

# FINAL ILLICIT DISCHARGE DETECTION AND ELIMINATION PROCEDURE MANUAL

FOR

JOINT BASE LANGLEY EUSTIS–FORT EUSTIS, VIRGINIA



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### **Statement of Limitations**

This manual was prepared in accordance with the customary thoroughness and competence of environmental science and engineering consulting professionals and in accordance with the standard for professional services for a national consulting firm at the time these services were provided. The analysis, conclusions, and recommendations expressed in this report were developed based upon a limited scope of services and the information made available to AECOM at the time this work was conducted.

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**LIST OF ABBREVIATIONS AND ACRONYMS**

733d CED/CEIE	733rd Civil Engineer Division / Environmental Element
733d CED/GIO	733rd Civil Engineer Division / GeoBase
733d CED/CEO	733rd Civil Engineer Division / Operations
AEC	Activity Environmental Coordinator
AF	Air Force
AFDPO	Air Force Departmental Publishing Office
ASA	Army Support Activity
BOS	Base Operations Services
CFR	Code of Federal Regulations
COR	Contracting Officer’s Representative
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESOHTN	Environmental Safety and Occupational Health Training Network
GIS	Geographical Information System
GMS	Global Management Services
gpm	Gallons per Minute
HUC	Hydrologic Unit Code
IDDE	Illicit Discharge Detection and Elimination
JBLE–Eustis	Joint Base Langley-Eustis – Fort Eustis
MS4	Municipal Separate Storm Sewer System
NCDEQ	North Carolina Department of Environmental Quality
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
ODUS	Old Dominion Utility Services
OWS	Oil/Water Separator
POL	Petroleum, Oils, and Lubricants
RCI	Residential Community Initiatives
SDO	Stormwater Discharge Outfall
TMDL	Total Maximum Daily Load
UEC	Unit Environmental Coordinator
U.S.	United States
USDA	United States Department of Agriculture
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VPDES	Virginia Pollutant Discharge Elimination System

## 1.0 INTRODUCTION

### 1.1 Background and Purpose

Stormwater runoff from developed land can harm surface water resources by changing natural hydrologic patterns and elevating pollutant concentrations and loadings. Stormwater runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients, heavy metals, and pathogens. To address this problem, the U.S. Environmental Protection Agency (EPA) established stormwater regulations as part of the National Pollutant Discharge Elimination System (NPDES) permits program under the Clean Water Act (CWA), which are implemented through NPDES permits.

In the State of Virginia, the EPA has delegated administration of the NPDES program to the Virginia Department of Environmental Quality (VDEQ). On 1 July 2013, the VDEQ authorized coverage to Joint Base Langley-Eustis – Fort Eustis (JBLE–Eustis) under the General Permit for Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) – General Permit No. VAR040035. This manual has been prepared to support compliance with Section II.B.3.c of the MS4 permit, which requires JBLE–Eustis to “*develop, implement, and update, when appropriate, written procedures to detect, identify and address unauthorized non-stormwater discharges, including illegal dumping, to the small MS4*”. To ensure compliance with the Illicit Discharge Detection and Elimination (IDDE) requirements of the MS4 Permit, JBLE–Eustis will follow the procedures outlined in this manual.

The JBLE–Eustis MS4 program is managed by the 733d Civil Engineer Division / Environmental Element (733d CED/CEIE). For any questions regarding the MS4 program or illicit discharges please contact:

Stormwater Program Manager  
733d Civil Engineer Division  
1407 Washington Blvd.  
Fort Eustis, VA 23604  
Telephone: (757) 878-4123

### 1.2 Manual Organization

This IDDE Procedures Manual is organized into the following sections:

- Section 1 includes this introduction, which discusses the regulatory background and purpose of the manual, the MS4 program oversight authority, and manual organization
- Section 2 describes the JBLE–Eustis storm sewer system map
- Section 3 outlines the JBLE–Eustis IDDE policy
- Section 4 presents procedures to detect unauthorized non-stormwater discharges to the JBLE–Eustis MS4
- Section 5 outlines methods for investigating potential illicit discharges to the storm system

- Section 6 describes mechanisms for eliminating confirmed illicit discharges, methods for conducting follow-up investigations to confirm the illicit discharges are resolved, and the implementation of enforcement actions as needed
- Section 7 provides a list of references used in developing this manual
- Appendix A contains a copy of the JBLE–Eustis storm sewer maps
- Appendix B presents the draft Stormwater Illicit Discharge Prohibition Policy Statement and EMP 4.4.6.2.2.3, MCM 3 – Illicit Discharge Detection and Elimination
- Appendix C provides an example Illicit Discharge Tracking Record, Dry-Weather Outfall Screen Form, Dry-Weather Outfall Screening Record, and Air Force (AF) Form 332

## 2.0 STORMWATER DRAINAGE SYSTEM MAP

A critical component of the JBLE–Eustis IDDE program is the stormwater drainage system map. Maintaining an accurate map of the stormwater system allows the base to trace and locate the source of suspected illicit discharges. The JBLE–Eustis storm sewer system maps are maintained by 733rd Civil Engineer Division / GeoBase (733d CED/GIO) in Geographical Information System (GIS) format. Updated stormwater drainage system data from contract projects on base are routed to 733d CED/GIO for inclusion in the installation’s geodatabase. Hardcopy maps are available upon request and electronic versions of the stormwater drainage system map can be viewed by authorized personnel on the JBLE–Eustis server. As of June 2016, JBLE–Eustis has identified 85 non-industrial (also known as MS4 stormwater outfalls or discharge locations), two (2) comingled (i.e., industrial and MS4 activities) outfalls, and 39 industrial outfalls<sup>1</sup>. Stormwater drainage system maps showing each identified MS4 outfall, the associated receiving water body and hydrologic unit code (HUC), and the drainage basin boundary are provided in Appendix A.

JBLE–Eustis is in the process of conducting a comprehensive update of the stormwater system GIS data. The project includes inventory and location of stormwater system features as well as an update of its attributes within the installation’s geodatabase. The mapping update is scheduled to be completed in December 2017 and will improve the accuracy of the stormwater drainage system map. Updated storm sewer system maps, including the addition of new or reclassified (e.g., industrial to non-industrial) outfalls, will be included in this manual as they are developed.

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<sup>1</sup> Stormwater discharges to the industrial outfalls are regulated under a separate permit, Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0025216, and are not covered under the MS4 permit.

### 3.0 IDDE POLICY

JBLE–Eustis is dedicated to detecting and eliminating illicit discharges to the stormwater drainage system. This section defines illicit discharges and outlines the JBLE–Eustis policy prohibiting illicit discharges.

#### 3.1 Illicit Discharge Definition

Title 9 of the Virginia Administrative Code (VAC) defines an illicit discharge as, “...any discharge to a municipal separate storm sewer that is not composed entirely of stormwater, except discharges pursuant to a separate VPDES or state permit (other than the state permit for discharges from the municipal separate storm sewer), discharges resulting from firefighting activities, and discharges identified by and in compliance with 9VAC25-870-400 D 2 c (3)”. Essentially, an illicit discharge is any non-stormwater discharge to the storm sewer that is not specifically authorized under a separate permit or the VAC.

Illicit discharges to the JBLE–Eustis MS4 are typically the result of aging infrastructure; industrial, commercial and/or residential practices; or a specific spill event. Examples of illicit discharges are illustrated in Figure 3-1 and include (but are not limited to) the following:

- Runoff from improperly stored materials
- Improper disposal of vehicle maintenance fluids or household chemicals into a storm drain inlet
- Leaking dumpsters flowing into a storm drain inlet
- Old or damaged sanitary sewer line leaking fluids into a cracked or damaged storm sewer line
- Allowing wash water with soaps or detergents to discharge to a storm drain inlet
- Washing silt, sediment, concrete, cement or gravel into a storm drain inlet
- Spills resulting from vehicle accidents
- Foam solutions from firefighting testing and training exercises

Examples of authorized non-stormwater discharges that are not significant contributors of pollutants and are not considered illicit discharges at JBLE–Eustis include the following:

- Water line flushing
- Uncontaminated groundwater infiltration
- Landscape and lawn irrigation
- Air conditioning condensate<sup>2</sup>
- Street wash water
- Groundwater from footing drains and crawl spaces
- Flows from firefighting activities
- Discharges from potable sources

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<sup>2</sup> Condensate and blow down from large cooling towers located throughout JBLE–Eustis are regulated under a separate permit, VPDES Permit No. VA0025216, and are not covered under the MS4 permit.

- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges



*Source: Illicit Discharge Detection and Elimination - A Guidance Manual for Program Development and Technical Assessments (CWP, 2004)*

**Figure 3-1. Examples of Illicit Discharges**

Illicit connections to the stormwater drainage system can also generate illicit discharges. Illicit connections are any manmade conveyance that is connected to the MS4 without a permit, excluding roof drains and other similar connections. Examples of illicit connections include, but are not limited to, the following:

- Sanitary sewer piping that is connected directly from a building to the stormwater drainage system
- A cross connection between the sanitary sewer and the stormwater drainage system
- A shop floor drain that is connected to the stormwater drainage system

The frequency of illicit discharges typically occurs within the following three classifications as defined by the EPA (CWP, 2004):

- **Continuous** discharges occur most or all of the time, are usually easier to detect, and typically produce the greatest pollutant load.
- **Intermittent** discharges occur over a shorter period of time (e.g., a few hours per day or a few days per year). Because they are infrequent, intermittent discharges are hard to detect, but can still represent a serious water quality problem, depending on their flow type.
- **Transitory** discharges occur rarely, usually in response to a singular event such as an industrial spill, ruptured tank, sewer break, transport accident or illegal dumping episode. These discharges are extremely hard to detect with routine monitoring, but under the right conditions, can exert severe water quality problems on downstream receiving waters.

Understanding the frequency classifications can help in detecting and eliminating illicit discharges by allowing inspectors to determine if dry weather flows may need additional examination to determine if they should be classified as illicit discharges.

### 3.2 JBLE–Eustis Illicit Discharge Prohibition Policy

Illicit discharges to the stormwater drainage system at JBLE–Eustis are prohibited via multiple base-level policies, instructions and guidelines.

**JBLE Memorandum, Stormwater Illicit Discharge Prohibition Policy Statement:** This draft memorandum communicates JBLE–Eustis commitment to water quality protection and conservation. The document identifies the stormwater discharge permits in effect at JBLE–Eustis, prohibits illicit discharges to the stormwater system, and provides information on how to report illicit discharge to the proper authorities. The memorandum is applicable to all JBLE military personnel, civilian employees and support contractors. This draft policy statement is provided in Appendix B. A copy of the Stormwater Illicit Discharge Prohibition Policy Statement signed by the Commander will be posted at:

<https://www.jble.af.mil/About-Us/JBLE-Environmental-Information>

**JBLE–Eustis Environmental Management Procedure (EMP) 4.4.6.2.2.3, MCM 3 - Illicit Discharge Detection and Elimination:** EMP 4.4.6.2.2.3 presents the scope, base personnel roles and responsibilities, and procedures, and references the IDDE Procedure Manual. The EMP acts as an enforcement tool for the Illicit Discharge Prohibition Policy Statement and this IDDE Procedure Manual. A copy the EMP is provided in Appendix B.

**JBLE–Eustis MS4 Program Plan:** JBLE–Eustis maintains an MS4 Program Plan per the requirements of Permit No. VAR040035. The Program Plan outlines the requirements of the permit, including the six MCMs and two special conditions. The subsection on MCM 3 presents the base’s IDDE program, including referring to this IDDE Procedure Manual for details of the program, as well as plans to remain in compliance with the permit.

**JBLE–Eustis Instruction 32-101, *Environmental Management***: JBLE–Eustis Instruction 32-101 applies to all personnel performing functions and conducting operations on JBLE–Eustis and is aimed at preserving, protecting, conserving, and restoring the quality of the Fort Eustis environment. Section 4.4.6.2 requires the installation to comply with applicable federal, state and local stormwater regulations through execution of required stormwater permits. Section 4.4.6.2.2.2 requires all operations and actions be planned and executed in a manner to protect surface water, which would include prohibiting illicit discharges to the stormwater system. JBLE–Eustis Instruction 32-101 can be viewed at: <https://www.jble.af.mil/About-Us/JBLE-Enviromental-Information>

**Balfour Beatty Communities, *Resident Guide***: The Resident Guide outlines policies and procedures for all residents at JBLE–Eustis and includes stormwater pollution prevention requirements. Section 25 of the Resident Guide prohibits the disposal of household waste to the ground and in storm drains. Section 40 prohibits the discharge of petroleum oil and lubricants (POL) and antifreeze to the ground and in storm drains. Section 57 prohibits vehicle washing in residential areas. Vehicle washing must be conducted at authorized car wash stations that discharge the wash water to the sanitary sewer. The Resident Guide can be viewed at: <http://www.forteustisfamilyhomes.com/media/1563329/Eustis-and-Story-RES-GUIDE-Apr-2015.pdf>

## 4.0 ILLICIT DISCHARGE DETECTION PROCEDURES

Illicit discharges and connections at JBLE–Eustis are typically identified through community reporting and dry-weather field screening activities. Detecting potential problem areas quickly allows issues to be addressed before they cause significant water quality degradation. This section outlines procedures for IDDE incident reporting and dry-weather field screening at the JBLE–Eustis MS4 outfalls.

### 4.1 Community Reporting

All JBLE–Eustis personnel and residents are encouraged to report illicit discharge and/or illegal dumping activities. 733d CED/CEIE and the family housing management company (Balfour Beatty) plan to periodically distribute information about the IDDE program and how to report via newspaper articles, Facebook postings, mass emails, and postings to the JBLE–Eustis Environmental public website. The aforementioned websites can be viewed at the following addresses:

- JBLE–Eustis Environmental public website:  
<https://www.jble.af.mil/About-Us/JBLE-Environmental-Information>
- JBLE–Eustis Environmental Facebook site:  
<https://www.facebook.com/forteustisenvironment>
- Housing Management Facebook site:  
<https://www.facebook.com/FortEustisHomes>

The JBLE–Eustis Fire and Emergency Services personnel are the installation’s First Responders and their telephone number (757-878-1008 or 4281 or 911) is used as the primary hotline for reporting illicit discharges. The hotline is manned 24 hours per day, 7 days per week. JBLE–Eustis personnel can also call Environmental staff (757-878-4123) or Housing Management staff (757-369-8344) with concerns regarding potential illicit discharges.

When a potential illicit discharge incident is reported, the incident information will be referred to 733d CED/CEIE, staff for documentation using the Illicit Discharge Tracking Record (see Appendix C) and follow-up. The responding staff will either follow the investigation procedures in Section 5.0 of this manual to identify the source of the problem or, if the source is known, the discharge elimination procedures outlined in Section 6.0 will apply.

### 4.2 Community Outreach

Effective promotion and publication of the base IDDE prohibition policy and methods for illicit discharge detection are an integral part of the IDDE Program for JBLE–Eustis. Outreach initiatives that JBLE–Eustis conducts include:

- Operation and publication of an illicit discharge hotline. 733d CED/CEIE is working with PAO to publicize the hotline number.
- Storm drain marking activities which include volunteers from the base residents and personnel.

- Educational signs are posted at various facilities (e.g., industrial facilities) regarding illegal dumping.
- Facebook posts related to educating the general public regarding illicit discharges and how to report them.

### **4.3 Dry-Weather Field Screening**

Dry-weather field screening of stormwater outfalls is an effective method of detecting illicit discharges to the stormwater system. JBLE–Eustis has 85 MS4 outfalls that discharge to various receiving water bodies including Bailey Creek, Eustis Lake, Milstead Island Creek, Warwick River, Morrision’s Creek, James River and Skiffes Creek. The MS4 Permit requires a minimum of 50 outfalls to be screened each year during dry weather to detect potential illicit discharges to the stormwater system.<sup>3</sup> Maps showing the location of each known outfall and the receiving waters are provided in Appendix A. It should be noted that a mapping update project is underway in 2016 and expected to be complete by June 2017. Updated maps will be included in this manual as they are developed.

#### **4.3.1 Responsibility**

Outfall screenings are the responsibility of 733d CED/CEIE staff. Inspections may be performed by other base personnel or by outside consultants hired by the base; however, all field reports will be reviewed and maintained by 733d CED/CEIE staff.

#### **4.3.2 Outfall Prioritization and Schedule**

As required by Section II.B.3c (1) (a) of the MS4 Permit, the stormwater outfalls have been prioritized for screening. Each of the 85 MS4 outfalls will be screened at least every two years, with 15 “high priority” outfalls being screened each year. The “high priority” outfalls were identified based on land use (Personally owned vehicle [POV] washing, POV gas stations, POV maintenance [Auto Hobby Shop], dog park, hospital, etc.) and historical data regarding previous suspected illicit discharges. Table 4-1 presents a list of each known MS4 outfall, its receiving water body, and the year scheduled for screening. The inspection schedule will be updated as necessary to accommodate additional outfalls that may be created as part of future development or identified as part of system mapping updates.

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<sup>3</sup> JBLE-Eustis has 39 industrial outfalls and two (2) comingled outfalls that are regulated under VPDES Industrial Permit No. VA0025216. Industrial outfalls are inspected under the requirements of the VPDES program.

**Table 4-1. MS4 Outfall Inspection Schedule, JBLE–Eustis**

High Priority Outfalls to be Inspected Each Permit Year		Outfalls to be Inspected in Permit Year 4 (1 Jul 2016 – 30 Jun 2017)		Outfalls to be Inspected in Permit Year 5 (1 Jul 2017 – 30 Jun 2018)	
013	Bailey Creek	023	Eustis Lake	011	Bailey Creek
031	Eustis Lake	027	Eustis Lake	014	Bailey Creek
043	Warwick River	029	Eustis Lake	015	Bailey Creek
052	Warwick River	030	Eustis Lake	018	Bailey Creek
057	Warwick River	032	Eustis Lake	016	Bailey Creek
067	Warwick River	038	Milstead Island Creek	017	Bailey Creek
068	Warwick River	039	Milstead Island Creek	022	Bailey Creek
077	Eustis Lake	041	Milstead Island Creek	028	Eustis Lake
078	Warwick River	044	Warwick River	033	Eustis Lake
084	Bailey Creek	048	Milstead Island Creek	045	Warwick River
091	Warwick River	049	Milstead Island Creek	047	Milstead Island Creek
092	Skiffes Creek	050	Milstead Island Creek	056	Warwick River
115	James River	053	Warwick River	058	Warwick River
117	Warwick River	054	Warwick River	059	Warwick River
121	Warwick River	055	Warwick River	071	Morrison's Creek
		060	Warwick River	086	Bailey Creek
		062	Warwick River	087	Bailey Creek
		063	Warwick River	089	Eustis Lake
		066	Warwick River	094	Bailey Creek
		085	Bailey Creek	098	Bailey Creek
		090	Island Creek	099	Bailey Creek
		093	Bailey Creek	100	Bailey Creek
		095	Bailey Creek	104	Eustis Lake
		096	Bailey Creek	105	Eustis Lake
		097	Bailey Creek	107	Eustis Lake
		103	Bailey Creek	118	Warwick River
		106	Eustis Lake	119	Warwick River
		113	Warwick River	120	Warwick River
		126	Warwick River	122	Warwick River
		127	Warwick River	124	Warwick River
		128	Warwick River	125	Warwick River
		131	Morrison's Creek	134	Eustis Lake
		136	Warwick River	135	Eustis Lake
		141	Milstead Island Creek	140	Eustis Lake
		142	Warwick River	32A	Eustis Lake

### 4.3.3 Timing

Timing is important when conducting dry-weather outfall screenings to detect dry-weather flows during time periods when potential pollutants are not diluted by stormwater. The following guidelines should be considered when scheduling screenings:

- Conduct screenings at least 48 hours after a runoff producing rain event
- Tidally influenced outfalls should be screened during low tide

- Remote outfalls may be more accessible during times of low vegetation (late fall to early spring)
- Conduct screening during times of low groundwater levels (e.g., avoid time periods when the ground is saturated by extended rainfall or snowmelt)

#### 4.3.4 Screening Activities

During outfall screening, field crews will visually inspect each outfall and the immediate surrounding area, photograph the current conditions, and complete a Dry-Weather Outfall Screening Form provided in Appendix C. Special attention will be paid to outfalls that are flowing when no rain has occurred within the last 48 hours and/or outfalls where foul odors or discolored water is noted. When the screening of an outfall indicates a potential illicit discharge, the JBLE–Eustis Stormwater Program Manager will be notified within one business day so an investigation, as described in Section 5.0, can be performed. Any identified spills or conditions that represent a serious threat to personnel safety or equipment damage will be immediately reported to JBLE–Eustis Fire and Emergency Services.

The Dry-Weather Outfall Screening Form includes the following seven sections to be completed with each outfall screening:

**Section 1: Background Data** – This section requires general information regarding when and where the screening was performed, historical rainfall data, reference to photographs taken, and a description of drainage basin land uses. Tips for completing Section 1 include:

- The Outfall ID can be found in Table 4-1 and the stormwater drainage system maps in Appendix A of this manual.
- Historical daily rainfall totals can be found at:  
<http://www.wunderground.com/q/zmw:23628.3.99999> by selecting “Felker Army Air Field, VA” → “History” → “Custom” and entering the desired time period. The data will be formatted in a table as shown in Figure 4-1.
  - Total rainfall in a 24 hour period is shown with the blue callout in Figure 4-1.
  - Total rainfall in a 48 hour period will need to be calculated by the inspector by summing the values indicated by the red callout in Figure 4-1.
  - Hourly data can also be used to determine the total rainfall utilizing the same website and selecting “Felker Army Airfield, VA” → “History” → “Daily”.
- Take at least one photograph of the outfall for documentation purposes. Note the Camera ID and Photo IDs on the form.
- Drainage basin categorization (i.e., industrial/non-industrial) can be identified through operator knowledge or by reviewing the stormwater drainage system maps in Appendix A.

Weather History & Observations											
2015	Temp. (°F)			Dew Point (°F)			Humidity (%)			Precip. (in)	Events
Dec	high	avg	low	high	avg	low	high	avg	low	sum	
1	55	50	46	55	53	48	100	100	100	0.13	Rain
2	62	58	53	63	58	54	100	100	100	0.03	Fog, Rain

**Figure 4-1. Example Rainfall Data Output, JBLE–Eustis**

**Section 2: Outfall Description** – This section requires a description and dimensions of the outfall and a determination if flow is present during the inspection. Tips for completing Section 2 include:

- The cross-sectional shape of the outfall structure will determine the dimensions required. If the shape is abnormal, provide a sketch in the available area of the dimension column and label the measured dimensions.
- If the outfall is submerged with sediment, photograph the submergence and attempt to measure the depth of sediment.
- The identification of flow is important as flow during dry weather would indicate a non-stormwater discharge. If a pipe is partially submerged in water, and it is difficult to identify dry-weather flow, a nearby leaf or blade of grass can be dropped onto the water surface near the outfall. Travel of the object on the surface can help indicate if flow is discharging from the outfall.
- Dimensions that cannot be safely measured should be estimated.
- Upon completion of this section, if flow is present, continue to Section 3 of the form. However, if no flow is present, skip to Section 5 of the form.

**Section 3: Estimated Discharge Rate** – This section requires the inspector to estimate the quantity of discharge from the outfall at the time of inspection using one of two techniques. The first technique simply records the time it takes to fill a container of a known volume. In the second technique, the inspector measures the velocity of flow, and multiplies it by the estimated cross-sectional area of the flow. Tips for completing Section 3 include:

- **Flow Method #1:** This technique is preferred for relatively low flows that can effectively be captured in a container. It may be helpful to use a “homemade” container, such as a cut out plastic milk container that is marked to show a one quart volume. The shape and flexibility of plastic containers allows the capture of relatively flat and shallow flow. The discharge rate in gallons per minute (gpm) is then estimated using the following equation with measured data from the form shown in bold.

$$\text{Discharge Rate (gpm)} = \frac{\# \text{ quarts}}{\# \text{ seconds}} \times \frac{1 \text{ gallon}}{4 \text{ quarts}} \times \frac{60 \text{ seconds}}{1 \text{ minute}}$$

- **Flow Method #2:** The second technique is preferred for open channels and larger discharges where containers are too small to effectively capture the flow. The inspector measures and marks off a fixed flow length (usually about five feet); crumbles leaves or other light material; drops them into the discharge; and measures the time it takes the material to travel across the pre-measured length. The velocity of flow in feet per second (fps) is estimated using the following equation with measured data from the form shown in bold.

$$\text{Velocity (fps)} = \frac{\text{measured length (ft)}}{\text{time of travel (sec)}}$$

Next, the cross-sectional flow area is estimated by measuring the water depth and the width of the water surface and bottom of the channel. The cross-sectional flow area in cubic feet (ft<sup>3</sup>) and discharge rate in gpm are then estimated using the following equations with measured data from the form shown in bold.

$$\text{Area (ft}^2\text{)} = \left[ \left( \frac{\text{surface width (in)} + \text{bottom width (in)}}{2} \right) \times \text{depth (in)} \right] \times \frac{1 \text{ ft}^2}{144 \text{ in}^2}$$

$$\text{Discharge Rate (gpm)} = \text{Area (ft}^2\text{)} \times \text{Velocity (fps)} \times \frac{7.48 \text{ gallons}}{1 \text{ ft}^3} \times \frac{60 \text{ seconds}}{1 \text{ minute}}$$

**Section 4: Physical Indicators for Flowing Outfalls** – This section requires documentation of four indicators for flowing outfalls – odor, color, clarity, and floatables. These indicators are important in detecting the most severe or obvious discharges. The severity of each indicator is rated on a scale from zero to three. Tips for completing Section 4 include:

- **Odor:** A severity score of 0 means that no odor is present; a score of 1 means the odor is faint or it is unclear if the odor is coming from the stream or other object in the area; a score of 2 indicates a moderate odor within the pipe; and a score of 3 is assigned if the odor is so strong that it is detected at a considerable distance from the outfall.
- **Color and Clarity:** Color and clarity are best evaluated by collecting the discharge in a clear bottle and holding it up to the light. Color is rated by the tint or intensity of the color observed and clarity is rated based on how easily light can penetrate through the collected sample. The severity scale is further defined on the inspection form. Examples of the different levels of clarity is illustrated in Figure 4-2.



**Figure 4-2. Examples of Levels of Clarity at Outfalls**

- **Floatables:** Sewage, oil sheens, and suds are all examples of floatable indicators. Floatables that appear to be *sewage* are assigned a severity score of 3. Surface *oil sheens* are ranked based on their thickness and coverage. Note that natural sheens created by in-stream biological processes often form a sheet-like film that cracks if disturbed and are not indicators of illicit discharges. *Suds* are rated based on their foaminess and staying power. A severity score of 3 is designated for thick foam that travels many feet before breaking up. Suds that break up quickly may simply reflect water turbulence, and do not necessarily have an illicit origin. Suds that are accompanied by a strong organic or sewage-like odor may indicate a sanitary sewer leak or connection, whereas suds with a fragrant odor may indicate the presence of wash waters. Note that trash and debris are generally not considered illicit discharge concerns and should not be documented as floatables. Trash should be noted in Section 7 of the form. An example of floating solids is provided as Figure 4-3.



**Figure 4-3. Floating Solids**

- Photographs should be taken of all visible indicators.

**Section 5: Observations for Flowing and Non-Flowing Outfalls** – This section requires documentation of five indicators that may reveal past intermittent or transitory discharges. Indicators documented in this section include outfall damage, outfall deposits or stains, abnormal vegetation growth, poor pool quality,

and benthic growth on pipe surfaces. Indicator descriptions are provided on the inspection form. Tips for completing Section 5 include:

- Surface damage at the outfall may be an indicator of high strength / corrosive discharges or associated gases
- Inhibited vegetation growth immediately downstream of the outfall may be an indicator of industrial discharges, whereas excessive vegetation may be an indicator of a nutrient rich discharge (e.g., sewage, fertilizers, etc.).
- Benthic growth on the pipe includes algae, bacteria, and slime on outfall surfaces may be an indicator of a nutrient rich discharge (e.g., sewage, fertilizers, etc.).
- Photographs should be taken of all visible indicators.

**Section 6: Overall Preliminary Illicit Discharge Rating** – This section requires an overall illicit discharge rating of unlikely, potential, suspect, or obvious for the outfall based on the discharge indicators identified in the preceding sections. This is only an initial assessment of the *likelihood* of an illicit discharge and will be used to determine if additional investigation is warranted. The outfall characterization rating is best judged by the inspector. Rating guidance is provided on the form to provide consistency; however, the intuition of the inspector should take precedence. Tips for completing Section 6 include:

- **Unlikely:** A rating of *Unlikely* is generally assigned to non-flowing outfalls with no physical indicators of an illicit discharge in Section 5.
- **Potential:** A rating of *Potential* is generally assigned to flowing or non-flowing outfalls with presence of one or more physical indicators in Sections 4 or 5.
- **Suspect:** A rating of *Suspect* is generally assigned to flowing outfalls with high severity, typically a 3 on the 0 to 3 scale, on one or more physical indicators in Section 4.
- **Obvious:** A rating of *Obvious* is generally assigned where there is an illicit discharge that can be confirmed without sampling or upstream investigation.

**Section 7: Other Non-Illicit Discharge Concerns** – This section is used to document other concerns observed at the outfall that are not associated with illicit discharges and may include: accumulated trash, erosion, sink holes, pipe failure, overgrowing vegetation, and required infrastructure repairs.

#### 4.3.5 Documentation

Outfall screenings can generate a significant amount of data which requires proper management and record keeping. 733d CED/CEIE staff will complete the following tasks within five working days of completing a dry-weather outfall screening:

- Store the field reports in a properly labeled three-ring binder. The binder will be tabbed by inspection year, and the outfall reports will be organized by Outfall ID from lowest to highest.

- Download digital inspection photographs to an appropriately titled folder on the JBLE–Eustis shared server. The photographs will be grouped by inspection year and renamed based on the Outfall ID. If multiple photographs are taken at the same outfall, “-#” will be appended to the end of the Outfall ID (e.g., 001-1, 001-2, 001-3)
- Enter inspection data into the Dry-Weather Outfall Screening Record spreadsheet. The spreadsheet should be tabbed by inspection year with outfalls listed by Outfall ID from lowest to highest and saved to the JBLE–Eustis shared server. An example outfall screening record spreadsheet is provided in Appendix C, and an electronic version is provided on the CD-ROM included with this manual.
- Complete Section 1 of the Illicit Discharge Tracking Record for each discharge identified as Potential, Suspected, or Obvious. Completion of the tracking sheet will document the discharge for future investigation and annual reporting as required by Section 2.B.3.f of the MS4 permit. An example Illicit Discharge Tracking Record is provided in Appendix C, and an electronic version is provided on the CD-ROM included with this manual.
- A service order request will be submitted via email to the 733d Civil Engineer Division / Operations (CED/CEO) Service Order Desk to address any maintenance issues identified during the outfall screenings. 733d CED/CEO will determine whether the issue can be addressed with a service order or whether an AF Form 332, *Base Civil Engineer Work Request*, will be required. A blank AF Form 332 is provided in Appendix C.

Note that any identified spills or conditions that represent a serious threat to personnel or equipment safety should be immediately reported to JBLE–Eustis Fire and Emergency Services. Additional reporting to DEQ will be completed as necessary per Section III.G-I of the MS4 permit.

## 5.0 ILLICIT DISCHARGE INVESTIGATION

Potential illicit discharges can be detected through community reporting or outfall inspections as described in Section 4.0. Once a potential illicit discharge has been detected, it becomes necessary to conduct an investigation to identify and eliminate the source of the discharge. The investigation may result in the source being easily identified or it may require a more in-depth inspection as outlined in this section.

### 5.1 Responsibility

Illicit discharge investigations are the responsibility of 733d CED/CEIE staff. Investigations may be performed by other base personnel staff or by outside consultants hired by the base; however, all investigation results will be reviewed and maintained by 733d CED/CEIE staff.

### 5.2 Time Frame for Investigation

After a potential, suspected, or obvious illicit discharge has been detected, follow-up investigations should be prioritized and initiated according to the following guidance:

- **Priority Level 1** – Initiate investigations within three working days for discharges suspected of being sanitary sewage, significantly contaminated (e.g., degreasers, solvents, pesticides, petroleum), or unknown based on the initial observation
- **Priority Level 2** – Initiate investigations within seven working days for discharges suspected of being less hazardous to human health and safety (e.g., non-contact cooling water, wash water, yard waste)

Note that any discharges that represent a serious threat to human health or the environment should immediately be reported to JBLE–Eustis Fire and Emergency Services.

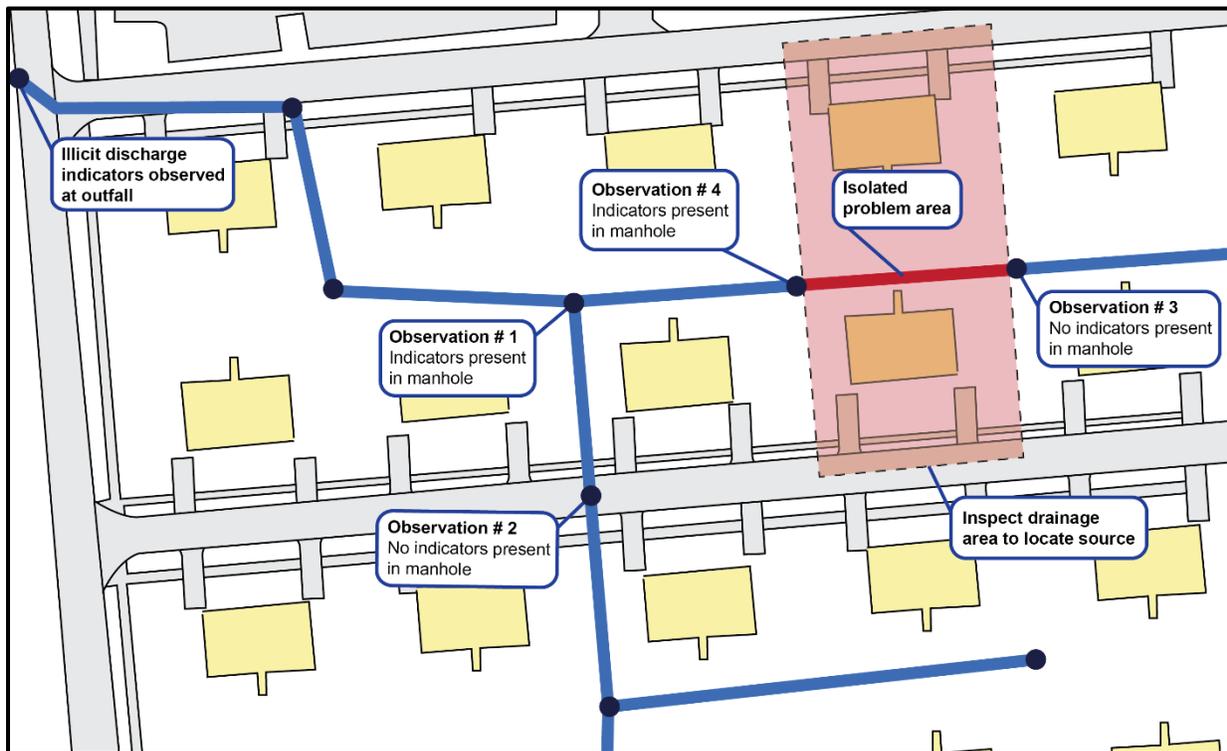
### 5.3 Investigation Methodology

When the source of a suspected illicit discharge cannot be readily identified, additional action is required.

The source of some illicit connections or discharges can be located by systematically isolating the area from which the polluted discharge originates. This process involves progressive investigation at manholes and catch basins in the storm drain network to narrow down the location where the illegal discharge is entering the drainage system. This method is best used to identify constant or frequent discharge sources such as an illicit connection with the sanitary sewer system.

Field crews should work progressively upstream from the outfall and inspect stormwater structures (e.g., manholes, catch basins, junctions) looking for the presence of flow during dry weather, foul odors, colors or stained deposits, oily sheen, floatable materials, and/or other indicators of an illicit discharge. The observations are continued at each upstream structure until a structure is found with no evidence of discharge. This indicates the discharge source is likely located between the structure with no evidence of discharge and the next downstream structure.

Once the discharge source has been isolated to a specific segment of stormwater drainage system, the field crew should inspect the drainage area near the point of entry to identify the source. The drainage area inspection should include interviewing personnel at nearby facilities or residents within the vicinity of the drainage area to understand activities and materials used that may be generating discharges. Special attention should be paid to facilities that use materials similar to those noted in the discharge or residential locations that show evidence of illegal dumping (e.g., residences with moves scheduled or a history of MFH policy violations). For example, if a discharge is detected with an oil sheen and a gasoline odor, vehicle maintenance facilities would be of more interest than a food service facility. The stormwater drainage system map should also be cross referenced against the sanitary sewer map and/or historical as-built drawings of nearby facilities to identify illicit connections with the sanitary sewer, discharges from industrial processes, or drain inlets located within wash areas. Figure 5-1 illustrates the observation steps used to trace the source of a potential illicit discharge. The source of all confirmed illicit discharges should be photographed and documented as described in Section 5.4 for future correction.



**Figure 5-1. Illicit Discharge Isolation Observation Steps, JBLE–Eustis**

JBLE–Eustis relies primarily on physical indicators, facility personnel interviews, and historical records to identify the source of potential illicit discharges; however, there are several additional field tests that can be performed as necessary. Additional field tests include:

- Dye testing
- Smoke testing

- Video inspection
- Discharge sample and analysis

Use of the additional field tests will likely require contract of an outside party to complete the investigation. Permitting needs (i.e., dye testing) and sample methods to be used (i.e., 40 CFR 136 compliant methods) must be verified prior to conducting field tests. The Center for Watershed Protection's *Illicit Discharge Detection and Elimination: A Guidance Manual* (CWP 2004) provides instructions for employing these techniques and can be downloaded from the EPA website.

Note that the MS4 permit requires at least three separate attempts be made to identify the source of an intermittent, non-stormwater discharge. If three attempts have been made and the non-stormwater discharge has not been detected again within six months of the first investigation, then the discharge should be documented as "Source not found – discharge has not reoccurred" in the Illicit Discharge Tracking Form and no further action is required. Non-stormwater flows that are found to be the result of discharges allowable under the VPDES or other state permits require no further action and should be documented as "Allowable discharge".

## 5.4 Documentation

Recording keeping is an important component of the illicit discharge investigation process. 733d CED/CEIE staff will complete the following tasks after initiating an investigation:

- Enter investigation data into Section 2 of the Illicit Discharge Tracking Form for each investigative task completed. If multiple attempts and methods are conducted to investigate a discharge, ensure each attempt is documented with the date. Completion of the tracking form will document the discharge for elimination and annual reporting as required by Section 2.B.3.f of the MS4 permit. An example Illicit Discharge Tracking Form is provided in Appendix C, and an electronic version is provided on the CD-ROM included with this manual. The tracking form will be maintained by 733d CED/CEIE staff and kept electronically on the JBLE–Eustis network drive.
- Download digital investigation photographs to an appropriately titled folder on the JBLE–Eustis shared server. The photographs will be grouped by permit year and renamed based on the corresponding Discharge ID in the Illicit Discharge Tracking Form. If multiple photographs are taken as part of the investigation(s), "-#" will be appended to the end of the Discharge ID (e.g., 100-1, 100-2, 100-3).

## 6.0 ILLICIT DISCHARGE ELIMINATION

JBLE–Eustis is committed to eliminating illicit discharges to the stormwater drainage system. This section outlines mechanisms for eliminating confirmed illicit discharges, procedures for conducting follow-up investigations to verify the discharges have been eliminated, and enforcement actions that may be enacted to achieve compliance.

### 6.1 Responsibility

Initiating and verifying the elimination of an illicit discharge is the responsibility of 733d CED/CEIE. 733d CED/CEIE staff will provide educational materials and advocate for funding when needed to eliminate illicit discharges. Depending on the location and type of discharges, specific elimination actions may be conducted by other organizations including Activity/Unit Environmental Coordinators (AEC/UEC), Housing Management staff (Balfour Beatty), the Base Operations Services (BOS) contractor (Global Management Services [GMS]), the base wastewater privatization contractor (Old Dominion Utility Services [ODUS]), or other outside contractors hired by the base. Regardless of the entities involved in eliminating an illicit discharge, 733d CED/CEIE is responsible for following-up on the corrective actions to verify the illicit discharge has been resolved.

### 6.2 Eliminating Illicit Discharges

Illicit discharges are generally the result of either structural issues or operational deficiencies. The mechanism for eliminating a discharge will depend on the discharge type.

#### 6.2.1 Structural Issues

Examples of structural issues that may result in illicit discharges include:

- Illicit connections with the sanitary sewer
- Oil/water separators (OWS) pretreating industrial wastewater discharging to the stormwater drainage system
- Leaking concrete containment berms and/or valves
- High level bypass pipes at sanitary sewer lift stations

Structural issues will generally require a construction action to eliminate the illicit discharge. Repair projects for structural issues should be initiated through completion of a service order request to the 733d CED/CEO Service Order Desk. 733d CED/CEO will determine whether the issue can be addressed with a service order or whether an AF Form 332, *Base Civil Engineer Work Request*, will be required. A blank AF Form 332 is provided in Appendix C. Funding for the repair will be determined once the work request has been submitted and reviewed by JBLE–Eustis 733d CED/CEO.

#### 6.2.2 Operational Deficiencies

Examples of operational deficiencies that may result in illicit discharges include:

- Washing activities in areas that discharge to a storm drain inlet
- Runoff from improperly stored material
- Illegal dumping
- Dumpster leachate
- Improperly managed secondary containment valves

Operational deficiencies can typically be addressed through BMPs such as education, modification of processes, and/or relocation of the discharge generating activities. 733d CED/CEIE staff will work with facility occupants as needed to promote compliance.

### 6.3 Follow-up Investigations

After a confirmed illicit discharge has been eliminated, 733d CED/CEIE staff must conduct a follow-up investigation to verify that the discharge has been eliminated. If the discharge was due to a structural issue, the field crew should inspect and photograph the location of the repair to confirm the source has been eliminated. If the discharge was due to an operational deficiency, the field crew should revisit the entry point of the previous illicit discharge and verify that there are no indicators of further discharges. JBLE–Eustis staff should also interview personnel at the facility associated with the previous discharges to ensure they have proper procedures in place to prevent future discharges.

### 6.4 Enforcement Actions

As discussed in Section 3.2 of this manual, illicit discharges to the stormwater system are prohibited by various JBLE–Eustis policies and instructions. Prohibition is also addressed through contract language with contractors performing work on base. Corrective actions focus first on education to promote voluntary compliance and escalate to increasingly severe enforcement actions if voluntary compliance is not obtained. The JBLE–Eustis community is comprised of military and civilian personnel and residents and enforcement actions associated with illicit discharges will depend on the organization of the responsible party or parties. JBLE–Eustis will generally follow a three step enforcement action policy for confirmed illicit discharges; however, more serious violations or continued, egregious non-compliance may warrant a more aggressive approach. Actions conducted under each enforcement step include the following:

- **Step 1: Initial Actions** – 733d CED/CEIE will provide a “summary letter” describing the location and nature of the illicit discharge, the date it was confirmed, the required elimination action, and a reasonable timeframe for compliance. If the source of the illicit discharge is due to a structural issue, the letter will also include a reference to the Service Order Number or a copy of the AF Form 332 initiated to correct the issue. For military organizations and tenants, the letter will be sent to the AEC or equivalent. For contractor organizations, the letter will be sent to the Contracting Officer’s Representative (COR) overseeing the responsible party. Letters for illicit discharges occurring in housing areas will be sent to the Residential Community Initiatives (RCI). *Step 1 is not meant to be punitive. It is an opportunity to inform and educate the responsible parties and to encourage voluntary compliance.*

- **Step 2: Intermediate Actions** – If the confirmed illicit discharge has not been eliminated by the required compliance date or if the illicit discharge is detected a second time at the facility under the responsibility of the same organization at a later date, 733 CED/CEIE will send a “notice of violation” letter regarding the unresolved issues with a second compliance date. For military organizations and tenants, the letter will be sent to the AEC or equivalent. For contractor organizations, the letter will be sent to the COR overseeing the responsible party. Letters for illicit discharges occurring in housing areas will be sent to the RCI. *To the extent possible, Step 2 is meant to bring about an immediate stop to activities generating the illicit discharge until such time that procedures are put in place to prevent future discharges. For contractor activities, Step 2 may result in a stop work order from the COR.*
- **Step 3: Final Actions** – If the confirmed illicit discharge has not been eliminated by the second compliance date or if the illicit discharge reoccurs at the facility a third time under the responsibility of the same organization at a later date, 733 CED/CEIE will send a second “notice of violation” letter regarding the unresolved issues. For military organizations and tenants, the letter will be sent to the Unit Commander or equivalent. For contractor organizations, the letter will be sent to the COR overseeing the responsible party. Letters for illicit discharges occurring in housing areas will be sent to the Army Support Activity (ASA). *Step 3 may result in disciplinary action for military organizations and tenants; loss of contract and/or removal from base for contractors; and loss of housing lease for residents in base housing.*

## 6.5 Documentation

Record keeping is an important component of the illicit discharge elimination process. JBLE–Eustis 733d CED/CEIE will complete the following tasks as part of the elimination and verification process:

- Enter information into Section 3 and 4 of the Illicit Discharge Tracking Record for each elimination and follow-up task completed. Completion of the tracking form will document the closure of the investigation for annual reporting as required by Section 2.B.3.f of the MS4 permit. An example Illicit Discharge Tracking Record is provided in Appendix C, and an electronic version is provided on the CD-ROM included with this manual.
- Download digital photographs of the follow-up investigation to an appropriately titled folder on the JBLE–Eustis shared server. The photographs will be grouped by permit year and renamed based on the corresponding Discharge ID in the Illicit Discharge Tracking Record. If multiple photographs are taken for the same record, “-#” will be appended to the end of the Discharge ID (e.g. 100-1, 100-2, 100-3).
- Save digital copies of all enforcement letters provided on the JBLE–Eustis shared server. Document the submittal date of enforcement letters in the “Corrective Action to be Taken” field in Section 2 of the Illicit Discharge Tracking Record. Save correspondence between all parties regarding the resolution of the illicit discharge to the JBLE–Eustis shared server.

## **6.6 Manual Review**

Regular review of the IDDE Procedures Manual is important in order JBLE–Eustis to have an up to date standard to use for assessing the overall effectiveness of the IDDE Program for compliance with General Permit No. VAR040035. The JBLE–Eustis MS4 Program Plan outlines the procedures for the IDDE program evaluation and assessment. Refer to the MS4 Program Plan for guidance for performing the annual evaluation.

## 7.0 REFERENCES

- Balfour Beatty Communities. 2015. *Resident Guide – Fort Eustis and Fort Story*. JBLE–Eustis, VA: Balfour Beatty.
- Center for Watershed Protection (CWP). 2004. *Illicit Discharge Detection and Elimination - A Guidance Manual for Program Development and Technical Assessments*. Ellicott City, MD: CWP.
- Commander Joint Base Langley–Eustis. 2014. JBLE–Eustis Instruction 32-101, *Environmental Management*. Washington, DC: Air Force Departmental Publishing Office (AFDPO).
- JBLE–Eustis. 2014. *Phase 2 MS4 Permit No. VAR040035 Annual Update*. JBLE–Eustis, VA: 733d CED.
- JBLE–Eustis. 2015a. EMP 4.4.6.2.2, *Stormwater Management*. JBLE–Eustis, VA: 733d CED.
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- North Carolina Department of Environmental Quality (NCDEQ). 2008. *Stormwater Discharge Outfall (SDO) Qualitative Monitoring Report Supplement SWU-242A: Guidance for Rating Stormwater Discharge*. Unknown.
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**APPENDIX A**  
**STORMWATER DRAINAGE SYSTEM MAPS**

**APPENDIX A**

**STORMWATER DRAINAGE SYSTEM MAPS**

**APPENDIX B**

**STORMWATER ILLICIT DISCHARGE  
PROHIBITION POLICY STATEMENT AND EMP**





DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 633D AIR BASE WING  
JOINT BASE LANGLEY- EUSTIS VA

OFFICE OF THE COMMANDER  
125 Mabry Avenue  
Joint Base Langley-Eustis VA 23665-2522

MEMORANDUM FOR ALL JOINT BASE LANGLEY-EUSTIS PERSONNEL

SUBJECT: Stormwater Illicit Discharge Prohibition Policy Statement

1. Joint Base Langley–Eustis (JBLE) is committed to water quality protection and meeting the goals of Executive Order 13508: *Chesapeake Bay Protection and Restoration*. Stormwater runoff from developed land can harm surface water resources by changing natural hydrologic patterns and elevating pollutant levels.
2. Discharges to surface water from JBLE are authorized by the Virginia Department of Environmental Quality (DEQ) under two separate permitting programs. The discharge permits limit the types and quantities of allowable discharges and establish monitoring and record keeping requirements in compliance with provisions of the Clean Water Act.

PERMIT TITLE	PERMIT NUMBER	PERMIT PURPOSE
Virginia Pollutant Discharge Elimination System (VPDES)	Langely Permit No. XXXXX	The VPDES permits allow JBLE to discharge stormwater runoff from industrial areas to the stormwater outfalls specified in the permit.
	Eustis Permit No. VA0025216	
General Permit for Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4)	Langely Permit No. TBD	The MS4 permits allow JBLE to discharge stormwater runoff from urbanized areas in accordance with conditions set forth in the permit.
	Eustis Permit No. VAR040035	

3. The MS4 permit requires JBLE to effectively prohibit illicit discharges into the storm sewer system. An illicit discharge can be any discharge to the storm sewer that is not composed entirely of stormwater, unless otherwise allowed under JBLE’s discharge permits. **Illicit discharges to the stormwater system are prohibited at JBLE.**
4. It is the responsibility of all military personnel, civilian employees and support contractors to perform their duties in a manner that prevents surface water pollution and protects this important natural resource. Suspected illicit discharges should be reported to JBLE Fire and Emergency Services (Langley: XXX-XXX-XXXX / Eustis: 757-878-1008). Questions regarding allowable stormwater discharges should be directed to JBLE Environmental staff (Langley: XXX-XXX-XXXX / Eustis: 757-878-4123).

### Environmental Management Procedure (EMP) 4.4.6.2.2.3

#### Subject: Illicit Discharge Detection and Elimination (IDDE) Program

1. Purpose and Policy:
  - A. Purpose: This EMP establishes the procedures to implement policy for the IDDE Program.
  - B. Policy: The installation will comply with applicable Federal, State, and local storm water regulations through execution of the following:
    - (1). General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), General Permit No. VAR040035
    - (2). MS4 Program Plan
    - (3). IDDE Procedure Manual
2. Document Control: This is a controlled document. Controlled documents are updated as required, reviewed at least annually, and re-dated if changed. Any documents to include blank forms appearing in paper form are not controlled and should be checked against the file version prior to use on the:
  - A. Environmental, Safety, and Occupational Health Training Network's (ESOHTN) website (<http://esohtn.com/>) or;
  - B. eDASH website (<https://cs1.eis.af.mil/sites/edash-ins1/jble/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fsites%2Fedash%2Dins1%2Fjble%2FShared%20Documents%2FEustis%2FEMPs>).
3. References:
  - A. JBLE-I 32-101, Environmental Management
  - B. EMP Dictionary
  - C. EMP 4.4.6.6, Hazardous Material Management
  - D. General Permit No. VAR040035
  - E. MS4 Program Plan
  - F. 40 CFR 112, Oil Pollution Prevention
  - G. JBLE–Eustis Integrated Contingency Plan (ICP) and Spill Prevention Control and Countermeasures (SPCC) Plan
  - H. IDDE Procedure Manual
4. Scope: This EMP applies to all Activities and personnel, including military, civilians, vendors, suppliers, and contractor personnel who enter JBLE-Eustis. The definition of an Activity can be found in JBLE I 32-101.
5. Roles and Responsibilities:
  - A. The CED Operations Flight (CEO) will:
    - (1). Manage the infrastructure in compliance with all federal, state and local regulations.

- (2). Inspect and maintain all storm water management facilities.

B. The CED Environmental Element (CEIE) will:

- (1). Review base maps for completeness and changes that impact the IDDE program (e.g., addition or repurposing of outfalls to the MS4 area).
- (2). Conduct storm water outfall screenings as specified on the schedule included in Table 4-1 of the *IDDE Procedure Manual*.
  - (a). Each of the 85 MS4 outfalls will be screened at least every two years, with 15 “high priority” outfalls being screened each year.<sup>1</sup>
  - (b). Dry-weather outfall screenings to detect dry-weather flows during time periods when potential pollutants are not diluted by storm water should be conducted based on guidelines in the *IDDE Procedure Manual*.
- (3). Update the outfall inspection schedule as necessary to accommodate additional outfalls that may be created as part of future development or identified as part of system mapping updates.
- (4). Complete the Dry-Weather Outfall Screening Form and maintain the Dry-Weather Outfall Screening Record for each inspection year that summarizes the observations from the inspections. See Appendix C of the *IDDE Procedure Manual* for template inspection forms and the record to be used for tracking this information.
- (5). Conduct illicit discharge investigations as presented in Section 5.0 of the *IDDE Procedure Manual*.
- (6). Initiate and verify the elimination of an illicit discharge. See Section 6.0 of the *IDDE Procedure Manual* for guidance.
- (7). Maintain all documentation as specified in the *IDDE Procedure Manual* and the *MS4 Program Plan*. Documentation should be submitted with the base’s MS4 Annual Report as specified in the *MS4 Program Plan*.
- (8). Refer to the base *MS4 Program Plan* for additional guidance and regulations applicable to maintaining the base IDDE Program.

C. The CED Programs Flight (CEP) will:

- (1). Maintain inventories and drawings of the storm water drainage system. Refer to General Permit No. VAR040035, the *MS4 Program Plan*, and the *IDDE Procedure Manual* for requirements for maintaining up to date inventories for the storm water drainage system
- (2). Coordinate with CEIE for proposed storm water projects to allow notification of federal and state regulatory agencies if required.
- (3). Contact CEIE (878-4123) for guidance when any proposed action or project has the potential (or if there is a question as to the potential) to affect a water resource.

6. IDDE Procedures:

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<sup>1</sup> There are two (2) additional comingled outfalls, Outfalls 042 and 046, which are covered under the installation industrial VPDES permit, VPDES Permit No. VA0025216. These outfalls are inspected annually as part of the compliance efforts for that permit.

- A. Maintain an accurate storm sewer system map and information table that shows, at a minimum, the following:
  - (1). Location of all MS4 outfalls;
  - (2). Name and location of all waters receiving discharges from the MS4 outfalls and the associated hydrologic unit code (HUC);
  - (3). A table that includes:
    - (a). The unique identifier;
    - (b). Estimated MS4 acreage served;
    - (c). Name of the receiving surface water and indication of whether it is listed as impaired in the *Virginia 2010 303(d)/305(b) Water Quality Assessment Integrated Report*; and,
    - (d). The name of any applicable TMDL(s).
- B. Within 48 months of permit coverage (by 1 July 2017), complete an updated storm sewer system map and information table and shall submit as an appendix to the MS4 Annual Report.
- C. Prohibit non-storm water discharges into the storm water drainage system through locally enforced environmental policies in compliance with JBLE-Eustis storm water permits VAR040035 and VA0025216.
- D. Promote, publicize, and otherwise facilitate public reporting of illicit discharges into or from the storm sewer system, including conducting inspections to incidents that have been reported, as well as follow-up inspections to ensure that corrective measures have been implemented effectively; and,
- E. Include all procedures developed for implementation of the IDDE program with the MS4 Program Plan.

## **APPENDIX C**

### **ILLICIT DISCHARGE DETECTION AND ELIMINATION FORMS**

This appendix includes the following forms to be used to detect, document, and eliminate illicit discharges:

- Illicit Discharge Tracking Record
- Dry-Weather Outfall Screening Form
- Dry-Weather Outfall Screening Record
- AF Form 332

Electronic versions of these forms are provided on the CD-ROM accompanying this manual



**DRY-WEATHER OUTFALL SCREENING FORM  
JBLE-EUSTIS**



**Section 1: Background Data**

Installation:	Outfall ID:
Today's Date:	Time (Military):
Form Completed by:	
Rainfall (in.):	Last 24 hours: Last 48 hours:
Camera ID:	Photo IDs:
Land Use in Drainage Area (Check all that apply):	
<input type="checkbox"/> Industrial <span style="margin-left: 200px;"><input type="checkbox"/> Open Space</span> <input type="checkbox"/> Training <span style="margin-left: 100px;"><input type="checkbox"/> Institutional (e.g., school, hospital)</span> <input type="checkbox"/> Residential <span style="margin-left: 100px;">Other: _____</span> <input type="checkbox"/> Commercial	

**Section 2: Outfall Description**

STRUCTURE TYPE	MATERIAL	SHAPE		DIMENSIONS (INCHES)	SUBMERGED
<input type="checkbox"/> Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other: _____	<b>Geometry:</b> <input type="checkbox"/> Circular <input type="checkbox"/> Elliptical <input type="checkbox"/> Box <input type="checkbox"/> Other: _____	<b>Number of Barrels:</b> <input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Triple <input type="checkbox"/> Other: _____	Diameter/Dimensions: _____	In water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully  With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<b>Flow Present?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, Skip to Section 5</i>				
<b>Flow Description (if present)</b>	<input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial				

**Section 3: Estimated Discharge Rate**

FIELD DATA FOR FLOWING OUTFALLS					
PARAMETER	RESULT		UNIT	EQUIPMENT	
<input type="checkbox"/> Flow Method #1	Volume		quart	Bottle	
	Time to fill		sec	Stop watch	
<input type="checkbox"/> Flow Method #2	Measured length		ft	Tape measure	
	Time of travel		sec	Stop watch	
	Flow depth		in	Tape measure	
	Flow width	_____ " surface _____ " bottom		in	Tape measure
	Velocity		fps	N/A (calculated)	
	Area		ft <sup>2</sup>	N/A (calculated)	
Estimated Discharge Rate <sup>1</sup>			gpm	N/A (calculated)	

<sup>1</sup> See IDDE Procedures Manual Section 3 for formulas.

**DRY-WEATHER OUTFALL SCREENING FORM  
JBLE-EUSTIS**



**Section 4: Physical Indicators for Flowing Outfalls**

INDICATOR	DESCRIPTION	RELATIVE SEVERITY INDEX (0-3)			
Odor	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/Sour <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other: _____	<input type="checkbox"/> 0 - None	<input type="checkbox"/> 1 - Faint; origin not obvious	<input type="checkbox"/> 2 - Easily detected	<input type="checkbox"/> 3 - Noticeable from a distance
Color	<input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other: _____	<input type="checkbox"/> 0 - Clear	<input type="checkbox"/> 1 - Faint colors in sample bottle	<input type="checkbox"/> 2 - Clearly visible in sample bottle	<input type="checkbox"/> 3 - Clearly visible in outfall flow
Clarity	See severity index	<input type="checkbox"/> 0 - Clear	<input type="checkbox"/> 1 - Slight cloudiness	<input type="checkbox"/> 2 - Cloudy	<input type="checkbox"/> 3 - Opaque
Floatables <sup>1</sup> (Does not include trash)	<input type="checkbox"/> Sewage (e.g., toilet paper) <input type="checkbox"/> Suds <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other: _____	<input type="checkbox"/> 0 - None	<input type="checkbox"/> 1 - Few/slight; origin not obvious	<input type="checkbox"/> 2 - Some; indications of origin (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 - Some; origin clear (e.g., obvious oil sheen, suds or floating sanitary materials)

<sup>1</sup> See IDDE Procedure Manual for guidance on determining the severity of the floatables.

**Section 5: Physical Indicators for both Flowing and Non-Flowing Outfalls**

Are physical indicators that are not related to flow present?     Yes     No    (If no, skip to Section 6)      Photographs of physical indicators taken?     Yes     No

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking, or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion <input type="checkbox"/> Other: _____	
Deposits/Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other: _____	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor Pool Quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other: _____	
Pipe Benthic Growth (Organic slime)	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other: _____	

**Section 6: Overall Preliminary Illicit Discharge Rating**

- |  |  |
|--|--|
| <input type="checkbox"/> <b>Unlikely:</b> Non-flowing outfalls with no indicators in Section 5.                            | <input type="checkbox"/> <b>Suspect:</b> Flowing outfalls with one or more high severity indicators in Section 4.      |
| <input type="checkbox"/> <b>Potential:</b> Flowing or non-flowing outfalls with one or more indicators in Sections 4 or 5. | <input type="checkbox"/> <b>Obvious:</b> Illicit discharge can be confirmed without sampling or upstream investigation |

**Section 7: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?**







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**BASE CIVIL ENGINEER WORK REQUEST**  
(See Reverse for Instructions)

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average .3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project 0704-0188, Washington DC 20503. Please DO NOT RETURN your form to either of these addresses. Send your completed form to HQ AFESC/DEMG.

**SECTION I - TO BE COMPLETED BY REQUESTER**

1. FROM (Organization)		2. OFFICE SYMBOL	3. DATE OF REQUEST		4. WORK REQUEST NO. (For BCE Use)	
5. NAME AND PHONE NO. OF REQUESTER			6. REQUIRED COMPLETION DATE		7. BUILDING, FACILITY OR STREET ADDRESS WHERE WORK IS TO BE ACCOMPLISHED	
8. DESCRIPTION OF WORK TO BE ACCOMPLISHED (Include Sketch or Plan, when appropriate)						
9. BRIEF JUSTIFICATION FOR WORK TO BE ACCOMPLISHED (Not required for maintenance and repair)						
10. DONATED RESOURCES						
	FUNDS		LABOR		CONTRACT BY REQUESTER	NONE
11. NAME OF REQUESTER			12. GRADE OF REQUESTER		13. SIGNATURE OF REQUESTER (See Reverse of Form)	
14. COORDINATION						

**SECTION II - FOR BASE CIVIL ENGINEER USE**

15. WORK ORDER (Place an "X" in the appropriate box.)						
	IN-SERVICE		SELF-HELP		CONTRACT	SABER
16. DIRECT SCHEDULED WORK (Place an "X" in the appropriate box.)						
	EMERGENCY		URGENT		ROUTINE	SELF-HELP M/C
17. SELF-HELP (Place an "X" in the appropriate box.)						
BRIEFING REQUIRED			ADEQUATE COORDINATION			INSPECTION REQUIRED

**SECTION III - COMPLETE ONLY IF WORK IS TO BE ACCOMPLISHED BY WORK ORDER**

18. WORK CLASS		19. PRIORITY		20. ESTIMATED HOURS		21. ESTIMATED FUNDED COST	22. ESTIMATED TOTAL COST
	23. THERE IS NO NEED FOR AN ENVIRONMENTAL ASSESSMENT (AFR 19-2)		24. A WRITTEN ASSESSMENT IS BEING/HAS BEEN PROCESSED		25. APPROVED		26. DISAPPROVED
27. REMARKS							

**SECTION IV - APPROVING AUTHORITY**

28. NAME AND GRADE (Please Type or Print)			29. SIGNATURE			30. DATE	
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