equipped with a cypher lock. The rules include a requirement for owners to clean-up after their dogs. Signs are posted inside the dog park, and dog waste bags are provided near the trash can for pet waste disposal.

4.2 Livestock

Livestock is the second largest contributor of non-human bacteria within the watersheds. JBLE–Eustis operates horse stables for authorized personnel to utilize. Stable bedding and horse manure are collected by patrons and stored in a roll-off bin located on site, and then disposed of by a contractor off-site. During periods of good weather, horses are allowed to utilize pasture lands.

4.3 Wildlife

Wildlife is the most challenging bacteria source to control. The southern portion of the base (located in the Warwick River watershed) is largely undeveloped and therefore is prime wildlife habitat. The TMDL report noted that prime raccoon habitat covers a large portion of the base that lies within the Warwick River watershed. In developed areas in the northern part of the base, implementing "No Mow" buffer zones around natural and constructed ponds can deter geese from landing, foraging, and contributing to the bacteria problem. The base also removes wetlands surrounding airfields that would attract wildlife and present bird/animal aircraft strike hazard (BASH) safety concerns. Removal of wetlands reduces habitat for waterfowl and other wildlife that have the potential to contribute bacteria to the Warwick River.

4.4 Human

The entire JBLE–Eustis installation is currently connected to a sanitary sewer network. There are no septic systems currently located on the installation. Additionally, JBLE–Eustis adheres to an Illicit Discharge Detection and Elimination (IDDE) Program, designed to help detect, identify, and address non-stormwater discharges to the stormwater network. Non-stormwater discharges include untreated sewage that contain fecal bacteria. To help detect and identify illicit discharges, the base regularly screens outfalls to determine if any non-runoff related discharges are occurring. Additionally, any sanitary sewer overflows that occur are tracked and immediately addressed. Initiatives planned include continued inspections of non-industrial outfalls and investigation and reporting of potential illicit discharges. Reducing dry weather flows from lawn and park irrigation practices, car washing, power washing, and other non-stormwater flows can help reduce wash-off of animal waste into storm sewers. To educate residents on the importance of proper car maintenance and washing practices, the Outdoor Vehicle Washing Brochure and the Car Maintenance Brochure are handed out to residents of MFH and at base events.

5.0 BACTERIA-REDUCING ACTIVITIES IN PROGRESS (2021-2022)

JBLE–Eustis has initiated 2021-2022 actions that are identified in Section 2.0 of this memorandum. In addition, JBLE–Eustis conducted a local fecal bacteria source assessment in 2022. This evaluation included field assessments of potential point and nonpoint sources of bacteria, including wildlife, the community dog park, horse stables, and resident housing area. The evaluation also included interviews with base staff to identify stormwater and bacteria-reducing practices currently used by the base and determine strategies that would improve bacteria reduction on the installation. The evaluation determined that the base continues to implement many of the bacteria-reducing strategies required by section II.B.4 in the MS4 permit. Findings from the source assessment include:

- The base actively manages bird and animal populations, and minimal wildlife was observed during the source assessment.
- No human sources of bacteria were identified.
- Livestock and pet sources continue to be controlled through BMPs at the horse stables, pet waste stations in residential areas, and a pet waste station at the community dog park.
- Illicit discharges and sewer line leaks into the MS4 are being monitored through the IDDE program. Opportunities to improve strategies on illicit discharge prevention may include public education programs on the environmental impacts of dumping materials.
- The base urges residents to use commercial car washing facilities where wash waters are prevented from entering the storm sewer system. Opportunities to further reduce bacteria wash-off may include public education programs on the environmental impacts of car washing.

As part of the base's pollution prevention and good housekeeping program, JBLE–Eustis develops and implements SWPPPs for high priority MS4 facilities and provides pollution prevention training for staff. Training on topics such as municipal solid wastes, recycling materials, hazardous materials, hazardous wastes, non-hazardous wastes, universal wastes, hazardous substances, and spill response is also provided to JBLE–Eustis personnel. Training on proper handling and disposal of waste streams that may contain fecal bacteria can help reduce the levels of bacteria delivered to receiving stream. Strategies for public education and outreach are summarized in the JBLE–Eustis MS4 Program Plan (JBLE–Eustis, 2022a).

6.0 SUMMARY

In summary, JBLE–Eustis has taken several actions to reduce bacteria and address various sources on the installation. Completed or ongoing actions taken by JBLE–Eustis include the following:

- Prepared the and Skiffes Creek as part of the Warwick River and Skiffes Creek Bacteria TMDL Action Plan, including preliminary source investigations and schedule for addressing bacteria sources.
- Active bird and animal population management including BASH.
- Livestock and pet sources are controlled through BMPs at the horse stables, pet waste stations in residential areas, and a pet waste station at the community dog park.
- Developed and distributed to the public educational brochures including the Stormwater Pollution Prevention Educational Flyer and the Pet Waste Pollution Prevention Brochure.
- Illicit discharges and sewer line leaks into the MS4 are being monitored through the IDDE program.

7.0 REFERENCES

JBLE–Eustis. 2022a. *Draft MS4 Program Plan for Joint Base Langley Eustis – Eustis*. Prepared by AECOM Technical Services, Inc. January 2022.

JBLE–Eustis. 2022b. *Warwick River and Skiffes Creek Bacteria Total Maximum Daily Load Action Plan for Joint Base Langley Eustis – Eustis*. Prepared by AECOM. June 2022.

VDEQ. 2007. *Fecal Bacteria Total Maximum Daily Load Development for Warwick River*. Final Submission December 13, 2007.

VDEQ. 2015. *Authorization to discharge under the Virginia Stormwater Management Program and the Virginia Stormwater Management Act, VPDES Permit Number VA0025216.* Permit effective September 1, 2015.

VDEQ. 2018. *General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems General Permit Number VAR040035*. Permit effective 1 November 2018.

ACRONYMS

AFCEC	Air Force Civil Engineer Center
BASH	Bird/Animal Aircraft Strike Hazard
BMP	Best Management Practice
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
JBLE–Eustis	Joint Base Langley Eustis – Eustis
MS4	Municipal Separate Storm Sewer System
TMDL	Total Maximum Daily Load
VDEQ	Virginia Department of Environmental Quality
VPDES	Virginia Pollutant Discharge Elimination System
WLA	Wasteload Allocation