U.S. Army Garrison Alaska

Fort Wainwright, Alaska

2022 Storm Water Annual Report

MS4 Permit Year 6

APDES Permit No. AKS055859

2/15/2023

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Acronyms and Abbreviations

ADEC	Alaska Department of Environmental Conservation
APDES	Alaska Pollutant Discharge Elimination System
BMP	best management practice
Brice Environmental	Brice Environmental Services Corporation
CGP	Construction General Permit
COR	Contracting Officer's Representative
CWA	Clean Water Act
DMR	discharge monitoring report
DPW	Directorate of Public Works
ENV	Environmental Division
FAI	Fairbanks International Airport
FWA	Fort Wainwright, Alaska
GC	Garrison Commander
GI	Green Infrastructure
GIS	geographic information system
HAZMAT	hazardous material
HHW	household hazardous waste
HW/HMMP	Hazardous Waste/Hazardous Materials Management Plan
ICE	Interactive Customer Evaluation
IDDE	Illicit Discharge Detection and Elimination
LID	Low Impact Development
NO_3	nitrate
MCM	minimum control measure
MPP	Monitoring Program Plan

MS4	Municipal Separate Storm Sewer System
MSGP	Multi-Sector General Permit
MRSI	MILCON Requirements, Standardization, and Integration
NHC	North Haven Communities LLC
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PAO	Public Affairs Office
POL	petroleum, oils, and lubricants
QAPP	Quality Assurance Project Plan
RPMP	Real Property Master Plan
SPCC	Spill Prevention, Control, and Countermeasures
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWSC	Storm Water Steering Committee
TP	total phosphorus
TSS	total suspended solids
UA	urbanized area
USACE	U.S. Army Corps of Engineers
USAG	United States Army Garrison
WPM	Water Program Manager
WQS	water quality standards

1.0 INTRODUCTION

United States Army Garrison (USAG) Alaska encompasses two installations: Fort Greely and Fort Wainwright. Fort Wainwright, Alaska (FWA) continues to represent the physical location of the installation located east of Fairbanks, Alaska and USAG Alaska is the organization tasked with maintaining the entire garrison and environmental compliance on the cantonments and training areas.

This document has been prepared to satisfy the annual reporting requirements for the FWA Municipal Separate Storm Sewer System (MS4) Permit, permit number AKS055859. The U.S. Environmental Protection Agency's (EPA) requirement to obtain a National Pollutant Discharge Elimination System (NPDES) MS4 Permit under the Clean Water Act (CWA) applies to owners and operators of municipal storm sewer systems within urbanized areas (UA) as defined by the U.S. Bureau of the Census. In Alaska, the EPA has allowed the Alaska Department of Environmental Conservation (ADEC) to issue and oversee permits through the Alaska Pollutant Discharge Elimination System (APDES). USAG Alaska was issued the MS4 Permit on September 26, 2016 with an effective implementation date of November 1, 2016 and expiration date of October 31, 2021.

On May 3, 2021 USAG Alaska submitted a new permit application to APDES; however, because of time, resource, and other constraints, but through no fault of the permittee, a new permit was not able to be issued before the expiration date. On October 29, 2021 ADEC notified the Army that the previous permit has been administratively continued and will remain fully effective and enforceable until a new permit is issued. At the time of writing this report, a new permit has not been issued by ADEC.

Site Description

Fort Wainwright is a 916,000-acre military reservation in central Alaska, located east of Fairbanks in the Chena River drainage basin. The post location is shown on Figure 1, including the Real Property Master Plan (RPMP) Planning Area of the main cantonment. The reservation consists of the cantonment area and contiguous and non-contiguous training and maneuver areas. Facilities regulated under the MSGP are located in the cantonment area, which includes Ladd Army Airfield. The Chena River discharges into the Tanana River west of Fairbanks city limits. The Tanana River, a major tributary of the Yukon River, flows south of Fairbanks city limits.

The cantonment is centrally located and comprised of troop and family housing, administrative facilities, industrial and industrial-like facilities, and community facilities. The topography of the cantonment area is generally flat, except for Birch Hill along the northern end of the installation boundary. Much of the cantonment area is unpaved, except for roads, housing areas, parking areas, and airfield runways and ramps.

USAG Alaska also holds an APDES Multi-Sector General Permit (MSGP) and Storm Water Pollution Prevention Plan (SWPPP) for industrial storm water discharges and the activities. Within or adjacent to the UA boundary there is an airfield (Sector S), warehousing and vehicle maintenance (Sector P), and an inactive gravel pit (Sector J). Outside of the UA, USAG Alaska operates a landfill (Sector L).

Regarding MS4 Permit coverage, only a portion of the FWA installation is included within the UA. This portion consists mainly of the developed portion of FWA known as the cantonment area (Figure 2). Activities located outside of the UA where storm water has potential to run-on to an MS4 are treated as subject to MS4 requirements. Receiving waters of the FWA MS4 are identified as the Chena River and wetlands. In previous years, the gravel pit known as Badger Pit was identified as a receiving water, but in 2020 the U.S. Army Corps of Engineers (USACE) Regulatory District issued a jurisdictional determination that this gravel pit is not a water of the U.S. The two outfalls leading to the gravel pit are no longer included as compliance points in the MS4 or MSGP storm water plans.

More information about the USAG Alaska storm water permits can be found on the Fort Wainwright Storm Water website at the following web address:

https://home.army.mil/alaska/index.php/fort-wainwright/storm-water

Responsible Parties

The USAG Alaska Garrison Commander (GC) has ultimate responsibility for all regulatory compliance at Fort Wainwright and specific tasks for maintaining the installation are delegated through the chain of command. The Directorate of Public Works (DPW) encompasses the divisions that oversee environment, contracts, engineering, housing, and others required to maintain the installation. The Directorate of Public Works (DPW), Environmental Division (ENV) Chief has been delegated authority by the Garrison Commander to sign and submit documents related to the FWA MS4 Permit and MSGP, assisted by the DPW ENV Compliance Branch Chief. The DPW ENV Water Program Manager (referred to in this document as WPM) has direct

responsibility for day-to-day compliance in coordinating and implementing the MS4 Permit tasks at FWA.

The Garrison Commander is typically stationed at Fort Wainwright for 2 to 3 years and command authority is delegated directly from Headquarters, Department of the Army (HQDA). Under Army Regulation 200-1, Environmental Protection and Enhancement, the GC will apply for, sign, arrange funding, and maintain all applicable Federal, State, and local environmental permits.

In June 2022, the 1st Stryker Brigade Combat Team, 25th Infantry Division at USAG Alaska was reflagged as the 1st Brigade Combat Team, 11th Airborne Division.

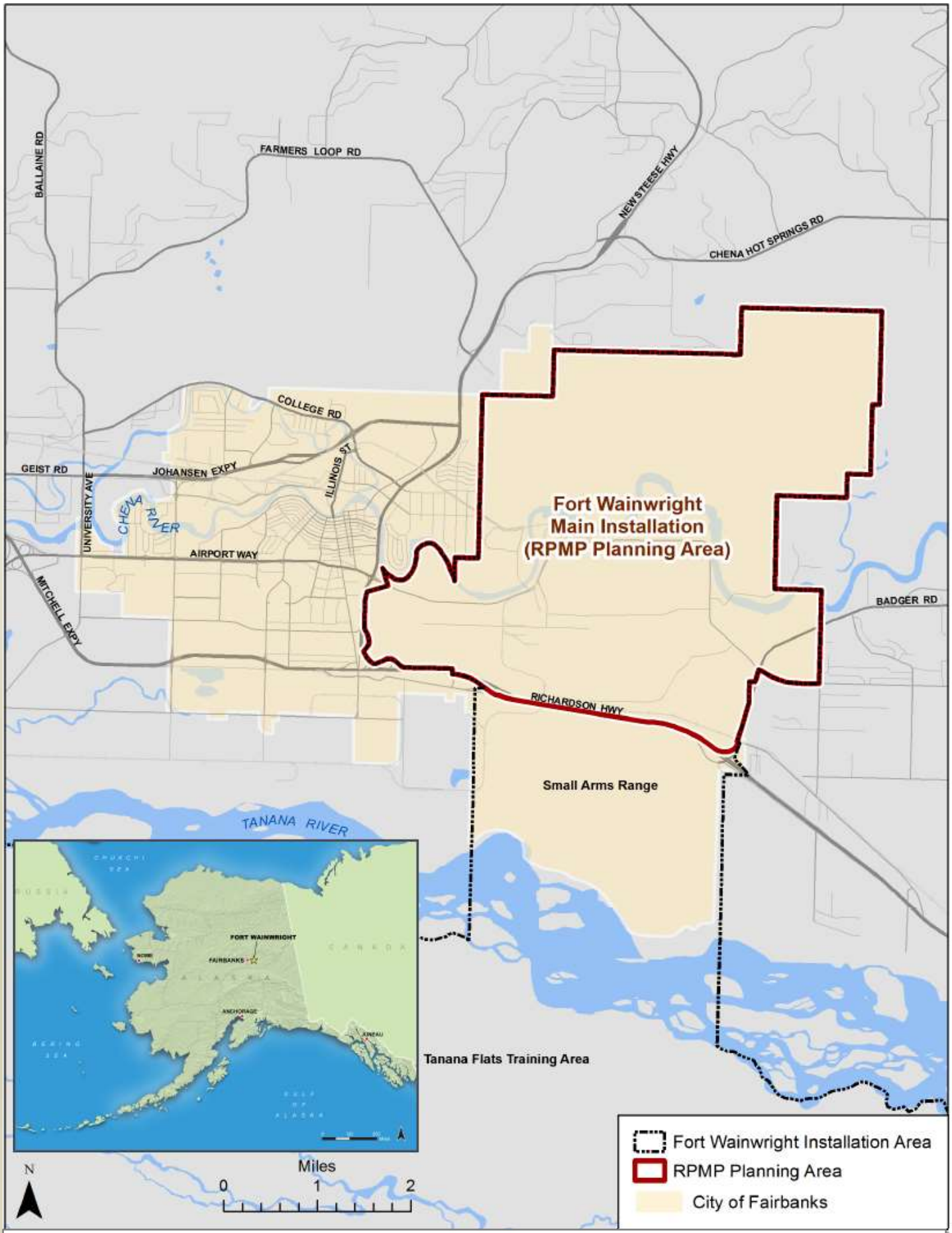

Figure 1. Fort Wainwright Location Map

Map prepared for the Fort Wainwright Master Plan

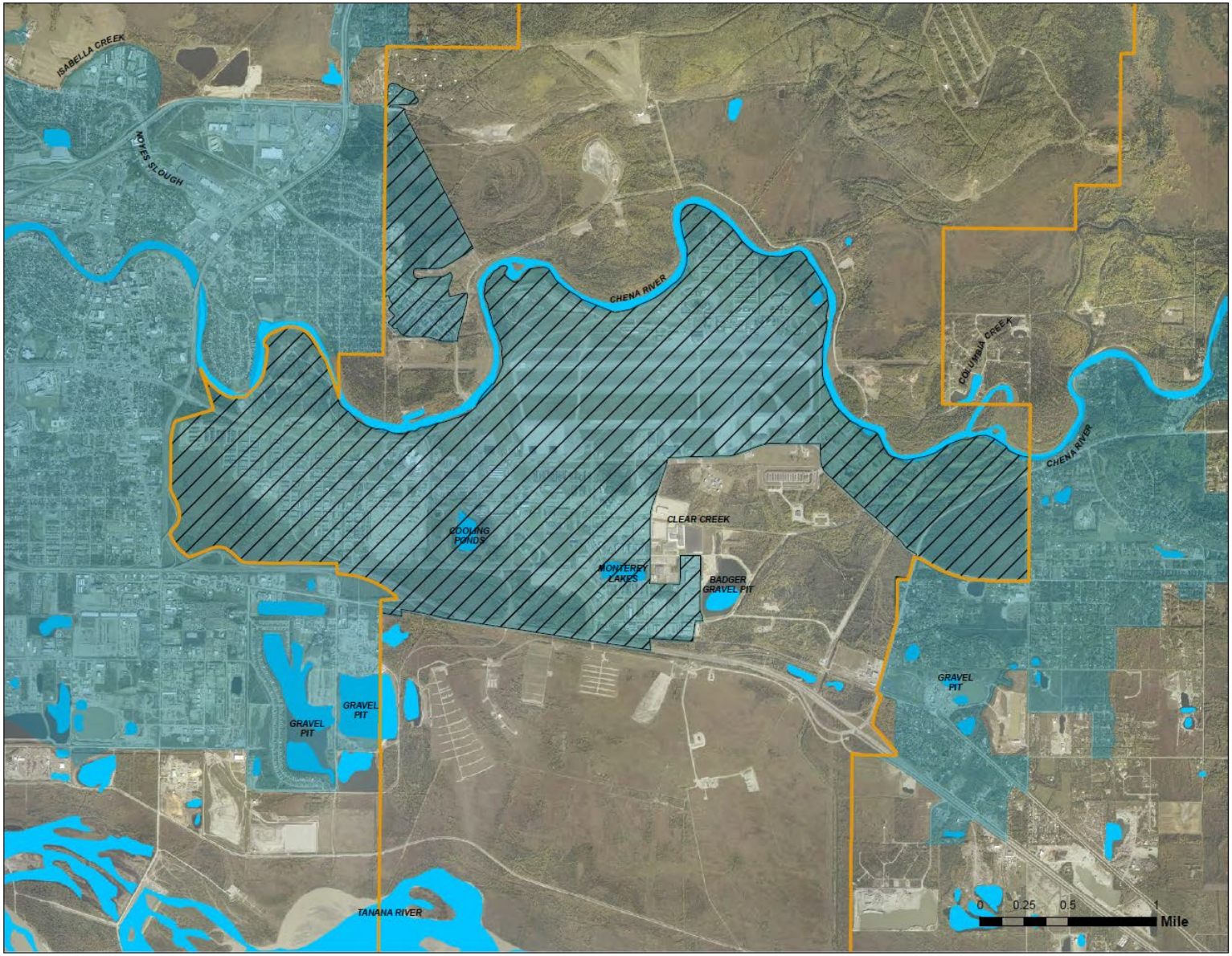

Figure 2.

The Urbanized Area at Fort Wainwright

Legend

- Installation Boundary
- Census Bureau Urbanized Area
- Urbanized Area within Installation Boundary

Map prepared for the Fort Wainwright Storm Water Management Plan

2.0 STORM WATER ANNUAL REPORTING

USAG Alaska must submit a Summary Annual Report and a Detailed Annual Report to fulfill the reporting requirements set forth in Part 4.3 of the MS4 Permit. The Summary Annual Report is included as Appendix A and the Detailed Annual Report comprises the main body of this document.

Annual Reports are due 15 February, following each respective Permit year and this report accounts for the 2022 calendar year.

The purpose of the Annual Report is to:

1. Evaluate compliance with Permit conditions,
2. Gauge the appropriateness of best management practices (BMPs),
3. Track BMP implementation towards satisfying measureable goals identified in the Storm Water Management Plan (SWMP), and
4. Determine the overall effectiveness of the SWMP.

Minimum Control Measures

This document is structured according to the Minimum Control Measures (MCMs) listed in section 3 of the FWA MS4 Permit:

- MCM 1: Public Education and Outreach
- MCM 2: Public Involvement and Participation
- MCM 3: Illicit Discharge Detection and Elimination
- MCM 4: Construction Site Storm Water Runoff Control
- MCM 5: Post-Construction Storm Water Management in New Development and Redevelopment
- MCM 6: Pollution Prevention and Good Housekeeping

The final section of this Annual Report is the Program Evaluation.

Detailed Annual Report Requirements

The following items must be included in, or with, the Annual Report, at a minimum:

- An updated SWMP document as required in Part 2.0 of the MS4 Permit.

- A description of the effectiveness of each SWMP program component or activity (see Part 4.2 of the MS4 Permit).
- Planned activities and changes for the next reporting period for each SWMP program component or activity.
- An evaluation of compliance with the requirements of the MS4 Permit, the appropriateness of identified BMPs, and progress toward achieving identified measurable goals of the SWMP for each MCM.
- Results of any information collected and analyzed during the previous twelve-month reporting period, including monitoring data used to assess the success of the program at reducing the discharge of pollutants to the maximum extent practicable.
- A summary of the activities USAG Alaska plans to undertake during the next reporting cycle (including an implementation schedule) for each MCM.
- Proposed changes and completed changes to the SWMP, including changes to any BMPs or any identified measurable goals for any MCMs.
- Description and schedule for implementation of additional BMPs that may be necessary, based on monitoring results, to ensure compliance with applicable water quality standards (WQS).
- Notice if USAG Alaska is relying on another entity to satisfy some of the permit obligations, if applicable.

The following sections of this report address applicable provisions in the above list. Copies of all Annual Reports must be available to the public through the municipal library system, a USAG Alaska-maintained website, or other easily accessible location.

The permittee must track the annual number of inspections, official enforcement actions, and types of public education activities and outcomes, as stipulated by the respective program requirement. Information summarizing these activities during the previous reporting period must be included in the Annual Report.

3.0 MINIMUM CONTROL MEASURES

Information required under each MCM in the Permit is presented in the following subsections.

3.1 MCM 1: Public Education and Outreach

The permittee must document the following information related to public education and outreach in the Annual Report required in Part 4.3:

1. Describe the public education program and outreach activities accomplished during the previous calendar year, including at least one copy of all educational material distributed;
2. Describe the methods and frequency of disseminating information;
3. Describe the target audiences and pollutants/sources that are addressed by the program and how they were selected;
4. Estimate the number of people reached by the program over the previous twelve month period;
5. List the measurable goals for the public education and outreach program over the next twelve month period;
6. List the dates by which the measureable goals will be achieved; and
7. Identify the person(s) responsible for implementing and coordinating the education activities.

The existing public education program has continued, primarily through the FWA Facebook page, the Alaska Post newspaper, and distribution of printed materials.

The USAG Alaska Garrison Commander has ultimate responsibility for all regulatory compliance at Fort Wainwright, but for brevity that role is not noted in the tables below and for each MCM. The WPM is responsible for overseeing the day-to-day requirements of the MS4 Permit and MSGP, assisted by the environmental contractor, Brice Environmental. The garrison's Public Affairs Office (PAO) is instrumental in communication and publishing of DPW ENV's educational materials. Two other key organizations to storm water compliance are the DPW Housing office and their privatized housing partner, North Haven Communities, LLC (NHC).

The following tables summarize the different public education and outreach efforts done in 2022.

Activity	Newspaper Article
Description	The Scoop on Pet Waste in Our Waterways
Method	Alaska Post newspaper
Frequency	Once on February 3, 2023

Target Audience	Soldiers, Families, Civilians, Veterans, and contractors; People in the community; Those interested in Fort Wainwright activities
Pollutants/ Sources	pet waste
Reason for selection	Provide education about the impacts of pet waste on water pollution, as well as actions people can take to protect water quality.
People reached	Approximately 10,800 copies of the Alaska Post were distributed in Fort Wainwright and other military installations, North Pole, and Fairbanks. Data is not available on the number of people reading the digital version.
Discussion	Although this article was written and planned to be published in December 2022, staff travel around the holidays delayed final review and publication until early February.

Activity	Facebook Article
Description	Garbage Truck Fire
Method	Facebook
Frequency	Once on June 28, 2022
Target Audience	Fort Wainwright residents
Pollutants/ Sources	Household hazardous waste
Reason for selection	Response to a fire started in a garbage collection truck due to improperly disposed materials
People reached	Total number of interactions not available, but the post had 467 reactions and 98 shares

Activity	Prevent Sewer Backups Magnets
Description	5.5-inch by 4.25-inch magnet with kitchen conversions and information warning against items that cause sewer backups when flushed or washed down drains at homes.
Method	Through NHC prior to move-in in welcome bags and during inspections
Frequency	As each family moves onto Post, re-stock NHC as requested Reviewed annually
Target Audience	Family housing tenants
Pollutants/ Sources	Sewer backups from wet wipes, fats/oil/grease, medications, and other garbage
Reason for selection	To educate residents on negative effects of putting grease and garbage into the sewer. Kitchen conversions included to make the handout more useful and likely to be kept.
People reached	1,800 were provided to NHC in March 2022.
Discussion	Clogs are a routine problem for maintenance personnel within facility plumbing and for Doyon Utilities at sewer lift stations and other infrastructure. An error in the conversion chart was identified, so future magnets produced will be updated to the correct ratio of tablespoons to ¾ cup and 1 cup.

Activity	Pet Waste flyer
Description	2-sided flyer with roll of pet waste bags
Method	Through NHC in Welcome Bags
Frequency	As each family moves onto Post, re-stock NHC as requested Reviewed annually
Target Audience	Family housing tenants

Pollutants/ Sources	Pet waste
Reason for selection	To educate residents on negative effects of pet waste and encouraging them to clean it up.
People reached	No new flyers were provided to NHC in 2022 as they had an adequate stock from late 2021.

Activity	Environmental Handbook
Description	76-page booklet describing each Environmental Program, including Pollution Prevention and Storm Water, Permits
Method	Booklet handed out at Newcomer's Briefing, Orientation for New Employees, military Environmental Compliance Officer training, at motor pools, in the DPW ENV office, and at events that DPW ENV hosts or participates in
Frequency	Once per month, to each attendee
Target Audience	Incoming Soldiers and Civilians
Pollutants/ Sources	HAZMAT (POL, paint, solvents, fuel), oil, antifreeze, detergents, pesticides, pet waste, grass clippings, spills
Reason for selection	To educate newcomers to Fort Wainwright on the Garrison's environmental policies and resources, and how to find more information. Reviewed both materials and determined to be accurate and useful.
People reached	Estimated 700

Activity	Small Construction Sites Brochure
Description	Best Management Practices for Small Construction Sites on Fort Wainwright trifold brochure

Method	Digital, with DPW ENV Work Order Reviews
Frequency	As needed
Target Audience	Incoming Soldiers and Civilians
Pollutants/ Sources	HAZMAT (POL, paint, solvents, fuel), oil, antifreeze, detergents, pesticides, pet waste, grass clippings, spills,
Reason for selection	Remind engineers, contractors, and other construction management people about the storm water requirements on Fort Wainwright and highlight some typical construction best management practices.
People reached	Project teams for 20 different construction projects.
Discussion	The need to distribute the Small Construction Sites Brochure varies by the number of unique small soil-disturbing projects in any given year and the location/site conditions.

Activity	Storm Water signage
Description	"Be the Solution to Storm Water Pollution" posters are displayed in 3 kiosks along walking/bike trails. 6 new interpretive signs were produced for installation along the Chena River trail by the DPW ENV Natural Resources Program.
Method	Sign display
Frequency	Once, reviewed annually
Target Audience	Soldiers, Families, Civilians, and other people recreating or passing by bike path.
Pollutants/ Sources	Pet waste, illegal dumpling, spills, trash from hauling or dumpsters, hazardous waste, litter, car washing, camping, vehicle maintenance
Reason for selection	These pollutants and sources have been observed on Fort Wainwright in the past. People who see the sign can see how to

	manage these activities properly and have some recognition of the Storm Water Program.
People reached	Estimated greater than 100 people
Discussion	"Be the Solution to Storm Water Pollution" signage was re-reviewed in 2022 and determined to be accurate and useful, however, one sign needs to be re-hung in the summer as it is slumping down inside the kiosk. Although there is now a 24-hour spill reporting number and the posters show the old phone number, this number is still active and acceptable to use. The subjects of interpretive signs are: Landscape Architects (beaver), Chena River, Fish Species, Hydrology, Invasive Species, and What is a Wetland.

Activity	HHW Brochure
Description	Trifold brochure
Method	Through NHC in Welcome Bags
Frequency	As each family moves onto Post, re-stock NHC as requested
Target Audience	Family housing tenants
Pollutants/ Sources	Household hazardous waste (HHW)
Reason for selection	To educate residents on proper disposal/reuse of consumer products and hazardous materials used in residential setting.
People reached	1,000 brochures were provided to NHC in 2022.
Discussion	This brochure was reviewed in 2022 and DPW ENV determined that it was still accurate and useful.

Activity	Healthy Yards & Gardens Brochure
Description	Trifold brochure
Method	Through NHC in Welcome Bags
Frequency	As each family moves onto Post, re-stock NHC as requested
Target Audience	Family housing tenants
Pollutants/ Sources	Fertilizer, nutrients, invasive species, pesticides/herbicides, pet waste, spills of petroleum and other pollutants, household hazardous waste
Reason for selection	Prior education materials did not have specific discussion about appropriate yard care techniques for protecting water quality, including proper timing and use of fertilizers as specified in MS4 Permit section 3.1.1.2.
People reached	1,000 brochures were provided to NHC to distribute to new residents
Discussion	The Healthy Yards & Gardens brochure was developed with cooperation from the DPW ENV Natural Resources program and with feedback from the Storm Water Steering Committee.

Activity	Website
Description	Updating Storm Water Website
Method	Online, Fort Wainwright Facebook Page
Frequency	Updated March 2022
Target Audience	General public, Soldiers, Families, Civilians, Veterans, contractors
Pollutants/ Sources	All described in activities above.
Reason for selection	The Storm Water website was updated in March 2022 with the 2021 MS4 Annual Report and Healthy Yards & Gardens handout.

People reached	Number of site visitors is not available at this time

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for Public Education and Outreach in 2023, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Newspaper Article
Description	Publish an article in the local newspaper regarding storm water pollution prevention
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager will submit the article to Fort Wainwright Public Affairs Office for publication and dissemination in the newspaper and on the FWA Facebook page.

Measureable Goal	Review, Update, or Produce Educational Materials
Description	Review current handouts (brochures and flyers) Review handouts for coverage of the MCM 3 requirement that education materials must include hazards related to illicit discharges and improper waste disposal to inform users of the storm water conveyance system and the general public.
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager will review educational materials that are currently distributed.

Measureable Goal	Review, Update, or Produce Housing Tenant Materials
Description	Review NHC booklet and handouts provided to NHC for residents
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager and environmental contractor

Measureable Goal	Review, Update, or Produce Educational Materials
Description	Produce and install signage describing storm water pollution prevention and pet waste management for sensitive areas and recreational parks. Install Natural Resources signage.
Dates to achieve goals	30 June 2023
Person(s) responsible	DPW ENV Water Program Manager and environmental contractor will produce and install temporary signage. DPW ENV Natural Resource program will install the permanent signage.

Measureable Goal	Update Storm Water Website
Description	Update Storm Water Website semi-annually with newest annual reports and outreach materials.
Dates to achieve goals	31 March 2023 31 December 2023
Person(s) responsible	DPW ENV Water Program Manager will work with the Fort Wainwright Public Affairs Office to make changes to the Storm Water Website, located at the web address below: https://home.army.mil/alaska/index.php/fort-wainwright/storm-water

3.2 MCM 2: Public Involvement and Participation

The permittee must document the following information related to public involvement/participation in the Annual Report required in Part 4.3:

1. Describe the activities and target audiences for public involvement that the program accomplished for the preceding twelve-month period, including any monitoring and/or survey results, number of storm drains stenciled, etc.;
2. Describe the procedure(s) for receiving and reviewing public comments;
3. Describe the measurable goals for the public involvement/participation program over the next twelve-month period;
4. List the dates by which the permittee will accomplish each of the upcoming measurable goals; and
5. Identify the person(s) responsible for implementing and coordinating the public involvement/participation activities.

Activities and Target Audiences

Each MCM 2 Activity performed in 2022, target audience, results (if applicable) and other information, is presented in the following tables.

Activity	**Website**
Description	USAG Alaska hosts a website where relevant information and storm water documents are available. The SWMP and all Annual Reports are posted to the website.
Target Audience	Soldiers, Families, Civilians, and contractors; People in the community; Those interested in Fort Wainwright activities
Results	Number of site visitors is not available at this time
Discussion	DPW ENV Water Program Manager will work with the Fort Wainwright PAO to make changes to the Storm Water Website, located at the web address below: https://home.army.mil/alaska/index.php/fort-wainwright/storm-water

Activity	**Community Trash Pickup Day**
Description	USAG Alaska hosts an annual Spring Clean Up trash pickup day. Military units and installation organizations are each assigned a "piece of the rock" to sweep for litter. NHC interfaces with residents to ensure housing areas are cleaned up.
Target Audience	Soldiers and Families; Civilians and contractors
Results	Trash pickup was performed over the week of 23-26 May 2022.

Activity	**Storm Drain Stenciling**
Description	Decals featuring the Sergeant Salmon mascot and the words, "NO DUMPING DRAINS TO CHENA RIVER" to be placed on or next to each storm drain inlet.
Target Audience	Soldiers, Families, Civilians, Veterans, and contractors
Results	Not all of the remaining storm drain inlets were marked during 2022.
Discussion	The target of marking 100% of storm drain inlets was not met. This activity will be continued in 2023.

Activity	**Storm Water Steering Committee Meetings**
Description	4 Quarterly Storm Water Steering Committee Meetings
Target Audience	Soldiers, Families, Civilians, Veterans, and contractors; People in the community; ADEC staff
Results	4 Storm Water Steering Committee Meetings were held, one each quarter of 2022: March 30, June 23, September 21, and November 30.
Discussion	Although many members of the public are invited to participate in the Storm Water Steering Committee Meetings, the attendees in 2022 were all attending in an official capacity representing their respective organizations.

Receiving and reviewing public comments

Public input may be received through the following avenues as applicable:

- Through NHC staff or Maintenance hotline (907) 353-7000
- By Interactive Customer Evaluation (ICE) comment to DPW or PAO
- By attending or calling into the Storm Water Steering Committee meetings
- By calling the contact information on the SWPPP posting at the site
- By contacting the DPW Customer Service number at (907) 361-7069
- Via phone or e-mail directly to DPW ENV

Comments will be reviewed by the DPW ENV WPM and shared with project management staff. Comments to North Haven Communities projects will first go through NHC's internal management procedures and if necessary, will be brought to DPW's attention during the regular water quality meetings or via e-mail.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for public involvement and participation in 2023, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Post SWMP and Annual Reports online
Description	The SWMP and all Annual Reports must be made available to the public by posting them on an FWA-maintained website.
Dates to achieve goals	31 March 2023
Person(s) responsible	DPW ENV Water Program Manager and PAO, who oversees the USAG Alaska website.

Measureable Goal	Community Trash Pickup Day
Description	Annual event to involve the community in picking up litter and other pollutants. Typically, this is performed in the spring once snow has melted and exposed trash, spills, and other concerns.

Dates to achieve goals	30 June 2023
Person(s) responsible	The USAG Alaska Garrison Commander will issue an Operations Order to perform the community cleanup event in spring 2023. Organizations will participate in the cleanup during these dates.

Measureable Goal	Storm Water Steering Committee Meetings
Description	Host 4 quarterly Storm Water Steering Committee (SWSC) Meetings and invite SWSC members, the public, and ADEC to participate.
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager and environmental contractor, Storm Water Steering Committee Members

Measureable Goal	Storm Drain Stenciling
Description	Complete storm drain stenciling that was not performed in 2022.
Dates to achieve goals	31 October 2023
Person(s) responsible	DPW ENV Water Program Manager and environmental contractor

Other Projects in Development

The DPW ENV is developing plans for a nature walk event and ongoing nature notebook program aimed at encouraging Soldiers, families, and other interested community members in observing and interacting with the environment. These activities may begin in summer 2023.

A pilot community garden is slated to be constructed by NHC after the idea was presented during the Winter 2021 Storm Water Steering Committee Meeting. NHC leadership has purchased materials to construct raised garden beds near the NHC Community Center, Building 4268 Neely Road. The community garden will be an

opportunity to provide education and hopefully recruit residents to participate in other environmental programs. DPW ENV is looking at the feasibility and interest in establishing community garden space for soldiers living in barracks outside of the NHC footprint.

3.3 MCM 3: Illicit Discharge Detection and Elimination

The permittee must document the following information related to illicit discharge detection and elimination (IDDE) in the Annual Report to ADEC:

- A description of the criteria used to prioritize investigations in areas suspected of having illicit discharges (e.g., targeting older areas of the FWA, areas of high public complaints, areas of high recreational or environmental value such as parks, golf courses, and drinking water sources);
- A description of procedures used to locate and remove illicit discharges, including detection methods;
- A summary of all dry weather testing conducted to date, and of permittee activity to remove any illicit discharge(s) identified;
- A copy of the established ordinance or other regulatory mechanisms used to prohibit illicit discharges into the MS4. If the permittee has yet to develop this local requirement, describe the plan and schedule for doing so and progress towards implementation;
- A description of the enforcement policy and jurisdiction. The policy must include procedures for coordination with adjacent municipalities and/or federal or state regulatory agencies to address situations when investigations indicate the illicit discharge originates outside the permittee's jurisdiction. Where a permittee lacks legal authority to establish enforceable rules or if an illicit discharger fails to comply with procedures or policies established by the permittee, the policy must include procedures for notifying DEC for assistance in enforcement of this permit provision;
- A description of the methods used over the previous 12-month period to inform the public and/or train employees, contractors, and tenants about illicit discharges and the improper disposal of waste;
- A list of measureable goals for the illicit discharge detection and elimination program for the next 12 month period, and the dates by which the permittee will achieve each of the measurable goals; and
- The name and title of the person(s) responsible for coordination and implementation of the illicit discharge detection and elimination program.

USAG Alaska's IDDE program is provided in the Illicit Discharge Detection and Elimination Program Manual. The IDDE Program Manual has previously been submitted to ADEC and is on file at the DPW ENV office.

This document can be provided upon request to the DPW ENV Water Program Manager by phone or e-mail at: (907)361-9686, (907)361-6220 or ida.r.petersen.civ@army.mil. Much of the following information is discussed further in the IDDE Program Manual.

Investigation Criteria

The IDDE Program Manual describes the procedures for determining and prioritizing illegal discharges as follows. The determination of the occurrence of an illicit discharge by the DPW ENV Water Program Manager or other train staff, based on an observed illicit discharge by an individual or the public, such as during their daily activities, or a follow-up from an incident reported earlier.

A severity index classification of 'potential', 'suspect,' or obvious' is assigned for each. If more than one outfall screening produces one of these classifications, investigation efforts shall be prioritized as:

- Obvious – Illicit discharge(s) suspected of being sanitary sewer discharges or significantly contaminated, such as vehicle washing outdoors, would have this classification
- Suspect – Numerous physical indicators result in this classification including staining of the ground, odor, or stressed vegetation.
- Potential – These discharges should not be expected to be hazardous to human health and safety such as trash.

In 2022, most illicit discharges investigated were result of construction violations and spills, including sewer overflows, and subsequently identified as "obvious". Typically, the DPW ENV Spills Program investigates and tracks illicit discharges that are also ADEC-reportable spills of oil and hazardous substances. The DPW ENV Water Program generally investigates and tracks illicit discharges that deal with other pollutants such as sediment, litter, sewage, color, or odor.

Procedures to Locate and Remove Illicit Discharges

Location of illicit discharges relies on reporting of spills and illegal activities, outfall monitoring, MSGP monitoring and MS4 monitoring. A detailed description of the procedures is provided in the IDDE Program Manual. In addition, the DPW ENV 24-hour spill hotline is also used to report illicit discharges. The phone number is (907) 482-7267. Reports may still be made to the DPW ENV office at (907) 361-9686 or (907) 361-6220.

The primary goal of investigating suspected illicit discharge is to prevent or reduce the impact of pollutants on waters of the U.S. and the MS4. Procedures for investigation include onsite investigation, documentation, information-gathering through interviews, continued monitoring, identification of responsible parties, and coordination with other parties involved. Further detail of these procedures is provided in the IDDE Program Manual. Once found, the illicit discharge source should be eliminated and efforts documented on the IDDE Tracking Form or IDDE Tracking Spreadsheet.

Dry Weather Testing

No dry weather tests were performed in 2022, although monitoring was performed. All illicit discharges were identified and removed without the need for testing. Because most of the MS4 on FWA consists of open drainages and underground storm water lines are not widespread, identification of the source has been straightforward and is found before pollution is able to reach an underground storm water line or waters of the U.S.

Activity to Remove Illicit Discharges

One Illicit Discharge was recorded on the Fort Wainwright Spill Log. This spill was a result of a garbage truck catching fire. The contaminated material was cleaned up by using absorbent material, digging out snow, and collecting garbage. A Facebook post about preventing this type of disaster quickly followed the incident.

One Illicit Discharge was a result of a transformer mineral oil spill reported to ADEC Spill Reporting and cleaned up by Doyon Utilities using absorbent material. Four Illicit Discharges were recorded from sewer backups that were reported to ADEC Division of Water, Compliance and Enforcement Team, and cleaned up by Doyon Utilities by spreading lime and fixing the clogs and leaks.

One Illicit Discharge was recorded as a result of notification from USACE project staff and a resulting MS4 Construction Site Inspection. The construction site access/exit points and soil stockpiles were not stabilized and there were no control measures in the nearby open drainage. Project staff installed straw wattles in the drainage ditch and the soil stockpiles were removed, so this illicit discharge was eliminated.

Copy of Ordinance and Enforcement Policy

Garrison Policy #35 was updated in 2021 with more information about compliance and enforcement regarding illicit discharges. The policy letter discusses the MS4 Permit, SWMP program goals, and the requirements of the six MCMs. All individuals, units,

directorates, activities, organizations, partners, and tenants at USAG FWA are required to comply with FWA MS4 Permit provisions and the installation SWMP. These parties include military, contractors, consultants and all other personnel living, working, or conducting other authorized activities, on the installation. The letter explains actions that may be taken with individuals or entities that fail to comply with the SWMP. The policy also includes enforcement procedures and actions, including enforcement escalation procedures for recalcitrant or repeat offenders.

Training

As part of the MSGP SWPPP and MS4 Operations and Maintenance (O&M) Program, employees working with pollutants and activities with potential to discharge pollutants receive an annual storm water training. Foremen and supervisors receive this training as well as materials to train other employees. An effort is made to train both a primary and alternate storm water supervisor.

The DPW ENV Hazardous Waste Program leads a monthly initial and refresher training for hazardous material (HAZMAT) and hazardous waste handling and disposal. People responsible for each hazardous waste accumulation area are trained at least annually. Staff of the environmental contractor routinely work with Soldiers, Civilians, and contractors who operate accumulation areas on the installation.

Storm Sewer System Map

The storm sewer system map “Flow Direction Mapbook” has not been updated, but the ArcGIS map used by DPW personnel, which includes locations and characteristics of all storm drainages, has been updated to include new construction. A new Stormwater Utility Map of the Fort Wainwright Main Post was produced in June 2022, which shows the locations of MS4 features without flow direction markers. When an additional storm water drainage study has been performed or when a new model is created, the flow direction mapbook will be revised.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for IDDE, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Continue to Implement the IDDE Program
Description	DPW ENV will ensure that IDDE tracking forms or spill log is updated. DPW ENV and contractor staff will investigate any illicit discharge within 15 days of its detection, and take action to eliminate the source of the discharge within 45 days of its detection.
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor, DPW ENV Spills Program Manager

Measureable Goal	Wet Weather Outfall Inspections
Description	Perform a wet weather inspection at all outfalls at least once during the non-snowy season. (co-listed with MCM 6 measureable goals)
Dates to achieve goals	31 October 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Dry Weather Outfall Inspections
Description	Perform a dry weather inspection at all outfalls at least once during the non-snowy season.
Dates to achieve goals	31 October 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Dry Weather Testing
Description	If dry weather flows are observed during inspections or otherwise discovered, the DPW ENV Water Program will perform field screening of the surface water. Field screening may include, but is not exclusive to, measuring flow rate, temperature, pH, dissolved oxygen, conductivity, off-gas of volatiles, and/or turbidity.
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Update Maps
Description	As infrastructure on FWA changes, DPW ENV will incorporate new drainages and other features will be incorporated into the storm water Geographic Information Systems (GIS) database.
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV WPM, DPW and USACE project managers and planners, GIS contractor

Measureable Goal	Outreach Materials
Description	MCM 3 mandates the Permittee inform users of the storm water conveyance system and the general public of hazards related to illicit discharges and improper waste disposal. These topics are included in MCM 1 and will continue to be part of public education and outreach.
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV WPM, with assistance from DPW ENV Hazardous Waste Program, environmental contractor, PAO, and NHC

3.4 MCM 4: Construction Site Storm Water Runoff Control

The Annual Report must document the following SWMP information related to construction site runoff control:

- A copy of the established ordinance or other regulatory mechanism used to require erosion, sediment and waste controls at construction sites. If the permittee has yet to develop the required regulatory mechanism, describe the plan and schedule for doing so;
- A summary of the number of sanctions and enforcement actions taken by the permittee to ensure compliance with the construction site ordinance during the previous 12-month period. To the extent allowable under the legal authority of the permittee, sanctions may include both monetary and non-monetary penalties;
- A copy of the written requirements for appropriate erosion, sediment and waste control BMPs at construction sites;
- A summary of the number of site plan reviews conducted;
- A description of the procedures for receipt and consideration of information submitted by the public;
- A summary of the number of sites inspected during the previous 12-month period, including a description of the site inspection procedures, how sites will be prioritized for inspection, and when and how often a site will be inspected;
- A list of measurable goals for the construction site runoff control program, including dates by which the permittee will achieve each of the measurable goals; and
- The name and title of the person(s) responsible for coordination and implementation of the construction site runoff control program.

Copy of Ordinance and Enforcement Policy

Garrison Policy #35 has been updated and remains in place. The policy letter, discusses the MS4 Permit, SWMP program goals, and the requirements of the six MCMs. All individuals, units, directorates, activities, organizations, partners, and tenants at USAG FWA are required to comply with FWA MS4 Permit provisions and the installation SWMP. These parties include military, contractors, consultants and all other personnel living, working, or conducting other authorized activities, on the installation. The letter explains actions that may be taken with individuals or entities that fail to comply with the SWMP. The policy also includes enforcement procedures

and actions, including enforcement escalation procedures for recalcitrant or repeat offenders.

The MS4 Construction Site Inspection Form specifies the following enforcement actions in the order they will be followed if the violation is not corrected:

- Re-inspection required
- Meeting with Contracting Officer's Representative (COR) and Contractor to resolve issues
- Up-Chain for Command Action
- Disclosure of violation(s) to federal/state agencies

Construction Enforcement Summary

Number of Sanctions/Enforcement Actions: 1 construction project site was identified for re-inspection based on the routine inspection findings, which were resolved by the second inspection. This site was also the source of an illicit discharge of sediment into the MS4 and was eventually resolved.

Written Requirements for BMPs

The SWMP identifies the Army Low Impact Development (LID) Technical User Guide as the major reference for permanent BMPs in construction projects.

For temporary BMPs, FWA provides contract language that the contractor must select and maintain the erosion and sediment controls such that water quality standards are not violated as a result of construction activities. United Facilities Guide Specifications (UFGS) 01 57 19 Temporary Environmental Controls is the guide the DoD uses to specify construction in contracts.

The ESCP Template requires the following control measures as applicable:

- Mark clearing lines
- Control flow rate (such as on-site detention)
- Install sediment controls (such as fiber rolls [wattles])
- Stabilize soils (such as compaction, mulching or seeding)
- Protect drain inlets
- Stabilize channels and outlets
- Control pollutants (good housekeeping)
- Control de-watering
- Maintain BMPs (such as wattles, concrete clean-outs, sweeper trucks or personnel, spill pads, drip pans, and/or water truck)

- Manage the project (phase activity, maintain ESCP, training, minimize soil disturbance, good housekeeping, monitoring/inspection)
- Site-specific BMPs (curb flow line protection wattles, catch basin protection, manhole protection, entry control point and signage, spill kit, water truck and sweeper)

The brochure titled USAG Alaska Small Construction Sites Best Management Practices for Storm Water Pollution Prevention describes the following BMPs:

- Erosion Control
    - Marking site limits
    - Construction phasing
    - Maintain natural buffers
    - Manage run-on and run-off
    - Cover and contain exposed soil
- Sediment Control
    - Protect storm drain inlets (fiber rolls and silt fence)
    - Protect water bodies and wetlands
    - Entrance/exit control
    - Site Inspections
- Good Housekeeping
    - Waste handling
    - Hazardous materials handling/storage
    - Spill prevention
- Common Structural Control Measures & Supplies
    - Plastic liner
    - Fiber mats/fabric
    - Orange snow fence
    - Paint, flagging, and cones
    - Fiber rolls or wattles
    - Silt fence and stakes
    - Sandbags
- Final Stabilization
    - Re-growth of vegetation
    - Gravel
    - Pavement or other durable material

Other construction site environmental requirements are further addressed by the DPW ENV Hazardous Waste Program, Solid Waste Program, and Spills Program.

Site Plan Reviews

Nine storm water plans were reviewed in 2022. Below a summary of these plans is broken down by whether the project is in the UA of the FWA MS4 and whether the project required a Storm Water Pollution Prevention Plans (SWPPP) with APDES Alaska Construction General Permit (CGP) coverage, or if an Erosion and Sediment Control Plan was prepared for the FWA MS4 Program to review:

(9) SWPPPs inside the MS4

(2) ESCPs inside or immediately adjacent to the MS4

Comments identified for storm water plans in 2022 frequently pertained to site map, locations of MS4 features, and illicit discharge/spill response and reporting procedures.

Procedure for Public Input

Public input may be received through the following avenues as applicable:

- Through NHC staff or Maintenance hotline (907) 353-7000
- By Interactive Customer Evaluation (ICE) comment to DPW or PAO
- By attending or calling into the Storm Water Steering Committee meetings
- By calling the contact information on the SWPPP posting at the site
- By contacting the DPW Customer Service number at (907) 361-7069
- Via phone or e-mail directly to DPW ENV

Comments will be reviewed by the DPW ENV WPM and shared with project management staff. Comments to North Haven Communities projects first go through NHC's internal management procedures and if necessary, are brought to DPW's attention during the regular water quality meetings or via e-mail.

Site Inspections

Inspection procedures: DPW ENV does two kinds of inspections at construction sites: site visits and MS4 Construction Site Inspection. For general environmental concerns and informal storm water inspections, the DPW ENV Water Program Manager, or a trained individual designated by the DPW ENV Water Program Manager, does a site visit to a construction site. Site visits are often performed for a specific environmental

concern, such as contaminated soil or groundwater, hazardous materials and waste handling, dust control, or storm water concerns.

To ensure the MS4 and CGP requirements are met, DPW ENV performs a formal MS4 Construction Site Inspection. The inspection form for the latter procedure includes fields for project information, common corrective actions, inspection type, enforcement actions, and inspector signature. The inspector reviews the hardcopy SWPPP or ESCP and checks that maps and self-inspections are current. The inspector walks around the entire site, typically with the Storm Water Supervisor or other project representative, and looks for BMPs, run-on, and runoff. Concerns for structural BMPs include proper placement, construction, condition, and BMP choice. The inspector is encouraged to discuss storm water observations with the project personnel and

Other agencies that are stakeholders in the project perform site inspections. Stakeholders that own or lease property, or are responsible for construction management like the USACE, Doyon Utilities LLC (DU), and the Bureau of Land Management (BLM), have their own internal procedures and generally include DPW ENV on findings from their inspections.

Prioritization: The top priority for MS4 Construction Site Inspections is to inspect construction sites with CGP coverage where storm water is discharged to the Fort Wainwright MS4 or waters of the U.S. and located within the MS4 urbanized area boundary. The next priority is construction sites that are less than 1 acre in size, but disturb 5,000 square feet of soil, and are located within/discharge storm water to the MS4. Thirdly, DPW ENV may inspect construction sites located outside of the MS4 and do not discharge to the MS4, that have obtained coverage under the CGP.

When/How often inspections performed: Typically inspections are performed once per calendar year. During a routine investigation, if there are the inspector may flag the site for re-inspection. A site may also receive an inspection before construction begins (NOI Inspection), at the end of final stabilization (NOT Inspection), or as a result of a complaint to DPW ENV.

Number of sites inspected: In 2022 there were a total of 9 active construction sites discharging to the MS4 with greater than 1 acre of soil disturbance and covered under the CGP. Nine of these construction sites were inspected by DPW ENV following the MS4 Construction Site Inspection procedure. Two project sites were inspected twice by formal inspection because of the number of findings from the initial inspection. The re-inspections found that all necessary corrective actions were taken. One project site

was not inspected as the Notice of Termination was submitted before DPW ENV staff were able to arrange a formal inspection.

During the formal inspections, 18 items were identified and corrected by project staff. The most common types of corrective actions needed in 2022 were proper BMP installation and maintenance, SWPPP signage and recordkeeping, and construction exits/track-out.

One project site that performed dewatering near a contaminated site self-reported the accidental overflow of untreated water from a dewatering treatment system to the ground. The project staff included DPW Environmental Division on communication to ADEC about the spillage incidents.

In 2022 there were a total of 2 active construction sites with 5,000 square feet to 1 acre of soil disturbance that were required to write and follow an ESCP. One repaving project was completed before it was formally inspected, but DPW ENV staff performed a site visit. One project was only waiting for final stabilization and not being actively worked, so DPW ENV staff performed a site visit in lieu of a formal inspection.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for construction site storm water runoff control in 2022, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Construction Storm Water Training
Description	Although the permit requirements have already been met for this MCM, DPW ENV believes an additional training would be helpful for changing contractors and staff. The 2018 Annual Report identified a goal for DPW ENV staff and environmental contractor to update the MS4 Construction training and conduct another training session for the FWA construction/design/engineering audience related to the construction ordinance and BMP requirements referenced in Parts 3.4.3 and 3.4.4 of the MS4 Permit. Although training slides were reviewed with individuals, a larger training was not completed in 2022 and will remain as an open goal for

	2023. The audience invited will include DPW Engineering Division, Master Planning Division, Business Operations Division, and Utilities and Privatization staff, USACE staff, Lend Lease (development for NHC) personnel, Doyon Utilities personnel, and 11th Airborne Division personnel. This training will occur sometime during the 2023 calendar year when the appropriate audience is available.
Dates to achieve goals	30 June 2023
Person(s) responsible	DPW ENV Water Program Manager

Measureable Goal	Storm Water Plan Inspections
Description	The permittee shall review all SWPPPs and ESCPs for construction sites in their jurisdiction for appropriate erosion/sediment/waste control at least once per year.
Dates to achieve goals	31 December 2023
Person(s) responsible	The DPW ENV Water Program Manager, trained DPW ENV personnel, and/or environmental contractors will review the plans and submit comments to the project management.

Measureable Goal	Construction Site Inspections
Description	The permittee shall inspect all construction sites in their jurisdiction for appropriate erosion/sediment/waste control at least once per year.
Dates to achieve goals	31 December 2023
Person(s) responsible	The DPW ENV Water Program Manager, trained DPW ENV personnel, and/or environmental contractors inspect each construction site (located within or impacting the MS4 boundary) once per year.

3.5 MCM 5: Post-Construction Storm Water Management in New Development and Redevelopment

The Annual Report must document the following SWMP information related to post-construction storm water management:

- A copy of the BMP design manual containing structural and non-structural BMPs that will be used to manage post-construction runoff from new development and redevelopment projects within the MS4. List any specific priority areas for this program;
- An explanation of the design and performance features of the chosen BMPs that are intended to minimize water quality impacts;
- A copy of the established ordinance or other regulatory mechanism used to address post-construction runoff control. If the permittee has yet to develop the required regulatory mechanism, describe the plan and schedule for doing so;
- A description of how long-term operation and maintenance of the selected BMPs will be ensured, including the organizations responsible and their expected operation and maintenance schedule;
- A description of the plans to inform and educate developers and the public about appropriate project designs that minimize water quality impacts;
- A list of measurable goals for the post-construction runoff control program, including dates by which the permittee will achieve each of the measurable goals; and
- The name and/or title of the person(s) responsible for coordination and implementation of the post-construction storm water management program.

Post-Construction Design Manual

The Army Low Impact Development (LID) Technical User Guide is the primary reference for LID and green infrastructure (GI) concerns in Army projects. The document, implementing guidance, training, and other resources are available online from the MILCON Requirements, Standardization, and Integration (MRSI) website at the following web address:

https://mrsi.erdc.dren.mil/sustain/cx/lid/

This BMPs listed in this document were compared with four other resources: the Public Works Technical Bulletin 200-1-121 USACE Storm Water BMPs for LID, the LID BMP Toolbox from USACE, the Alaska Storm Water Guide, and the Fairbanks Green Infrastructure Manual.

The Army LID Technical User Guide includes climatic considerations for most structural BMPs, and conditions at Fort Wainwright align most with the Continental (microthermal) climate.

On Fort Wainwright, projects conducted by NHC, DU, and medical facilities constructed using DoD Medical funding are not required to follow the Army LID Technical User Guide. However, these organizations are encouraged to use LID design techniques listed in the guide.

Specific priority areas

In the past, FWA projects had not been considered for storm water drainage effects on nearby facilities, which resulted in issues like seasonal flooding. Storm water impacts are being discussed early in the planning and design phase for new development.

Three construction projects were reviewed in 2022 to evaluate storm water management design and assess impacts to water quality and receiving stream protection.

Written Strategy for GI/LID BMPs

The most current implementation guidance is provided in the memorandum titled "2017 Implementing Guidance, Army Stormwater Management Using Low Impact Development," referred to in this document as the "LID Implementing Guidance." According to the LID Implementing Guidance, project planning includes the following steps: site selection, site planning, runoff assessment, LID BMP strategy, cost estimating and reporting. The LID BMP strategy determined by DPW Master Planning is presented at the planning charrette phase, then integrated into the project design. Changes to the LID BMP strategy are communicated between DPW Master Planning and the project engineers and managers. Inspections during construction, addition to the real property inventory, an LID BMP Owner's Manual for operation and maintenance, example contract language, and other considerations are discussed/included in the memo.

The following tables summarize the BMPs provided in the Army LID Technical User Guide. Pollutants specifically evaluated for each BMP include total suspended solids (TSS), total phosphorus (TP), nitrate (NO_3), and temperature. These pollutants are included in the table below if the BMP is considered to have medium or high effectiveness. Some BMPs may have low effectiveness for mitigating these pollutants even if not listed. Refer to the Army LID Technical User Guide and LID Implementing Guidance for more detailed discussion.

BMP	Minimize Total Disturbed Area
Description	Minimizing the total disturbed area for a construction project is a site planning strategy that is designed to reduce the amount of disturbance to the site from the building footprint and orientation itself, including roads and parking lots, to ground disturbed during construction.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Preserve Natural Flow Pathways and Patterns
Description	Preserving natural flow patterns and pathways during and after construction is a site planning strategy to maintain existing drainage patterns, areas of sheet flow, areas of the site that have depression storage, existing grades, ditches, and channels as much as possible.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low cost and low-to-medium maintenance with low-to-medium winter performance.
Pollutants/ Sources	TSS, TP

BMP	Protect Riparian Buffer Areas
Description	Riparian buffers are vegetated areas, natural or re-established, along water courses that protect the integrity of the habitat and hydrologic functions of that water course. Protection of riparian buffers can be determined during the project planning phase.
Type	Non-structural

Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Protect Sensitive Areas
Description	Natural areas with high habitat value and function, water supply areas, areas of special geologic concern, culturally significant areas, and natural areas with high storm water management functions, such as sandy soils, must be identified and protected from pollutants and erosive flows associated with runoff from developed areas. Other areas include, but are not limited to, riparian buffers, wetlands, hydric soils, floodplains, steep slopes, woodlands, and other valuable habitat, such as critical habitat and rare, threatened and endangered species habitat.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Cluster Development
Description	Cluster development refers to the concentrated development of buildings and residential lots on a portion of a larger site through avoidance of sensitive areas and reducing the lot size or reconfiguring the lot footprint.
Type	Non-structural
Features	Acceptable for residential applications.

	Generally low cost and low-to-medium maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Minimize Soil Compaction
Description	Minimizing soil compaction is the practice of preventing loss of soil structure and function through avoiding and minimizing ground disturbance during construction and land use activities. Soil compaction can occur from activities such as stockpiling, heavy equipment traffic, high pedestrian use, and even heavy rainfalls
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with low-to-medium winter performance.
Pollutants/ Sources	TSS, TP, temperature

BMP	Reduce Impervious Surfaces
Description	Reducing impervious surfaces includes minimizing the area of streets, parking lots, and driveways as well as the surface area of the building roof. Disconnecting large areas of imperviousness or contiguous developed areas with parcels of perviousness is also a consideration when reducing impervious surfaces.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with high winter performance. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Medium effectiveness for climate at FWA.

Pollutants/ Sources	TSS, temperature

BMP	Site Fingerprinting
Description	Site fingerprinting is a technique used to minimize site disturbance during construction. The smallest possible disturbance area is delineated and flagged to prevent traffic or materials storage on areas designated for conservation.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low-to-medium maintenance with high winter performance. High effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Bioretention
Description	Bioretention is a flat-bottomed, shallow landscaped depression or basin used to collect and hold storm water runoff; allowing pollutants to settle and filter out as the water infiltrates into the ground or to an underdrain, depending on soil conditions. The various layers in the bioretention area typically include: plants, mulch or ground cover, engineered soil media, and a gravel base layer with a possible underdrain.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally medium cost and medium maintenance with medium winter performance. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Medium effectiveness for climate at FWA.

Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Vegetated Swale
Description	A vegetated swale is a broad, shallow storm water channel that is often used as a pretreatment device for other BMPs or to reduce the timing of and volume of runoff. Vegetated swales are densely planted with a variety of grasses, shrubs, and/or trees designed to slow, filter, and, in some cases, infiltrate storm water runoff from adjacent areas. Includes grass swales, wet swales, and bio-swales.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low-to-medium maintenance with medium winter performance. One advantage is that maintenance of vegetated swales at USAG Alaska is already included in Base Operations activities. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Medium effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Vegetated Filter Strip
Description	A vegetated filter strip is a densely vegetated strip of gently sloping area that receives runoff from an adjacent impervious area as sheet flow.
Type	Structural
Features	Acceptable for residential applications. Generally low-to-medium cost and low-to-medium maintenance with high winter performance. Medium effectiveness for climate at FWA.

Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Permeable Pavements
Description	Permeable pavements are similar to conventional pavements but have pores or voids that allow storm water runoff to filter through the pavement surface into an underlying stone reservoir, where it is temporarily stored then either infiltrated or directed to another BMP or permeable area.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with high winter performance. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Low effectiveness for climate at FWA (not recommended).
Pollutants/ Sources	Function of removing pollutants is dependent on construction techniques and BMPs used in conjunction.

BMP	Rainwater Harvesting
Description	Rainwater harvesting involves the collection and storage of rainwater for future use. Rainwater harvesting applies to collection from rooftops and on a large-scale from other impervious surfaces, such as parking lots. Collected rainwater is stored in tanks, barrels, or cisterns for later use in non-potable applications or irrigation.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and medium maintenance with medium winter performance. At USAG Alaska use of a rain barrel or cistern is

	not recommended unless maintenance is first arranged by contract or agreement. Effective for hydrologic objectives of: peak flow control, volume reduction, and water conservation. High effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Green Roofs
Description	Green roofs (also known as living roofs and eco roofs) consist of a layer of vegetation installed on top of a conventional flat or slightly sloped roof that absorb rainwater in the soil media to be uptaken and transpired by vegetation or discharged to another BMP or storm water system.
Type	Structural
Features	Acceptable for industrial applications. Generally high cost and medium maintenance with medium winter performance. At USAG Alaska, green roofs are typically only used at existing earthen-covered storage facilities. Effective for hydrologic objectives of: peak flow control and water quality improvement.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Infiltration Practices
Description	Infiltration practices are natural or constructed land areas located in permeable soils that capture, store, and infiltrate the volume of storm water runoff into the surrounding soil. Types of infiltration practices include dry wells, infiltration basins, infiltration berms, infiltration trenches, and subsurface infiltration beds.
Type	Structural

Features	Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Acceptable for residential and industrial applications. Cost and maintenance vary by type and generally medium-to-high winter performance. Dry wells are generally discouraged for use at USAG Alaska due to the incidence of historically contaminated of soil and groundwater in various areas.
Pollutants/ Sources	TSS, TP, NO_3 (varies), temperature

BMP	Level Spreaders
Description	A level spreader is an erosion control measure that is designed to mitigate the impact of high velocity storm water surface runoff, and can also serve to increase infiltration and reduce water pollution. Level spreaders are often used in conjunction with other LID BMPs or conventional storm water BMPs.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with medium winter performance. Level spreading devices help to reduce the erosive nature of storm water runoff by uniformly diffusing both high and low flows over a wide area. They can also serve to promote infiltration and improve water quality by evenly distributing flows over a stabilized vegetated surface.
Pollutants/ Sources	While level spreaders themselves do not remove pollutants, by dispersing runoff to a buffer or bioretention cell, pollutants can be effectively removed.

BMP	Constructed Filter
Description	Constructed filters are precast or cast in place structures or excavated areas containing a layer of sand, compost, organic material, peat, or other media that filter and treat storm water runoff.
Type	Structural
Features	Acceptable for industrial applications. Generally medium-to-high cost and high maintenance with medium winter performance. Effective for hydrologic objectives of: peak flow control and water quality improvement. May be used in areas where there is a limited amount of space to treat runoff from impervious areas such as parking lots, walkways, and roofs.
Pollutants/ Sources	TSS, TP, NO_3

BMP	Soil Restoration
Description	Soil restoration is a practice used to deeply till compacted soils and restore their porosity by amending them with compost or other acceptable organic material.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally medium cost and low maintenance with high winter performance. Medium effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Reforestation and Afforestation
Description	Reforestation refers to the reestablishment of forested cover in areas where development has removed forest. Afforestation is the establishment of forests on grasslands or other areas that were previously unforested.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with medium winter performance. Medium effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	Riparian Buffer Restoration
Description	Riparian buffer restoration refers to natural or constructed low-maintenance ecosystems adjacent to surface waterbodies. The riparian vegetation slows and dissipates storm water runoff entering the receiving waterbody by absorbing the energy and volume of the storm water runoff. The riparian vegetation also acts as a filter to remove pollutants from both overland storm water flow and shallow groundwater flow.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with medium winter performance.
Pollutants/ Sources	TSS, TP, NO_3, Temperature

Storm water retention and detention ponds take up valuable space, are not considered LID BMPs and are highly discouraged. Traditional retention and detention ponds do not

provide for maintaining pre-development hydrology, allow for minimal infiltration, and provide minimal water quality benefits.

Copy of Ordinance

Garrison Policy #35 discusses the MS4 Permit, SWMP program goals, and the requirements of the six MCMs. All individuals, units, directorates, activities, organizations, partners, and tenants at USAG FWA are required to comply with FWA MS4 Permit provisions and the installation SWMP. These parties include military, contractors, consultants and all other personnel living, working, or conducting other authorized activities, on the installation.

Long-term operation and maintenance

Currently, inspection and long-term operation and maintenance (O&M) of existing BMPs is included in the contracts for Base Operations and NHC's contractor. Because the majority of structural LID BMPs at Fort Wainwright have low maintenance requirements, such as vegetated swales and vegetated filter strips, regular mowing, trimming, and re-planting activities are typically sufficient.

Future BMPs will be reviewed in a case-by-case basis to determine whether they will be maintained or repaired by routine contract or require a more specific work solution.

Training

Training for Army LID is available online at the following web address:

https://mrsi.erdc.dren.mil/sustain/cx/lid/

Training specific to Fort Wainwright was not conducted in 2022, but will be administered in conjunction with the MS4 Construction training for the FWA construction/design/ engineering audience in 2023. The audience invited will include DPW Engineering Division, Master Planning Division, Business Operations Division, and Utilities and Privatization staff, USACE staff, Lend Lease (development for NHC) personnel, Doyon Utilities personnel, and 11th Airborne Division personnel.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for post-construction storm water management in new development and redevelopment in 2023, the dates to achieve them, and the person(s) responsible for each. As previously noted, the

Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Distribute Design Manual
Description	Continue to ensure that all project design individuals and organizations have access to the LID Implementing Guidance and Army LID Technical User Guide & associated resources
Dates to achieve goals	31 October 2023, ongoing during project planning
Person(s) responsible	DPW Water Program Manager, DPW Master Planner

Measureable Goal	Training
Description	Update the MS4 Construction training and conduct another training session for the FWA construction/design/engineering audience related to MCM 4 and MCM 5 requirements. The audience invited will include DPW Engineering Division, Master Planning Division, Business Operations Division, and Utilities and Privatization staff, USACE staff, Lend Lease (development for NHC) personnel, Doyon Utilities personnel, and 11th Airborne Division personnel.
Dates to achieve goals	30 April 2023
Person(s) responsible	DPW ENV Water Program Manager

3.6 MCM 6: Pollution Prevention and Good Housekeeping

The Annual Report must document the permittee's efforts to prevent or reduce pollutant runoff from the FWA operations through the operation and maintenance program, including:

- A description of the activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants to the MS4;
- A description of the employee training program used to prevent and reduce storm water pollution including the targeted department personnel, frequency of such training, and a copy of training materials;
- A summary description of the controls for reducing or eliminating the discharge of pollutants from areas owned or operated by the permittee, including but not limited to streets, roads, and highways; municipal parking lots; maintenance and storage yards; waste transfer stations; fleet or maintenance shops with outdoor storage areas; salt/sand storage locations; and snow disposal sites operated by the permittee;
- A description of procedures to ensure proper disposal of waste removed from the MS4 and the MS4 operations including dredge spoil, accumulated sediments, floatables, and other debris;
- A description of procedures to ensure that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices;
- A list of all industrial facilities owned or operated by the permittee that discharge to the MS4, including industrial facilities that are subject to the APDES MSGP or individual APDES permits for discharges of storm water associated with industrial activity, and/or facilities identified as part of the inventory required in Part 3.3.1 of this permit. Include the DEC permit tracking number or a copy of the Industrial Notice of Intent form for each facility, as appropriate;
- A list of measurable goals for the pollution prevention and good housekeeping program, including dates by which the permittee will achieve each of the measurable goals; and
- The name and title of the person(s) responsible for coordination and implementation of the pollution prevention and good housekeeping program.

Operations and Maintenance (O&M) Program

The USAG Alaska O&M Program Document discusses the following activities occurring at FWA and the controls to reduce negative impacts to storm water quality:

- Use of sand/gravel and road deicers
- Fleet maintenance and vehicle washing operations
- Street sweeping, cleaning and maintenance
- Grounds/parks, golf course, and open space maintenance operations
- Building maintenance
- Solid waste transfer activities
- Water treatment plant operations
- Storm water system maintenance
- Snow disposal site operations
- Materials storage
- Hazardous materials storage
- Used oil recycling
- Spill control and prevention measures for refueling facilities
- FWA new construction and land disturbances

The O&M Program references the FWA Hazardous Waste/Hazardous Materials Management Plan (HW/HMMP) and the FWA Spill Prevention, Control, and Countermeasure (SPCC) Plan.

The O&M Program Document also outlines the training and inspection procedures for motor pools, maintenance facilities, and universal waste generators, as well as outlining allowable non-storm water discharges.

The following tables describe the activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants to the MS4.

Procedure	Facility Inspections
Description	Annual inspections of facilities that have the potential to negatively impact storm water quality
Type	Inspection
Quantity	Once per year

Audience	DPW ENV Water Program Manager, environmental contractor, MSGP Facility Storm Water Supervisors, MS4 Facility Storm Water Supervisors
References	FWA MSGP, MS4 O&M Program Document
Discussion	The mission of the O&M Program is to prevent or reduce pollutant runoff from FWA operations. The O&M Program requires that facilities that are not inspected under the MSGP SWPPP on a quarterly basis, fall within the FWA MS4 urbanized area, and require some oversight be inspected on an annual basis

Procedure	Historical Spill Site Inspections
Description	Locations where a major spill has occurred within the past three years are inspected
Type	Inspection
Quantity	Once per year
Audience	DPW ENV Water Program, DPW ENV Spills Program, environmental contractor
References	FWA MS4 SWMP, MS4 O&M Program
Discussion	Areas where a major spill has occurred within the past three years need to be inspected on an annual basis. Observations are noted on the O&M Historical Spill Location Inspection Form. The purpose is to ensure that pollutants are not entering water bodies through storm water runoff and that the cause of the historical spill is no longer an issue.

Procedure	Wet-weather Outfall Inspections
Description	Perform a wet weather inspection at all outfalls at least once during the non-snowy season.
Type	Inspection

Quantity	Once per year at each of the outfalls
Audience	DPW ENV Water Program and Environmental Contactor
References	FWA MS4 SWMP, MS4 Monitoring Program Plan
Discussion	The MS4 Permit requirement is to inspect these areas at least annually. This task is done by filling out an inspection form or other written report and taking photographs.

Procedure	Snow Disposal Area Inspections
Description	Inspect areas where snow is stockpiled and observe environmental conditions
Type	Inspection
Quantity	4 times per year
Audience	DPW ENV Water Program Manager and environmental contractor, DPW Base Operations and Base Operations contractor, NHC
References	FWA MS4 SWMP, FWA MSGP
Discussion	Snow stockpiles are inspected by DPW ENV Water Program on a quarterly basis. The MS4 Permit requirement is to inspect these areas at least annually. This task is done by filling out an inspection form or other written report and taking photographs. In the springtime, snow stockpiles are monitored for runoff to ditches, swales, water bodies, or wetlands. The inspection's purpose is to ensure that the snow stockpile areas are not being contaminated, snow is being stored properly, and no issues will arise come the spring melt.

Procedure	Catch Basin Inspections
Description	Annual inspection of storm water inlets
Type	Inspection
Quantity	50% of catch basins each year

Audience	DPW ENV Water Program Manager and environmental contractor, DPW Base Operations and Base Operations contractor
References	MS4 SWMP
Discussion	The inspection's purpose is to ensure that the storm inlets are functioning properly and that they will continue to properly function. There are five types of storm inlets; catch basin, drop inlet, curb inlet, surface linear, and roof drain. Inspections look for presence of water, damage, odor, trash, sediment, and condition of storm inlet. In addition, the MS4 requires that all storm inlets are marked with a stencil or placard. The structural integrity of the storm inlets are assessed by giving them a color rating, Green: No faults, Yellow: Damage to surrounding concrete or grates, Red: Broken frame.

Procedure	Seasonal Surface Water Drainage Preventative Maintenance Program
Description	Observation of storm water during break up and preventative maintenance
Type	Program: inspections and maintenance
Quantity	Inspections scheduled once per year during spring break up Maintenance performed through the summer
Audience	DPW Base Operations and Base Operations contractor
References	Base Operations Contract, FWA SWMP, O&M Program Document
Discussion	Program includes observation of snow melt water for direction of flow, blockage, flow problems, overflow, condition of culverts, drains, and ditches, culvert markers, trash and debris. Problems identified are prioritized for maintenance.

Procedure	Employee Training
Description	Storm Water Annual Training
Type	Regular Training Program

Quantity	Multiple trainings, employees receive once per year
Audience	DPW Base Operations and contractor, NHC Maintenance and landscaping, Pest Management staff, MSGP Storm Water Supervisors
References	MS4 SWMP, MSGP SWPPP
Discussion	At this point, only storm water supervisors or a limited number of individuals from each facility or organization receive the annual training.

Procedure	Soil and Waste Management
Description	Oversight of waste disposal and soil/sediment management
Type	Procedure/policy
Quantity	Not applicable
Audience	Waste generators
References	Installation Hazardous Waste/Hazardous Materials Management Plan, project-specific Environmental Protection Plans
Discussion	The garrison's waste disposal is managed by the DPW ENV Solid Waste and Hazardous Waste Programs. Most solid waste, including municipal trash, is disposed of at the Fairbanks North Star Borough Landfill. The landfill located on Post, outside of the UA and MS4 jurisdiction, is now used solely for asbestos-containing material and fly ash. Hazardous waste and universal waste is carefully tracked and disposed of by an environmental contractor under the supervision of the Hazardous Waste Program Manager. For the foreseeable future, soil from the installation is not permitted to be disposed of or used off the installation due to an agreement with the EPA and ADEC Contaminated Sites program. Staff from DPW ENV is fundamentally involved in management of soils and dredge material.

Procedure	Flood Management

Description	Buildings sited within or partially within the 100-year floodplain must follow Department of Defense (DoD) policy for construction in flood plains. For any project in or adjacent to the flood plain, applicable permits must be obtained from the Fairbanks North Star Borough (FNSB) Flood Plain Program.
Type	Procedure/policy
Quantity	Each project
Audience	DPW ENV Water Program, DPW ENV Natural Resources, training area managers, project managers, designers, and contractors
References	FNSB Flood Plain Program UFC 1-200-01 DoD Building Code and UFC 3-201-01 Civil Engineering
Discussion	Buildings sited within or partially within the 100-year floodplain must follow Department of Defense (DoD) policy for construction in flood plains. In some cases a waiver must be obtained from Army environmental leadership to construct in the special flood hazard area. Projects involving bank restoration or other flood management concerns are flagged for further environmental consideration. Applicable permits must be obtained from the FNSB Flood Plain Program. Where there is question of applicability, DPW ENV requests a decision from the FNSB Flood Plain Program.

Street and Storm Drain Cleaning Study

The MS4 Permit requires USAG Alaska to complete a study of the effectiveness of current street cleaning operations, storm drain cleaning operations, and other FWA activities with potential for storm water impacts. This study must also examine the existing practices for the disposal of waste removed from the MS4 and the MS4 operations. The Storm Drain and Street Cleaning Operations document in Appendix G summarizes the information that has been collected and what data will be collected in the future.

Industrial Facilities

Currently, two MSGP permits exist at Fort Wainwright. The US Army Garrison Fort Wainwright tracking number is AKR06AC73. Permit authorization under the 2020 MSGP was granted by ADEC effective July 2, 2021.

The Fort Wainwright Central Heat and Power Plant (CHPP) tracking number is AKR06AE33. This facility is owned and managed by DU. The CHPP facility has been sloped to minimize the outflow of storm water from the facility footprint. A relatively small amount of storm water is discharged from the north vehicle entrance and eventually into the MS4 drainage ditch along Neely Road.

The facilities included in the 2021 MSGP SWPPP are presented in the following table.

List of FWA Industrial Facilities:

Industrial Sector	Building number	Description	Activity with Potential to Pollute Storm Water							
			Fueling/ De-fueling	Above Ground Liquid Storage Tanks	Vehicle, Aircraft, & Equipment Maintenance	Vehicle, Aircraft, & Equipment Washing	Loading/ Unloading Materials	Industrial Waste Management	Outdoor Storage	Salt Storage
L	1191	Directorate of Public Works (DPW) Landfill	X	X	X		X	X		
P	1500	BLM Maintenance Facility & Fuel Pump	X		X		X	X	X	
S	1510	BLM Bulk Fuel Issue and HM/HW Management Storage	X	X			X	X	X	
P	1544	BLM Fire Cache Warehouse			X	X	X	X	X	
S	- -	BLM Fire Retardant Storage and Issue	X	X	X	X	X	X	X	
S	1557	Hangar 1						X		
S	1565	Aviation Fueling and Fuel Storage	X				X	X	X	
S	2077 (east)	Hangar 8	X		X	X	X	X	X	
S	2077 (west)	Hangar 7	X		X	X	X	X	X	
S	2081	Aviation Re-fuel Facility	X	X				X		
S	2088	Hangar 6	X		X	X	X	X	X	
P	2116	Alert Holding Area (AHA)					X			
S	2120	Fueling/De-fueling Island at AHA	X	X						
S	2132	Hangar 5	X		X	X	X	X	X	
P	2295 (north & south)	Vehicle/Equipment Maintenance Facility	X		X	X	X	X	X	
P	2400	Railhead Operations	X	X		X	X		X	

Industrial Sector	Building number	Description	Activity with Potential to Pollute Storm Water							
			Fueling/ De-fueling	Above Ground Liquid Storage Tanks	Vehicle, Aircraft, & Equipment Maintenance	Vehicle, Aircraft, & Equipment Washing	Loading/ Unloading Materials	Industrial Waste Management	Outdoor Storage	Salt Storage
P	2297	Brigade Motor Pool			X	X	X	X	X	
S	3007	Hangar 4	X		X	X	X	X	X	
S	3009	Unmanned Aircraft Systems (UAS) Hangar	X		X		X	X	X	
S	3015	DPW Contractor Maintenance	X		X	X	X	X	X	X
P	3030	Logistics Readiness Center					X		X	
P	3380	Stryker Wash Facility				X		X		
P	3425	Vehicle/Equipment Maintenance Facility			X	X	X	X	X	
P	3479 (South)	Light Maintenance Facility			X		X			
P	3480	Maintenance Facility			X	X	X	X	X	
P	3485	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3487	Warehouse					X		X	
P	3489	HW Consolidation Facility					X	X	X	
P	3490	DOL Installation Maintenance Division			X	X	X	X	X	
P	3492 (north & south)	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3494 (north & south)	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3496	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3498	Consolidated Brigade Motor Pool		X	X	X	X	X	X	
P	5008 & 5010	Brigade Warehouse		X			X		X	

Non-MSGP facilities chosen to be incorporated in O&M Program are included in the O&M Program document and shown in the following table.

List of Non-Industrial Facilities with Potential Storm Water Impacts

Building Number	Description	Activity with Potential to Pollute Storm Water									In MS4
		Fueling/De-fueling	Above Ground Liquid Storage Tanks	Vehicle and Equipment Maintenance	Vehicle and Equipment Washing	Loading/ Unloading Materials	Hazardous Waste Management	Universal Waste Management	Outdoor Storage	Salt Storage	
1053	Northern Warfare Training Center			X		X	X	X	X		Yes
1185	Birch Hill Ski Area	X	X	X		X	X	X	X		No
2095, 2096	Chena Bend Golf Course Maintenance	X	X	X	X	X	X	X	X		Yes
3018	DPW Contractor Shops					X	X	X	X	X	Yes
3026	Pest Management Shop				X	X	X	X	X		Yes
3030	Logistics Readiness Center (Inspected under MSGP)					X	X	X	X		Yes
3467	Vehicle / Equipment Maintenance Facility			X	X	X	X	X	X		Yes
3470	Vehicle / Equipment Maintenance Facility			X	X	X	X	X	X		Yes
3484	Defense Fuel Supply Point (Bulk Fuel Issue)	X	X			X	X				Yes
3562	Quick Lane Maintenance Shop			X		X	X	X	X		Yes

Building Number	Description	Activity with Potential to Pollute Storm Water									In MS4
		Fueling/De-fueling	Above Ground Liquid Storage Tanks	Vehicle and Equipment Maintenance	Vehicle and Equipment Washing	Loading/Unloading Materials	Hazardous Waste Management	Universal Waste Management	Outdoor Storage	Salt Storage	
3730	Automotive Skills Center			X	X	X	X	X	X		Yes
4050	MWR Outdoor Recreation			X	X	X	X	X	X		Yes
4058	AAFES Express Fueling Station	X				X		X	X		Yes
5109	Fort Wainwright Range Control	X	X	X		X	X	X	X	?	No

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for O&M in 2022, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Wet Weather Outfall Inspection
Description	Perform a wet weather inspection at all outfalls at least once during the non-snowy season. (co-listed with MCM 6 measureable goals)
Dates to achieve goals	31 October 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Snow Disposal Area Inspections
Description	Perform an inspection at all snow disposal areas at least once per year. Typically, snow disposal areas are inspected during spring breakup to monitor meltwater and during the summer as they melt.

Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Catch Basin Inspections
Description	Inspect 50% of catch basins each year.
Dates to achieve goals	31 October 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Street & Storm Drain Cleaning Study
Description	USAG Alaska will continue to collect data as part of the study of the effectiveness of current street cleaning operations, storm drain cleaning operations, and other storm water impacts.
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor, with assistance from DPW ENV Natural Resources and DPW Base Operations

Measureable Goal	Training
Description	FWA must continue to update and conduct training for appropriate FWA personnel related to optimum maintenance practices for the protection of water quality
Dates to achieve goals	31 December 2023
Person(s) responsible	DPW ENV Water Program Manager

4.0 MONITORING, EVALUATION, REPORTING, AND RECORDKEEPING REQUIREMENTS

The MS4 Permit requires USAG Alaska to discuss measures that will be implemented over the next 12-month period to achieve compliance with permit provisions. Most of these requirements and associated measures are specific to MCMs and are discussed in Section 2.0 of this report. This section discusses additional requirements that are not specific to the six MCMs, and therefore, were not previously discussed in this report.

4.1 Monitoring Program Plan

Part 4.1.1 of the MS4 Permit requires a comprehensive Monitoring Program Plan (MPP) and Quality Assurance Project Plan (QAPP). A description of this plan must be included in the SWMP document. The Monitoring Program Plan must be designed to accomplish the following objectives:

- Assess compliance with this permit
- Measure the effectiveness of the SWMP
- Measure the chemical, physical, and biological impacts to the receiving waters resulting from storm water discharges
- characterize storm water discharges
- identify sources of specific pollutants
- detect and eliminate illicit discharges and illegal connections to the MS4

Monitoring of storm water outfalls in accordance with the FWA MPP and QAPP began in 2018. Eight of the outfalls at Fort Wainwright were selected for regular sampling.

Due to the variable conditions at and upstream of each outfall, samples cannot always be collected during monitoring events. Access to the actual outfall may also be blocked by the Chena River, as has historically been an issue Outfall FWA-A and Outfall-009.

Taking into account the rarity of flow and ability to collect samples at Outfalls FWA-A and FWA-007, the MPP and QAPP were updated in 2022 to replace sampling at these two locations with Outfall FWA-Q. This outfall, which leads from the Birchwood Homes neighborhood to the Chena River, had previously been omitted from the MPP and QAPP because of confusion between the 2000 and 2010 Census Urbanized Areas and because of the location of Birchwood Homes outside the fenced cantonment. The drainage

features at Birchwood Homes are primarily catch basin inlets in paved and grassy areas that lead through subsurface pipes to an outfall along the bank of the Chena River, FWA-Q. The updated MPP and QAPP are provided as an attachment to this Annual Report.

USAG Alaska uses weather data recorded at the Fairbanks International Airport (FAI) weather station to keep the official log. For reference, weather data is also accumulated from the North Pole weather station. In the spring, personnel visit outfalls regularly around the anticipated breakup date to determine where flow may be sampled. After the breakup sample has been collected, attempts for sample collection are made when the precipitation forecast for Fairbanks is great enough that it is expected to generate flow. Staff may stop by several outfalls or look at drainage ditches to determine how likely an impending discharge event is to occur. The likelihood of a discharge event is dependent on how dry the soil is, whether the ground is frozen, the ambient temperature and pressure, and the intensity and duration of the rain event forecasted. In interior Alaska, rainfall patterns change during the season. In the early- to mid-summer, intense, geographically concentrated rain events can cause flow at one outfall but not another, or can yield very different readings from weather station to weather station. In the later summer, rain events may occur at a lower intensity but over a longer period of time and a broader area.

Monitoring results are recorded on a Discharge Monitoring Report (DMR) form and submitted annually to ADEC for the previous 12-month period along with this Annual Report. Figure 3 shows the locations of storm water outfalls from the Fort Wainwright MS4.

The DPW ENV is responsible for developing and implementing the MS4 monitoring program and associated submittals.

Outfall Monitoring Requirements

The selected outfalls must be monitored four times per year. Samples are analyzed for the parameters presented in the table below. Measurement of fecal coliform and E. coli bacteria has been added to the MPP/QAPP above and beyond the permit requirements in order to monitor the impact of pet waste from residential neighborhoods.

Parameter	Units	Discussion	Value Comparison [1]
Flow	Cubic feet per second (cfs)	Flow measures the volume of water passing through the outfall over a given time period. Flow can vary widely during and after a rainstorm.	Varies at each outfall
Temperature	Degrees Celsius (°C)	Temperature at each outfall can depend on the weather, the surfaces storm water lands on and runs across, presence of non-storm water discharges, how long water sits, and other factors.	Less than 30°C; 5 to 17°C [3]
pH	Standard pH units	pH is commonly known as acidity and is dependent on a host of environmental interactions. Rain and snowmelt is generally lower in pH than water in a lake or river that has interacted with the environment.	6.5 to 8.5
Dissolved oxygen (DO)	Milligrams per liter (mg/L)	Fresh rain often has a higher DO level than surface water, and fast-moving water has a higher DO level than stagnant water. Interaction with biological organisms and certain inorganic chemicals can lower the DO of water. Cold water can hold more DO than warm water.	
Biochemical oxygen demand, 5-day (BOD)	mg/L	BOD is the amount of oxygen needed to biologically degrade, or oxidize, organic matter in the water.	Less than 1.0 [4]
Chemical oxygen demand (COD)	mg/L	COD is the amount of oxygen used to oxidize both biological and non-biological materials in the water. COD can measure organic material that decomposes very slowly like wood, which is not typically measured by BOD. COD can also rise if there are vehicle fluids, trash, fertilizers, pesticides, or other pollutants.	3.0 to 46 [4]

Turbidity	Nephelometric turbidity units (NTU)	Turbidity is how cloudy or clear a sample of water appears. Most tap water is less than 1 NTU. Higher turbidity may result from naturally-occurring organic matter, like decaying leaves, or from pollutants such as sediment or algae blooms.	25 [2]
Total suspended solids (TSS)	mg/L	TSS is generally proportional to turbidity measurements, but specifically measures the amount of particulate material suspended in the water.	13 to 42 [4]
Total aromatic hydrocarbons (TAH)	Micrograms per liter (µg/L)	TAH is the sum of certain hydrocarbon chemicals. The source of TAH is most likely from human sources such as vehicle fluid leaks, drips, and spills.	15; no film or sheen
Total aqueous hydrocarbons (TaqH)	µg/L	TaqH is the sum of certain petroleum hydrocarbons that tend to be very persistent in water. TaqH does not measure oil and grease that floats on the water surface.	15
Fecal Coliform	Presence/Absence or colony forming units per 100 milliliters (CFU/100mL)	Fecal coliform is a type of bacteria. It may not be harmful in itself, but it is an indicator of untreated sewage, pet waste, or wild animal scat present in the water.	200 CFU/100mL over 30 days [5]
Escherichia coli (E. coli)	Presence/Absence or CFU/100mL	Most types of E. coli bacteria are not harmful, but some strains can cause illness in people and other animals. Like fecal coliform, presence of E. coli indicates untreated biological waste in the water.	126 CFU/100mL over 30 days

Notes:

[1] Unless otherwise specified, values from 18 AAC 70, Fresh water uses: Water recreation: contact recreation

[2] Sigler and others (1984) suggest a limit for salmonids of 25 nephelometric turbidity units

[3] Brungs and Jones (1977) suggest water temperature of 5-17°C for salmonoids growth.

[4] Alaska Army Lands Withdrawal Renewal EIS (1999), typical values listed in text.

[5] 18 AAC 70, Fresh water uses: Water recreation: secondary recreation

Each of these measurements can provide information about what types of pollutants storm water may be interacting with, or potential issues with drainage on Fort Wainwright. However, one measurement alone cannot tell the whole story, but be used as a clue to determine the source or cause(s).

Storm water is referred to as a “non-point source” because it is made up of water falling on or running through a wide variety of landscapes and potential pollutants. This means that sample results are a reflection of what is going on over a large area and individual issues may be difficult to track down. It also means that the combination of many small sources of pollution can add up to become one large source of pollution. Monitoring these parameters over time helps provide more clues to tell the story of Fort Wainwright storm water quality.

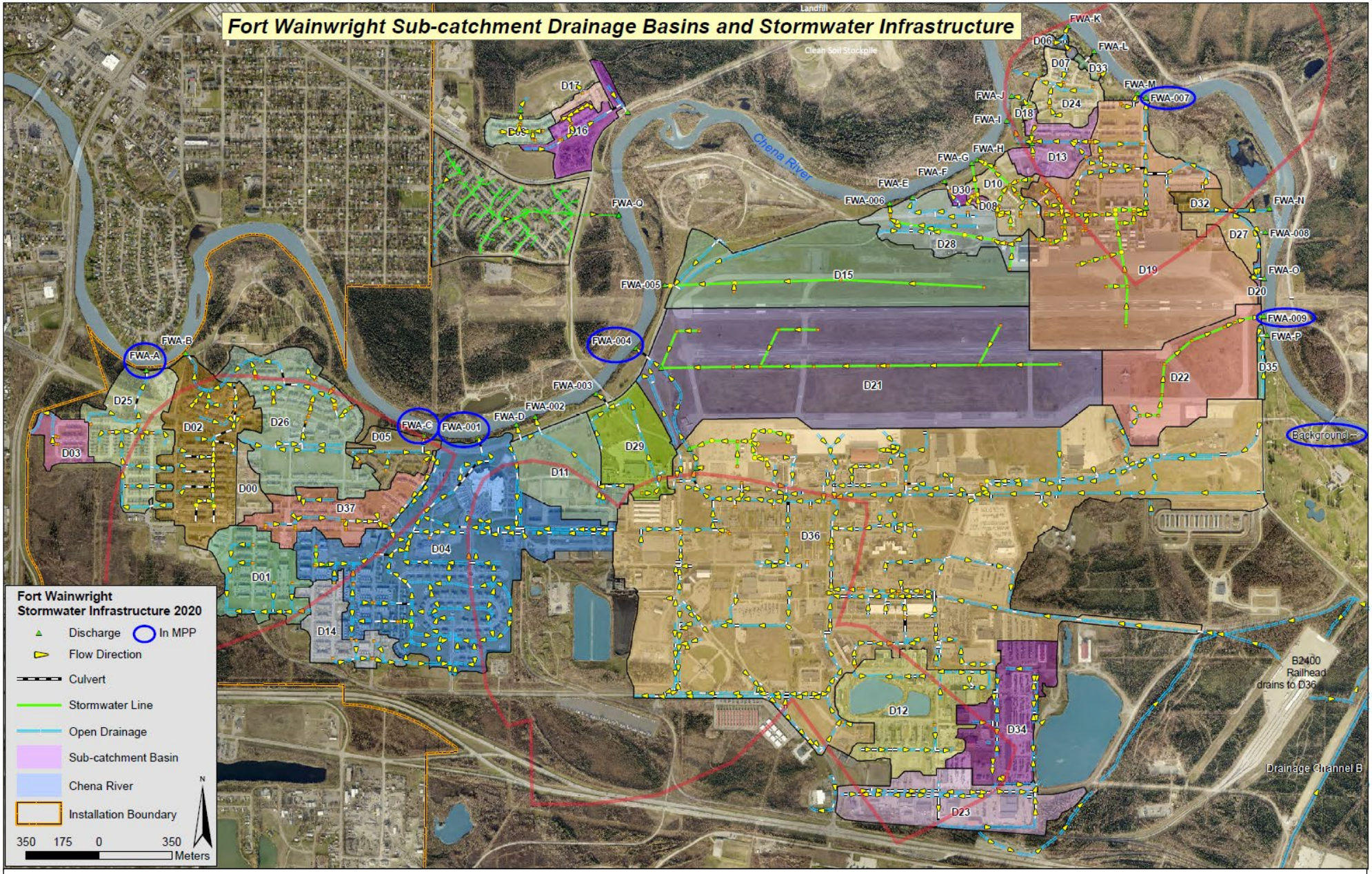

Figure 3. Fort Wainwright Outfall Location Map

4.2 Sampling Activities & Results

In 2022, storm water samples were attempted to be collected during four events and analytical samples were collected during three different event.

The subsections below describe the samples collected and a summary of notable results. A full record of results is submitted to ADEC via Discharge Monitoring Report.

Quarter 1

The Quarter 1 sampling event was performed during spring break up. Surface water samples from melting snow were collected between 25 April 2022 and 5 May 2022 from 5 Outfalls: FWA-001, FWA-004, FWA-009, FWA-C and FWA-Q.

During Quarter 1, pH measurements were within expected values, ranging from 6.49 to 6.94. Dissolved Oxygen measurements ranged from 1.07 mg/L and 1.86 mg/L, and were generally lower than DO measurements from previous years. The instrument used to measure DO in the field was malfunctioning while sampling at Outfall FWA-Q, so it was not recorded at that location.

During Quarter 1 2022, COD and BOD were slightly higher than in previous years with COD values ranging from 43 to 140 mg/L and BOD values ranging from 4.94 to 28.6 mg/L. The COD result was much higher at Outfall FWA-C than in previous years, and slightly higher than average at Outfalls FWA-001, FWA-004, and FWA-009. There were no obvious sources of COD noted during sampling or notable process changes at the facilities associated with these outfalls. The higher COD results are also associated with a higher BOD result at Outfall FWA-C compared to previous years, and slightly higher BOD results at Outfalls FWA-001 and FWA-009. Outfall FWA-C drains approximately 20 acres of residential and park area, so COD and BOD levels were in large part due to pet waste.

The winter precipitation preceding the spring break up sampling event was notable in that the seasonal snowfall total was 95.3 inches, the 9th highest on record and freezing rain affected storm water behavior during break up. A larger percentage of culverts on Fort Wainwright needed to be thawed to allow meltwater to flow to outfalls. This meant that standing water covered a larger area upstream of these culverts and thus a greater area to interact with substances that might contribute to COD, BOD, and other monitoring parameters. The buildup of snow throughout the winter season also increased the likelihood of pet waste, leaks, drips, and spills not getting cleaned up in time before more snow landed and obscured these pollutants.

Fecal coliform and E. coli were sampled and found present at Outfalls FWA-C and FWA-Q. All other measured results were within normal ranges.

This year was the first time that any samples were collected from Outfall FWA-Q. Because this outfall receives storm water that predominately travels across paved roads and through impermeable subsurface pipes, water moves faster through the system and there is less of an ecological buffer to temper pollutants compared to outfalls fed by grassy swales. One would expect higher levels of physical properties like turbidity, total suspended solids, and temperature at Outfall-Q compared to other residential outfalls.

Quarter 2

A Quarter 2 sampling event was attempted at multiple intervals during June and July 2023. The FAI weather station measured a total of 0.53 inches of rainfall between June 19 and 20, 2022, but staff was not able to reach the outfalls in time to verify flow or collect samples.

Rainfall events between July 10 and 27, 2022 were not prolific enough to generate flow at outfalls when surveyed. No field measurements or analytical samples were collected during Quarter 2.

Quarter 3

The Quarter 3 sampling event was performed during a rain event on Monday, 8 August 2022. Measured at the FAI weather station, the total rainfall in the 24-hour period was 0.14 inches, and over the preceding weekend the total rainfall was 0.48 inches. Three outfalls were sampled: FWA-009, FWA-Q, and the background outfall.

Sample results from Outfalls FWA-009 and the background outfall were within normal, expected ranges from previous years. Measurements of pH ranged from 6.73 to 7.78. Dissolved oxygen measurements ranged from 5.39 to 7.8 mg/L.

At Outfall FWA-009 and the Background outfall, COD, BOD, and TAH results were all below the method detection limit. At Outfall FWA-Q, COD and TSS were detected at a lower level than in Quarter 1 and BOD and TAH were not detected. Sample results for TAqH at the three outfalls ranged from 3.14 to 3.51 µg/L.

Fecal coliform and E. coli were both detected at Outfall FWA-Q and the likely source is pet waste in the residential neighborhood.

Quarter 4

A Quarter 4 sampling event was performed on 8 and 12 September 2023. Although the FAI weather station measured total rainfall in the 24-hour period at 0.02 inches, the previous 48 hours measured a total of 0.16 inches and at the North Pole weather station the total rainfall over 48 hours was 0.26 inches. Two outfalls were sampled: FWA-Q and the background outfall.

Outfall FWA-Q was sampled on a Thursday, so the laboratory was not able to run BOD, fecal coliform, or E. coli analyses. Because these parameters are measurements of biological activity that degrades quickly over time, they need to be received and processed by a laboratory within 30 hours of sample collection to provide accurate results.

From Outfall FWA-Q, pH, DO, TAH, TAqH values were very similar to Quarter 3 results, but TSS and COD levels were noticeably higher than in Quarter 3. This variability is likely reflective of the low permeability of the MS4 drainage features at Birchwood Homes compared to other municipal outfalls. Water quality characteristics can fluctuate depending on the pollutants the storm water picks up as it flows towards the river and a higher percentage of precipitation is expected to through the outfall instead of infiltrating into the ground.

Overall trends

In 2022, ten primary samples were collected from six outfalls and three trends were observed: higher than average COD and BOD during the spring breakup event, lower than average DO during the spring breakup event, and slightly more neutral pH levels.

Higher COD results are likely due to the use of man-made chemicals such as vehicle fluids, fertilizer, pesticides, and others. DPW ENV will continue to observe and collect data to determine specific sources. As discussed in the Quarter 1 section, high snowfall and freezing rain events likely had an impact on water quality during the spring break up. Lower DO results may be associated with man-made chemicals, but may also be a factor of the way breakup occurred in 2022 with increased volume and slightly increased temperature.

As the source of low pH readings in 2020 remains unexplained, the rebound to progressively more neutral readings in 2021 and 2021 is also unexplained. During the 2022 monitoring season, DPW ENV staff did not observe any anomalous low readings and did not need to trace a potential source as recommended in previous Annual Reports.

DPW ENV will continue to observe the impact of a pest management strategy that increases the use of mechanical removal and decreases the use of pesticides across the cantonment. In 2021, pesticides with relatively high pH were suspected of being connected to a slight rise in pH measured at outfall FWA-009, up to 8.28 during the Quarter 2 2021 compared to 6.0 during the same quarter 2020. Lower than average volume of product was applied earlier in the summer in 2021 and the chemicals used have a basic pH in solution, the middling pH values measured in snowmelt runoff in 2022 is consistent with the suspected relationship between pesticide usage and pH.

Fecal coliform and E. coli, are inferred based on observations in housing areas of the failure to clean up after dogs. It should be mentioned that dog and cat feces can contain other harmful bacteria, worms, and chemicals that can spread to other animals and disrupt the existing ecosystem.

4.3 Evaluation of Overall Program Effectiveness

This is the fourth reporting cycle under the FWA MS4 Permit, accounting for the 12-month period from January through December 2021.

Annual Effectiveness Assessment by evaluating compliance with the permit conditions, the appropriateness of identified BMPs, and progress toward achieving identified measurable goals for each of the MCMs.

The annual effectiveness assessment must:

4.2.1 Use the monitoring and assessment data described in Part 4.1 to specifically assess the effectiveness of each of the following:

4.2.1.1 Each significant activity/control measure or type of activity/control measure implemented;

4.2.1.2 Implementation of each major component of the SWMP (Public Education/Involvement, Illicit Discharges, Construction, Post-Construction, Pollution Prevention and Good Housekeeping); and

4.2.1.3 Implementation of the SWMP as a whole.

.2.2 Identify and use measurable goals, assessment indicators, and assessment methods for each of the items listed in Part 4.2.1.

4.2.3 Document the permittee's compliance with permit conditions.

4.2.4 Based on the results of the effectiveness assessment, the permittee must annually review their activities or control measures to identify modifications and improvements needed to maximize SWMP effectiveness, as necessary to achieve compliance with this permit. The permittee must develop and implement a plan and schedule to address the identified modifications and improvements. FWA activities/control measures that are ineffective or less effective than other comparable FWA activities/control measures must be replaced or improved upon by implementation of more effective FWA activities/control measures.

Activity/Control Measure Effectiveness

MCM	MCM 1: Public Education and Outreach
Primary audience	Soldiers, Families, Civilians, contractors and other community members
Primary focus	The primary focus of the MCM 1 program is to provide information and guidance to help individuals reduce pollution in their personal lives. Several brochures are aimed at pollution reduction in the workplace, but most of the flyers, brochures, articles, and outreach is targeted at choices at home and off the clock.
Key methods	Brochures and flyers, magnets, newspaper articles, social media posts, website
Sample results	Sample results at Outfalls FWA-C and FWA-Q show the presence of fecal coliform and E. coli in storm water. In addition, COD and BOD results from outfall FWA-001, which drains Tanana Trails and Taku Gardens neighborhoods, may be linked to pet waste and fertilizers/pesticides. Observations from NHC indicate that pet waste is still a major issue in housing areas.
Compliance discussion	USAG Alaska has met the measureable goals outlined for 2022. Environmental Handbooks are distributed to newcomers to Fort Wainwright. Pet Waste flyers, Healthy Lawns & Gardens brochures, Household Hazardous Waste trifolds, and a Prevent Sewer Backups magnet are given to each new family moving on Post through NHC. NHC also has enforcement policies spelled

	out in the rental agreement to inspect yards, issue warnings, and impose fees as necessary. In 2022, the Garrison Commander also reinstated authority to revoke pet privileges for residents who repeatedly fail to meet enforcement policies.
Look ahead	Environmental flyers will continue to be distributed. NHC will continue to provide reminders to residents via Facebook and enforcement policies. DPW ENV is working with PAO to continue messaging encouraging residents to scoop the poop.

MCM	MCM 2: Public Involvement and Participation
Primary audience	Soldiers, Families, Civilians, contractors and other community members
Primary focus	The primary focus of the MCM 2 program is to provide information and guidance to help individuals reduce pollution in their personal lives. Several activities are executed through the workplace or mission, such as military unit assignments for Spring Clean Up.
Key methods	Storm Water Steering Committee and meetings, community events, storm drain stenciling
Sample results	As discussed in MCM 1, fecal coliform, E. coli, COD, and BOD results indicate continued impacts from pet waste on storm water quality.
Compliance discussion	The target of marking 100% of storm drain inlets was not met.
Look ahead	Storm drain inlet marking will be performed in 2023. DPW ENV will work with Birchwood Homes to complete inlet marking and inspection requirements in this subdivision. Routine tasks such as posting the SWMP and Annual Report online, the community trash pickup day, and Storm Water Steering Committee meetings are scheduled for 2023.

MCM	MCM 3: Illicit Discharge Detection and Elimination
Primary audience	Soldiers, Civilians, contractors and other tenants
Primary focus	Awareness if IDDE and reporting illicit discharges and spills while on the job and off.
Key methods	Training, outreach materials, inspections/monitoring, illicit discharge tracking, investigation and cleanup
Sample results	Results of elevated COD at Outfalls FWA-C and FWA-001 may be due to pet waste or chemicals used in landscaping. Factors from commercial and industrial work like application of fertilizer, vehicle leaks, spills, or pesticide use at MSGP Industrial outfalls.
Compliance discussion	Garrison Policy #35 has been updated to specifically discuss illicit discharges. The new Spills Program Manager has been assisting in executing the IDDE program.
Look ahead	Construction Training planned for 2023 will be helpful in educating the construction/design/engineering audience about illicit discharge concerns on construction sites.

MCM	MCM 4: Construction Site Storm Water Runoff Control
Primary audience	Soldiers, Civilians, contractors and other tenants engaging in construction activities
Primary focus	Preparing functional plans and BMPs, following construction SWPPPs and ESCPs while on the job
Key methods	Training, outreach materials, site plan reviews, inspections/monitoring
Sample results	Sample results, spill reports, and inspection observations suggest that deleterious levels of construction site pollutants are not reaching receiving waters.

Compliance discussion	Not all construction sites less than 1 acre in size were inspected in 2022. Construction Training was not completed in 2022. A new ESCP template began to be distributed in 2022, which includes a field for documenting MS4 inspections so there is accountability written into these plans.
Look ahead	Another construction training will be shared with the primary audience. There are key topics to address with the construction audience that can reduce the risk of erosion or sediment in runoff. There were multiple findings at each construction site inspected in 2022, including one instance of an illicit discharge of sediment into the MS4. A greater emphasis will be placed on future work order and SWPPP reviews to set the expectation for an MS4 inspection. Additional staff with Alaska Construction Erosion and Sediment Control Lead training have been tapped to help conduct inspections on behalf of the MS4.

MCM	MCM 5: Post-Construction Storm Water Management in New Development and Redevelopment
Primary audience	Soldiers, Civilians, contractors and other tenants engaging in design, construction, and maintenance activities
Primary focus	Preparing functional plans and BMPs, following construction and design guidance, ongoing maintenance
Key methods	Design manual, plan reviews, training
Sample results	Sample results are not directly linked to post-construction storm water BMPs
Compliance discussion	A MCM 5 training event was not conducted by USAG Alaska in 2022. The majority of projects that require green infrastructure and low impact development BMPs under Army policy are contracted through USACE, so BMP selection and storm water design are built in to the project. Designers of these projects are not guaranteed to be at Fort Wainwright or Interior Alaska during the initial design phase, so training on post-construction storm

	water management is often achieved through processes built into USACE projects and the MRSI website's online resources. However, post-construction training is still useful to share with local project managers, engineers, and planners.
Look ahead	The post-construction training will be shared with the primary audience in 2023. DPW Engineering, DPW Master Planning, and USACE are helping to ensure Army Low Impact Development policies are followed.

MCM	MCM 6: Pollution Prevention and Good Housekeeping
Primary audience	Soldiers, Civilians, contractors, and other tenants engaging in commercial, industrial, and maintenance activities
Primary focus	To prevent or reduce pollutant runoff from FWA operations, including infrastructure maintenance, snow management, industrial activities, and other public utility operation
Key methods	Inspections, training, support and enforcement under the Solid Waste, Spills, Pest Management, and Hazardous Waste programs
Sample results	Results of elevated COD and lowered pH are likely due to factors from commercial and industrial work like application of fertilizer, vehicle leaks, spills, or pesticide use.
Compliance discussion	Storm drain stenciling was not completed in 2022.
Look ahead	Storm drain stenciling will be completed in 2023. Training and inspections will continue as in past years. DPW ENV will continue to work with operations & maintenance contractors and staff to collect street and storm drain cleaning data.

The SWMP includes the separate program plans such as the IDDE Program Manual, the O&M Program Document, the Implementing Guidance and Army LID Technical User Guide, and the MPP and QAPP. As a whole, these plans are appropriate for the Fort Wainwright MS4. In order to increase the effectiveness of the SWMP and associated documents, PWE plans to emphasize the need for agencies and individuals across the

organizations to follow the programs and integrate MS4 concerns in future contracts and procedures.

Compliance with Permit Conditions

Training for construction and post-construction has been delayed. Due to the complex nature of contracts, tenant agreements, and Federal, DoD, and Army regulations and requirements, the training has gone through multiple revisions. Throughout the development of training materials, DPW ENV has identified both concerns and best practices that have strengthened the MCM 4 and 5 programs and relationships with the DPW, USACE, NHC/LendLease, and military personnel involved in construction and design. There have been benefits to the MS4 Program by having repeated discussions with other stakeholders, even though the training requirements were not met at the time. Examples include expanding the Environmental Work Order Review process to include more projects, education provided during construction inspections, and increased MS4 Program involvement in the initial project planning stages. These relationship-building and informal education efforts will provide a more applicable and robust training for a broader audience that can be formally documented.

Measureable Goal	pH measurement
Description	Collecting additional pH measurements during storm water sampling.
Dates to achieve goals	Concurrent with outfall sampling events.
Person(s) responsible	Environmental contractor, DPW ENV Water Program Manager

In general, getting more people on board with MS4 program requirements will improve compliance and storm water quality. It is unclear whether some activities or control measures are ineffective or less effective than others. One piece of anecdotal feedback is that people pay attention less when the same information, in the same format, is given out year after year in educational materials and training. Through the Sergeant Salmon School of Environmental Basics, development of new educational materials, and engaging new voices, USAG Alaska is trying to keep storm water concerns relevant to the people and organizations who are responsible for maintaining the environment.

5.0 CERTIFICATION

Appendix A, Part 1.12.3 of the FWA MS4 Permit states the following:

> Any report required by an APDES permit, and a submittal with any other information requested by the Department, must be signed by a person described in Appendix A, Part 1.12.2, or by a duly authorized representative of that person.

I certify under penalty of law that this Annual Report, and all attachments, were prepared under my supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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 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.

Name of Authorized Representative: Robert K. Larimore

Title: Chief, Directorate of Public Works Environmental Division

Signature: LARIMORE.ROBERT.KENDALL.1230062664 Digitally signed by LARIMORE.ROBERT.KENDALL.1230062664 Date: 2023.02.15 17:21:22 -09'00'

Date Signed: February 15, 2023

Email: robert.k.larimore.civ@army.mil

APPENDIXES

Appendix A: Summary Annual Report

ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM
MS4 – Summary Annual Report Form

1. MS4 Information

U.S. Army Garrison Alaska; Fort Wainwright, AK — Name of MS4

AKS055859 — Permit Number

Robert — Name of Contact Person (First)

Larimore — (Last)

Chief, Environmental Division — (Title)

(907) 361-4213 — Telephone (including area code)

robert.k.larimore.civ@mail.mil — Email

AMIM-AKP-E (Larimore), 1046 Marks Road — Mailing Address

Fort Wainwright — City

Alaska — State

99703 — Zip Code

What size population does your MS4 serve? 13,224

What is the reporting period for this report? (mm/dd/yyyy) From 01/01/2022 to 12/31/2022

2. Water Quality Priorities

A. Does your MS4 discharge to waters listed as impaired on a state 303(d) list? ☐ Yes ☑ No

B. If yes, identify each impaired water, the impairment, whether a TMDL has been approved by EPA for each, and whether the TMDL assigns a wasteload allocation to your MS4. Use a new line for each impairment, and attach additional pages as necessary.

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No

C. What specific sources contributing to the impairment(s) are you targeting in your storm water program?

D. Do you discharge to any high-quality waters (e.g., Tier 2, Tier 3, outstanding natural resource waters, or other state or federal designation)? ☐ Yes ☑ No

E. Are you implementing additional specific provisions to ensure their continued integrity? ☐ Yes ☑ No

3. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? ☑ Yes ☐ No

B. If yes, what are the specific sources and/or pollutants addressed by your public education program?

Oil and sheen-causing petroleum, oil, and lubricants, loose trash and litter, pet waste, household chemicals, vehicle washing, industrial SWPP, general urban runoff, and sediment.

C. Note specific successful outcome(s) (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

Inspections and training corrected dozens of control measures, such as spill kits, drip pans, spill reporting, HAZWASTE storage, secondary containments, and others.

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your storm water program? ☑ Yes ☐ No

4. Construction

A. Do you have an ordinance or other regulatory mechanism stipulating:

- Erosion and sediment control requirements? ☑ Yes ☐ No
- Other construction waste control requirements? ☑ Yes ☐ No
- Requirement to submit construction plans for review? ☑ Yes ☐ No
- MS4 enforcement authority? ☑ Yes ☐ No

B. Do you have written procedures for:

- Reviewing construction plans? ☑ Yes ☐ No
- Performing inspections? ☑ Yes ☐ No
- Responding to violations? ☑ Yes ☐ No

C. Identify the total number of active construction sites ≥ 1 acre in operation in your jurisdiction during the reporting period. 9

D. How many of the sites identified in 4.C did you inspect during this reporting period? 8

E. Describe, on average, the frequency with which your program conducts construction site inspections.

Formal inspections performed once per year. Site visits ranged from 1 to 2 visits/season.

F. Do you prioritize certain construction sites for more frequent inspections? ☑ Yes ☐ No
If Yes, based on what criteria?
Re-inspection may be performed based on findings during routine inspection. Inspection or additional inspection may be performed based on complaints received. Additional inspections performed on projects contracted by the USACE per project manager request.

G. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:

☐ Yes	Notice Of Violation	#		No Authority ☐
☐ Yes	Administrative Fines	#		No Authority ☐
☐ Yes	Stop Work Orders	#		No Authority ☐
☐ Yes	Civil Penalties	#		No Authority ☐
☐ Yes	Criminal Actions	#		No Authority ☐
☐ Yes	Administrative Orders	#		No Authority ☐
☑ Yes	Other: Identified corrective actions required during inspections	#	18	

H. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction? ☑ Yes ☐ No

I. What are the 3 most common types of violations documented during this reporting period?
a. Proper BMP installation & maintenance b. SWPPP Signage & SWPPP amendments c. Construction exits and track-out

J. How often do municipal employees receive training on the construction program? Twice during permit cycle, next planned for Spring 2023

5. Illicit Discharge Elimination

A. Have you completed a map of all outfalls and receiving waters of your storm sewer system? ☑ Yes ☐ No

B. Have you completed a map of all storm drain pipes and other conveyances in the storm sewer system? ☑ Yes ☐ No

C. Identify the number of outfalls in your storm sewer system. 26

D. Do you have documented procedures, including frequency, for screening outfalls? ☑ Yes ☐ No

E. Of the outfalls identified in 5.C, how many were screened for dry weather discharges during this reporting period? 26

F. Of the outfalls identified in 5.C, how many have been screened for dry weather discharges at any time since you obtained MS4 permit coverage? 26

G. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type. MSGP & MPP outfalls inspected quarterly. Else, at least annually.

H. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges? ☑ Yes ☐ No

I. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges? ☑ Yes ☐ No

J. During this reporting period, how many illicit discharges/illegal connections have you discovered? 6

K. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated? 6

L. How often do municipal employees receive training on the illicit discharge program? Annually

6. Storm Water Management for Municipal Operations

A. Have storm water pollution prevention plans (or an equivalent plan) been developed for:

All public parks, ball fields, other recreational facilities and other open spaces	☐ Yes	☑ No
All municipal fleet and building maintenance activities	☑ Yes	☐ No
All municipal construction activities, including those disturbing greater than 1 acre	☑ Yes	☐ No
All municipal storm water system maintenance	☑ Yes	☐ No
All municipal snow disposal site operation and maintenance activities	☑ Yes	☐ No

Other:

B. Are storm water inspections conducted at these facilities? ☑ Yes ☐ No

C. If Yes, at what frequency are inspections conducted? Quarterly for active facilities under the MSGP permit and snow disposal sites, annually for all else

D. List activities for which operating procedures or management practices specific to storm water management have been developed (e.g., road repairs, catch basin cleaning).

Soil management, pest management, culvert cleaning, material storage, others in O&M Program Document

E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection? ☑ Yes ☐ No

F. If Yes, which activities and/or facilities receive most frequent inspections?

Snow stockpile areas receive inspections at least quarterly. Housing areas are inspected more frequently by North Haven Communities.

G. Do all municipal employees and contractors overseeing planning and implementation of storm water-related activities receive comprehensive training on storm water management? ☑ Yes ☐ No

H. If yes, do you also provide regular updates and refreshers? ☑ Yes ☐ No

I. If so, how frequently and/or under what circumstances? Annual training typically provided concurrent with other storm water training or by request for new staff.

7. Long-term (Post-Construction) Storm Water Measures

A. Do you have an ordinance or other regulatory mechanism to require:

Site plan reviews for storm water/water quality of all new and re-development projects? ☑ Yes ☐ No

Long-term operation and maintenance of storm water management controls? ☑ Yes ☐ No

Retrofitting to incorporate long-term storm water management controls? ☐ Yes ☑ No

B. If you have retrofit requirements, what are the circumstances/criteria?

N/A

C. What are your criteria for determining which new/re-development storm water plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.)

All new/re-development projects are reviewed by DPW ENV program managers as applicable, including the Water Program. The USACE & DPW Engineering review for compliance with standard contract inclusion Appendix CC, LEED requirements, ADEC Engineering Plan review, and EISA Section 438.

D. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development? ☑ Yes ☐ No

E. Do these performance or design standards require that pre-development hydrology be met for:

Flow volumes	☑ Yes	☐ No
Peak discharge rates	☑ Yes	☐ No
Discharge frequency	☑ Yes	☐ No
Flow duration	☑ Yes	☐ No

F. Please provide the URL/reference where all post-construction storm water management standards can be found.

https://mrsi.erdc.dren.mil/sustain/cx/lid/ "2017 Implementing Guidance, Army Stormwater Management Using Low Impact Development" and Standard Contract Appendix CC

G. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection? 3

H. How many of the plans identified in 7.G were approved? 3

I. How many privately owned permanent storm water management practices/facilities were inspected during the reporting period? 0

J. How many of the practices/facilities identified in 7.I were found to have inadequate maintenance? n/a

K. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections? n/a

L. Do you have authority to take enforcement action for failure to properly operate and maintain storm water practices/facilities? ☑ Yes ☐ No

M. How many formal enforcement actions (i.e., more than a verbal or written warning) were taken for failure to adequately operate and/or maintain storm water management practices? 0

N. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? Spreadsheet in process

O. Do all municipal departments and/or staff (as relevant) have access to this tracking system? ☐ Yes ☑ No

P. How often do municipal employees receive training on the post-construction program? TBD, once per permit cycle and annually thereafter

8. Additional Information

Please include any additional information on the performance of your MS4 program. If providing clarification to any of the questions on this form, please provide the question number (e.g., 2C) in your response.

On May 3, 2021, USAG Alaska submitted a new permit application to APDES; However, because of time, resource, and other constraints, but through no fault of the permittee, a new permit was not able to be issued before the expiration date. On October 29, 2021, ADEC notified the Army that the previous permit has been administratively continued and will remain fully effective and enforceable until a new permit is issued. At the time of writing this report, a new permit has not been issued by ADEC.

Clarification to response for question 4.D. is in the Detailed Annual Report. One construction project site was not formally inspected because the Notice of Termination was submitted before an inspection was able to be arranged.

Certification Statement and Signature

☑ Yes

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.

Per Appendix A, Part 1.12.2 This report to be signed as follows: **For a municipal, State, Federal, or other public facility**: by either a principal executive or ranking elected official; **for a corporation**, a responsible corporate officer.

LARIMORE.ROBERT.KENDALL.1230062664

Digitally signed by LARIMORE.ROBERT.KENDALL.1230062664
Date: 2023.02.15 17:30:44 -09'00'

Signature

February 15, 2023

Date

Robert K. Larimore, DPW Environmental Division Chief

Name of Certifying Official, Title

Appendix B: MCM 1 Documentation

Newspaper Article

Protect Storm Water Quality at Birchwood Homes brochure

Healthy Yards & Gardens on Fort Wainwright brochure

Pet Waste literature

Environmental Handbook (full version available online or by request)

Small Construction Sites brochure

Storm Water Signage

Facebook Post

Appendix C: MCM 2 Documentation

No MCM 2 Documentation required for inclusion in the 2022 Annual Report.

Appendix D: MCM 3 Documentation

No MCM 3 Documentation required for inclusion in the 2022 Annual Report.

Appendix E: MCM 4 Documentation

Erosion and Sediment Control Plan – Form style template

United Facilities Guide Specifications

Example Appendix CC for typical construction projects

Environmental Requirements for Construction, Demolition, and Renovation Projects

SWPPP Completion Checklist

MS4 Construction Site Inspection Form

Appendix F: MCM 5 Documentation

Army Low Impact Development Technical User Guide and training materials can be found online at the following web address:

https://mrsi.erdc.dren.mil/sustain/cx/lid/

Appendix G: MCM 6 Documentation

No MCM 3 Documentation required for inclusion in the 2022 Annual Report.

Appendix H: Garrison Policy Letter

Garrison Policy #35 dated October 26, 2021

Appendix I: Sample Results

Quarter 1 Discharge Monitoring Reports

Quarter 2 Discharge Monitoring Reports

Quarter 3 Discharge Monitoring Reports

Quarter 4 Discharge Monitoring Reports

Appendix J: Delegation Forms

Internal Army Memorandum

ADEC Delegation of Signatory Authority form