ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT FOR STORM WATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

FACT SHEET – DRAFT

Permit Number: AKS055859

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

Public Comment Period Start Date: August 10, 2016
Public Comment Period Expiration Date: September 12, 2016
Alaska Online Public Notice System

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Proposed issuance of an Alaska Pollutant Discharge Elimination System (APDES) permit for Storm Water Discharges from the Municipal Separate Storm Sewer System (MS4) within the

FORT WAINWRIGHT
(hereafter "permittee")

The Alaska Department of Environmental Conservation (Department or DEC) proposes to issue an APDES MS4 permit for discharges from a small MS4. The permit authorizes and sets conditions on the discharge of pollutants from municipal activities to waters of the United States. In order to ensure protection of water quality and human health, the permit established conditions, prohibitions, and management practices for discharges of storm water from the MS4 owned or operated by the permittee.

This fact sheet explains the nature of potential discharges from MS4 activities and the development of the permit including:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions
- technical material supporting the conditions in the permit
- proposed monitoring requirements in the permit

Public Comment

Persons wishing to comment on, or request a public hearing for the draft permit for this facility, may do so in writing by the expiration date of the public comment period.

Commenters are requested to submit a concise statement on the permit condition(s) and the relevant facts upon which the comments are based. Commenters are encouraged to cite specific permit requirements or conditions in their submittals.

A request for a public hearing must state the nature of the issues to be raised, as well as the requester's name, address, and telephone number. The Department will hold a public hearing whenever the Department finds, on the basis of requests, a significant degree of public interest in a draft permit. The Department may also hold a public hearing if a hearing might clarify one or more issues involved in a permit decision or for other good reason, in the Department's discretion. A public hearing will be held at the closest practicable location to the site of the operation. If the Department holds a public hearing, the Director will appoint a designee to preside at the hearing. The public may also submit written testimony in lieu of or in addition to providing oral testimony at the hearing. A hearing will be tape recorded. If there is sufficient public interest in a hearing, the comment period will be extended to allow time to public notice the hearing. Details about the time and location of the hearing will be provided in a separate notice.

All comments and requests for public hearings must be in writing and should be submitted to the Department at the technical contact address, fax, or email identified above (see also the public comments section of the attached public notice). Mailed comments and requests must be postmarked on or before the expiration date of the public comment period.

After the close of the public comment period and after a public hearing, if applicable, the Department will review the comments received on the draft permit. The Department will respond to the comments received in a Response to Comments document that will be made available to the public. If no substantive comments are received, the tentative conditions in the draft permit will become the proposed final permit.

The proposed final permit will be made publicly available for a five-day applicant review. The applicant may waive this review period. After the close of the proposed final permit review period, the Department will make a final decision regarding permit issuance. A final permit will become effective 30 days after the Department's decision, in accordance with the state's appeals process at 18 AAC 15.185.

The Department will transmit the final permit, fact sheet (amended as appropriate), and the Response to Comments to anyone who provided comments during the public comment period or who requested to be notified of the Department's final decision.

The Department has both an informal review process and a formal administrative appeal process for final APDES permit decisions. An informal review request must be delivered within 15 days after receiving the Department's decision to the Director of the Division of Water at the following address:

Director, Division of Water
Alaska Department of Environmental Conservation
410 Willoughby Street, Suite 303
Juneau AK, 99811-1800

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal Department review.

See http://dec.alaska.gov/commish/InformalReviews.htm for information regarding informal reviews of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department within 30 days of the permit decision or a decision issued under the informal review process. An adjudicatory hearing will be conducted by an administrative law judge in the Office of Administrative Hearings within the Department of Administration. A written request for an adjudicatory hearing shall be delivered to the Commissioner at the following address:

Commissioner
Alaska Department of Environmental Conservation
410 Willoughby Street, Suite 303
Juneau AK, 99811-1800

Interested persons can review 18 AAC 15.200 for the procedures and substantive requirements regarding a request for an adjudicatory hearing. See http://dec.alaska.gov/commish/ReviewGuidance.htm for information regarding appeals of Department decisions.

Documents are Available

The permit, fact sheet, and related documents can be obtained by visiting or contacting DEC between 8:00 a.m. and 4:30 p.m. Monday through Friday at the addresses below. The permit, fact sheet, and other information are located on the Department's Wastewater Discharge Authorization Program website: http://dec.alaska.gov/water/wwdp/index.htm.

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501
(907) 269-6285

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
610 University Avenue
Fairbanks, AK 99709
(907) 451-2100

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1.0 INTRODUCTION

The Alaska Department of Environmental Conservation (the Department or DEC) is issuing an Alaska Pollutant Discharge Elimination System (APDES) Program permit that authorizes the discharge of pollutants in storm water discharges associated with a Municipal Separate Storm Sewer System (MS4).

The permit and fact sheet reference various state and federal regulations. The state regulations are found in the Alaska Administrative Code (AAC), Chapter 83 "Alaska Pollutant Discharge Elimination System Program" (18 AAC 83). The federal regulations are incorporated by reference into the state APDES regulations in 18 AAC 83.010(b)(3). As an aid to readers, however, the permit and fact sheet in some areas cite the federal regulations where specific regulatory language can be found. If any discrepancy exists between the fact sheet and the actual permit language, the permittee must comply with the permit as written.

2.0 BACKGROUND

2.1 Permit Area and Applicants

In accordance with Clean Water Act (CWA) Section 402(p) and federal regulations at 40 CFR §122.32, the permit coverage area (see green shaded area of Figure 1 in Appendix A) is on a system-wide basis for the following MS4 operator:

U.S. Army Garrison Fort Wainwright
3023 Engineer Place
Fort Wainwright, Alaska 99703

The storm sewer system owned and operated by the permittee is located within the boundaries of the U.S. Army Garrison Fort Wainwright.

2.2 Description of the Permittee

The terms municipal separate storm sewer and small municipal separate storm sewer system are defined at 40 CFR §122.26(b)(8) and (b)(16), respectively. MS4s include any publicly-owned conveyance or system of conveyances used for collecting and conveying storm water that discharges to waters of the United States. The term municipality is defined at 40 CFR §122.2. An MS4 can be owned or operated by a federal, state, local or tribal entity, and includes systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

The permittee's surface runoff within its jurisdiction is directed to a system of mostly interconnected conveyances, which consist of subsurface storm sewers, roadside ditches, and surface streets. These systems provide drainage for the core area of Fort Wainwright.

2.3 Permit History

This is the first MS4 permit for Fort Wainwright.

3.0 DESCRIPTION OF MUNICIPALITY AND RECEIVING WATERS

3.1 Municipal Summary

The first Air Corps detachment assigned to Alaska arrived at Ladd Field in Fairbanks in April 1940. The U.S. Army assumed control of the Ladd Field in 1961 and renamed it Fort Johnathan M. Wainwright. The base has been active since 1961 and currently encompasses roughly 916,000 acres within a portion of the Fairbanks Urbanized Area. The base consists of cantonment, training, and maneuver areas. The cantonment area includes troop and family housing, administrative facilities, industrial facilities, and community facilities. Much of the cantonment area is unpaved, except for roads, parking areas, and airfield runways and ramps. Major industrial operations located within the MS4 that may contribute pollutants to storm water runoff include: vehicle and aircraft operations and maintenance; generates, stages, and manifests for disposal of hazardous and non-hazardous wastes; landfill; rock quarries; coal-fired power plant and a golf course. Pollutants typically associated with these activities include petroleum, oil, lubricants, heavy metals, solids, and floatable debris. Overall, the discharge is expected to be consistent with typical urban runoff. Storm water associated with the MS4 is collected, treated, and conveyed through a series of catch basins, gutters, ditches, storm drains, and grass-lined channels. Storm water discharges directly into the Chena River via 25 outfall locations along the river.

3.1.1 Precipitation and Temperature

The region falls within the continental climate zone and is characterized by extreme temperature differences with temperatures ranging from above 90 °F to below -55 °F. Mean annual temperatures average slightly below freezing, with a mean summer (June through August) temperature of approximately 59 °F an a mean winter (November through March) temperature of approximately -1° F. Wintertime temperatures are strongly controlled by ground-based inversions, and may vary widely over short distances and in response to human modification of the local environment. The wettest months are July and August with an average annual precipitation slightly below 10 inches per year. Snow covers the ground continuously from mid-October to late April with an average annual snowfall of approximately 65 inches. Figure 1 and Figure 2 show the average total monthly precipitation and the average daily temperature and precipitation for the Fairbanks International Airport[1].

(Figure 1: Average Total Monthly Precipitation, Fairbanks International Airport is located on the following page.)

[1] National Oceanic and Atmospheric Administration's Western Region Climate Center

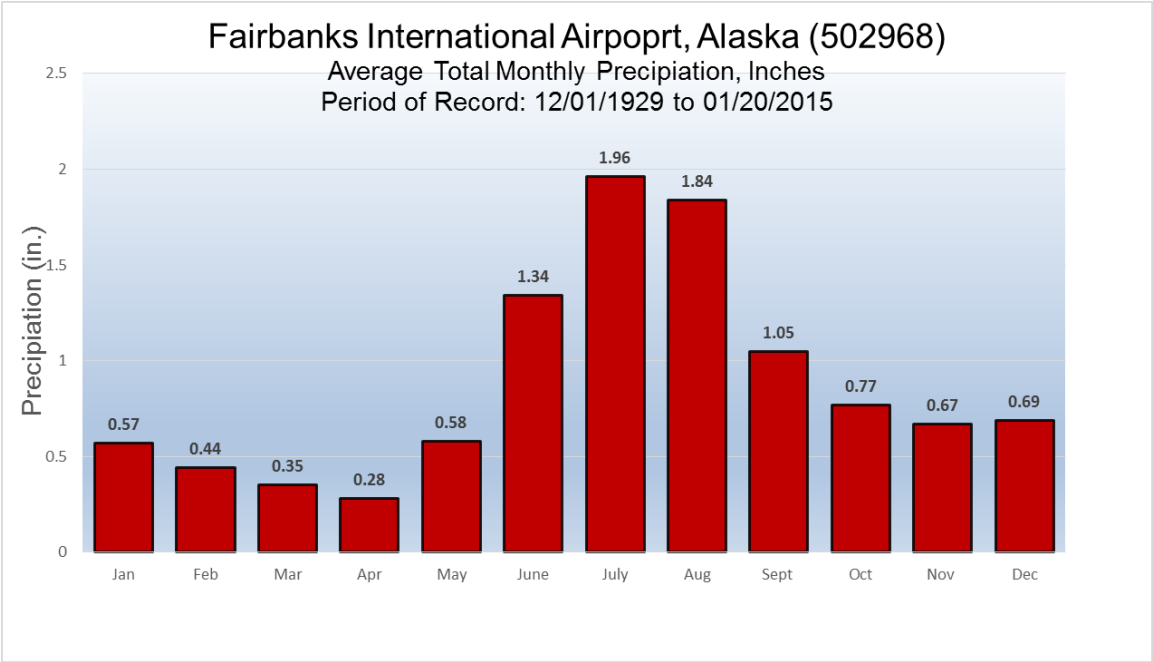

Figure 1: Average Total Monthly Precipitation, Fairbanks International Airport

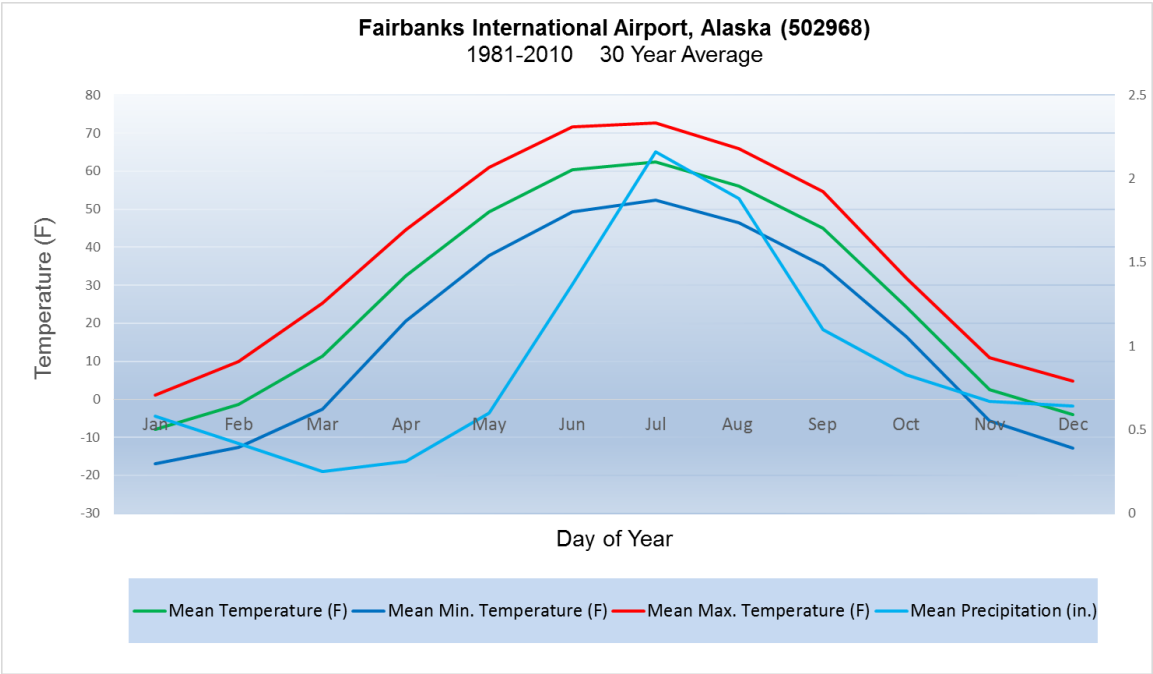

Figure 2: Average Daily Temperature and Precipitation for Fairbanks International Airport

3.2 Receiving Waters

3.2.1 Water Quality Standards

The protection of surface water occurs primarily through the development, adoption, and implementation of Water Quality Standards (WQS) and the use of the WQS in APDES permits. The WQS designate specific uses for which water quality parameters must be protected. Alaska WQS designate seven uses for fresh waters including (A) water supply: (i)

drinking, culinary, and food processing; (ii) agriculture, including irrigation and stock watering; (iii) aquaculture; (iv) industrial; (B) water recreation: (i) contact recreation, (ii) secondary recreation; and (C) growth and propagation of fish, shellfish, other aquatic life, and wildlife. State waters within the Fairbanks Urbanized Area have been classified by DEC in 18 AAC 70.020 as fresh water with all seven designated uses mentioned above.

3.2.2 Potential Municipal Impact on Water Quality

Storm water discharges from MS4 areas can compromise the overall health of aquatic systems due highly variable levels of several pollutants in the discharge. Urban development increases the amount impervious paved areas such as roadways, sidewalks, pathways, driveways, and parking lots, which collect and concentrate pollutants before rain washes them untreated into nearby waterways. Common pollutants found in urban environments include sediment, oils and grease, salt, litter and other debris, pesticides and fertilizers. Untreated runoff can have dramatic effects on an aquatic system by changing the physical and chemical characteristics (e.g., pH, temperature, turbidity, biochemical oxygen demand, etc.) of the water. These changes can negatively impact aquatic resources by causing damage to fish habitats and spawning grounds, contaminating drinking water, and diminishing the recreational and aesthetic value of waterways and wetlands.

Uncontrolled runoff from construction sites is a particular water quality concern due to the devastating effects that sediment and turbidity can have on waterways and smaller streams. An Environmental Protection Agency's (EPA) Federal Register Notice states that turbidity levels in discharges from Construction and Development (C&D) sites may range from as low as 10-50 Nephelometric Turbidity Units (NTU) to several thousand NTU[2]. Sediment from construction projects that discharge to clear-water tributaries can have the greatest impact on fisheries, cause streambed scour, streambank erosion, and destruction of vegetative cover.

Sediment in water is generally considered in two broad categories. First, settleable solids rapidly settle out of water and move downstream or down a ditch if rolled along the bottom or resuspended by currents. Second, suspended sediment remains in the water column due to water turbulence, particle shape, and/or low specific gravity of individual particles. EPA selected turbidity as a measure of the fine-material fraction of suspended sediment for use in the C&D Effluent Limit Guidelines (ELG) as the pollutant to sample for a C&D Sites. EPA defined turbidity as "an expression of the optical property that causes light to be scattered and absorbed rather than transmitted with no change in direction of flux level through the sample…caused by suspended and colloidal matter such as clay, silt, finely divided organic and inorganic matter, and plankton and other microscopic organisms". One unit of measure of turbidity is the NTU. The NTU is based on the use of a nephelometer, an instrument that measures the amount of light scattered by a water sample at 90 °F to the path of incident light. This measurement is calibrated against the scattering of light in a standard suspension of formazin polymer and is reported in NTU.

Turbidity in Alaska's stream and rivers ranges from extremely low values of less than 1 NTU in clear-water drainages to intermediate levels of 50 NTU to naturally night levels of 50-4,000 NTU in several major rivers (Lloyd, 1986). Sampling at 46 sites in wadeable

[2] Federal Register Vol. 73, No. 230, p. 72572)

streams in the Tanana River basin found a range in turbidity from 0.1 to 716 NTU, with a median value of 1.7 NTU (Rinella, et. al., 2009).

3.2.3 Impaired Waters

The CWA mandates that states monitor and report on the quality of their waters. Section §305(b) requires that the quality of all water bodies be characterized and Section §303(d) requires that states list any water bodies that do not meet WQS. DEC develops and publishes an integrated water quality assessment report as required by the CWA. The most recent final report is *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report* (DEC, 2010).

The receiving water within the Fort Wainwright drainage area is the Chena River. The Chena River and Chena Slough were previously listed in 1994 for non-attainment of the petroleum hydrocarbon WQS. Sampling for hydrocarbons in 2005, 2007, and 2009 indicated levels met WQS and the impairment for petroleum hydrocarbons was removed. *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report* lists the Chena River on Alaska's 303(d) list of impaired waters due to elevated levels of sediment resulting from urban runoff. DEC is currently collecting and reviewing data to evaluate the sediment impairment for the Chena River and Chena Slough. In the event that a Total Maximum Daily Load is developed and approved by EPA prior to the expiration date of the permit, DEC may reopen this permit to incorporate the appropriate terms and conditions of the approved TMDL. Appendix A of the permit addresses such permit modifications consistent with 18 AAC 83.130.

4.0 PERMIT CONDITIONS

This section is intended to help the regulated community and members of the public understand the intent and basis of the permit language.

The conditions established by the permit are based on CWA Section 402(p)(3)(B), 33 U.S.C. §1342(p)(3)(B). This section requires that permits for an MS4 must effectively prohibit non-storm water discharges from entering the MS4 and requires controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and other provisions as the permitting authority determines appropriate for the control of such pollutants.

The permit requires the use of six minimum control measures or Best Management Practices (BMPs) as the primary means to control the sources of pollution in storm water discharges. DEC has determined that BMPs implemented and enforced through a comprehensive local storm water management program (SWMP) are the most effective mechanism for reducing the discharge of pollutants to the maximum extent practicable and for complying with the water quality provisions of the CWA. EPA considers maximum extent practicable to be an iterative process in which an initial SWMP is proposed and then periodically upgraded as new BMPs are developed or new information becomes available concerning the effectiveness of existing BMPs. DEC is implementing EPA's iterative process approach for MS4 improvement.

The National Pollutant Discharge Elimination System (NPDES) regulations at 40 CFR §122.44(k) allow for use of BMPs when numeric limits are infeasible. EPA's *Interim Permitting*

Approach for Water Quality-Based Effluent Limitations in Storm Water Permits Policy (August 1996) addresses the use of BMPs in storm water permits to provide for attainment of WQS. This policy is available on-line at http://www.epa.gov/npdes/pubs/swpol.pdf.

The NPDES application requirements for MS4 permittee's at 40 CFR §122.33 describe the information that must be submitted to DEC to obtain permit coverage. The MS4 permittee is required to develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from its MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. 40 CFR §122.34 outlines six minimum control measures the SWMP must include. DEC then determines the specific permit conditions necessary to reduce the discharge of pollutants to the maximum extent practicable. DEC carefully considered the program information submitted by the permittee in its APDES application to develop the SWMP requirements in the permit to develop the required permit conditions. The permit application and associated amendment are included in the administrative record supporting this permitting decision.

4.1 Applicability

4.1.1 Discharges Authorized Under the Permit

The permit authorizes storm water discharges to waters of the United States located in the State of Alaska from all portions of the MS4 that are owned and operated by the permittee within Fort Wainwright.

The permit limits the authorization to discharge municipal storm water in a variety of ways:

- Storm water runoff that is commingled with flows from process wastewater, non-process wastewater, and storm water associated with industrial or construction activity (as defined in 40 CFR §122.26(b)(14) and (15)) or other discharge flows are allowed, provided the commingled flows are already authorized by a separate individual or general APDES permit.
- Certain types of non-precipitation related run off (referred to as non-storm water) listed in 40 CFR §122.26(d)(2)(iv)(B)(1) are also allowed to enter the MS4 as long as the discharges are not considered to be sources of pollution to the waters of the United States. However, the permittee is responsible for the quality of the combined discharge and therefore have an interest in locating any uncontrolled or un-permitted discharges to the storm drain system. In Part 3.3, the permit requires the permittee to prohibit, through ordinance or other enforceable means, all other types of non-storm water discharges into the MS4s.
- Discharges from the MS4s must be controlled by a management program to reduce the discharge of pollutants to the maximum extent practicable.

4.1.2 Limitations on Permit Coverage

4.1.2.1 Non-Storm Water Quality

The permit authorizes the discharge of non-storm water if it meets one of three conditions: (1) the discharge is in compliance with a separate APDES permit, (2) the discharge is the result of a spill due to unforeseen weather event or consists of an

emergency discharge, or (3) consists of uncontaminated water from a list of approved sources.

4.1.2.2 Snow Disposal to Receiving Waters

Disposal of snow directly into waters of the United States, or directly to the MS4, is prohibited, due to concerns that the accumulated snow and melt water may contain elevated levels of chloride and other salts, suspended sediment, turbidity, and metals associated with sediment and turbidity. Discharges of snow melt resulting from or associated with the permittee's snow management practices (such as street plowing and application of traction material) are conditionally authorized, provided such activities are conducted in accordance with BMPs and a manner that minimizes adverse water quality impacts. DEC recognizes the permittee's use of the snow management practice of using ditches for snow storage as an acceptable management practice. The primary function of using the ditches during the winter months is for snow storage and is part of the permittee's snow disposal and management practices. The ditches are maintained by the permittee and are lined with gravel, soil, and vegetation that allows melting of snow and rainwater to infiltrate into the ground to help filter pollutants from directly entering surface receiving waters. As stated in the permit, discharges from the permittee's snow disposal and snow management practices are authorized under the permit when such practices are operated using appropriate BMPs required in Permit Part 3.6 Pollution Prevention and Good Housekeeping. BMPs may include detention basins, dikes, berms, ditches, and vegetative buffers. BMPs shall be designed, operated, and maintained to prevent and reduce pollutants in the discharges to the maximum extent practicable so as to avoid excursions above WQS.

4.1.2.3 Discharges to Water Quality-Impaired Receiving Waters

Waters that do not meet the numeric/narrative criteria for their use designation(s) are listed as impaired, in compliance with the CWA and state rules. DEC currently lists approximately 65 waters as impaired, with about 30 listed as candidates for development of a TMDL (DEC, 2010). TMDLs typically define both waste load allocations (WLAs) and load allocations (LAs) that specify how much of a particular pollutant can be discharged from both regulated and unregulated sources, respectively, such that the water body will again meet WQS. In a water body with an approved TMDL, any APDES permit conditions must be consistent with the assumptions and requirements of available WLAs. See 40 CFR §122.44(d)(1)(vii)(B). The Chena River is currently listed as impaired for sediments and is currently awaiting development of a TMDL and determination of a WLA. Status of TMDL's and a listing of approved and scheduled TMDL's can be accessed at http://dec.alaska.gov/water/tmdl/tmdl_index.htm.

4.2 Storm Water Management Requirements

4.2.1 General Requirements

The permittee is required to develop, implement, and enforce a SWMP designed to reduce pollutants to the maximum extent practicable, to control the discharge of pollutants from the MS4 in order to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. Regulations at 40 CFR §122.34 set forth six minimum pollution control measures to be included in a SWMP. For each measure, the regulations specify

certain required elements, and also provide guidance concerning what an adequate program should include. EPA has also developed separate guidance documents to assist permittees to develop their SWMP[3].

The APDES permit application submitted by the applicant in February 2016 contains the various elements of the permittees initial SWMP and identifies at least three specific BMPs and accompanying measurable goals to accomplish each of the six required program elements. The proposed permit incorporates those BMPs, and includes the specific activities put forth by the permittee. Milestones and compliance dates are also contained in Table 1: Schedule of Submissions of the permit. Annual reports are required to document program accomplishments. DEC may review and approve any plans or plan modifications required by the permit.

4.2.2 Transfer of Ownership, Operational Authority, or Responsibility for SWMP Implementation

DEC does not intend to mandate a permit modification should the permittee annex additional lands or accept the transfer of operational authority over portions of the MS4. Implementation of appropriate SWMP elements for these additions (annexed land or transferred authority) is required. The permittee must notify DEC of any such additions or transfers in the Annual Report. DEC may require a modification to the permit based on such new information.

4.2.3 Storm Water Management Program Resources

Part 2.5 of the permit requires the permittee to provide adequate support to implement their activities under the SWMP. Compliance with Part 2.5 will be demonstrated by the permittee's ability to fully implement the SWMP and other permit requirements as scheduled. The permit does not require specific funding or staffing levels, which provides the permittee the ability and incentive to adopt the most efficient and cost effective methods to comply with permit requirements.

4.3 Minimum Control Measures

The Phase II Rule[4] defines a SWMP for a small MS4 as a program composed of six elements that, when implemented together, are expected to reduce pollutants discharged into receiving water bodies to the maximum extent practicable. These six program elements, or minimum control measures, are:

- Public Education and Outreach,
- Public Involvement and Participation,
- Illicit Discharge Detection and Elimination,
- Construction Site Runoff Control,

[3] EPA's National Menu of BMPs for Storm Water Phase II (October 2000) (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm): Measureable Goals Guidance for Phase II Small MS4s (October 2001) (http://cfpub.epa.gov/npdes/storrmwater/measurablegoals/index.cfm)

[4] Stormwater Phase II Final Rule (64 FR 68722).

- Post-Construction Storm Water Management in New Development and Redevelopment, and
- Pollution Prevention/Good Housekeeping for Base Operations.

The permit requires the permittee to comply with non-numeric technology-based standards (Part 3 of the permit) by implementing minimum control measures. The achievement of these non-numeric standards will result in the reduction or elimination of pollutants from the permittee's storm water discharge.

4.3.1 Public Education and Outreach

The permittee must implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps the public can take to reduce pollutants in storm water runoff.

An informed and knowledgeable community is crucial to the success of a SWMP, since there is greater support for the program as the public gains a better understanding of the reasons why the program is necessary and important. Public support is particularly beneficial when permittees of small MS4s attempt to institute new funding initiatives for the program or seek volunteers to help implement aspects of the program. Education can lead to greater compliance with the program, as the public becomes aware of the personal responsibilities expected of them and others in the community, including individual actions they can take to protect or improve the quality of area waters.

The permit lists seven public education activities to accomplish this control measure, including the following: 1) distribution of storm water education materials throughout their jurisdiction, 2) educating tenants, 3) posting informational signs, and 4) promoting public service announcements about the storm water program using local media. The permittee will work together with other base environmental efforts to accomplish the distribution of education material and public service announcements to the media annually. DEC encourages the permittee to work cooperatively with the various branches to coordinate their collective efforts to educate residents about storm water pollution.

4.3.2 Public Involvement and Participation

This control measure complements the Public Education control measure. If given the opportunity to participate, members of the public generally will become more supportive of a program. The permit requires that the public participation efforts comply with the public notice requirements of the state and local law. DEC encourages the permittee to provide more opportunities for public participation, and to attempt to engage all groups serviced by the storm water system.

DEC believes that Fort Wainwright personnel can provide valuable input and assistance to the development of a base SWMP. The Fort Wainwright personnel should be given opportunities to play an active role in both the development and implementation of the program. Broad public support is crucial to the success of a SWMP; citizens who participate in the development and decision making process are partially responsible for the program and, therefore are more likely to take an active role in its implementation. In addition, the community is a valuable, and free, intellectual resource providing a broader base of

expertise and economic benefit. Citizens involved in the SWMP development process provide important cross-connections and relationships with other community and government programs, which can be particularly valuable when trying to implement a storm water program on a watershed basis, as encouraged by DEC.

The permit lists seven public involvement activities, including the following: 1) hosting a stream clean-up day, 2) coordinating an Adopt-a-Stream program, 3) developing and distributing a storm water attitude survey, and 4) developing a storm drain stenciling program. In addition, the permittee will meet regularly through the Storm Water Advisory Committee, which serves as a coordinating forum and provides an opportunity for the public to be involved in the ongoing development and implementation of the storm water program. DEC encourages the permittee to invite members representing a broad cross section of the community to participate in the committee. The permittee should also work and meet cooperatively with the surrounding community or adjacent MS4 permittees to discuss mutual efforts to engage citizens in the discussion of storm water management in the area.

4.3.3 Illicit Discharge Detection and Elimination

An illicit discharge, typically, is any discharge to a MS4 that is not storm water. There are some exceptions, such as fire-fighting activities and otherwise permitted discharges (Part 1.4.1.3.1. of the permit lists the types of non-storm water which can be discharged) provided they are not significant contributors of pollutants to the system. This minimum measure requires the permittee to detect and eliminate illicit discharges from their system.

Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or paint or used oil dumped directly into a drain). Examples of other sources include, but are not limited to: sanitary wastewater effluent from septic tanks, car wash wastewaters, radiator flushing disposal, laundry wastewaters, and improper disposal of auto and household toxic waste. The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to receiving water bodies. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

The following are required components that this measure includes:

- Develop or update a map of the storm sewer system which shows outfalls and names of the receiving waters.
- Prohibit discharges of non-storm water to the storm sewer system through the use of an ordinance or other regulatory mechanism, and provide for enforcement procedures and actions. DEC recognizes that the permittee may not have the legal authority to pass an ordinance; such organizations must evaluate existing policies and procedures and use those in the development of a regulatory mechanism.
- Develop and implement a program to detect and address non-storm water discharges. DEC recommends that this program contain procedures to identify the problem areas

in the community, determine the source of the problem(s), remove the source if one is identified, and document the actions taken.

- Conduct or revise an existing hydrologic study to delineate area catchment boundaries for the outfalls and identify storm water flow paths to waters of the U.S., this may include updating existing mapping.
- Inform base residents, public employees, and businesses of the hazards associated with illegal discharges.

Guidance, including model ordinances, is available from EPA and others to assist in the implementation of an illicit discharge detection and elimination program.

The permit lists fourteen activities to accomplish this control measure, including the following select few: 1) development of a specific program to detect and address illicit discharges, 2) adoption of regulatory mechanism to prevent illicit discharges, 3) completion of a hydrologic study of roadway drainage structures to further document the conveyance of storm water, and 4) completion of a comprehensive storm sewer map for the areas served by the MS4.

4.3.4 Construction Site Storm Water Runoff Control

Permittees are required to develop, implement, and enforce a program to reduce pollutants in storm water runoff from construction activities that result in a land disturbance of greater than or equal to one acre. The permittee's program must also address storm water discharges from construction activity disturbing less than one acre, if that construction activity is part of a larger common plan of development or sale that would disturb one or more acres.

The SWMP proposed to complete the plan within four years; however, DEC believes three years is a more appropriate timeframe due to the high potential for water quality impacts associated with construction sites.

Polluted storm water runoff from construction sites often flows to MS4s and ultimately is discharged into local rivers and streams. Sediment is usually the main pollutant of concern, as it has been demonstrated that sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation's waters.

Construction activities at Fort Wainwright must comply with APDES construction storm water permitting requirements. When a construction storm water permit is needed, DEC's Construction General Permit[5] (CGP) is the typical permitting route (as opposed to applying for an individual permit). The permittee is required to ensure that construction site and post-construction control measures for erosion and sediment control are met for construction activities within the MS4 boundaries. Since military installations, including Fort Wainwright, are not municipalities, they cannot issue an ordinance to ensure compliance with these requirements. This presents a challenge to installations in enforcing a SWMP in

[5] APDES General Permit for Storm water Discharges from Construction Activity, AKR100000

cases where they do not have direct management control over a project. To address this issue, Fort Wainwright will develop and implement a Garrison Policy specifically addressing storm water management. The purpose of the Garrison Policy is to enforce the Fort Wainwright's SWMP that is used to reduce the discharge of pollutants from its MS4 to the maximum extent practicable and to identify enforcement actions Fort Wainwright will apply against violator(s).

Even though discharges from all Alaskan construction sites disturbing more than one acre in Alaska are independently required to be authorized by an APDES storm water discharge permit, this additional minimum program measure is necessary to enable the permittee to effectively and directly control construction site discharges into their storm sewer systems. The permittee must incorporate the following elements into their local program:

- An ordinance or other regulatory mechanism requiring proper sediment and erosion control, and proper waste management controls, at construction sites;
- Procedures for site plan review of construction plans;
- Procedures for site inspection and enforcement; and
- Procedures for the receipt and consideration of public comments.

Fort Wainwright can and should review what existing procedures are already in place in their jurisdiction for these activities. For example, plans are often reviewed by the Fort Wainwright staff. The permittee must work to optimize coordination between different Fort Wainwright offices.

The permit allows the permittee to exempt from local regulation those sites which qualify for the low rainfall erosivity waiver from the APDES CGP. This waiver, allowed by EPA regulation at 40 CFR §122.26(b)(15)(i)(A), is based on the "R" factor from the Revised Universal Soil Loss Equation (RUSLE) and applies to projects when (and where) negligible rainfall/runoff is expected.

The permit lists seven activities to fulfill the requirements of this control measure, including the following select few: 1) to create a locally appropriate Construction Best Management Practices Design Guide, 2) to adopt and implement a construction activity storm water control regulatory mechanism, and 3) to conduct at least one educational workshop for the local construction/design engineering audience.

4.3.5 Post-Construction Storm Water Management in New Development and Redevelopment

This control measure applies in areas undergoing new development or redevelopment. Post-construction controls are necessary because runoff from such areas has been shown to significantly affect receiving water bodies. Many studies indicate that prior planning and design for the minimization of pollutants in post-construction storm water discharges is the most cost-effective approach to storm water quality management.

Post-construction runoff can cause an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it can pick up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are

carried to receiving waters, such as lakes, ponds, and streams. Post-construction runoff also increases the quantity of water delivered to the water body during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete, and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

This minimum measure requires the permittee to develop, implement, and enforce a program to reduce pollutants in post-construction runoff from areas of new development and redevelopment. This measure applies at minimum to projects which are greater than or equal to one acre in size. In order to implement this measure, the permittee must:

- Develop and implement locally appropriate strategies which include a combination of structural and/or nonstructural BMPs requirements. Non-structural requirements can include planning, zoning, and other local requirements such as buffer zones. Structural controls include the use of storage, low impact development, infiltration basins, or vegetative practices such as rain gardens or artificial wetlands;
- Adopt an ordinance or other regulatory mechanism to address post- construction discharges; and
- Ensure adequate long-term operation and maintenance of BMPs.

The permit lists six activities to accomplish this control measure, including the following select few: 1) to create a New Development/Redevelopment Design Guide, 2) to adopt an ordinance/policy to require post-construction storm water controls at new and re-developed sites in accordance with the Design Guide, and 3) to host at least one training session for the local engineering and landscape architect audience on the newly adopted requirements for post-construction storm water management.

Green infrastructure applications and approaches can reduce, capture, and treat storm water runoff at its source before it can reach the storm sewer system. Site-specific practices, such as green roofs, downspout disconnections, rain harvesting/gardens, planter boxes, and permeable pavement are designed to mimic natural hydrologic functions and decrease the amount of impervious area and storm water runoff from individual sites. The applications and design approaches can also be applied in neighborhood settings (i.e., green streets) or at larger regional scale (i.e., riparian buffers and urban forestry) to manage storm water. These applications and approaches can keep storm water out of the storm sewer system to reduce overflows and to reduce the amount of untreated storm water discharging to surface waters.

4.3.6 Pollution Prevention/Good Housekeeping

This measure requires the permittee to implement an operation and maintenance program to prevent or reduce pollutant runoff from activities conducted by the permittee. The permittee must examine and subsequently alter their own actions to reduce the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, storage and vehicle maintenance areas, which may be discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

The SWMP did not address flood management projects; however due to the level of potential impacts from flooding, DEC added a requirement that the permittee must ensure the new flood management projects are assessed for impacts to water quality.

Activities associated with maintenance of parks and open spaces, as well as fleet and building maintenance, must also be considered for possible water quality impacts. While this measure is meant primarily to improve or protect receiving water quality by improving facility operations, it also can result in a cost savings for the permittee, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

The permittee must examine its maintenance activities and schedules, and inspection procedures for controls to reduce floating debris and other pollutants. By evaluating existing practices, the permittee can improve operations to reduce or eliminate discharges from roads, parking lots, maintenance and storage yards, waste transfer stations, salt/sand storage locations, and snow storage/disposal areas. Industrial APDES storm water permit requirements under the Multi-Sector General Permit (MSGP) (AKR060000) apply to several facilities within the MS4. These facilities are considered part of the MS4.

The permit lists five activities to implement this control measure, which involve evaluating existing practices and identifying specific activities to address improvement. The permittee will evaluate the effectiveness of their current street cleaning operations, with particular attention to when street cleaning occurs relative to spring break up and a comparison of various available street cleaning equipment. The permittee will also evaluate the effectiveness of their respective storm drain cleaning operations to identify possible improvements. Lastly, the permittee plans to examine all other facility operations under their control and identify changes in operations that will reduce adverse impacts to water quality. Each of these evaluation efforts will result in some type of training for facility employees to optimize water quality protection.

4.4 Monitoring, Evaluation, Reporting, and Recordkeeping Requirements

4.4.1 Monitoring and Evaluation of Overall Program Effectiveness

The Phase II storm water regulations at 40 CFR §122.34(g) require that the permittee evaluate program compliance, the appropriateness of BMPs in their SWMPs, and progress towards meeting their measurable goals. These requirements have been included in Part 4 of the permit.

The Monitoring Program Plan must be designed to meet the following objectives:

- Assess compliance with this permit;
- Measure the effectiveness of the permittee's 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; and
- Detect and eliminate illicit discharges and illegal connections to the MS4.

The nature of the monitoring activities to be implemented by the permittee largely depends on the measurable goals selected by the permittee. Measurable goals in the permit application are primarily measures of the level of effort given to implementing a particular BMP (such as frequency of street sweeping), but may also encompass actual measures of water quality improvement. DEC encourages a mix of physical, chemical, biological, and programmatic indicators to evaluate the appropriateness of BMPs and progress towards achieving their measurable goals. The purpose of this evaluation is to determine whether or not the MS4 is meeting the requirements of the minimum control measures of the permit.

DEC expects that during the initial five year term of the permit, the permittee will opt for measurable goals which define and report on a level of effort for implementation of BMPs. This information must be submitted to DEC in the Annual Report described below. For chemical, biological, or physical storm water monitoring conducted by the permittee, Part 4.1.2 of the permit includes requirements related to representative monitoring, test procedures, and recording results. All chemical, physical, or analytical monitoring must be conducted according to a Quality Assurance Plan (QAP). The permit requires a revised QAP to be submitted to DEC and be available upon request.

4.4.2 Annual Reports

In general, the annual report must document and summarize implementation of the SWMP during the previous year and evaluate program results and describe planned changes towards continuous improvement. DEC requires the permittee to use the Summary Annual Report Template in this permit to obtain summary information about the status of the MS4. In addition to the summary annual report, the permittee must also submit a more detailed annual report. Requirements for the minimum control measures in Part 3.0 of the permit detail specific information to be reported for each control measure. The detailed annual report should clearly illustrate three key items for each SWMP area:

- **Summary of the Year's Activities.** The summary should describe and quantify program activities for each SWMP component. Responsible persons, agencies, or departments should be included in the summary. Each activity should be described in relation to achievement of established goals or performance standards.
- **Description of SWMP Effectiveness.** The Annual Report should not only describe the previous year's activities, but should also highlight the SWMP's effectiveness (Part 4.2 of the permit) using indicators required in Part 4.1 of the permit.
- **Planned Activities and Changes.** The Annual Report should describe activities planned for the next year highlighting any changes made to improve control measures or program effectiveness.

The Annual Report(s) may be submitted to DEC in electronic format (preferred) using universally available document formats, such as Adobe Acrobat PDF or other available means. However, while the Annual Report text can be submitted in electronic format, the required certification statement must be signed and dated in hard copy by the permittee as directed in Appendix A, Part 1.12.2 of the permit.

4.4.3 Recordkeeping

Part 4.4 of the permit requires the permittee to keep all records required by the permit for a period of at least five years. Records need to be submitted only when requested by DEC. The permittee's SWMP must be available to the public; the permittee may charge a reasonable fee for copies, and may require a member of the public to provide advance notice of their request. DEC encourages the permittee to make their program materials available to the public electronically via a website or other viable means.

4.4.4 Addresses

Submittals required by the permit must be made to the address specified in the permit, Appendix A, Part 1.1.2.

4.5 Appendices

4.5.1 Standard Conditions (Appendix A)

Appendix A of the permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on the regulations and cannot be challenged in the context of an individual APDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements; compliance responsibilities; and other general requirements.

4.5.2 Acronyms (Appendix B)

Appendix B is a list of acronyms found in the permit and fact sheet which aids in the understanding of the permit and its requirements.

4.5.3 Definitions (Appendix C)

Appendix C contains definitions of statutory, regulatory, and other terms important for understanding the permit and its requirements.

4.5.4 Annual Report Form (Appendix D)

Appendix D contains an annual report form for summarizing the annual results of storm water activities.

5.0 ANTIBACKSLIDING

18 AAC 83.480 requires that "effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." 18 AAC 83.480(c) also states that a permit may not be reissued "to contain an effluent limitation that is less stringent than required by effluent guidelines in effect at the time the permit is renewed or reissued." The effluent limitations in this permit reissuance are consistent with 18 AAC 83.430.

Effluent limitations may be relaxed under two categories as allowed under 18 AAC 83.480 (CWA §402(o)) and CWA §303(d)(4). 18 AAC 83.480(b) allows relaxed limitations in renewed, reissued, or modified permits when there have been material and substantial alterations or additions to the permitted facility that justify the relaxation. CWA §303(d)(4)(A) states that, for water bodies where the water quality does not meet applicable water quality standards, effluent limitations may be revised under two conditions; the revised effluent limitation must ensure the attainment of the water quality standard (based on the water body's TMDL or the WLA) or the designated use which is not being attained is

removed in accordance with the water quality standard regulations. CWA §303(d)(4)(B) states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, water quality-based effluent limitations may be revised as long as the revision is consistent with the State's antidegradation policy. Even if the requirements of CWA §303(d)(4) or 18 AAC 83.480(b) are satisfied 18 AAC 83.480(c) prohibits relaxed limits that would result in violations of WQS or effluent limitation guidelines. This issuance represents the first issuance of the permit, therefore, further anitbacksliding analysis is not warranted.

6.0 ANTIDEGRADATION

Section 303(d)(4) of the CWA states that, for waterbodies where the water quality meets or exceeds the level necessary to support the waterbody's designated uses, water quality-based effluent limitations (WQBELs) may be revised as long as the revision is consistent with the State's antidegradation policy. The Antidegradation Policy of the WQS (18 AAC 70.015) states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected. This section analyzes and provides rationale for the Department's decisions in the permit issuance with respect to the Antidegradation Policy.

The Department's approach to implementing the Antidegradation Policy, found in 18 AAC 70.015, is based on the requirements in 18 AAC 70 and the Department's *Policy and Procedure Guidance for Interim Antidegradation Implementation Methods*, dated July 14, 2010. Using these procedures and policy, the Department determines whether a waterbody, or portion of a waterbody, is classified as Tier 1, Tier 2, or Tier 3, where a higher number tier indicates a greater level of water quality protection. At this time, no Tier 3 waters have been designated in Alaska.

The permit authorizes discharges to water bodies have been impaired as a result of urban runoff. The Chena River is listed as impaired for sediments on DEC's most recent *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report*. However, permit conditions (e.g., minimum control measures) have been developed to ensure existing uses are maintained and protected. For the purpose of this analysis, the Department classifies the impaired waterbodies as Tier 1 for the parameters causing the impairment. Compliance with permit conditions will limit storm water discharges to those waterbodies listed as impaired. As a result, water quality in those waterbodies is expected to improve subject to compliance with permit conditions. Accordingly, DEC finds that the existing uses in those waterbodies designated as Tier 1 for the parameters they are impaired for will be maintained and protected. The remainder of this antidegradation analysis conservatively assumes that the discharge is to a Tier 2 waterbody, which provides for the next highest level of protection. The Tier 2 analysis for this water follows.

The State's Antidegradation Policy in 18 AAC 70.015(a)(2) states that if the quality of water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (i.e., Tier 2 waters), that quality must be maintained and protected. The Department may allow a reduction of water quality only after finding that five specific requirements of the antidegradation policy at 18 AAC 70.015(a)(2)(A)-(E) are met. The Department's findings are as follows:

1. **18 AAC 70.015 (a)(2)(A)**. *Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located.*

In order to conduct their important ongoing military and civic functions, the permittee requires that infrastructure be constructed and maintained to accommodate important military, economic and social

development in the area. Without road construction and maintenance, as well as storm water collection systems with discharge points, successful operations of the permittee's important functions (and the citizens they serve) would be hampered. Storm water discharges associated with the permittee's activities will be controlled via the requirements of applicable SWMPs and SWPPPs, which implement the most effective and reasonable practices.

The Department concludes that the lowering of the water quality is necessary to accommodate important economic and social development in the area and that the finding is satisfied.

2. **18 AAC 70.015 (a)(2)(B)**. *Except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030.*

The adaptive management approach (from permit cycle to permit cycle) is used in MS4 permits unlike other types of NPDES permits because there is not a need to require strict compliance with WQS if discharges are controlled to the maximum extent practicable and comply with such other provisions as the NPDES authority determines to be appropriate (See *Defenders of Wildlife v. Browner*, 191 F3d 1159, 9th Cir., 1999). The maximum extent practicable provision of the CWA allows the NPDES authority the broad discretion whether to require strict compliance with state WQS.

A key requirement in the storm water Phase II rule[6] is a report (40 CFR 122.34(g)(3)) that includes "the status of compliance with permit conditions, an assessment of the appropriateness of identified [control measures] and progress towards achieving identified measureable goals for each of the minimum control measures." This assessment is critical to the storm water program framework which uses an adaptive management approach of implementing control, conducting assessments, and designating refocused controls leading toward attainment of water quality criteria. The permittee is required to conduct an annual effectiveness assessment to evaluate the effectiveness of significant control measures, SWMP components, and the SWMP as a whole. The permittee is to assess and modify, as necessary, any or all existing SWMP components and adopt new or revised SWMP components to optimize reductions in storm water pollutants through an iterative process. This iterative process includes routine assessment of the need to further improve water quality and protect beneficial uses, review of available technologies and practices to accomplish the needed improvement, and evaluate resources available to implement the technologies and practices. Through this type of analysis, the applicable criteria found in 18 AAC 70.020 will be maintained and protected.

With respect to 18 AAC 70.235 and 18 AAC 70.030, no site-specific criteria has been designated for the receiving water and permit conditions are designed to control potentially toxic discharges.

The Department has determined that reducing water quality will not violate the applicable criterial of 18 AAC 70.020 or 18 AAC 70.235, or the whole effluent toxicity limit in 18 AAC 70.030, and that the fining is satisfied.

3. **18 AAC 70.015(a)(2)(C)**. *The resulting water quality will be adequate to fully protect existing uses of the water.*

As previously discussed and listed in Fact Sheet Section 3.2.3, the permit authorizes discharges to impaired water bodies; however, permit conditions (e.g., BMPs) have been developed to ensure existing uses are maintained and protected. Further, compliance with permit conditions will result in a reduction

[6] Stormwater Phase II Final Rule (64 FR 68722).

of pollutant loading to those water bodies listed as impaired. As a result, water quality in those water bodies as well as applicable Tier 2 water bodies should improve subject to compliance with these newly implemented permit conditions.

The Department has determined that the resulting water quality will be adequate to fully protect existing uses of the water and that the finding is satisfied.

4. **18 AAC 70.015(a)(2)(D)**. *The methods of pollution prevention, control, and treatment found by the department to be most effective and reasonable will be applied to all wastes and other substances to be discharged.*

DEC generally implements permit conditions that specify that the permittee implement controls, BMPs or control measures, and other activities to reduce pollutants as identified in a SWMP. The SWMP may address control measures such as: public education and outreach, public participation/involvement, illicit discharge detection and elimination, construction site runoff control, post construction runoff control, and pollution prevention/good housekeeping. The SWMP must also include measurable goals to evaluate the effectiveness of individual control measures and the SWMP as a whole, requirements for industrial storm water discharges to the MS4, and reporting requirements.

The site-specific, activity-specific process of developing, implementing, and adjusting the pollution control practices contained in the SWMP constitutes the types of alternatives analysis and use of "the most effective and reasonable"… "methods of pollution, prevention, control, and treatment" cites as required under Alaska's Antidegradation Polity for activities that would degrade water quality.

Control measures that prevent or minimize water quality impacts from Fort Wainwright activities and construction activities are described in Part 3.0 of the proposed MS4 permit and in Chapters 4 and 5 of the *Alaska Storm Water Guide (*DEC, 2011). The *Alaska Storm Water Guide* provides detailed information on temporary storm water control for active construction sites. The storm water management process outlined in that chapter consists of the development of a SWMP which provides the basis for all pollutant discharge prevention/minimization activities. As noted below, development of the SWMP requires a comprehensive evaluation of the MS4, the proposed construction activities, and possible pollutant discharges. This information is used to create the SWMP, which contains structural and non-structural management practices; specification for selecting, sizing, sitting, operating, and maintaining them; and procedures for inspecting the management practices and repairing or replacing them as needed.

A permittee is required to implement erosion, sediment, and other storm water management practices to avoid or minimize pollutant discharges, as detailed in Part 3.0 of the permit. Alternative control measures that may provide equal or better water quality protection are also allowable, and encouraged, especially where those alternatives would provide better water quality and environmental protection.

The Department uses an integrated approach in the permit for developing and implementing "methods of pollution, prevention, control, and treatment" required by Alaska's Antidegradation Policy. This integrated approach includes requirements for:

- Erosion and sediment control, pollution prevention measures and prohibiting certain discharges (Part 3.4);
- Revised and expanded training requirements for the construction and post-construction (Part 3.4 and 3.5); and
- Monitoring of storm water discharges for illicit discharges (Part 3.3).

Most pollution controls at construction sites are not installed in isolation, but instead are part of a suite of control measures that are all designated to work together. Designers use the treatment train approach to design a series of practices that minimize storm water pollution and achieve compliance with the Alaska Construction General Permit (AKR100000) requirements. For example, a designer may use a series of control measures to prevent sediment discharges from a site – a diversion ditch at the top of a disturbed slope (to minimize storm water flowing down the slope), mulching on the slope (to minimize erosion), and silt fence at the bottom of the slope (to capture sediment). This treatment train would help protect the slope better than relying on a single control measure, such as a silt fence.

The site-specific nature of the SWMP, the requirement that it be implemented in a manner that addresses storm water impacts to the maximum extent practicable, and provisions that the approach be adjusted to ensure ongoing storm water management effectiveness provide the implementation methods needed to appropriately support the antidegradation policy.

The Department has determined the methods of pollution prevention, control, and treatment in the permit to be the most effective and reasonable, which will be applied to all wastes and other substances to be discharges, and the finding is satisfied.

5. **18 AAC 70.015(a)(2)(E)**. *All wastes and other substances discharged will be treated and controlled to achieve (i) for new and existing point sources, the highest statutory and regulatory requirements; and (ii) for nonpoint sources, all cost-effective and reasonable best management practices.*

The *MS4 Permit Improvement Guide* (EPA, 2010), in conjunction with the six minimum control measures, constitutes the highest regulatory requirements for municipal storm water management. This permit, as part of the iterative process of improvement of MS4 permits, forms the basis from which incremental changes will be made in the future through changes in the permit requirements.

Green infrastructure is an approach that communities can choose to maintain healthy waters, provide multiple environmental benefits and support sustainable communities. Green infrastructure can treat storm water that is not retained.[7] Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refer to storm water management systems that mimic nature by soaking up and storing water.

Low Impact Development (LID) is an approach to land development (or re-development) that works with nature to manage storm water as close to its source as possible. By preserving and recreating natural landscape features, LID minimizes effective imperviousness, creating functional and appealing site drainage that treats storm water as a resource rather than a waste product. Bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavement are some of the LID practices used to adhere to these principles. By implementing LID principles and practices, water can be managed in a way that reduced the impact of built areas and promotes the natural movement of water within an ecosystem or watershed. Applied on a broad scale, LID can maintain or restore a watershed's hydrologic and ecological functions.

[7] Center for Watershed Protection, September 2007. *National Pollutant Removal Performance Database,* Version 3 (http://www.stromwaterok.net/CWP Documents/CWP-07 National Pollutant Removal Perform Database.pdf)

The requirements contained in the Alaska CGP, the SWPPP development process (Part 5 of the CGP Permit), development and implementation of the SWMP to include construction site storm water runoff control and post-construction storm water management control measures and good housekeeping measure (Part 3 of this permit), and BMP's provided in the *Alaska Storm Water Guide* (Chapter 4) comprise a comprehensive, integrated approach for developing and implementing "methods of pollution prevention, control, and treatment" required by Alaska's Antidegradation Policy.

The Department has determined that the permit complies with the highest statutory and regulatory requirements. The Department concludes that this finding is satisfied.

7.0 OTHER LEGAL REQUIREMENTS

7.1 Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA) Marine Fisheries and the U.S. Fish and Wildlife Service if their actions could beneficially or adversely affect any threatened or endangered species. As a state agency, DEC is not required to consult with these federal agencies regarding permitting actions; however, DEC voluntarily contacted the agencies to notify them of the development of the permit and to obtain listings of threatened and endangered species near the proposed discharges. There are no listed species or designated critical habitat in the Fairbanks North Star Borough. DEC will provide these agencies with the draft permit and fact sheet during the public review period. Any comments received from the agencies regarding the listing of threatened or endangered species will be considered prior to reissuance of this permit.

7.2 Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish from commercially-fished species to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires federal agencies to consult with NMFS when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH.

As a state agency, DEC is not required to consult with NMFS regarding permitting actions; however, DEC interacts voluntarily with NMFS. DEC initiated discussion with NMFS on development of the permit to identify any EFH under their jurisdiction in the vicinity of the permit area. DEC reviewed the NMFS website http://alaskafisheries.noaa.gov/habitat/efh for information on EFH. The EFH interactive map on the website indicates the Chena River contains essential fish habitat for spawning and rearing Chinook and Chum salmon.

The permit includes non-fishing activities that may have the potential to adversely affect the quantity or quality of EFH in upland and riverine systems. DEC addressed EFH consideration in the Antidegration Analysis and through inclusion of control measures. DEC maintains with the addition of the non-numeric effluent limits (the control measures detailed in Part 3.0 of the permit) that all the non-fisheries impacts expected from the proposed discharges are being addressed in the permit.

7.3 Permit Expiration

The permit will expire five years from the effective date of the permit.

8.0 REFERENCES

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2. AAC. 2009. Alaska Administrative Code, Revised 2009. State of Alaska, Juneau, AK.
3. ADEC. 2008. Public Participation in APDES Permitting Process. Alaska Department of Environmental Conservation, Wastewater Discharge Authorization Program, Juneau, AK.
4. ADEC. 2011. Alaska Storm Water Guide. Alaska Department of Environmental Conservation, Division of Water. Anchorage, AK.
5. ADEC. 2014. Alaska Pollutant Discharge Elimination System Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems. Permit number AKS-053651. Alaska Department of Environmental Conservation, Wastewater Discharge Authorization Program, Anchorage, AK.
6. ADEC. 2010. Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report, July 15, 2010. Alaska Department of Environmental Conservation, Wastewater Discharge Authorization Program, Juneau, AK.
7. NOAA, 2015. Cooperative Climatological Data Summaries. Prepared by the Western Region Climate Center, Reno, NV.
8. NMFS, 2005. Appendix G: Non-fishing Impacts to Essential Fish Habitat and Recommended Conservation Measures. Prepared by the National Marine Fisheries Service, April 2005.
9. Tetra Tech, 2008. Evaluation of Options for Antidegradation Implementation Guidance. Prepared for the Alaska Department of Environmental Conservation, Juneau, AK.
10. USEPA. (U.S. Environmental Protection Agency). 2009. Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act. EPA-841-B-09-001. U. S. Environmental Protection Agency, Washington, DC.
11. USEPA. (U.S. Environmental Protection Agency). 2010. MS4 Permit Improvement Guide. EPA-833-R-10-001. U. S. Environmental Protection Agency, Washington, DC.
12. USEPA. (U.S. Environmental Protection Agency). 1983. Results of the Nationwide Urban Runoff Program, Executive Summary. Office of Water, Washington, DC.

APPENDIX A. FACILITY INFORMATION

Figure A-1: Fort Wainwright MS4 Storm Water Features

(Figure A-1: Fort Wainwright MS4 Storm Water Features is located on the following page.)

N

2 km

LEGEND

- Closed Conduit
- Open Channel
- Installation Boundary
- Watershed Boundary
- Storage Area
- Outfall
- Culvert
- Inlet
- Manhole
- Curb cut

PREPARED FOR
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DIRECTORATE OF PUBLIC WORKS

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WARNER COLLEGE OF NATURAL RESOURCES
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Revisions			
No.	Description	Date	By

Project:
STORMWATER SURVEY AND MODEL
TASK ORDER 0012
FORT WAINWRIGHT, ALASKA

Sheet 2:
WATERSHED MAP

Date: 1/2013	Created by: JS	Checked by: JS
Scale: Approx 1"=725'	Project no. TO 0012	Figure no. Sheet 2

Colorado State University CEMML Center for Environmental Management of Military Lands

Figure A-2: Fort Wainwright Storm Water Routing Map

(Figure A-2: Fort Wainwright Storm Water Routing Map is located on the following page.)

Sheet 1 - Stormwater Routing Map

Industrial Activities

- Covered Storage Areas
- Fueling Areas
- Outdoor Maintenance Areas
- Oil/Water Separators
- Industrial Outfall (monitoring points)
- Snow Stockpiling Sites
- Outdoor Wash Areas

Stormwater Infrastructure

- Culvert
- Open Drainage, Paved
- Open Drainage, Unpaved
- Pipe
- Curb-cut
- Inlet
- Junction

Map Elements

- Wetland
- Railroad
- Industrial Building
- Water bodies
- Installation Boundary
- HEMTT
- Quarry

List of Facilities

1185 - Birch Hill Ski Area Maintenance Facility
1191 - DPW Landfill
1500 - BLM Maintenance Facility & Fuel Pump
1510 - BLM Bulk Fuel Issue & HMHW Management
Fire Retardant Site - BLM Fire Retardant Storage & Issue
1544 - BLM Fire Cache Warehouse
1557 - Hangar 1
1565 - Aviation Fueling and POL Storage
2077 - Hangars 7 & 8
2078 - Aviation Re-fuel Facility
2088 - Hangar 6
2095 & 2096 - Golf Course Maintenance Facility
2116 - Alert Holding Area
2120 - Fueling/De-fueling Island at AHA
2132 - Hangar 5
2295 - Vehicle/Equipment Maintenance Facility
2297 - Brigade Motor Pool
3007 - Hangar 4
3015 - DPW Contractor Maintenance
3018 - DPW Contractor Shops
3026 - Pest Management Shop
3030 - Logistics Readiness Center
3380 - Stryker Wash Facility
3425 - Vehicle/Equipment Maintenance Facility
3467 - Vehicle/Equipment Maintenance Facility
3470 - Vehicle/Equipment Maintenance Facility
3484 - Defense Fuel Supply Point
3485 - Vehicle/Equipment Maintenance Facility
3487 - Brigade Warehouse
3489 - Hazardous Material Accumulation Point
3490 - DOL Installation Maintenance Division
3492 - Vehicle/Equipment Maintenance Facility
3494 - Vehicle/Equipment Maintenance Facility
3496 - Warm and Outdoor Storage Facility
3498 - Consolidated Brigade Motor Pool
3562 - American Tire
3730 - Automotive Skills Center
4050 - MWR Outdoor Recreation Equipment Issue Shop
4058 - AAFES Express Fueling Station
5010 - DLA Disposition Services Complex
5109 - FWA Range Control Maintenance Facility

Notes:
Fort Wainwright's main post is 13,756 acres, including the small arms complex. The urban portion of the main post that encompasses the cantonment area, housing, and Ladd Army Airfield is 5,785 acres. (Source: Integrated Natural Resources Management Plan, US Army Garrison Fort Wainwright, Update June 4, 2014.)

Center for Environmental Management MILITARY LANDS
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0 0.125 0.25 0.5 Miles