475.38.013
ADEC File No.

Hazard ID No.

US Army Corps of Engineers®
Alaska District

NORTHEAST CAPE
HTRW REMEDIAL ACTIONS

Northeast Cape, St. Lawrence Island, Alaska
Contract No. W911KB-12-C-0003
FUDS No. F10AK0969-03

STORM WATER POLLUTION PREVENTION PLAN

REVISION 0
May 2012

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
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Storm Water Pollution Prevention Plan

for

HTRW Remedial Actions

Northeast Cape, St. Lawrence Island, Alaska

Operator

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SWPPP Contact(s)

Eric Barnhill, Alaska CESCL

Bristol Environmental Remediation Services, LLC

111 W. 16th Avenue, Third Floor

Anchorage, AK 99501

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SWPPP Preparation Date

5/1/2012

Estimated Project Dates:

Start of Construction

6/15/2012

Completion of Construction

10/5/2012

APDES permit tracking number: AKR10DY50

RECORD OF SWPPP AMENDMENTS

Date of Revision	Section	Description

OPERATOR PLAN AUTHORIZATION/CERTIFICATION/DELEGATION

I hereby state that, based on my review, this Storm Water Pollution Prevention Plan (SWPPP) meets the minimum requirements of the Construction General Permit and that Bristol Environmental Remediation Services, LLC, (Bristol) has day-to-day operational control of the project site. Charles Croley is responsible for the maintenance and implementation of the SWPPP, including inspections, documentation, and application of the Best Management Practices at the site. Charles Croley will notify all subcontractors of the requirements of this SWPPP. The USACE has operational control over the project specifications, including the ability to make changes to the project specifications.

I hereby designate Eric Barnhill, Storm Water Lead, as my authorized representative. This designee is responsible for the overall operations of the site and will be responsible for the implementation of the SWPPP, compliance with the Construction General Permit, selection and implementation of additional Best Management Practices as conditions warrant, and signing all inspection reports required.

I certify under penalty of law that this document and all attachments were prepared under direction of Bristol Environmental Remediation Services, LLC, in accordance with a system designed to ensure 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 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.

Steve Johnson, Bristol Chief Executive Officer/Senior Engineer

Signature	Date
Print name	Title

TABLE OF CONTENTS

APPENDICES

ACRONYMS AND ABBREVIATIONS

′	minutes
″	seconds
°	degrees
ACGP	Alaska Construction General Permit
ADEC	Alaska Department of Environmental Conservation
AFS Ops	Air Force Station Operations
APDES	Alaska Pollutant Discharge Elimination System
BMP	Best Management Practice
Bristol	Bristol Environmental Remediation Services, LLC
CESCL	Certified Erosion and Sediment Control Lead
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
EPP	Environmental Protection Plan
mg/kg	milligrams per kilogram
NE Cape	Northeast Cape
NOI	Notice of Intent
NOT	Notice of Termination
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricants
PPE	personal protective equipment
SHPO	State Historic Preservation Office
SWPPP	Storm Water Pollution Prevention Plan
T&E	threatened and endangered
TMDL	Total Maximum Daily Load
USACE	US Army Corps of Engineers

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SECTION 1 - GENERAL INFORMATION

1.0 PERMITTEE (5.3.1)

1.1 OPERATOR(S)

Operator(s):
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
Tel: (907) 563-0013
Fax: (907) 563-6713
Area of Control: Operational control of the site and construction.

US Army Engineer District, Alaska
P.O. Box 6898
Elmendorf AFB, AK 99506-0898
Tel: (907) 753-2689
Area of Control: Operational control over plans and specifications, and ability to make modifications.

Owner:
US Army Engineer District, Alaska
P.O. Box 6898
Elmendorf AFB, AK 99506-0898
Tel: (907) 753-2689

Project Manager and Site Superintendent:
Charles Croley
Bristol Construction Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
Tel: (907) 563-0013
Fax: (907) 563-6713
ccroley@bristol-companies.com
Area of Control: General oversight of all construction activities and decisions.

1.2 SUBCONTRACTORS

None

2.0 STORM WATER CONTACTS (5.3.2)

Storm Water Pollution Prevention Plan (SWPPP) Contact/Storm Water Lead:

Bristol Environmental Remediation Services, LLC
Eric Barnhill, Alaska Certified Erosion and Sediment Control Lead(AK CESCL)
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
Tel: (907) 563-0013
Fax: (907) 563-6713
ebarnhill@bristol-companies.com
Area of Control: Responsible for weekly inspections, updating the SWPPP, and general storm water issues.

Emergency 24-hour contact:

Bristol Environmental Remediation Services, LLC
Eric Barnhill
Tel: (907) 378-3763

This SWPPP was prepared by:

Derek Tannahill and Travis Woods, P.E.
Bristol Engineering Services Corporation
111 W. 16th Avenue, Third Floor
Anchorage, Alaska 99501
Tel: (907) 563-0013

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3.0 PROJECT INFORMATION (5.3.3)

3.1 PROJECT INFORMATION

Project/Site Name: Northeast Cape HTRW Remedial Actions

Project Street/Location: Main Operations Complex, Site 13, Site 31, Site 21, Site 28

City: Northeast Cape (NE Cape), St. Lawrence Island **State:** AK **Zip Code:** 99769

Borough or Subdivision: Nome

Latitude/Longitude:

Latitude:	**Longitude:**
63.312° N (decimal degrees)	168.957° W (decimal degrees)

Method for determining latitude/longitude:

☐ USGS topographic map (specify scale: _________) ☐ EPA Web site ☐ GPS

☒ Other (please specify): Google Maps

The SWPPP will be retained and can be viewed at the construction site described above until the completion of the project and final stabilization has been achieved. The project construction site notice is in Appendix H.

3.2 PROJECT SITE-SPECIFIC CONDITIONS (5.3.3)

St. Lawrence Island is located in the Bering Sea, near the territorial waters of Russia, approximately 135 air miles southwest of Nome, Alaska. The project site, located near Northeast Cape (NE Cape), falls between Kitnagak Bay to the northeast, Kangighsak Point to the northwest, and the Kinipaghulghat Mountains to the south. The site is located at 63 degrees (°) 19 minutes (′) 12 seconds (″) north latitude, 168°56′24″ west longitude, in Township 25 South, Range 54 West, Kateel River Meridian.

The NE Cape site, a former White Alice Communication System and radar facility, is approximately 9 miles west of the northeastern cape of St. Lawrence Island (Figure 1). The site extends from the Bering Sea coast to the summit plateau area of the Kinipaghulghat Mountains, at an elevation of 1,820 feet above mean sea level.

Mean annual precipitation based on nearest weather stations (inches):

The mean annual precipitation for the project area is 17.56 inches of rainfall and 70.5 inches of snowfall, based on the information given at the Western Regional Climate Center website, Station 503226 (Appendix H).

Soil type(s) and slopes:

St. Lawrence Island consists of isolated bedrock highlands of igneous, metamorphic, and older sedimentary rocks surrounded by unconsolidated surficial deposits overlying a relatively shallow erosional bedrock surface. In the immediate vicinity of the Lower Mountain area, shallow unconsolidated surficial materials overlie quartz monzonitic rocks of the Kinipaghulghat Pluton. The Pluton forms the mountainous work area south of the Air Force Station Operations (AFS Ops) Area, including Kangukhsam Mountain. The Suqitughneq River drainage at the work area in the Kinipaghulghat Pluton has created an erosional valley and alluvial fan of unconsolidated sediments. Granitic bedrock materials are exposed at the coast north of the site at Kitnagak Bay, suggesting that quartz monzonitic bedrock underlies the unconsolidated materials at a relatively shallow depth on a wave-cut erosional platform (USACE, 2002).

The unconsolidated alluvial materials exhibit an alluvial soil profile in areas that have not been disturbed by man. In general, silts near the surface overlying more sand-dominated soil at depth characterize native soil stratigraphy at the site. The silt may contain varying quantities of clay/sand/gravel and may vary from zero to 10 feet in thickness. The silt is dark brown to dark green and sometimes exhibits a molted texture. In some areas, the silt exhibits an aqua green or blue color. Dark brown silts are observed in outcrop. The sand at depth contains varying degrees of silt/gravel/cobbles and varies from 2 feet to more than 20 feet in thickness. These deeper, coarse-grained materials are generally unsorted and are likely to be of glaciofluvial origin. Beach material is primarily cobble (1-inch stones), with some sand. Some areas have large boulders and rocks. The depth to bedrock at the site is unknown (USACE, 2002).

Landscape topography:

Slopes throughout the different project areas vary from site to site. The Site 31 area generally slopes to the northeast from the Main Operations Complex (MOC). The MOC area and Site 13 generally slope to the northeast and northwest. Site 28 generally slopes to the north.

Drainage patterns:

The slope of the ground conveys the storm water runoff flows northward. The surrounding areas contain several unnamed water features.

Approximate growing season:

The approximate growing season for the project area is June 2 to October 1.

Type of existing vegetation:

The NE Cape area has several major habitat types, including moist tundra dominated by heaths, grasses, sedges, mosses, and lichens, with shrubs that include bearberry, dwarf birch, narrow-leaf Labrador tea, and willow. These plants typically grow in 1 to 3 feet of undecayed organic mat over saturated and frozen soil. Alpine tundra plants (dwarf, prostrate plants that include heaths and tundra species adapted to dry, thin soil conditions) grow on the slopes and exposed ridges of the nearby mountains. The NE Cape area has many low-lying areas with lakes, bogs, and poorly drained soil (USACE, 2002).

Historical site contamination evident from existing site features and known past usage of the site:

The project is located at a former White Alice Communications System and radar facility site. Contamination is present and will be remediated.

If the Contractor encounters unknown site contamination, the Contracting Officer will be notified immediately, and appropriate actions will be taken before work resumes.

4.0 NATURE OF CONSTRUCTION ACTIVITY (5.3.4)

4.1 SCOPE OF WORK

Describe the general scope of work for the project, major phases of construction, etc.:
The project will consist of excavation and removal of petroleum-contaminated and arsenic-contaminated soil at the MOC and excavation and disposal of polychlorinated biphenyl- (PCB-) contaminated soil from Site 13 (Heat and Power Plant) and Site 31 (White Alice Communications Station). Contaminated sediment will be removed from the Site 28 Drainage Basin.

At the MOC, Bristol plans to excavate, process, handle, and dispose of off site the petroleum, oil, and lubricants- (POL-) contaminated soil to a depth of 15 feet, or 2 feet below groundwater, whichever occurs first. Approximately 2,000 tons of POL-contaminated soil above the site-specific cleanup goal of 9,200 milligrams per kilogram (mg/kg) diesel range organics (DRO) will be removed from the building pad. During excavation, special attention will be given to separation of clean overburden. Clean overburden will be separately stockpiled from contaminated soil. Upon completion of excavation, stockpiled overburden will be used as backfill. Following backfill with stockpiled overburden, clean backfill from the local borrow source will be used. Backfill will be placed to an elevation that ensures positive drainage without ponding of water and will not promote erosion. An impoundment area will be utilized at this site to dewater excavated soil (see Figure 3).

An estimated 2,000 tons of PCB-contaminated soil from Site 13 and Site 31 will be excavated, handled, and disposed of off site. Both of these sites are in gravel pad or very coarse grain to cobbly soil. From Site 21, an estimated 10 tons of arsenic-contaminated soil will be excavated, handled, and disposed off site. Samples will be analyzed to determine background arsenic concentrations.

The Site 28 Drainage Basin contains sediments that may be contaminated with DRO, PCBs, and metals. Bristol will sample sediments for contaminants of concern and remove up to 140 bank cubic yards of contaminated sediment. Sediment removal will utilize pumps and suction dredges to transport sediments to a dewatering/treatment area consisting of Geotubes® and a water impoundment.

The major phases of the project will consist of:

- Mobilization of equipment to the project site
- Setup of erosion and sediment control structures where needed
- Removal of hazardous debris from the site where applicable
- Stabilization
- Demobilization

4.2 PROJECT FUNCTION (5.3.4.1)

The facility will remediate contaminated sites on St. Lawrence Island.

4.3 SEQUENCE AND TIMING OF SOIL-DISTURBING ACTIVITIES (5.3.4.2)

Construction activities at the project site are scheduled to commence in June 2012. The planned sequence of work is:

- File Notice of Intent (NOI) (June 1, 2012)
- Install Best Management Practices (BMPs) (June 15 to 20, 2012)
- Conduct site surveying and preconstruction activities such as mobilization (June 2012)
- Remove liner covering excavations at sites 13 and 31 (June 2012)
- Install site excavations (June and July 2012)
- Excavate POL- and arsenic-contaminated soil at the MOC (July 2012)
- Remove hazardous debris from the site where applicable (summer 2012)
- Remove temporary sediment controls (September 2012)
- File Notice of Termination (NOT) (October 2012)

4.4 Size of Property and Total Area Expected to be Disturbed (5.3.4.3)

The following are estimates of the construction site:

- Total project area: 0.95 acres
- Construction site area to be disturbed: 0.85 acres
- Percentage impervious area BEFORE construction: Less than 5%
- Runoff coefficient BEFORE construction: 0.30
- Percentage impervious area AFTER construction: Less than 5%
- Runoff coefficient AFTER construction: 0.30

4.5 Identification of All Potential Pollutant Sources (5.3.4.5)

Potential sources of sediment to storm water runoff:

- Clearing and grubbing activities
- Site excavation activities
- Site grading activities
- Construction activities
- Vehicle sediment tracking
- Site stabilization operations

Potential pollutants and sources, other than sediment, to storm water runoff:

Trade Name Material	Storm Water Pollutants	Location
Fuel	Benzene, ethyl benzene, toluene, MTBE, petroleum distillate, oil and grease, naphthalene, xylenes	Staging Area
Oil	Petroleum oil	Staging Area
Antifreeze/Coolant	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Staging Area
Hazardous Waste Storage	Various hazardous waste	Staging Area
Sanitary Facilities	Human waste	Various Locations
Trash	Various waste	Various Locations

Note:
MTBE = methyl tertiary-butyl ether

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5.0 SITE MAPS (5.3.5)

See Appendix A for the General Vicinity Map (Figure 1) and the site figures (Figures 2 to 5)

6.0 DISCHARGES

6.1 Locations of Other Industrial Storm Water Discharges (5.3.8)

There will be no other industrial storm water discharges for this project.

6.2 Allowable Non-Storm Water Discharges (1.4.2; 4.2.7; 5.3.9)

- Water for dust control
- Landscape irrigation
- Emergency fire protection measures
- Potable water discharges containing no chemical or harmful substances

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SECTION 2 - COMPLIANCE WITH STANDARDS, LIMITS, AND OTHER APPLICABLE REQUIREMENTS

7.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO TOTAL MAXIMUM DAILY LOADS (3.2, 5.6)

7.1 IDENTIFY RECEIVING WATERS (5.3.3.3)

Description of receiving waters:

The tundra in areas of the project slopes downward toward the Suqitughneq River, which flows into an unnamed lake. The Contractor will utilize silt fencing and other BMPs so little or no runoff created from construction will reach the river. All other hydrological features near the site will be protected by BMPs.

Description of storm sewer and/or drainage systems:

There are no existing storm water systems in the project vicinity.

7.2 IDENTIFY TMDLS (5.6.1)

Is an EPA-established or approved Total Maximum Daily Load (TMDL) published for the receiving water(s) listed in Section 7.1?

☐ Yes ☒ No

TMDL: Not applicable.

Summary of consultation with state or federal TMDL authorities (5.6.2):

Not applicable.

Measures taken to ensure compliance with TMDL (5.6.3):

Not applicable.

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8.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO ENDANGERED SPECIES (3.3, 5.7)

8.1 INFORMATION ON ENDANGERED OR THREATENED SPECIES OR CRITICAL HABITAT (5.7.1)

Are endangered or threatened species and critical habitats on or near the project area?

☒ Yes ☐ No

Describe how this determination was made:

A U.S. Fish & Wildlife Service (USFWS) Consultation Guide for Southcentral Alaska (USFWS, March 2010) was consulted to determine whether there were any threatened or endangered (T&E) species identified on or near St. Lawrence Island. There are no endangered or threatened species at the project site itself. The proposed work will not impact critical habitat for listed T&E species.

Endangered or threatened species of animals on or near St. Lawrence Island include the spectacled eider (threatened), the Steller's eider (threatened), the Steller sea lion (threatened), the polar bear (threatened), and the short-tailed albatross (endangered). The prevalence of these species with respect to the NE Cape site is unknown. Only the spectacled eider and the Steller sea lion have critical habitat in the vicinity of St. Lawrence Island.

A large portion of the Bering Sea has been designated as critical habitat for the spectacled eider, because it is believed to be the wintering locale for the world's entire population of the species. The critical habit is specifically defined as U.S. waters south of St. Lawrence Island between latitudes 61° north and 63°30′ north, and between longitudes 169° west and 174°30′ west. According to the USFWS, this species is not likely to be adversely affected by projects conducted at NE Cape (USACE, 2002).

If the Contractor observes any of the endangered species within the project area, operations shall cease immediately pending a consultation.

Will species or habitat be adversely affected by storm water discharge?

☐ Yes ☒ No

Provide summary of necessary measures (5.7.5):

If the Contractor observes any of the endangered species within the project area, operations shall cease immediately pending a consultation.

9.0 HISTORIC PROPERTIES (5.11.3)

Are there any historic sites on or near the construction site?

☐ Yes ☒ No

Describe how this determination was made:

This was made by reviewing records at the Alaska State Historic Preservation Office (SHPO). An SHPO officer concurs that there will be no adverse effect to the Alaska Heritage Resources Survey Site.

If any historical or archeological resources or artifacts are found, construction operations shall cease immediately pending investigation.

10.0 APPLICABLE FEDERAL, STATE, TRIBAL, OR LOCAL REQUIREMENTS (4.13)

There are no additional federal, tribal, or local soil and erosion control and storm water management requirements that apply to this project.

The SWPPP will be updated to reflect any changes in requirements during the course of the project.

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SECTION 3 - CONTROL MEASURES

11.0 CONTROL MEASURES/BEST MANAGEMENT PRACTICES (4.0; 5.3.6)

11.1 MINIMIZE AMOUNT OF SOIL EXPOSED DURING CONSTRUCTION ACTIVITY (4.1.2)

11.1.1 Site Limit Marking

BMP Description: (Structural BMP)	Because site access is tightly controlled, site limits will be controlled by daily tailgate meetings and daily on-site inspections.
Installation Schedule:	Meeting will take place daily for discussion of construction activities.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.2 MAINTAIN NATURAL BUFFER AREAS (4.1.3)

Are stream crossings or waters of the U.S. located within or immediately adjacent to the property?

☒ Yes ☐ No

11.3 CONTROL STORM WATER DISCHARGES AND FLOW RATES (4.1.4)

Diversion Dike

BMP Description: (Structural BMP)	Although not anticipated, a diversion dike may be utilized during construction to temporarily divert and control storm water flows, to prevent off-site migration of the flows. Diversion dikes will have a maximum channel slope of 2 percent and will be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel will be 1.6 feet. The minimum base width will be 6 feet, and the minimum top width will be 2 feet. Personnel must avoid damage to the diversion dikes during construction operations. Typical installation procedures for diversion dikes are shown in Chapter 15 of the Alaska SWPPP Guide, Best Management

	Practices.
Installation Schedule:	Diversion dike will be created before grading activities commence for each segment of construction, when necessary.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details. Any debris will be removed from the ditch, and it will be inspected for erosion and sediment accumulation. Sediment removal will take place before the sediment build-up accumulates over one-third of the height of the ditch.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.4 PROTECT STEEP SLOPES (4.1.5)

Will steep slopes be present at the site during construction?

☐ Yes ☒ No

There are no slopes that need protection on site. The only slopes applicable are slopes of ongoing excavations. Excavations will be angled to aid in prevention of dig slopes. If additional stabilization of any slopes is required, silt fences, coir logs, and/or straw matting will be used.

11.5 STORM DRAIN INLET PROTECTION MEASURES (4.2.1)

There are no storm drain inlets in the project vicinity.

11.6 WATERBODY PROTECTION MEASURES (4.2.2)

See Section 11.3.

11.7 DOWN-SLOPE SEDIMENT CONTROLS (4.2.3)

Silt Fence

BMP Description: (Structural BMP)	Silt fences will be installed as a temporary structural practice to minimize sediment runoff. For fence construction, posts may be either wooden stakes or steel posts. Silt fences will be installed along extended bare ground sections or where roads run alongside creeks, along the crests of roadside

ditches, or along crests or bases of slopes adjacent to ground-disturbing activities.

Silt fence will be used to keep sediment out of any water crossing or adjacent waterbodies or wetlands.

Silt fences will be properly installed before each phase of work, if needed, to effectively retain sediment. Typical installation procedures for silt fences are shown in Appendix B.

The silt fences will be cut into the existing ground at least 6 inches. Posts will be driven in at least 18 inches at 6-foot intervals, where possible.

At the MOC area, silt fencing will be installed at the toe of the gravel pads where POL soil will be excavated. See Figure 2.

Site 13 and Site 31 silt fencing will be installed at the Contractor's discretion.

Installation Schedule: Silt fences will be installed before grading and hauling activities occur, at the Contractor's discretion.

Maintenance and Inspection: See Section 12.0 for inspection frequency and details. The silt fences will be inspected for gaps, tears, and broken stakes. If any deficiencies are found, the silt fence will be fixed or replaced immediately. Any debris or sediment accumulation will be removed. Sediment removal will take place before the build-up accumulates to one-third the height of the silt fence.

Responsible Staff: Bristol Environmental Remediation Services, LLC

11.8 STABILIZED CONSTRUCTION VEHICLE ACCESS AND EXIT POINTS (4.2.4)

The site access points, roads, and all areas where construction equipment will be driven consist of the same material; as such, special access points will not be developed. Vehicle wheels and tracks will be cleaned of excess materials to avoid tracking from site to site.

11.9 Dust Generation and Track-Out from Vehicles (4.2.5)

11.9.1 Dust Control

BMP Description: (Structural BMP)	Water trucks will be utilized as needed. Water will be applied in a sufficient amount of time before construction activities commence.
Installation Schedule:	Water will be applied daily, or more often if conditions require.
Maintenance and Inspection:	Dust control practices will be conducted daily.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.10 Soil Stockpiles (4.2.6)

Will soil stockpiles be at the site during construction?

☒ Yes ☐ No

Stockpile Management

BMP Description: (Structural BMP)	Dirt or gravel stockpiles must be covered with a Visqueen-type plastic or be temporarily stabilized with seeding. The Visqueen must be staked down in order to be held in place. To protect stockpiles from wind erosion, geotextile, plastic covers, or chemical stabilizers, such as tackifiers or soil binders, should be used.
Installation Schedule:	No publication was used as reference for this BMP. Stockpile stabilization will occur after the stockpile has been delivered. The stockpile must be covered after 14 days of non-use.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details. The stockpile must be kept covered, and the Site Superintendent will correct any deficiencies.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.11 SEDIMENT BASINS (4.2.8)

Will a sediment basin be required during construction?

☒ Yes ☐ No

MOC Impoundment Area

BMP Description: (Structural BMP)	An impoundment area will be set up at the MOC site in order to dewater excavated soils prior to haul-off. See Figure 3 for Impoundment Area plan. The impoundment area will consist of 5-foot wide, 18-inch high berms, and its dimensions will be 100 feet long by 75 feet wide. The impoundment area will be double lined. A sump will be located in the northwest corner to collect water.
Installation Schedule:	The impoundment area will be set up prior to excavation at the MOC area.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.12 DEWATERING (4.3)

Will excavation dewatering be conducted during construction?

☐ Yes ☒ No

11.13 SOIL STABILIZATION (4.4, 5.3.6.3)

<u>Seeding</u>

BMP Description: (Structural BMP)	Permanent seeding will be applied to any areas disturbed by construction.
Installation Schedule:	Permanent seeding will be performed when within 14 days of final grading activities in each location.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details. If any erosion or sediment transport is noticed, the deficiencies will be fixed immediately.

Responsible Staff:	Bristol Environmental Remediation Services, LLC

Temporary Seeding

BMP Description: (Structural BMP)	Temporary seeding will be used to stabilize areas as needed. This will consist of seeding the area with its natural vegetation to prevent erosion. Bristol will seed areas where the construction has temporally ceased or where temporary stabilization is needed.
Installation Schedule:	Temporary stabilization will occur when construction temporarily ceases for at least 14 days on portions of the site. If earth-moving activities will resume within 14 days, temporary stabilization is not required.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details. If any erosion or sediment transport is noticed, the deficiencies will be fixed immediately.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.14 TREATMENT CHEMICALS (4.5; 5.3.6.4)

Will treatment chemicals be used to control erosion and/or sediment during construction?

☐ Yes ☒ No

11.14.1 Treatment chemicals (4.5.1)

Not applicable.

11.14.2 Treatment Chemical Use Procedures (4.5.2)

Not applicable.

11.14.3 Project Site Conditions (4.5.3)

Not applicable.

11.14.4 Application of Treatment Chemicals (4.5.4)

Not applicable.

11.15 ACTIVE TREATMENT SYSTEM INFORMATION (4.5.4.3)

Will an ATS be used as a control measure at the site?

☐ Yes ☒ No

11.16 GOOD HOUSEKEEPING MEASURES (4.7)

11.16.1 Washing of equipment and vehicles (4.7.1)

Will equipment and vehicle washing and/or wheel wash-down be conducted at the site?

☐ Yes ☒ No

Description: Not applicable.

11.16.2 Fueling and maintenance areas (4.7.2)

Will equipment and vehicle fueling or maintenance be conducted at the site?

☒ Yes ☐ No

Fueling and Maintenance of Equipment

BMP Description:	Many different types of vehicles and construction equipment will be used for the construction project. Vehicle fueling will take place on site and will be set up by the Bristol Site Superintendent. The Contractor will set up an equipment maintenance area in order to prevent hazardous materials from entering the ground. Construction equipment will be inspected daily for petroleum leaks. Any leaking equipment will be repaired before the equipment will be allowed to operate, and any spills will be cleaned up immediately. Construction equipment will not be stored, refueled, or serviced within 100 feet of any waterbody. If equipment is operating on, or adjacent to, waterways and has a petroleum leak that cannot be immediately repaired or controlled, it will be removed from

	service as soon as the leak is discovered, until repairs can be made. Drip pans will be used as a method of secondary containment while equipment maintenance is being performed. A spill kit will be present in the fueling area in case of a spill. Bristol will follow the spill guidelines set forth in Section 11.17 in case of an accident.
Installation Schedule:	A maintenance area will be set up near the staging area when construction begins. Fueling will be done as needed and will be completed under proper supervision.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details. This area is to be kept clean and organized. A spill kit will be present in the area.
Responsible Staff	Bristol Environmental Remediation Services, LLC

11.16.3 Washout of applicators/containers used for paint, concrete, and other materials (4.7.4)

Will washout areas for trucks, applicators, or containers of concrete, paint, or other materials be used at the site?

☐ Yes ☒ No

11.16.4 Fertilizer or pesticide use (4.7.5)

Will fertilizers or pesticides be used at the site?

☐ Yes ☒ No

11.17 Spill Notification (4.8)

The following information relates to spill threats expected to be encountered during this project:

- Small cans of fuel will be kept on site throughout the project to fuel small gas and diesel engine equipment.
- All potentially hazardous materials will be temporarily stored in appropriate storage containers at designated storage locations.

- Chuck Croley will be responsible for reporting spills to the appropriate authorities.

11.17.1 Spill Prevention

Standard Operating Procedures will be employed for prevention and control of potential on-site spills or releases during construction activities. These are summarized below.

Emergency Response Spill Kits

An emergency response spill kit will be kept at the project office. The spill response kit will contain a variety of absorbent pads, an absorbent boom, granular absorbent material, polyethylene disposal bags, shovels, and personal protective equipment (PPE), including outer petroleum-resistant gloves, inner disposable gloves, and eye protection. Oil and fuel spill cleanup equipment and materials will also be available on the service vehicle. This vehicle will contain absorbent pads, oil containment booms, and other petroleum product spill cleanup materials, such as buckets, shovels, and plastic bags. Each vehicle on site will carry oil-sorbent pads.

In addition, Bristol and subcontractor crew members involved in work that may release even small amounts of hazardous materials will familiarize themselves with the manufacturers' recommended use, cleanup, and disposal processes and will use appropriate PPE, as well as maintain the appropriate cleanup materials at the location(s) of work.

Equipment Operation and Service

Operators will be present and observant during all fueling operations and will be prepared to rapidly terminate fueling in the case of a release.

Construction equipment will be inspected daily for petroleum leaks. Any leaking equipment will be repaired before the equipment will be allowed to operate, and any spills will be cleaned up immediately.

Construction operations will not come within 100 feet of a waterway on this project. In any case, construction equipment will not be stored, refueled, or serviced within 100 feet of any waterbody. If equipment is operating on, or adjacent to, waterways and has a petroleum leak that cannot be immediately repaired or controlled, it will be removed from service as soon as the leak is discovered, until repairs can be made.

11.17.2 Storage and Control

Petroleum-contaminated materials, such as used oil filters, old hydraulic hoses, and soiled cleanup booms, may be stored temporarily in the containment area while awaiting removal. Possible hazardous construction materials, such as paint and finishes, will be placed in a controlled temporary staging area during construction. Adhesives will be kept in all contractors' work boxes during construction.

11.17.3 Spill Reporting and Response

The following steps will be taken upon discovery of a leak, spill or release of a hazardous substance or oil (see Appendix L for additional information on spill reporting requirements).

Upon observation of a leak, spill, or release, workers must immediately notify the Site Superintendent, who will:

- Establish an exclusion zone to control access to the site. Smoking and open flames are banned within exclusion zones.
- Ensure all personnel involved in the cleanup activities know what was spilled, are familiar with spill response and the site safety and health procedures, and are wearing appropriate PPE.
- Prevent release of additional product, using the following procedures as appropriate:
  - Close valves.
  - Upright the container releasing the product.
  - Plug punctures with wooden pegs, sticks, rags, or absorbent pads.

  - Move the container into a lined containment area.
- Contain the released product, using the following procedures as appropriate:
  - Construct earthen berms downgradient of the product.
  - Apply granular absorbents or absorbent pads and booms.
  - Collect free product with barrel pumps, buckets, skimmers, or other physical means.
- Clean up the spill:
  - Recover free product.
  - Excavate affected soils and place in drums or containment cells.
  - Gather contaminated spill response materials and place in sealable drums for disposal.

Bristol will notify the legally required federal, state, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. (Note: This notification should not be delayed or postponed by lack of any information required on the spill report form, or by the absence of the Site Superintendent.)

Provide follow-up notification to appropriate parties as needed throughout the response and cleanup.

Once recovered, petroleum/chemical spills and debris (such as soil) contaminated with used motor oil, solvents, or other chemicals will be separated, bagged, and stored so as not to further contaminate the site. The Site Superintendent may require testing of the material to determine its classification. In the event this material may be classified as a hazardous substance, it must be controlled and handled accordingly.

Spill Reporting

In the event of a spill or emergency, the person discovering the incident is required to immediately contact the Site Superintendent.

The initial verbal report of a spill or emergency should include:

- Name and telephone number of caller
- Exact location of the spill or emergency
- Type and description of the emergency
- An estimate of the amount of material spilled, on fire, etc.
- The extent of the actual and potential environmental pollution
- Injuries or property damage, if any
- Possible hazards to human health or the environment outside of the project limits
- Actions taken

Training Requirements

Spill response training will be done at the initial hire of each employee and periodically during daily and weekly site briefings. Training consists of reviewing the spill response procedures and reporting procedures and goes hand-in-hand with SWPPP training.

11.18 Construction and Waste Materials (5.3.7)

11.18.1 Nonhazardous (Solid) Waste Disposal

BMP Description:	Handling, storage, and disposal will be conducted in a manner that prevents contamination. Litter and construction debris will be cleaned up daily to prevent entry into receiving waters. Segregation measures will be employed to prevent hazardous or toxic waste from becoming commingled with solid waste. Solid wastes will be burned in on-site trash burners when possible. Trash not able to be burned will be containerized and shipped off site for disposal.
Installation Schedule:	Trash will be secured at the waste accumulation point prior to burning or debris removal.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.18.2 Hazardous Waste Disposal

BMP Description: General practices for use, control, and storage of construction-related hazardous waste are:

- Store construction chemicals and construction-related hazardous waste at secure and bermed locations where the materials cannot come into contact with personnel, clean materials, or storm water.
- Chemicals will be dispensed in a manner to ensure no spillage to the ground or water.
- In the event of a spill, response actions identified in Section 11.17 will be followed.
- Chemical waste will be collected in corrosion-resistant, compatible containers as provided by Bristol.
- Collection drums provided by Bristol will be monitored and removed to a tagging or storage area when contents are within 150 millimeters of the top.
- Containers will be tagged appropriately.

Installation Schedule: Hazardous waste disposal sites will be installed in the project area as needed per each phase of construction.

Maintenance and Inspection: See Section 12.0 for inspection frequency and details. This area will be kept clean and maintained with cleaning supplies present in large quantities.

Responsible Staff: Bristol Environmental Remediation Services, LLC

11.18.3 Sanitary Waste Disposal

BMP Description: Temporary portable toilets will be provided in adequate numbers and convenient locations. A local firm, licensed to provide sanitary service, will service the toilets regularly to assure that the toilets are clean and fully useable.

If contamination of the facility should occur, Bristol will contain the spill by parameters set forth in Section 11.17. The contaminated soil will be excavated and replaced with suitable material.

Installation Schedule: The toilets will be brought on site prior to construction activities.

Maintenance and Inspection:	See Section 12.0 for inspection frequency and details. Temporary toilets will be inspected and cleaned weekly by a contracted company. Waste will be removed from these toilets during these inspections. Any toilets with deficiencies will be replaced immediately.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

11.18.4 Staging Area

BMP Description:	The staging area will be set up at a location determined by the Contractor. The areas will be clearly marked by Bristol.
Installation Schedule:	The temporary toilets will be installed before construction activity begins.
Maintenance and Inspection:	See Section 12.0 for inspection frequency and details. This area will be well organized and kept clean, with a spill kit present.
Responsible Staff:	Bristol Environmental Remediation Services, LLC

SECTION 4 - INSPECTIONS, MONITORING, AND RECORDKEEPING

12.0 INSPECTIONS (5.4; 6.0)

Inspection Personnel:

- The person responsible for conducting inspections is Mr. Eric Barnhill, AK CESCL No. AGC-11-0066.
- See Appendix N for resumes and certifications.
- Qualified personnel will inspect disturbed areas of the construction site; areas used for storage of materials that are exposed to precipitation that have not been finally stabilized; stabilization practices; structural practices; other controls; and areas where vehicles exit the site. Where sites have been finally stabilized, an inspection will be conducted at least monthly.
- Deficiencies will be noted during the inspection, and Bristol will implement repairs within 24 hours for conditions that are easily remedied, and within 7 calendar days for actions that require the installation of a new BMP or significant redesign and reconstruction or replacement of existing BMPs. The inspector will inspect the BMPs and will certify each inspection using the form in Appendix K.

12.1 INSPECTION SCHEDULES (5.4.1.2; 6.1; 6.2)

Inspection frequency:

Inspections will occur at least once every 7 calendar days.

Justification for reduction in inspection frequency, if applicable:

Not applicable.

Estimated date of winter shutdown:

No ground disturbance will occur until the spring of 2012.

12.2 INSPECTION FORM OR CHECKLIST (5.4.1.3; 6.7)

See Appendix K.

12.3 Corrective Action Procedures (5.4.1.4; 8.0)

Corrective Action Log

The corrective action log will be updated each time a deficiency in a BMP is found during a weekly inspection. Revisions to the SWPPP must be completed within 7 days of the inspection that identified the need for a SWPPP modification or within 7 days of substantial modifications to the construction plans or changes in site conditions. The Site Superintendent will update the log with actions taken to remedy the deficiencies identified in BMPs.

- See Appendix J for the Corrective Action Log.

12.4 Inspection Record-keeping (5.4.2)

Records will be maintained for a minimum period of 3 years after the permit has been terminated.

13.0 DETERMINATION OF NEED FOR MONITORING PLAN

No monitoring plan is necessary for this project because the receiving waters are not listed as impaired for turbidity and/or sediment.

14.0 POST-AUTHORIZATION RECORDS (5.8)

Copy of Permit Requirements (5.8.1)

The following documents are located in Appendix F of the SWPPP:

- Copy of 2011 Alaska Construction General Permit (ACGP)
- Copy of signed and certified NOI form submitted to the Alaska Department of Environmental Conservation (ADEC)
- Upon receipt, a copy of the letter from ADEC authorizing permit coverage, providing the tracking number
- Confirmation of delivery of the NOI to ADEC or to ADEC's electronic NOI system

14.1 Additional Documentation Requirements (5.8.2)

- Dates when grading activities occur (5.8.2.1; Appendix G).

- Dates when construction activities temporarily or permanently cease (5.8.2.2; Appendix G).
- Dates when stabilization measures are initiated (5.8.2.3; Appendix G).
- Date of beginning and ending period for winter shutdown (5.8.2.4; Appendix G).
- Copies of inspection reports (5.5.2; 5.8.2.5; Appendix K).
- Copies of monitoring records, if applicable (not applicable).
- Documentation in support of chemical-treatment processes (not applicable).
- Documentation of maintenance and repairs of control measures (5.8.2.10; 8.1; 8.2; Appendix J).

14.2 RECORDS OF EMPLOYEE TRAINING (4.12; 5.8.2.9)

Describe Training Conducted:

General storm water and BMP awareness training for staff and subcontractors:
All employees will receive SWPPP training. This training will be provided by Eric Barnhill and/or Charles Croley, who are both familiar with the SWPPP requirements Training will consist of review of the SWPPP and discussion of storm water pollution control responsibilities, including BMPs. This information will be reinforced at all weekly safety meetings.

Detailed training for staff and subcontractors with specific storm water responsibilities:
The Site Superintendent, Chuck Croley, will provide formal training to all subcontractors and staff associated with this project. They will discuss specific storm water responsibilities, along with installation and maintenance of BMPs. This training will occur before any BMPS are installed on the site. See Appendix I for the Training Log.

Individual(s) Responsible for Training:

Bristol Environmental Remediation Services, LLC
Eric Barnhill
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
Tel: (907) 563-0013
Fax: (907) 563-6713
ebarnhill@bristol-companies.com

15.0 MAINTAINING AN UPDATED SWPPP (5.9)

The permittee must modify the SWPPP, including site map(s), in response to any of the following:

- Whenever changes are made to construction plans, control measures, good housekeeping measures, monitoring plan (if applicable), or other activities at the site that are no longer accurately reflected in the SWPPP (5.9.1.1)
- If inspections or site investigations by staff or by local, state, tribal, or federal officials determine that SWPPP modifications are necessary for permit compliance (5.9.1.2)
- To reflect any revisions to applicable federal, state, tribal, or local laws that affect control measures implemented at the construction site (5.9.1.3)

15.1 LOG OF SWPPP MODIFICATIONS (5.9.2)

A permittee must keep a log showing dates, name of person authorizing the change, and a brief summary of changes for all significant SWPPP modifications (e.g., adding new control measures, changes in project design, or significant storm events that cause replacement of control measures). A form to document SWPPP amendments has been placed at the beginning of this SWPPP.

15.2 DEADLINES FOR SWPPP MODIFICATIONS (5.9.3)

Revisions to the SWPPP must be completed within 7 days of the inspection that identified the need for a SWPPP modification or within 7 days of substantial modifications to the construction plans or changes in site conditions.

16.0 ADDITIONAL SWPPP REQUIREMENTS (5.10)

16.1 RETENTION OF SWPPP (5.10.1)

A copy of the SWPPP (including a copy of the permit), NOI, and acknowledgement letter from ADEC will be retained at the construction site.

16.2 MAIN ENTRANCE SIGNAGE (5.10.2)

A sign or other notice must be posted conspicuously near the main entrance of the site. The sign or notice must include a copy of the completed NOI (see Appendix H).

16.3 AVAILABILITY OF SWPPP (5.10.3)

The permittee must keep a current copy of the SWPPP at the site. The SWPPP must be made available to subcontractors, government and tribal agencies, and Municipal Separate Storm Sewer Systems (MS4) operators, upon request.

16.4 SIGNATURE AND CERTIFICATION (5.10.4)

The SWPPP must be signed and certified in accordance with the requirements of the 2011 ACGP Appendix A, Part 1.12. The certification forms on pages ii and iii of the template (page iv of this document) meet the requirements of this paragraph. Steve Johnson meets the signatory requirements and will certify.

16.5 NOTICE OF TERMINATION

Once this project is complete and has been finally stabilized, a notice of termination (NOT) must be submitted to ADEC. The NOT will not be submitted to ADEC until the project has been completely stabilized.

Submit a complete and accurate NOT electronically or by completing the paper NOT form found on the ADEC website and submitting that form to the following address:

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Program - Storm Water NOT
555 Cordova St.
Anchorage, AK 99501

17.0 REFERENCES

US Army Corps of Engineers (USACE). 2002. Engineering Evaluation and Cost Analysis, Environmental Assessment and Finding of No Significant Impact, White Alice Site Removal Action, Northeast Cape, St. Lawrence Island, Alaska. March 2002.

U.S. Fish & Wildlife Service (USFWS). 2010. *Consultation Guide for Southcentral Alaska.* Website: http://alaska.fws.gov/fisheries/endangered/consultation_guide.htm. Accessed May 2012.

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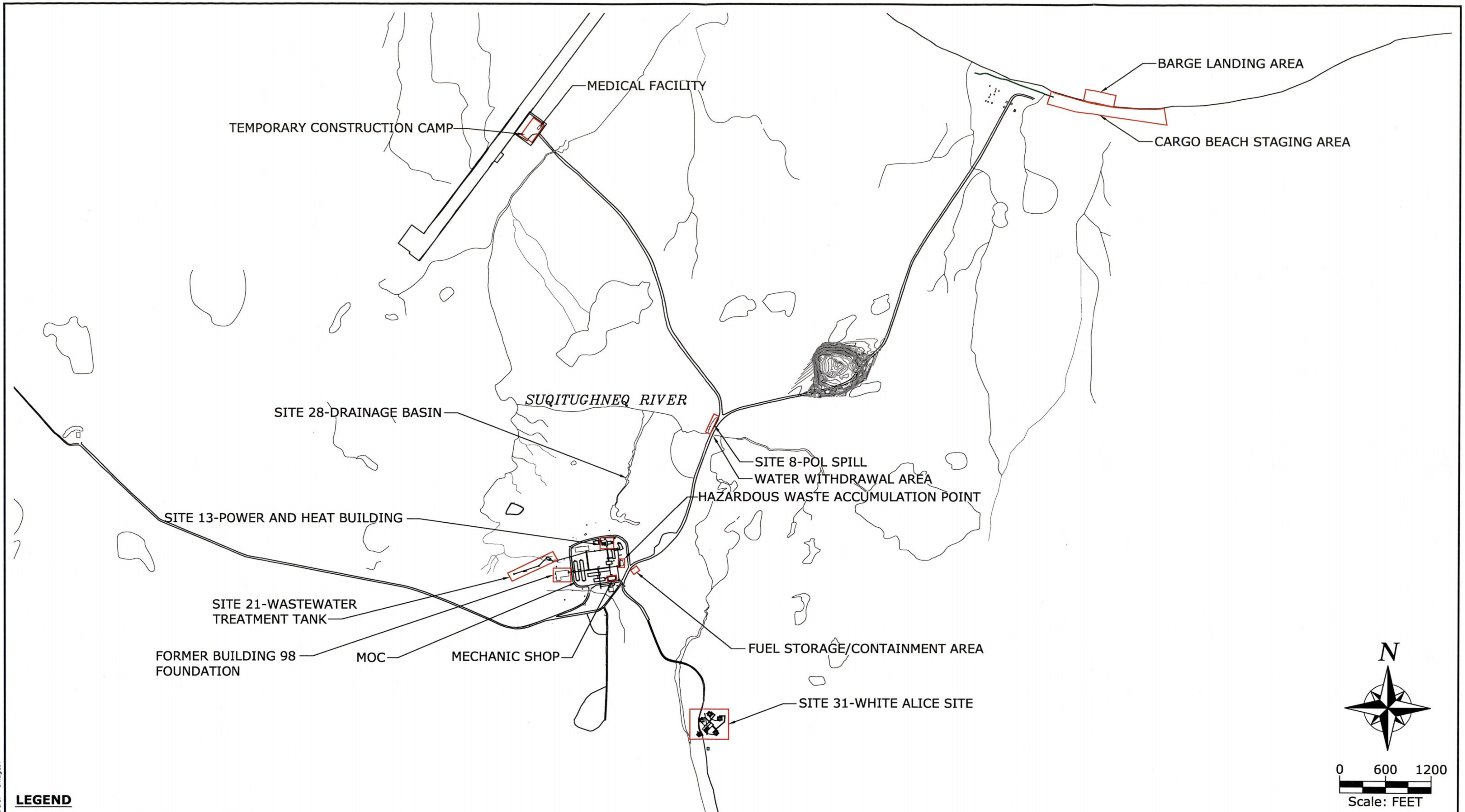
APPENDIX A

Site Maps and Drawings



LEGEND

MOC	MAIN OPERATIONS COMPLEX
POL	PETROLEUM, OIL, AND LUBRICANTS
UVOST	ULTRAVIOLET OPTICAL SCREENING TOOL

NOTE

1. DRAWING ADAPTED FROM MONTGOMERY WATSON FILE TITLED NECAPE.DWG, DATE 05 JUNE 2001. BASED ON RESURVEY PERFORMED BY ECO-LAND, LLC JULY 2009

FIGURE 1
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
SWPPP GENERAL VICINITY MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE ZONE 9
PROJECT NO. 34110008

DATE	01/31/11
DWN.	MTG
SCALE	SHOWN
APPRVD.	MW

REVISIONS				REVISIONS			
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION

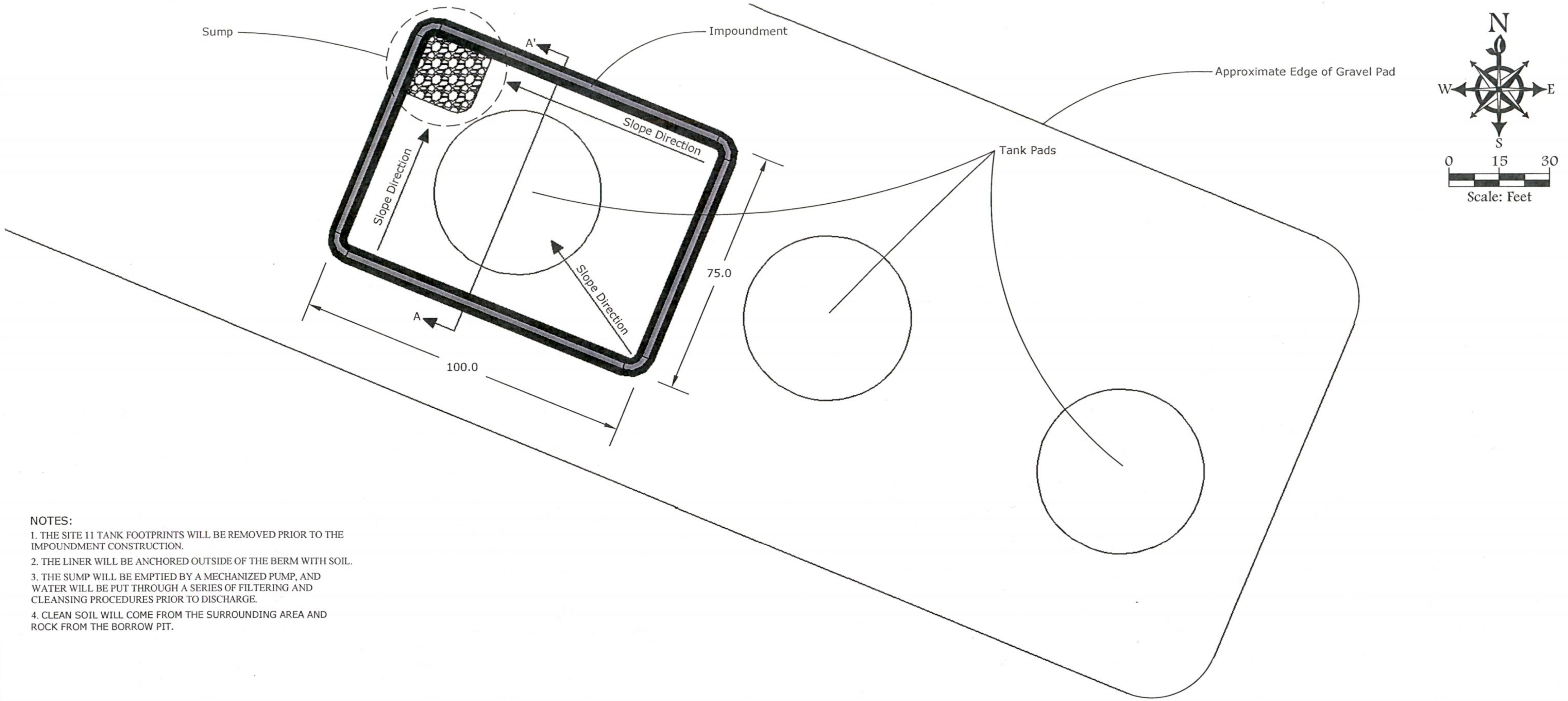
Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713
Project No. 34110008

FIGURE 2
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
NORTHEAST CAPE MOC BMP PLAN

FIGURE NO.
FIG 2

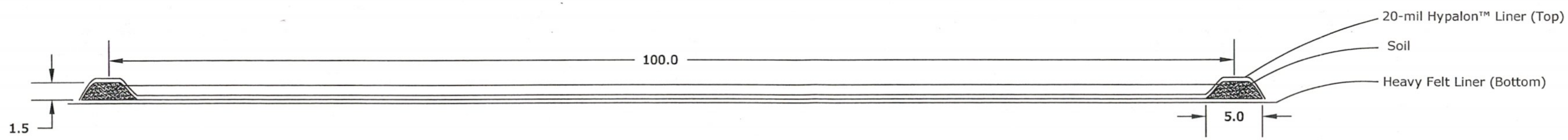
SCALE: 1" = 50' | DESIGNED: | CHECKED: MW | DRAWN:DST | DATE: 04/21/11

User: DTANNAHILL 2011 - 10:59am
Drawing: O:\JOBS\34110008 2011 NE CAPE\10 MGMT\2011 PLANNING DOCS\2011 SWPPP\2011 SWPPP SUBMITTED TO USACE\CAD\SWPPP FIG 2.DWG - Layout: FIG2
Xrefs: None - Images: (DIESEL evaluation failed)



NOTES:

1. THE SITE 11 TANK FOOTPRINTS WILL BE REMOVED PRIOR TO THE IMPOUNDMENT CONSTRUCTION.
2. THE LINER WILL BE ANCHORED OUTSIDE OF THE BERM WITH SOIL.
3. THE SUMP WILL BE EMPTIED BY A MECHANIZED PUMP, AND WATER WILL BE PUT THROUGH A SERIES OF FILTERING AND CLEANSING PROCEDURES PRIOR TO DISCHARGE.
4. CLEAN SOIL WILL COME FROM THE SURROUNDING AREA AND ROCK FROM THE BORROW PIT.



Impoundment Cross Section A-A'
Scale 1"=10'

FIGURE 3
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
MOC IMPOUNDMENT PLAN

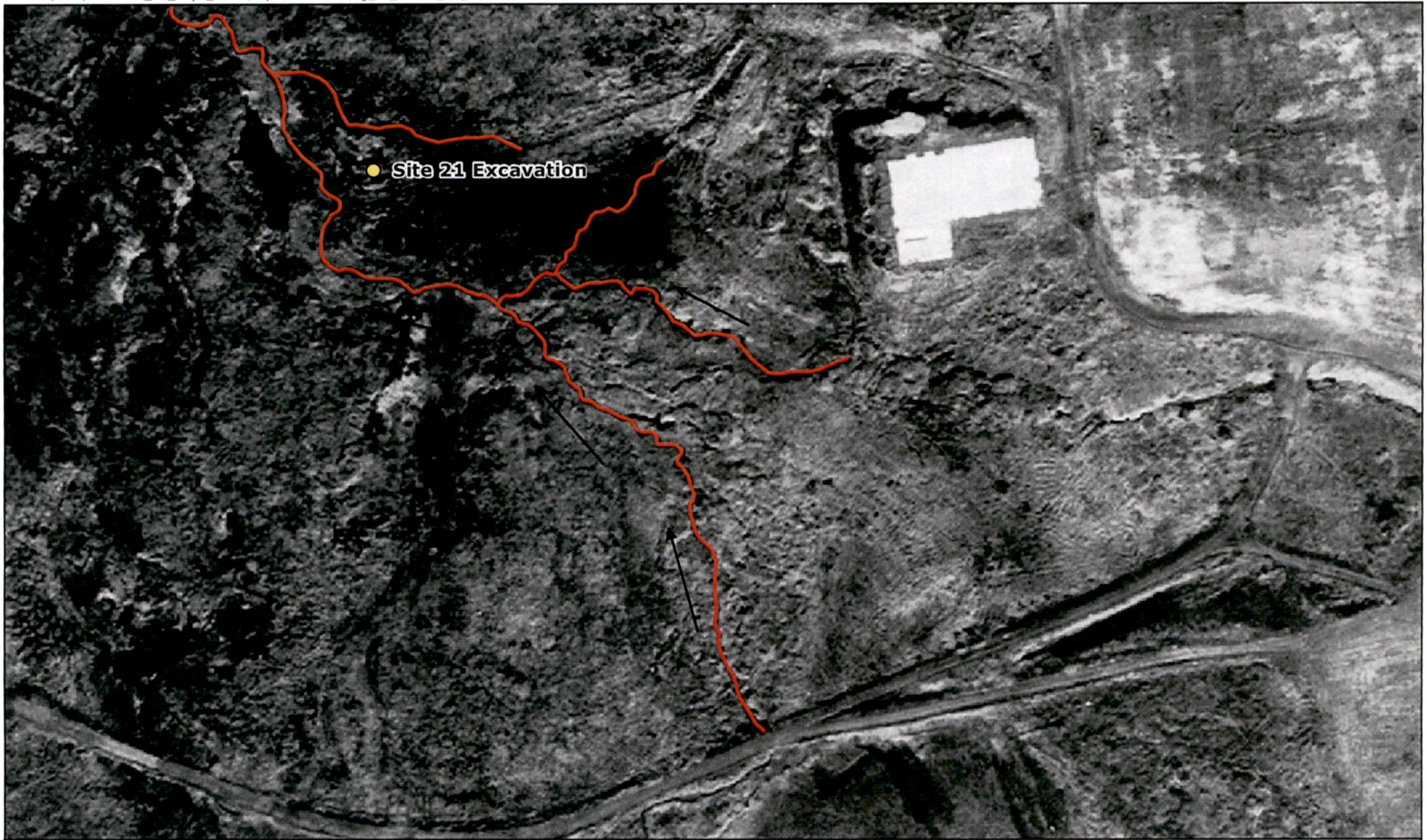
Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NA	DATE	01/31/11
PROJECTION: NA	DWN.	NAP
PROJECT NO. 34110008	SCALE	SHOWN
	APPRVD.	MW

Drawing: O:\JOBS\34110008 2011 NE CAPE\ACAD-ENVIRO\FIGURES-APR11\34110008-FIG3-IMPOUNDMENT-APR11.DWG - Layout: 34110008-FIG3-APR11
User: DTANNAHILL Jul 07, 2011 - 8:34am Xrefs: - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

File: G:\Jobs\34110008_NE_Cape_2011\Maps\SWPPP\Fig4_Site31_v02.mxd

File: G:\Jobs\34110008_NE_Cape_2011\Maps\Work Plan\Fig_14_Site28_BG_v02.mxd



Legend

- Drainage Flow Direction
- Drainage

0 100 200
Feet

N
W E
S

Figure 5
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Removal Actions
Site 21 Drainage Area

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC
Phone (907)563-0013 Fax (907)563-6713
Project No. 34110008

DATUM: NAD83	DATE 07-24-11	SHEET 1
PROJECTION: Alaska State Plane Zone 9	DWN. BI-NP	of
	SCALE 1:12,000	1
	APPRVD. BERS-MW	

Drawing: O:\JOBS\3412(2 NE CAPE\ACAD-ENVIRO\FIGURES-MAR12\FIGURE-6B-MAR12.DWG - Layout: 34110008-FIG6-MAY12
User: NPEACOCK May 07, 2012 - 1:29pm Xrefs: TOPO-XREF-FIG10.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

Note:
Topo units are in feet, elevations are based on the North American Vertical Datum of 1988

Legend

- Water Ponding
- Sediment Areas Delineated in 2011
- Surface Water
- Secondary Contours
- Primary Contours
- 2011 Sample Location
- Sediment Trap
- 2011 Sampling Transect
- Drainage Direction

FIGURE 6
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
NORTHEAST CAPE SITE 28 BMP PLAN

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
Project No.	34110008
DATE	05/07/12
DWN.	NAP
SCALE	SHOWN
APPRVD.	MW

APPENDIX B

BMP Details

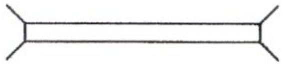
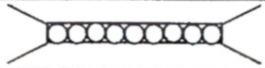
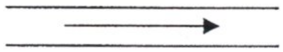
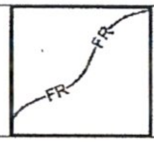
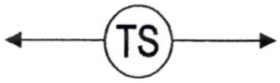
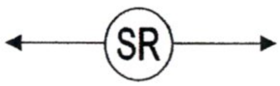
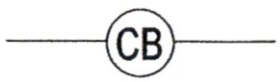
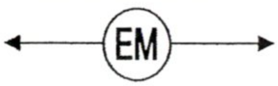
Appendix B. Examples of Best Management Practices

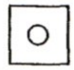
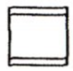
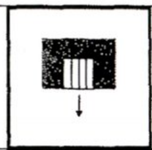
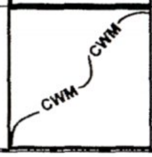
Introduction

Appendix B is a discussion of the more commonly used erosion and sediment control practices. Objectives and applications are outlined for each practice. Use considerations, common failures, alternate measures, and relationship with other erosion and sediment control practices are described. Finally, design, materials, installation, inspection, maintenance, and removal are described for each measure. The measures described here are by no means all-inclusive. There are many variations to these practices according to site-specific conditions, and in addition there may be manufactured products available that will satisfy a particular need for erosion and sediment control. Table B-1 lists a matrix of uses for selected erosion control practices, and suggested symbology to be used on plans.

It is crucial to the success of erosion and sediment control at construction sites that individual measures be designed, constructed, and maintained with regard to the site, to other measures, and construction methods being used. Revegetation, either temporary or permanent, is integral to the process. SWPPP Preparers for DOT&PF projects can select between these BMPs, those found in the Alaska Storm Water Guide, or select from another state's BMP Manual. The SWPPP Preparer is required to cite the published source that is used.

Table B-1
Matrix of Uses and Suggested Drawing Symbols

Erosion and Sediment Control Measures	Pg.	Structural Measures		Erosion Control	Pollution Prevention	Temporary/ Permanent	Symbol
		Velocity Control	Sediment Control				
Preservation of Existing Vegetation (BMP AK-1)	B-4			X		P	
Interception/ Diversion Ditch (BMP AK-2)	B-6	X				T, P	
Slope Drain (BMP AK-3)	B-9	X				T	
Rock Flume (BMP AK-4)	B-12	X				T, P	
Outlet Protection (BMP AK-5)	B-14	X				T, P	
Stormwater Conveyance Channel (BMP AK-6)	B-17	X				T, P	
Check Dam (BMP AK-7)	B-21	X				T, P	
Fiber Rolls (BMP AK-8)	B-24	X	X	X		T, P	
Mulching (BMP AK-9)	B-26			X		T	
Temporary Seeding (BMP AK-10)	B-28			X		T	
Seeding Around Culverts (BMP AK-11)	B-30			X		T,P	
Surface Roughening and Terracing (BMP AK-12)	B-32			X		T	
Compost Blankets (BMP AK-13)	B-37			X		T,P	
Rolled Erosion Control Products (BMP AK-14)	B-39			X		T, P	

Temporary Sediment Trap (BMP AK-15)	B-43		X			T	
Vegetative Buffer Strip (BMP AK-16)	B-46		X			T, P	
Filter Berm (BMP AK-17)	B-49		X			T	
Silt Fence (BMP AK-18)	B-50		X			T	
Inlet Protection (BMP AK-19)	B-54		X			T	
Brush Barrier (BMP AK-20)	B-59		X			T	
Vehicle Tracking Entrance/Exit (BMP AK-21)	B-61		X			T	
Tire Wash (BMP AK-22)	B-63		X			T	
Vehicle and Equipment Maintenance (BMP AK-23)	B-64				X	T	
Concrete Washout (BMP AK-24)	B-65				X	T	

BMP AK-1
Preservation of Existing Vegetation

Purpose and Description

- The purpose of preserving existing vegetation is to limit site disturbance and to minimize soil erosion by identifying and protecting pre-existing vegetation on the construction site.[1]

Applicability

- Natural vegetation must be preserved in all areas where no construction is planned or will occur at a later date.
- Clear only land that is needed for building activities or vehicle traffic.[2]
- This BMP is not to supersede existing guidelines, restrictions or law, preserve vegetation as required by local governments (such as stream buffers).
- The preservation of existing vegetation is an applicable practice in all regions and climates in Alaska.

Design and Installation

- Before any clearing begins, vegetation selected for preservation must be clearly marked with established barriers.[3] These barriers must be about 1 meter in height, must be highly visible and be anchored by wood or metal fence posts at spacing and depth that will adequately support the fence for the entirety of the project.[1]
- A site map must be prepared clearly outlining all areas of vegetation that is to be preserved.[2]
- Vehicle traffic, equipment storage and parking shall be kept away from these areas to prevent soil and root compaction.[1]
- Ground disturbance must be kept from these areas at least as far out as the leaf drip line.[3]
- Maintain pre-existing irrigation systems that may supply water to vegetation selected for preservation.[1]
- To increase chances of survival it is best to limit grade changes in these areas and areas within the drip line.[3]

Maintenance and Inspection

- Repair or replace damaged vegetation immediately.[2]
- Inspect preservation areas regularly, if barrier has been removed or visibility reduced repair or replace barrier so that visibility is restored.[3]
- If roots are exposed or damaged, prune ends just above damage with pruning shears or loppers and recover with native soil.[3]

References

[1]Caltrans Storm Water Quality Handbooks, March 2003, Construction Site Best Management Practices Manual, SS-2 Preservation of Existing Vegetation, http://www.dot.ca.gov/hq/construc/stormwater/CSBMPM_303_Final.pdf

(Continued on next page)

[2]USEPA (United States Environmental Protection Agency), October 2000, National Menu of Best Management Practices, Preserving Natural Vegetation, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=34&minmeasure=4

[3]Washington State Department of Ecology, February 2005, Storm Water Management Manual for Western Washington, Construction Storm Water Pollution Prevention, BMP C101: Preserving Natural Vegetation, http://www.ecy.wa.gov/pubs/0510030.pdf

BMP AK-2

Interception/Diversion Ditch

Objectives and Applications

An interception/diversion ditch, berm or excavated channel, or combination berm and channel constructed across a slope that functions to intercept runoff and divert it to a stabilized area where it can be safely discharged.

This measure should be used in construction areas where runoff can be diverted and disposed of properly to control erosion, sedimentation, or flood damage. Specific locations and conditions include above disturbed existing slopes, and above cut or fill slopes to prevent runoff over the slope; across unprotected slopes, as slope breaks, to reduce slope length; below slopes to divert excess runoff to stabilized outlets; where needed to divert sediment laden water to sediment traps; at or near the perimeter of the construction area to prevent sediment from leaving the site; above disturbed areas before stabilization to prevent erosion and maintain acceptable working conditions; around buildings or areas that are subject to damage from runoff, and during culvert installations where water must be temporarily diverted around the construction area. Diversions may be either temporary or permanent.

Common Failures - Generally due to faulty installation or maintenance.

- Berm not properly compacted during construction, resulting in uneven settling.
- Sediment accumulation against berm/channel not removed periodically, resulting in berm not functioning properly.

Other Considerations

- Berms to intercept and divert runoff should not be used where the drainage area exceeds 10 ac.
- Interception/diversion ditches should be carefully designed where longitudinal ditch slopes are steeper than 10 per cent.

Diversions are preferable to other types of man-made storm water conveyance systems because they more closely simulate natural flow patterns and characteristics, and flow velocities are generally kept to a minimum.

Relationship to Other ESC Measures

Diverted runoff should outlet to a stabilized area such as a sediment basin, detention or retention basin, or stabilized outlet, which should be established prior to introducing runoff from the diversion.

Alternate Sediment Control Measures

Slope Drain (can be used in association with this measure).

Other Names

Interceptor Ditch, Crown Ditch

Design

Location: *Should be determined by considering outlet conditions, topography, land use, soil type, and length of slope.*

Capacity: *permanent: 10 year peak runoff storm. temporary: 2 year peak runoff storm.*

Berm

Berm Top Width: *minimum 2 ft.*
Berm Base Width: *minimum 4.5 ft.*
Berm Height: *minimum 18 in.*
Berm Side Slopes: *2:1 or flatter*

Ditch

Channel Freeboard: *minimum 6 in.*
Channel Side Slopes: *2:1 or flatter*

Materials

Compacted soil or coarse aggregate, riprap, filter fabric, plastic lining, seed and mulch, sandbags

Installation

Interception Ditch

Remove and properly dispose of all trees, brush, stumps, or other objectionable material. Fill and compact all ditches, swales, or gullies that that will be crossed to natural ground level. Excavate, shape, and stabilize the diversion to line, grade, and cross section as required in the plans. Compact the berm to prevent unequal settlement and to provide stability against seepage. Stabilize the diversion with vegetation after installation.

Diversions for Culvert Installations

Excavate the diversion channel to the specified dimensions, leaving temporary plugs at both ends. Place channel lining and stabilize with riprap or sandbags. Remove plugs at both ends (down-stream first) and divert water into the diversion with sandbags. After installation of the culvert is complete, replug the diversion, salvage the diversion lining, and backfill in the channel.

Inspection

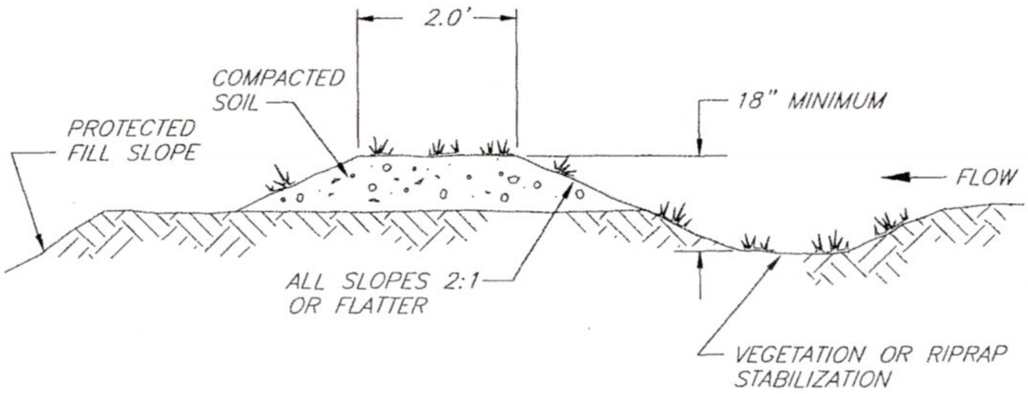
Inspect the diversion every week and after each rainfall during construction operations.

Maintenance

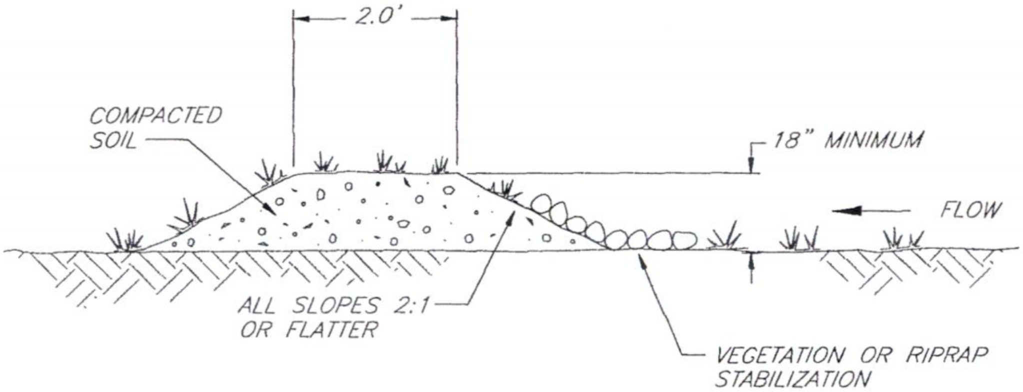
Remove any sediment or other obstructions from the diversion channel. Check outlets and make repairs as necessary. Reseed areas that fail to establish a vegetative cover.

Removal

Temporary installations – Restore to existing or constructed grade. Seed and mulch.



TYPICAL FILL DIVERSION



TYPICAL TEMPORARY DIVERSION DIKE

NOTES:
1. THE CHANNEL BEHIND THE DIKE SHALL HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE DIKE SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE DIKE SHALL BE STABLILIZED WITH TEMPORARY OR PERMANENT SEEDING OR RIPRAP.

FILE: TEMPDIKE

INTERCEPTION/DIVERSION DITCH

BMP AK-3

Slope Drain

Objectives and Applications

A slope drain is a flexible tubing or conduit extending temporarily from the top to the bottom of a cut or fill slope.

The purpose of a slope drain is to temporarily conduct concentrated storm water runoff safely down the face of a cut or fill slope without causing erosion on or below the slope. These are temporary measures that are used during grading operations, until the permanent drainage structures are installed, and until the slopes are permanently stabilized. The pipe material is typically corrugated plastic or flexible tubing, and is used in conjunction with temporary diversion dikes along the top edge of newly constructed slopes, that function to direct storm water runoff into the slope drain.

Common Failures - Generally due to faulty installation or maintenance.

- Slope drain sections not securely fastened together; fittings not water tight, resulting in leakage.
- Slope drain sections not securely anchored to the slope, resulting in displacement of the structure.
- Materials placed on, or construction traffic across slope drain, resulting in damage to the structure.

Other Considerations

- Provide both inlet and outlet protection to minimize erosion at these locations.
- Slope drains should be used in conjunction with diversion dikes to convey runoff from the drainage area.
- The entrance section must be securely entrenched, all connections must be watertight, and the conduit must be securely staked.

Relationship to Other ESC Measures

Slope drains are used with temporary diversion dikes to facilitate channeling of runoff into the structure. Inlet and outlet protection are required to minimize erosion and scour.

Alternate Sediment Control Measures

Diversion

Other Names

Downdrain; Drop Pipe

Design

Design life: *1 season (6 months) or less*

Contributing flow drainage area: *should not exceed 5 acres per slope drain. If contributing drainage area exceeds this amount, consider using a more permanent installation such as a rock-lined flume, etc.*

Capacity: *2 year peak runoff or the design discharge of the water conveyance structure, whichever is greater*

Slope drain size (minimum)	
Drainage area (Acres)	**Pipe diameter (Inches)**
0.5 ac.	12 in.
1.5 ac.	18 in.
3.5 ac.	24 in.
5.0 ac.	30 in.

Flexible conduit: *heavy duty flexible material, such as corrugated plastic pipe or plastic tubing*

Inlet section: *standard flared end section for metal pipe culverts, or geotextile, for inlet protection*

Diversion dike height: *minimum 12 in. higher than the top of the drain pipe*

Island over inlet height: *minimum 18 in. higher than the top of the drain pipe*

Outlet section: *riprap or geotextile, for outlet protection*

Materials

Flexible corrugated plastic pipe or specially designed plastic tubing; grommets or stakes (for fastening); riprap, geotextile

Installation

Place slope drains on undisturbed ground or well-compacted fill at locations specified on the plans. Place the entrance of the drain in a 6 in. sump at the top of the slope. Hand tamp the soil under and around the entrance in 6 in. lifts. Ensure that fill over the top of the drain has minimum dimensions of 18 in. height, 4 ft. top width, and 3:1 side slopes. Install inlet protection using end section for pipes or geotextile. Use watertight fittings at all slope drain connections. Securely fasten the exposed section of the pipe with grommets or stakes at 10 ft. spacings. Extend the drain beyond the toe of the slope and provide riprap or geotextile outlet protection. Construct the diversion dike 12 in. above the top of the pipe entrance. Compact and stabilize the dike.

Inspection

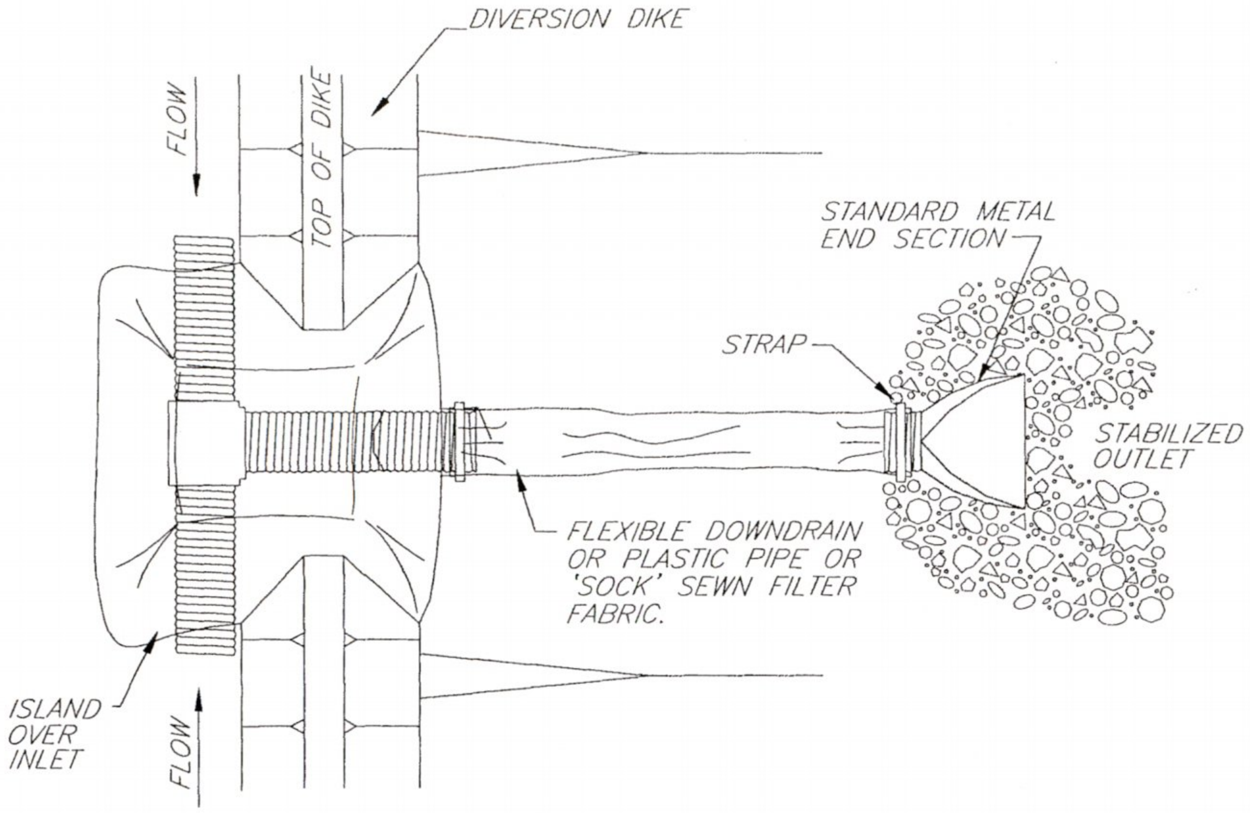
Inspect slope drains weekly and immediately after each rainfall that produces runoff for erosion around the inlet and outlet that could result in undercutting or bypassing. Inspect the pipe for breaks or clogs.

Maintenance

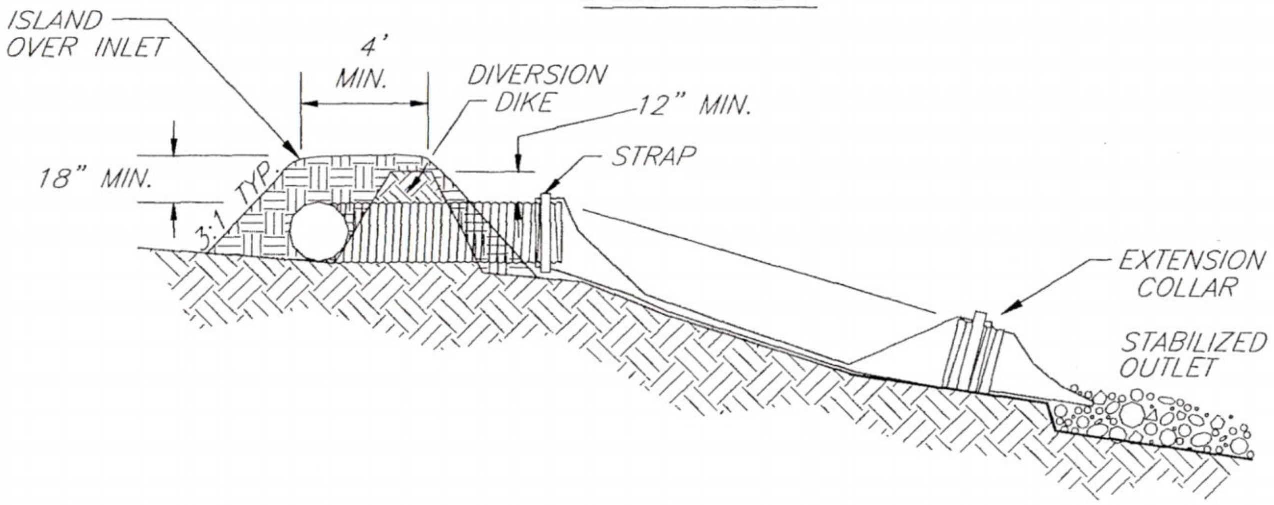
Immediately repair any erosion around the inlet or outlet; install a headwall, riprap, or sandbags if necessary. Promptly repair any breaks in the pipe and clear any clogs that reduce flow through the structure.

Removal

After the slope has been permanently stabilized and the permanent drainage system has been installed, remove the slope drains and stabilize the remaining disturbed areas.



PLAN VIEW



SECTION

SLOPE DRAIN

BMP AK-4

Rock Flume

Objectives and Applications

A rock flume is a riprap-lined channel to convey water down a relatively steep slope without causing erosion problems on or below the slope.

Flumes serve as stable, permanent elements of a storm water system receiving drainage from above a relatively steep slope, typically conveyed by diversions, channels, or natural drainageways. Drainage will flow down the rock culvert and into a stabilized outlet, sediment trap, or other conveyance measure.

Common Failures - Generally due to faulty installation or maintenance.

- Stone size too small or backslope too steep, resulting in stone displacement.
- Sediment accumulation in flume channel, resulting in reduced capacity.
- Channel width too narrow, resulting in over topping and erosion.

Other Considerations

- Provide both inlet and outlet protection to minimize erosion at these locations.
- Rock flumes should be used in conjunction with diversion dikes to convey runoff from the drainage area.
- When planning rock flumes, consider flow entrance conditions, soil stability, outlet energy dissipation, and downstream stability.

Relationship to Other ESC Measures

Rock flumes assist in the second, conveyance, stage of a BMP system. Rock flumes are used with diversion dikes to facilitate channeling of runoff into the structure

Alternate Sediment Control Measures

Storm water conveyance channel

Other Names

Rock chute, rock downdrain

Design

Contributing flow drainage area: *not to exceed 10 acres per rock flume.*

Capacity: *10 year peak runoff or the design discharge of the water conveyance structure, whichever is greater.*

Flume Channel Lining	
Drainage Area (Acres)	Riprap Sizes (Class)
5.0 ac	Class I
10.0 ac	Class II

Slope: *not to exceed 1.5:1 (67 %)*

Depth: *minimum 1 ft.*

Alignment: *straight*

Inlet section: *riprap and geotextile, or flared metal end section for inlet protection*

Outlet section: *riprap and geotextile, for outlet protection*

Materials

Riprap, geotextile, flared metal end section

Installation

Remove all unsuitable material, such as trees, brush, roots, or other obstructions prior to installation. Shape the channel to proper grade and cross-section as shown in the plans, with no abrupt deviations from design grade or horizontal alignment. Compact all fills to prevent unequal settlement. Place geotextile prior to placement of riprap.

Inspection

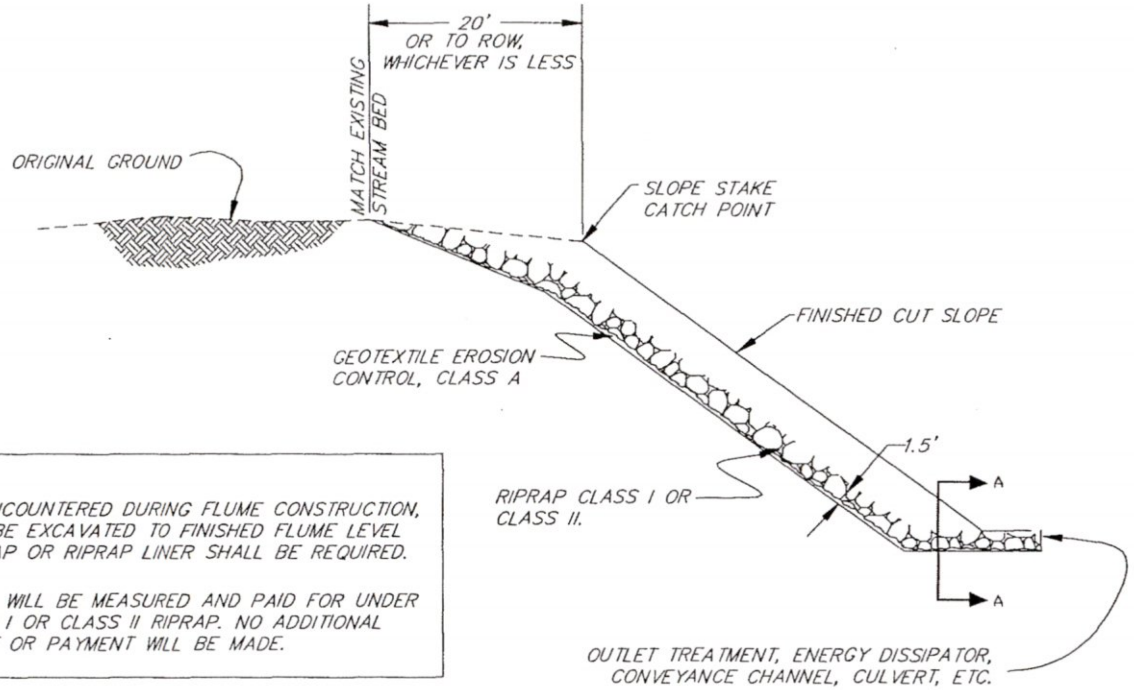
Inspect flume channels at regular intervals as well as after major rains for sediment accumulation, material displacement, bank failures, and scour at inlet and outlet sections.

Maintenance

Rock flume channels should be checked periodically to ensure that scouring is not occurring beneath the fabric underlying the riprap layer, or that the stones have not been displaced by the flow. Sediment should be removed from the riprap lined channel if it reduces the capacity of the channel.

Removal

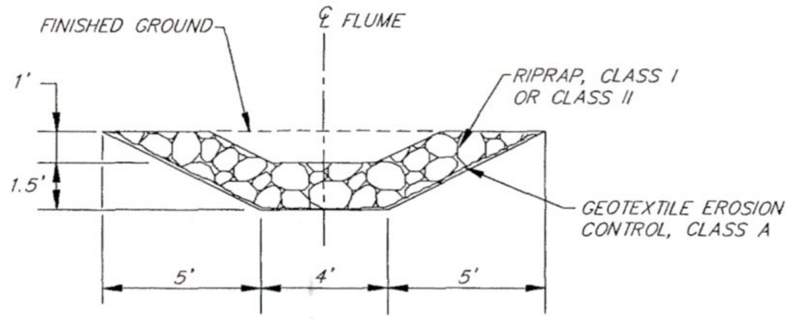
Rock flumes will normally be left in place after construction is completed.



NOTES:

1. IF ROCK IS ENCOUNTERED DURING FLUME CONSTRUCTION, ROCK SHALL BE EXCAVATED TO FINISHED FLUME LEVEL AND NO RIPRAP OR RIPRAP LINER SHALL BE REQUIRED.

2. ROCK FLUMES WILL BE MEASURED AND PAID FOR UNDER EITHER CLASS I OR CLASS II RIPRAP. NO ADDITIONAL MEASUREMENT OR PAYMENT WILL BE MADE.



SECTION A–A

ROCK FLUME DETAIL

Rock Flume

BMP AK-5
Outlet Protection

Objectives and Applications

An outlet protection is a structure designed to control erosion at the outlet of a pipe by reducing flow velocity and dissipating flow energy.

This measure should be used where the discharge velocity of a pipe exceeds the tolerances of the receiving channel or disposal area. To prevent scour and undermining, an outlet protection structure is needed to absorb the impact of the flow and reduce the velocity to non-erosive levels. A riprap lined apron is the most commonly used practice for this purpose because of its low cost and ease of installation. Designs will vary based on discharge specifics and receiving stream conditions. Outlet Protection may be temporary or permanent.

***Common Failures** - Generally due to faulty design, installation or maintenance.*

- Inadequate apron length, resulting in scouring
- Riprap rock that is too small for runoff velocities

Other Considerations

- The riprap apron should be extended downstream until stable conditions are reached even though this may exceed the length calculated for design velocity control
- If the pipe discharges into a well defined channel, the side slopes of the channel shall not be steeper than 1:2 (horizontal:vertical)
- Riprap stilling basins or plunge pools should be considered in lieu of aprons where pipe outlets are perched or where high flows would require excessive apron length. Design guidelines for stilling basins can be found in Hydraulic Design of Energy Dissipators for Culverts and Channels, Hydraulic Engineering Circular No. 14, USDOT, FHWA (1983).

Relationship to Other ESC Measures

Outlet protection may be installed at the discharge points of grassed waterways or swales, storm water conveyance channels, sediment basins, and wet ponds.

Alternate Sediment Control Measures

Other structural energy dissipators, such as riprap stilling basins, baffle wall basins or T-fitting on the end of corrugated metal pipe.

Other Names

Stabilized Outlet.

Design

Capacity: *2 year peak runoff or the design discharge of the water conveyance structure, whichever is greater. Determine the maximum allowable velocity for the receiving stream, and design the riprap apron to reduce the flow to this velocity*

Apron Length: *The apron length shall be six times the diameter of the outlet pipe.*

Apron Width: *The apron width shall be four times the diameter of the outlet pipe.*

Materials: *The apron should be lined with riprap. The riprap should consist of a well-graded mixture of stone, with larger stones predominating. The diameter of the largest stone shall be no greater than the 1.5 times the median stone size. Geotextile filter cloth shall be placed between the riprap and the underlying soil.*

Grade: *The apron shall be less than or equal to the receiving channel grade, preferably a flat (0%) slope. Steeper grades may require alternative measures such as riprap stilling basins, or other energy dissipators.*

Alignment: *The apron shall be straight throughout the entire length.*

Additional Design Guidelines: *Hydraulic Design of Energy Dissipators for Culverts and Channels, Hydraulic Engineering Circular No. 14, USDOT.*

Materials

Rock riprap; geotextile filter cloth.

Installation

Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan.

Compact any fill required in the subgrade to the density of the surrounding undisturbed material. The riprap must conform to the specified grading limits shown on the plan. Filter cloth must meet the design requirements and be properly protected from punching or tearing during installation.

Riprap may be placed by equipment, but take care not to damage the filter cloth. Ensure that the riprap consists of a well-graded mixture of stones. The diameter of the largest stone should be no greater than 1.5 times the median stone size. The minimum thickness of the riprap apron should be 1.5 times the maximum stone diameter. Riprap may be field stone or rough quarry stone, and should be hard, angular, weather resistant, and well graded. Make the top of the riprap at the downstream end level with the receiving area or slightly below it. Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron. Stabilize all disturbed areas with vegetation immediately after construction.

Inspection

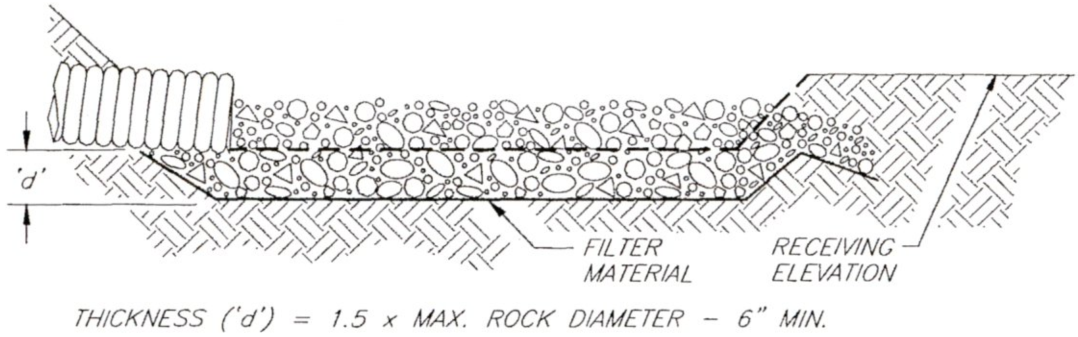
Inspect outlet protection weekly and after heavy rains to look for erosion around or below the riprap, dislodged stones, and scouring. Outlet protection should also be monitored for sediment accumulation filling the voids between rocks.

Maintenance

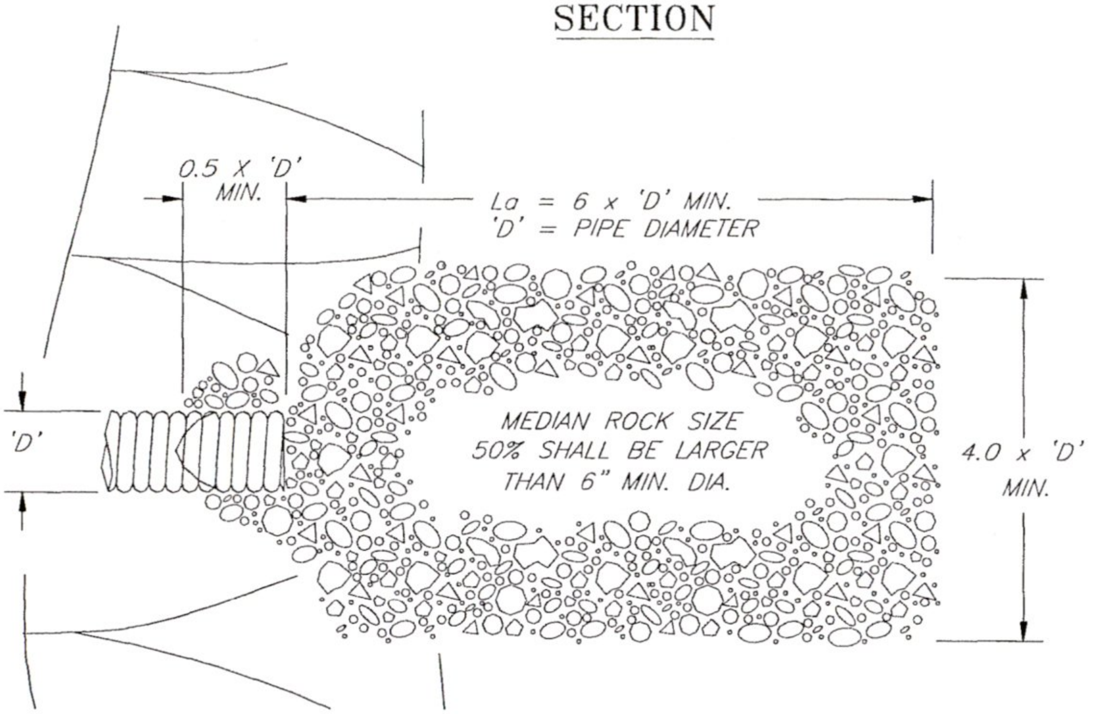
Make immediate repairs if any conditions noted under inspection are found. Sediment should be removed when it fills the voids between rocks.

Removal

Restore ground to existing or constructed grade. Revegetated measures may be left in place only if specifications specifically allow it.



SECTION



PLAN

NOTES:

1. 'La' = LENGTH OF APRON. DISTANCE 'La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" THICK MINIMUM GRADED GRAVEL LAYER.

FILE: ENRGYDIS

OUTLET PROTECTION

BMP AK-6
Storm Water Conveyance Channel

Objectives and Applications

A storm water conveyance is a channel lined with vegetation, riprap, or other flexible material designed for the conveyance and safe disposal of concentrated surface runoff to a receiving system without damage from erosion.

The main design considerations are the volume and velocity of the water expected in the channel. All conveyance channels should be designed to carry at least the appropriate peak flow. Other factors to be considered include availability of land, aesthetics, safety, maintenance requirements, and soil characteristics. There are two types of cross sections for channel linings, trapezoidal and triangular ("V" shaped). All channels should discharge through a stabilized outlet that should be designed to handle the expected runoff velocities and volumes from the channel without resulting in scouring.

Channel linings function to protect drainage channels against erosion through the use of flexible linings (vegetation, riprap, gravel, or flexible, porous mats), and may be used as either a temporary or a permanent sediment control measure. The selection of a type of lining should be based upon the design flow velocities.

Common Failures - Generally due to faulty maintenance.

- Sediment accumulation – channel capacity is reduced, resulting in over topping and erosion
- Failure of lining

Other Considerations

- Channels should be located to conform with and use the natural drainage system.
- Grass lined channels should not be subject to sedimentation from disturbed areas.
- Grass-lined channels may be unsuitable if channel slopes over 5% predominate, continuous or prolonged flows occur, potential exists for damage from traffic (people or vehicles), or soils are erodible.
- Channel side slopes should be 2:1 or flatter in the case of rock-riprap lining. Vegetated channel side slopes should be 4:1 or flatter.
- When using riprap as a liner, a geotextile filter blanket or one or more layers of granular filter should be placed before placing the riprap. The thickness and gradation of the granular filter, or specifications for the geotextile, should be included in the plans.
- Vegetation in grass lined channels should be established before flows are introduced.

Relationship to Other ESC Measures

All channels should discharge through a stabilized outlet. The outlet should be designed so that it will handle the expected runoff velocities and volumes without scouring. An energy dissipator may be needed if flow velocities exceed the allowable velocity of the receiving channel.

Alternate Sediment Control Measures

Grass Lined Swale

Other Names

Channel Stabilization

Design

The following information is needed to design channel linings.

- *Expected runoff peak flow*
  Temporary: 2-year frequency storm
  Permanent: 10-year frequency storm
- *Desired channel capacity*
- *Slope of the channel*
- *The type of cross-sectional design of channel*
- *The type of lining*
- *Design depth or design cross sectional area*

Design Guidelines – *Design procedures should be consistent with steps outlined in chapter 8.6.3.1 of the Alaska Highway Drainage Manual. Basic steps will include:*

1. *Establish a roadside plan*
2. *Obtain or establish cross section data*
3. *Determine initial channel grades*
4. *Check flow capacities and adjust as necessary*
5. *Determine channel lining/protection needed (following procedures in FHWA Hydraulic Engineering Circular No. 15, "Design of Roadside Channels with Flexible Linings")*
6. *Analyze outlet points and downstream effects*

Materials

Filter blanket or geotextiles, flexible, porous mats (fiberglass, plastic, or jute), staples, riprap, gravel, seed, fertilizer, mulch.

Installation

Remove all unsuitable material, such as trees, brush, roots, or other obstructions prior to installation. Shape the channel to proper grade and cross-section as shown in the plans, with no abrupt deviations from design grade or horizontal alignment. Compact all fills to prevent unequal settlement. Remove any excess soil and dispose of properly.

Grass lined channels – Seed, fertilize and mulch.

Riprap lined channels – Place a geotextile filter blanket or a granular filter, prior to placement of riprap.

Mat lined Channels –Seed and fertilize. Apply the matting from the upper end of the channel and continue downgrade. Secure the top end of the matting by excavating a 6 in. trench, followed by back-filling and compacting. Overlap rolls of matting at least 6 in. And use a double row of staples. Staple securely on 6 in. centers, using minimum 6 in. long staples, then backfill and compact. Roll channel lining with a heavy roller after seeding, mat placement, and stapling are complete.

Inspection

Inspect channels weekly as well as after major rains for sediment accumulation, material displacement, bank failures, and scour at inlet and outlet sections.

Maintenance

Grass Lined Channels – During the initial establishment, grass lined channels should be repaired immediately and grass re-established if necessary. After grass has become established, the channel should be checked periodically to determine if the grass is withstanding the flow velocities without damage. The channel should be repaired if scour is found to be present, and any debris or sediment accumulation should be removed.

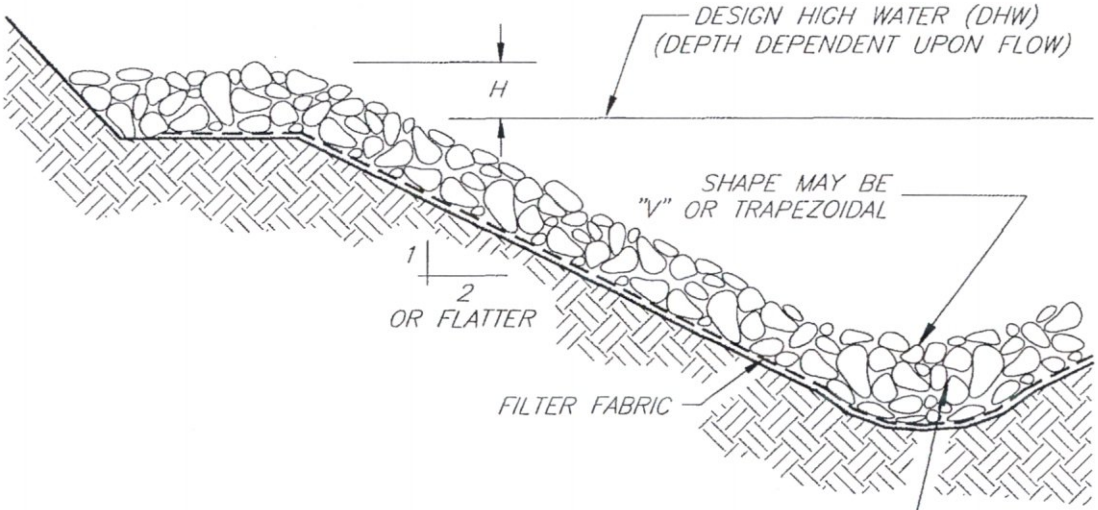
Riprap Lined Channels – Riprap lined channels should be checked periodically to ensure that scouring is not occurring beneath the fabric underlying the riprap layer, or that the stones have not been displaced by the flow. Sediment should be removed from the riprap lined channel if it reduces the capacity of the channel.

Mat Lined Channels – Inspect channel linings following each major storm or snowmelt event and repair as necessary. If the desired grass has not become established through a mat, replace the matting, taking care not to disturb any areas of established grass.

Removal

Temporary channels - Provide and compact fill to existing or constructed grade. Seed and mulch.

FREEBOARD HEIGHT (H), CHANNEL GEOMETRICS AND STONE SIZE SHALL BE DETERMINED BY THE ENGINEER

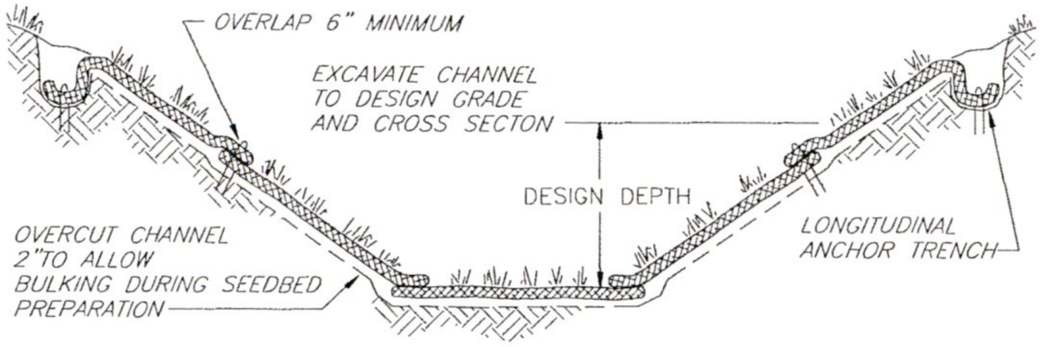


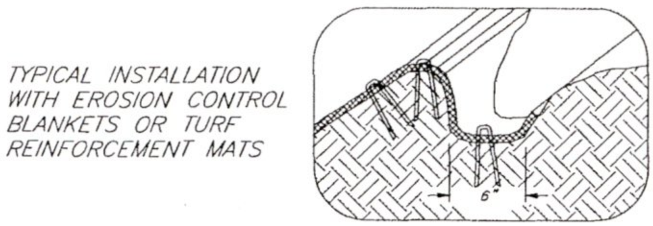
MINIMUM 6" THICK LAYER OF 2" MINIMUM DIAMETER DRAIN ROCK. LARGER STONE AND THICKNESSES SHALL BE USED DEPENDENT UPON GRADIENT, SOIL TYPE, AND DESIGN FLOW.

TYPICAL SECTION

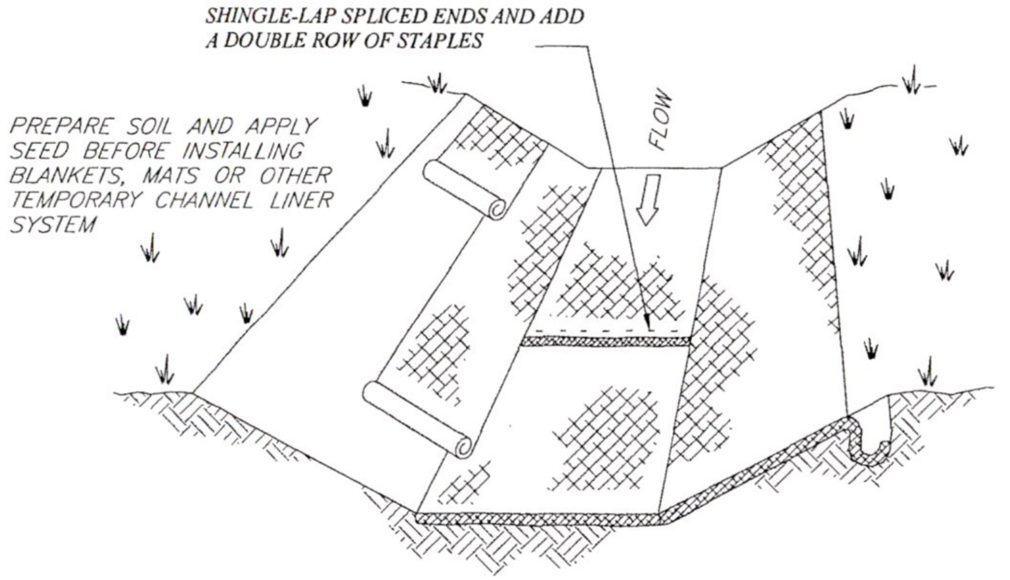
FILE: RCKCHNEL

STORM WATER CONVEYANCE CHANNEL, RIPRAP





LONGITUDINAL ANCHOR TRENCH



NOTES:
1. DESIGN VELOCITIES EXCEEDING 2.0 FT/SEC REQUIRE TEMPORARY BLANKETS, MATS OR SIMILAR LINERS TO PROTECT SEED AND SOIL UNTIL VEGETATION BECOMES ESTABLISHED.
2. GRASS-LINED CHANNELS WITH DESIGN VELOCITIES EXCEEDING 6.0 FT/SEC SHOULD INCLUDE TURF REINFORCEMENT MATS.

NOT TO SCALE

FILE: GRSSINST

BMP AK-7

Check Dam

Objectives and Applications

A check dam is an expedient (or emergency) temporary measure to protect narrow erosion-susceptible waterways and/or reduce the sediment loads in channeled flows. Check dams may also be used as permanent measures. Rock or a triangular silt dike may be used.

Temporary check dams are placed in series in ditches, swales, gullies, or other minor drainageways intended to be filled or stabilized at a later time. They are used to slow stormwater velocities and direct scouring flows away from channel surfaces. The dam configuration supports sediment settling from silted waters pooled behind the weir. When rock is used, small sediment particles become lodged in the dam's interior.

Permanent check dams may be used as gradient control structures in ditches adjacent to elevated roadway sections.

Common Failures - Check dams are vulnerable to failure from concentrated flow.

- Undercut/washout of channel banks beside the structure due to improper installation (e.g. dam not built high enough onto the banks).
- Increased bank erosion (e.g. at channel bends) or inadequate protection of channel surfaces due to improper location or installation of check dams.
- Water backup and bank overflow due to overly tall dam structure.
- When rock is used, rocks washed downstream may clog culverts, misdirect flow, etc.
- Check dams installed in grass lined structures may kill the vegetative lining if siltation is excessive or the dam remains submerged for extended periods of time.

Other Considerations

- Check dams are used in narrow ditches and gullies.
- Check dam rocks interfere with the establishment of vegetation.
- Check dams left as permanent structures interfere with grass mowing (maintenance).
- Steep channel slopes reduce effectiveness.
- Coupling check dams with a small adjacent upstream sump improves velocity slowing and sediment trapping ability.
- The area downstream from the last dam should be stabilized or flow diverted.

Relationship to Other ESC Measures

As part of the perimeter control ESC network, check dams are used for channel protection prior to establishment of permanent or stabilized erosion controls. Although check dams do some sediment filtering, they are not intended to replace filters or sediment basins. A depression in the bottom of the channel at the upstream edge of a check dam augments velocity slowing and sediment removal. Digging a sump through stabilized in-channel protection (e.g. grassed lining) should be avoided, however. Check dams interfere with localized vegetative channel protection. Rocks prohibit establishment of in-situ vegetation and the protective lining is subject to disturbance/ destruction during check dam removal.

Alternate Sediment Control Measures

- Drainage diversion during channel stabilization.
- Protective channel linings (e.g. grassed waterway, concrete or rock-lined ditch, erosion control blankets or mattings), , sediment settling ponds, permanent ditch blocks, brush barriers or combinations or these measures.

Other Names

In Stream/Channel Energy Dissipator

Design

The design of rock check dams (high at channel banks, lower in the middle) directs overtopping flows centrally to avert scouring of channel surfaces. The dam is keyed into channel slopes to prevent bank undercut and erosion.

Spacing between dams is based on waterway grade, height of adjacent check dams and desired length of backwater effect. The distance shown in the table below has been calculated for the protection of channel banks between successive structures. Placement of check dams at abrupt bends should be avoided since erosive waters could be misdirected by the check dam into channel banks.

Check dam structures are sized to stay in place during peak flow and should pass 2-year storm runoff without overtopping the roadway or ditch side-slopes. Generally, dams are not constructed higher than recommended as follows since excessive weir depth seriously impacts the flow characteristics of the ditch.

The following dimensions may be modified for site-specific applications:

Standard Check Dam

Maximum drainage area: *not to exceed 10 acres*

Normal flow velocity: *no greater than* 6 ft/sec.

Maximum height at dam center: *not greater than 2 ft. or one half the channel depth*

Minimum height difference between center and (bank) sides: *6 in.*

Structure slope: *1:2*

Maximum spacing between standard (2 ft. high) check dams: *align top of check dam level with toe elevation of the upstream dam*

Channel Slope (%)				
2	*3*	*4*	*5*	*6*
Spacing (ft.)				
100	*67*	*50*	*40*	*33*

•

Materials

Rock. Clean hard angular (e.g. crushed, shot) rock graded according to expected flows. Two- to three-inch stone is usually adequate.
Alternate materials: logs, brush and twigs, sandbags partially filled with pea gravel. Use only clean materials. Avoid introduction of fines.

Tirangular Silt Dike. These are foam encased in geotextile, with extra fabric to make an apron. They are usually 10 to 14" high at the center and 20 to 28" at the base.

Installation

Install dams as soon as drainage routes are established. Place rock by hand or mechanical means, distributing smaller rocks to the upstream side to prevent transport. Attach the leading edge of the triangular silt dike with rocks, sandbags or staples and a key slot. Check structures key into a trench that spans the complete width of the channel. Extend dams high onto the channel banks (above anticipated high water level) to prevent localized undermining and erosion. In unlined channels, a small sump dug at the upstream side of the dam facilitates sediment collection and removal.

Inspection

Observe dam function during/after each rainfall event that produces runoff and note conditions of channel surfaces. Visually compare upstream and downstream flows to determine relative turbidity levels and effectiveness of velocity checks. Inspect channel banks for evidence of undermining and erosion. Look for dam deterioration and for migration of structural components downstream. Observe level of sediment buildup behind dam. It should not exceed ½ dam height. Observe ESC effectiveness during flows to determine if adjunct measures are needed. The dam should be stable and appropriately sized to withstand high velocity events.

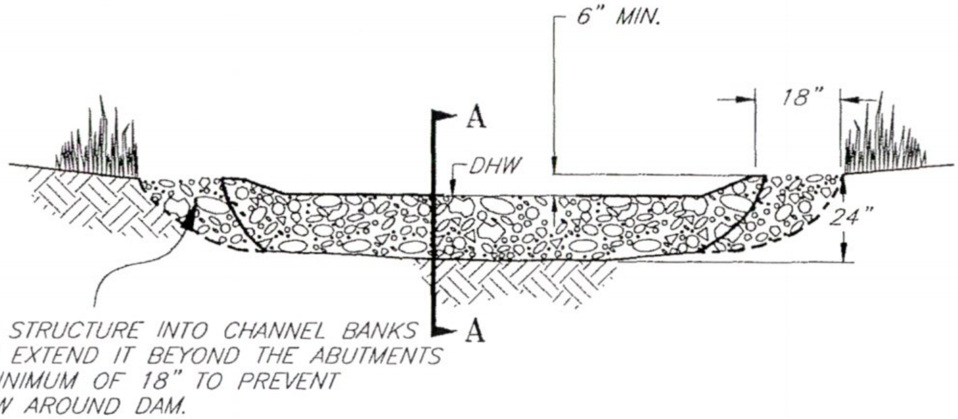
Maintenance

Rock. Repair check dam voids and bank undercuts. Fortify disintegrating dams and install additional dams or other ESC measures as needed. Correct undesirable effects of rock migration (e.g. clogged culvert, flow construction). Periodically remove sediment deposits.

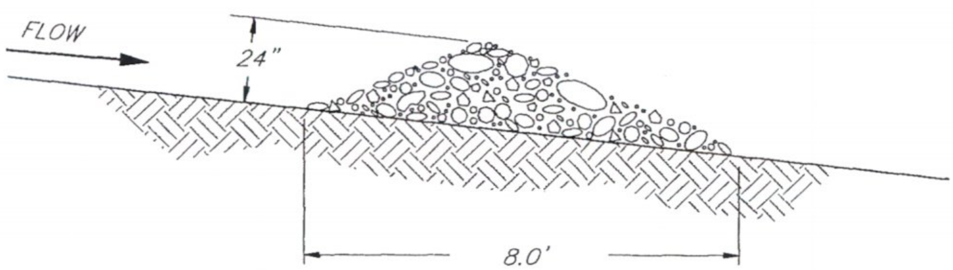
Triangular Silt Dike. Remove accumulated sediment when it reaches half the height of the dam. Repair right away if there is any undercutting or flow around the edges.

Removal

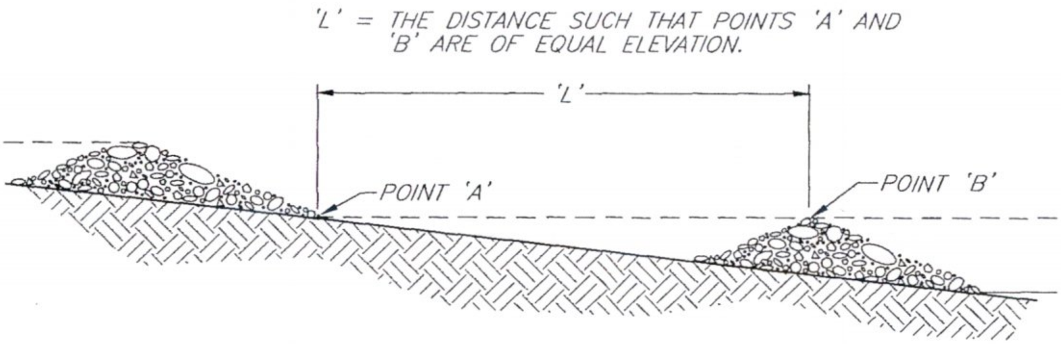
Care should be taken since the waterway surfaces are susceptible to damage during check dam removal. Damaged or unprotected areas should be seeded immediately or other forms of protection provided as warranted. Some check dams are left as a permanent control measure. Removal may be indicated because of unsightliness or interference with maintenance activities.



VIEW LOOKING UPSTREAM



SECTION A – A



SPACING BETWEEN CHECK DAMS

NOT TO SCALE

FILE: RCKCHKDM

ROCK CHECK DAM

BMP AK-8
Fiber Roll

Objectives and Applications

Fiber rolls are long rolls of material such as straw, flax, rice, coconut or compost wrapped in plastic or biodegradable netting. They are placed and staked along the contour of disturbed slopes.

The purpose of a fiber roll is to shorten the slope and help to slow, filter and spread overland flows. They capture organic matter and seeds that might otherwise be washed downslope.

Fiber rolls can be applied to steep or long slopes and slopes that are susceptible to freeze/thaw activity, sheet and rill erosion or dry ravel. They can be placed along the toe, top, face and at grade-breaks on disturbed slopes. They can be placed at the perimeter of a project and around temporary stockpiles. They can be used as check dams in unlined ditches

Common Failures - Generally due to faulty installation or maintenance.

- Without being placed in a trench, runoff can flow underneath the roll and cause failure.
- Water can flow between rolls is they are not abutted tightly together.
- Rolls must be placed perpendicular to flow (parallel to the slope contour).
- Rolls will not work if the slope is slumping, creeping or sliding.

Other Considerations

- Use in areas of low shear stress.
- Avoid use on slopes that could build up ice.
- They are effective for one to two seasons.
- Fiber rolls can be stakes to the ground using willow cuttings to increase the revegetation. Since the fiber roll will retain moisture, it will provide a good site for the willow.
- Rolls will be difficult to move once they are saturated.
- The quantity of sediment that a roll can capture is limited. They are typically about 8 inches in diameter.

Relationship to Other ESC Measures

Fiber rolls are best used in combination with seeding, mulch and/or erosion control blankets. They can be used to stabilize slopes until the permanent vegetation becomes established.

Alternate Sediment Control Measures

Silt fence -- the advantage of fiber rolls over silt fence is that installation is much easier, they do not have to be removed and hydroseeding can be done after their installation.

Other Names

Straw Wattle, Straw Roll

Design

Design life: *1 or 2 seasons*

Contributing flow drainage area:

Diameter: 8 to 10 inches up to 20 inches

Length: 20 to 30 feet

Materials

Fiber rolls: The netting may be UV-degradable polypropylene, biodegradable burlap, jute or coir. The filling may be straw, flax, rice, coconut-fiber or compost.

Stakes: 1"x1" wooden stakes 24" long (18" if soils are rocky) or 3/8" rebar or ¾" to 1 ½" diameter live willow cuttings

Installation

Dig trenches across the slope (on the contour) to a depth of 3 to 5 inches. If the slope is steep or there is high rainfall, make trenches 5 to 7 inches deep. Add a slight downward angle to the trench at the ends to avoid ponding in the middle of the slope.

Start installation downslope. Determine the spacing of the rolls based on the slope gradient and soil type. Typically, place rolls 10 feet apart on 1:1 slopes, 20 feet apart on 2:1 slopes, 30 feet apart on 3:1 slopes. Space rolls closer in softer soils, farther in rocky soils.

Place the rolls in the trenches. Where two rolls meet, place the ends abutted tightly, not overlapped. At the end of the roll, turn the end upslope to prevent runoff from going around the roll end.

Stake the roll every four feet. Leave 3 inches of the stake above the roll. It may be easier to make a pilot hole through the roll and into the soil first. Fiber rolls around storm drains and inlets must be staked into the ground

Inspection

Ensure that the roll ends remain abutted tightly. Ensure that the rolls are in contact with the soil and thoroughly entrenched. Rolls need to be inspected after a significant rainfall. Look for scouring underneath the rolls.

Maintenance

Equipment cannot drive over the installed fiber rolls. If inspections reveal crushed, torn, slumping or split rolls, the damaged sections must be replaced.

Remove sediment accumulated upslope of the roll when it reaches one-half the distance between the top of the fiber roll and the ground surface.

Removal

Usually fiber rolls are left in place. If they are removed, the accumulated sediment must first be collected and disposed. After removal, the trenches and stake holes should be filled to blend with the slope and revegetated

BMP AK-9
Mulching

Objectives and Applications

Mulching is the application of a uniform protective layer of straw, wood fiber, wood chips, or other acceptable material on or incorporated into the soil surface of a seeded area to allow for the immediate protection of the seed bed.

The purpose of mulching is to protect the soil surface from the forces of raindrop impact and overland flow, foster the growth of vegetation, increase infiltration, reduce evaporation, insulate the soil, and suppress weed growth. Mulching also helps hold fertilizer, seed, and topsoil in place in the presence of wind, rain, and runoff, and reduces the need for watering. Mulching may be utilized in areas that have been seeded either for temporary or permanent cover.

Mulches include straw, hay, wood fiber, paper fiber, wood/ paper fiber blends, peat moss, wood chips, bark chips, shredded bark, manure, compost and corn stalks. This type of mulch is usually spread by hand or by machine (mulch blower) after seed, water, and fertilizer have been applied. Soil binders or tackifiers, composed of a variety of synthetic and organic materials, including emulsions or dispersions of vinyl compounds, rubber, asphalt, or plastics mixed with water are often added to commercial mulch products. Tackifiers aid in the stabilization process, and are not used as a mulch alone, except in cases where temporary dust and erosion control is required. Hydroseeding, sometimes referred to as hydromulching, consists of mixing a tackifier, specified organic mulch, seed, water, and fertilizer together in a hydroslurry and spraying a layer of the mixture onto a surface or slope with hydraulic application equipment. The choice of materials for mulching should be based on soil conditions, season, type of vegetation, and the size of the area.

Common Failures - Generally due to faulty installation or maintenance.

- Mulches are not properly watered after application, resulting in drying out and possible blowing or washing away of materials.
- Depth of mulching material is either insufficient or excessive, resulting in low seed germination rates.
- Hydroseeding slurry not applied uniformly, resulting in spotty germination and inadequate ground cover.

Other Considerations

- Mulch should be applied immediately after seeding to improve seed germination.
- Hydroseeding can be performed in one step, and is effective provided that materials are properly mixed and equipment is in good working order.
- Depth of the applied mulch should be not less than 1 in. and not more than 2 in.
- Chemical soil stabilizers or soil binders, when used alone, are less effective than other types of mulches. These products are primarily useful for tacking organic mulches.
- A tackifier should be used in conjunction with seeding, fertilizing, and mulching or hydro-seeding on any slopes steeper than 3:1.
- Check labels on chemical mulches and binders for environmental concerns. Take precautions to avoid damage to fish, wildlife, and water resources.
- Some materials such as wood chips may absorb nutrients necessary for plant growth.

Relationship to Other ESC Measures

Mulching may be performed in conjunction with seeding, fertilizing, surface roughening, and grading practices. Concentrated flows of runoff should be directed away from mulched areas.

Alternate Sediment Control Measures

Erosion Control Blankets; Sodding

Other Names

Hydromulching; Chemical Stabilization

Design

Design life: *1 season (6 months) or less*

Site applicability: *Areas which have been disturbed and require temporary or permanent cover*

Materials and application rates: *as per Section 619 and Section 727 of Alaska Standard Specifications for Highway Construction, and Special Provisions for project*

Materials

Most Commonly Specified Mulches – Wood Fiber, Paper Fiber, Wood/Paper Fiber Combination Blends, Peat Moss

Other Mulches – Straw, Hay, Wood Chips, Bark Chips, Shredded Bark, Corn Stalks, Compost, Manure

Tackifiers – Vinyl Compounds, Rubber, Asphalt, or Plastics mixed with water

Installation

Complete the required grading as shown on the plans and ensure that erosion control measures intended to minimize runoff over the area to be mulched are in place. Apply mulch at the rates specified in the special provisions either by hand or by machinery immediately after the seed and fertilizer have been applied (two step method), or as part of the hydroslurry incorporating seed, fertilizer, mulch, and water (one step method). Apply specified tackifier if not already incorporated into the mulch matrix or hydroslurry. Provide additional watering as specified to ensure optimal seed germination conditions.

Inspection

Inspect all mulches weekly, and after each rainstorm to check for rill erosion, dislocation, or failure.

Maintenance

Replace mulch that has been loosened or dislodged. In addition, reseed areas if necessary. Water mulched areas periodically to ensure that moisture content will be maintained and seed germination and grass growth will continue.

Removal

Mulching is usually left in place to naturally decompose and become part of the soil structure.

BMP AK-10
Temporary Seeding

Objectives and Applications

To establish a temporary vegetative cover on disturbed areas by seeding with appropriate and rapid growing annual grasses, usually annual ryegrass.

The purpose of temporary seeding is to eventually stabilize the soil once the vegetation is established and reduce damage from wind and/or water until permanent stabilization is accomplished. By itself, temporary seeding is not soil stabilization, because the seeds aren't effective until they sprout and grow. Seeding is applicable to areas that are exposed and subject to erosion and not being actively worked. It is usually accompanied by surface preparation, fertilizer, and mulch. Temporary seeding may be accomplished by hand or mechanical methods, or by hydraulic application (hydroseeding), which incorporates seed, water, fertilizer, and mulch into a homogeneous mixture (slurry) that is sprayed onto the soil.

Common Failures - Generally due to faulty installation or maintenance.

- Seed is not properly watered after application, resulting in drying out and low germination rates.
- Depth of mulching material is either insufficient or excessive, resulting in low seed germination rates.
  Hydroseeding slurry is not applied uniformly, resulting in spotty germination and inadequate ground cover.

Other Considerations

- Proper seedbed preparation and the use of high quality seed are essential to the success of this practice.
- Temporary seeding should take place as soon as practicable after the last ground-disturbing activities in an area.
- Once seeded, protect the area from foot and equipment traffic.
- Temporary seeding is not recommended if permanent seeding will be completed in the same growing season. Other temporary stabilization measures should be considered.

Relationship to Other ESC Measures

Seeding should be performed in conjunction with mulching, fertilizing, surface roughening, and grading practices. Concentrated flows of runoff should be directed away from seeded areas using diversions.

Alternate Sediment Control Measures

Erosion Control Matting, Plastic Sheeting

Other Names

Temporary Stabilization

Design

Seed Selection: *Annual Ryegrass (Lolium multiflorum)*

Seed Application Rate: *60 lbs/acre (average rate, site specific conditions may require more or less)*

Fertilizer Application Rate: *600 lbs/acre 20-20-10 (nitrogen-phosphorous-potassium [average rate, site specific conditions may require more or less])*

Materials

Seed, water, fertilizer, mulch

Installation

Grade as needed where it's feasible to permit the use of equipment for seedbed preparation. Prepare the seedbed by using surface roughening if soil has been compacted by machinery or heavy foot traffic. If using hand or mechanical methods, apply fertilizer in order to optimize growing conditions, followed by seed, mulch, and water. If using hydroseeding, mix seed, mulch, fertilizer, and water as per the manufacturer's recommendations. Apply slurry as per the manufacturer's recommendations.

Inspection

Inspect newly seeded areas on a regular basis and after each storm event to check for areas where protective measures (mulch) have failed or where plant growth is not proceeding at the desired rate.

Maintenance

Water seeded areas daily until initial ground cover is established if rainfall does not provide moisture for seed germination. Reseed areas where growth is absent or inadequate. Provide additional fertilizer if needed.

Removal

Removal of temporary vegetation is usually not necessary. Continue inspections and remedial action until the site is stabilized by permanent vegetation.

BMP AK-11

Seeding Around Culverts

Objectives and Applications

To establish a temporary vegetative cover on disturbed areas around culverts by seeding with appropriate and rapid growing annual grasses, usually annual ryegrass.

The purpose of seeding around culverts is to minimize the erosion potential in an area of concentrated flows of storm water.

Common Failures - Generally due to faulty installation or maintenance.

- Seed is not properly watered after application, resulting in drying out and low germination rates.
- Depth of mulching material is either insufficient or excessive, resulting in low seed germination rates.
- Hydroseeding slurry is not applied uniformly, resulting in spotty germination and inadequate ground cover.

Other Considerations

- Proper seedbed preparation and the use of high quality seed are essential to the success of this practice
- Temporary seeding should take place within 24 hours after culvert installation, or maintenance, is complete.
- Seed 25 feet from the end of the pipe, or the disturbed area, whichever is larger.
- Once seeded, protect the area from foot and equipment traffic.
- Protect temporary seeding, if seed has not fully developed into 70% of background vegetation, prior to anticipated storm events in order to minimize erosion potential with a concentrated flow of storm water.

Relationship to Other ESC Measures

Seeding should be performed in conjunction with mulching, fertilizing, surface roughening, and grading practices.

Alternate Sediment Control Measures

- Rolled Erosion Control Products
- Rock Drains
- Geotextile Armoring

Other Names

Temporary Seeding

Design

Seed Selection: Annual Ryegrass (Lolium multiflorum)

Seed Application Rate: 1/2 lb/1000 sq.ft. (average rate, site specific conditions may require more or less, steep slopes require more but do not exceed 1 ½ lb/1000 sq.ft.)

Fertilizer Application Rate: 10 lb/1000 sq.ft. 20-20-10 (nitrogen-phosphorous-potassium [average rate, site specific conditions may require more or less])

Materials

Seed, Water, Fertilizer, Mulch

Installation

Prepare the seedbed by using surface roughening. If using hand or mechanical methods, apply fertilizer in order to optimize growing conditions, followed by seed, mulch, and water. If using hydroseeding, mix seed, mulch, fertilizer, and water as per the manufacturer's recommendations. Apply slurry as per the manufacturer's recommendations.

Inspection

Inspect newly seeded areas on a regular basis and after each storm event to check for areas where protective measures (mulch) have failed or where plant growth is not proceeding at the desired rate.

Maintenance

Water seeded areas daily until initial ground cover is established if rainfall does not provide moisture for seed germination. Reseed areas where growth is absent or inadequate. Provide additional fertilizer if needed.

Removal

Removal of temporary vegetation is usually not necessary. Continue inspections and remedial action until the site is stabilized by permanent vegetation

BMP AK-12
Surface Roughening and Terracing

Objectives and Applications

Surface roughening and terracing includes establishing a rough soil surface by creating horizontal grooves, furrows, depressions, steps, or terraces running parallel to the slope contour over the entire face of the slope.

These measures are intended to aid in the establishment of vegetative cover from seed, to reduce runoff velocity and increase infiltration, and to reduce erosion and provide for sediment trapping. By themselves, surface roughening measures are not soil stabilization. They provide simple, inexpensive and immediate short-term erosion control for bare soil where vegetative cover is not yet established. A rough, loose soil surface gives a mulching effect that provides more favorable moisture conditions than hard, smooth surfaces and that aids in seed germination. The measure chosen to achieve these goals depends on the grade of the slope, the type of slope (cut or fill), soil and rock characteristics, future mowing and maintenance requirements, and type of equipment available. The most common measures utilized include:

Tracking – This is done by running machinery (such as bulldozers) up and down slopes to leave horizontal depressions in the soil, and is generally limited to sandy soils in order to avoid undue compaction of the soil surface.

Groove Cutting – This is done by cutting serrations along the contour with a blade attached to a dozer or other equipment.

Contour Furrows – This is done by cutting furrows (a series of ridges and depressions) along the contour of a slope, and is applicable to any area that will safely accommodate disks, tillers, spring harrow, or the teeth of a front end loader.

Stair Step Grading – This is done by cutting "steps" along the contour of a slope, and is applicable to slopes with a gradient greater than 3:1 which have material soft enough to be bulldozed and which will not be mowed.

Gradient Terracing – This is done by constructing earth embankments or ridges and channels along the face of a slope at regular intervals to intercept surface runoff and conduct it to a stable outlet. This measure is applicable to long, steep slopes where water erosion is a problem, and should not be constructed in areas with sandy or rocky soils.

Common Failures - Generally due to faulty installation or maintenance.

- Roughening washed away by heavy rain, necessitating reroughening and reseeding.
- Failure of upslope control measures (diversions), resulting in excessive flows over area and erosion of soil.

Other Considerations

- These measures are of limited effectiveness in anything more than a moderate storm.
- These measures may not be suitable for noncohesive or highly erodible soils.
- All fills should be compacted to reduce erosion, slippage, settlement, subsidence, and other related problems.
- The finished cut and fill slopes to be vegetated should not exceed 2:1.
- Use slope breaks, such as diversions, benches, or contour furrows to reduce the length of cut and fill slopes to limit sheet and rill erosion.

Relationship to Other ESC Measures

Diversions at the upper perimeter of the area function to prevent runoff from causing erosion on the exposed soil. Silt fences and sediment basins at the lower perimeter of the area function to prevent off site sedimentation.

Alternate Sediment Control Measures

Erosion Control Blankets

Other Names

Contour Grading, Serration

Design

Measure Applicability: *Construction slopes greater than 5 vertical feet.*

Measure Selection: *Should be determined by slope grade, soil type, mowing requirements, and slope type (cut or fill).*

Materials

Construction equipment (bulldozer, front end loader, crawler tractor).

Installation

Cut Slope Roughening (Areas Not To Be Mowed)
Stair step grade or groove cut slopes that are steeper than 3:1. Use stair step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair step grading. Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the "step" in toward the vertical wall. Do not make individual vertical cuts more than 2 ft. high in soft materials or more than 3 ft. high in rocky materials. Groove the slope using machinery to create a series of ridges and depressions that run across the slope, on the contour.

Fill Slope Roughening (Areas Not To Be Mowed)
For slopes greater than 3:1, ensure that the face of the slope consists of loose, uncompacted fill 4 in. – 8 in. deep. Use contour furrows or tracking to roughen the face of the slope, if necessary. Do not blade or scrape the final slope face.

Cuts, Fills, And Graded Areas (To Be Mowed)
Make mowed slopes no steeper than 3:1. Roughen these areas with shallow grooves by using tilling, disking, or harrowing implements. Make grooves close together, less than 12 in., and not less than 1 in. deep. Avoid excessive roughness on areas to be mowed.

Roughening With Tracked Machinery
Limit roughening with tracked machinery to sandy soils in order to avoid undue compaction of the soil surface. Operate machinery up and down the slope to leave horizontal depressions in the soil. Do not back blade during the final grading operation.

Inspection

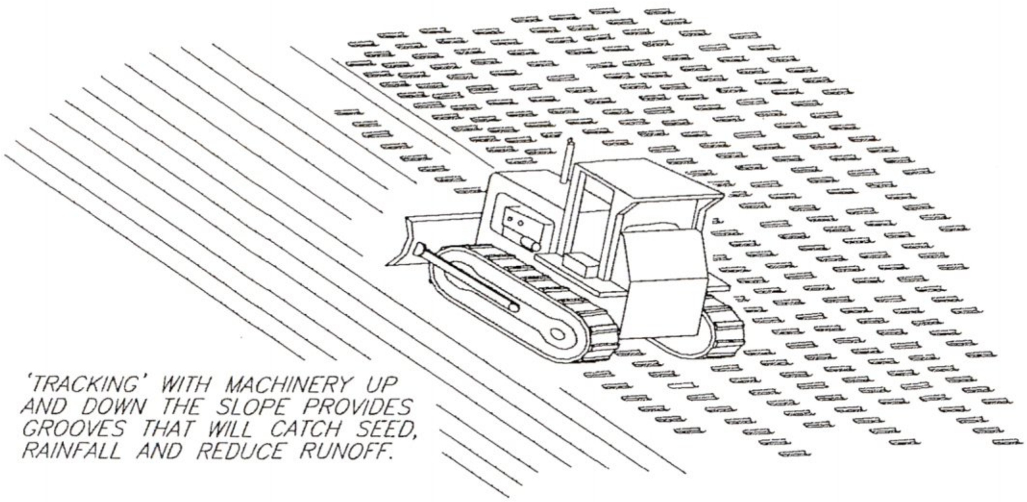
Inspect the areas every week and after each rainfall that produces runoff during construction operations.

Maintenance

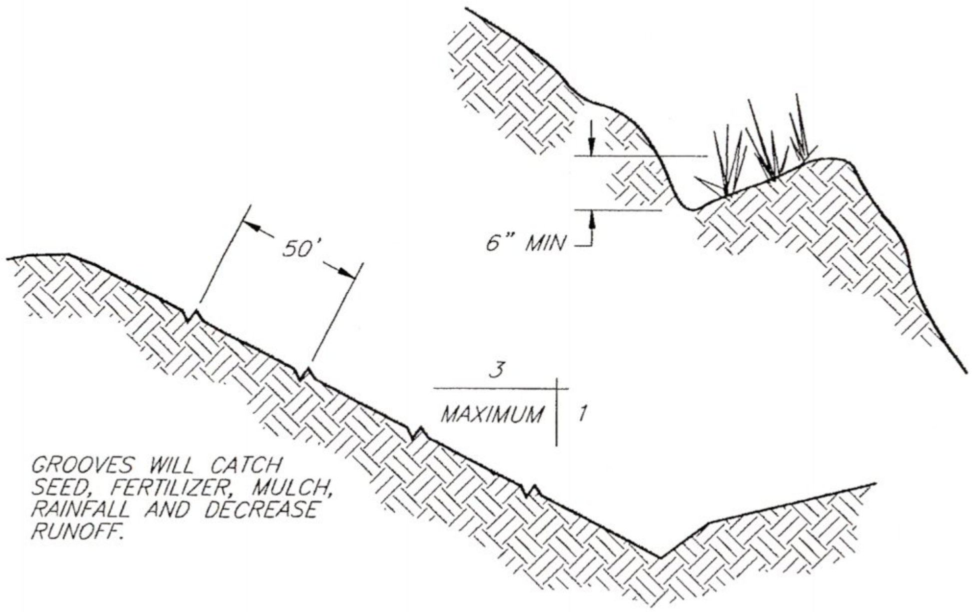
Seed, fertilize, and mulch areas which are graded as quickly as possible. Regrade and reseed immediately if rills appear.

Removal

Surface roughening and gradient terracing will remain an integral part of the slope after final stabilization with vegetation.



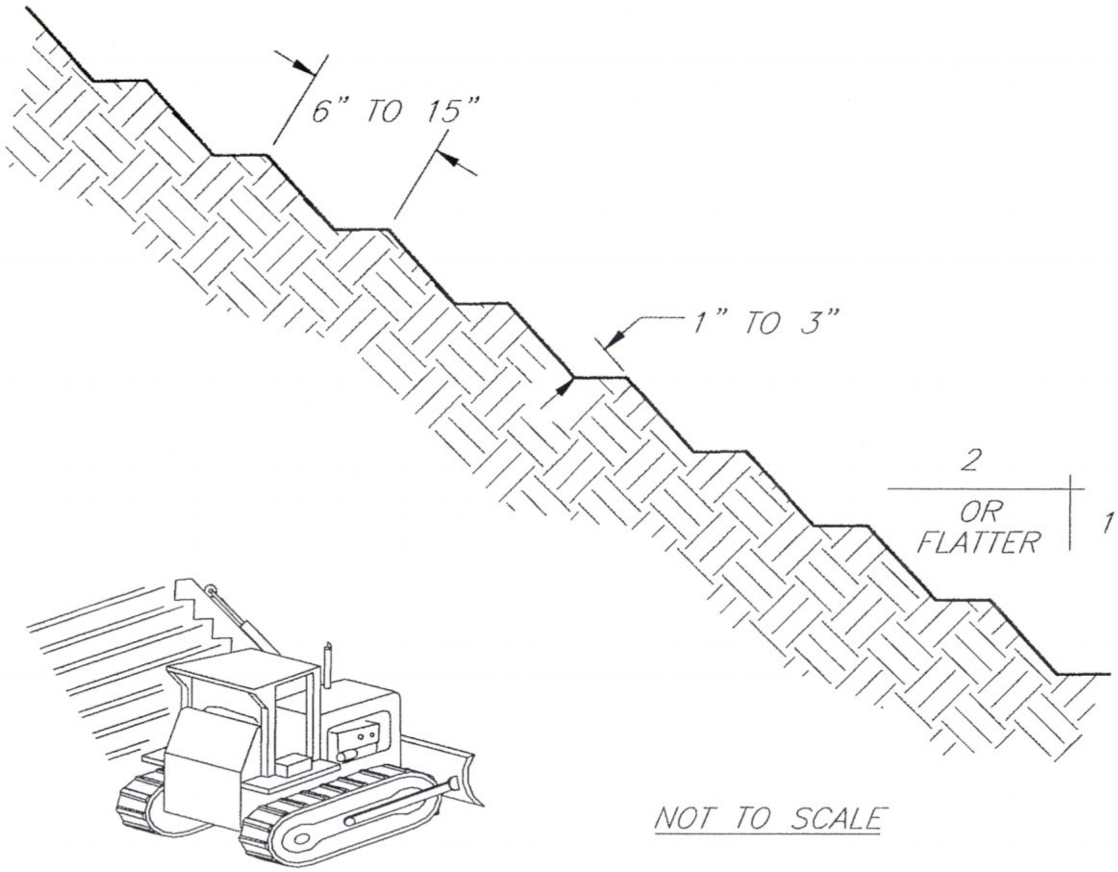
TRACKING



CONTOUR FURROWS

FILE: SRFROUGH

SURFACE ROUGHENING AND TERRACING

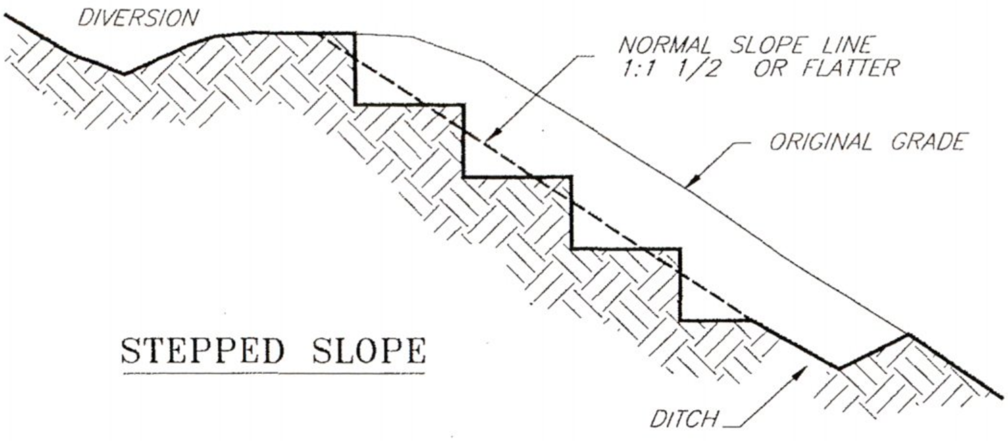


NOTE:

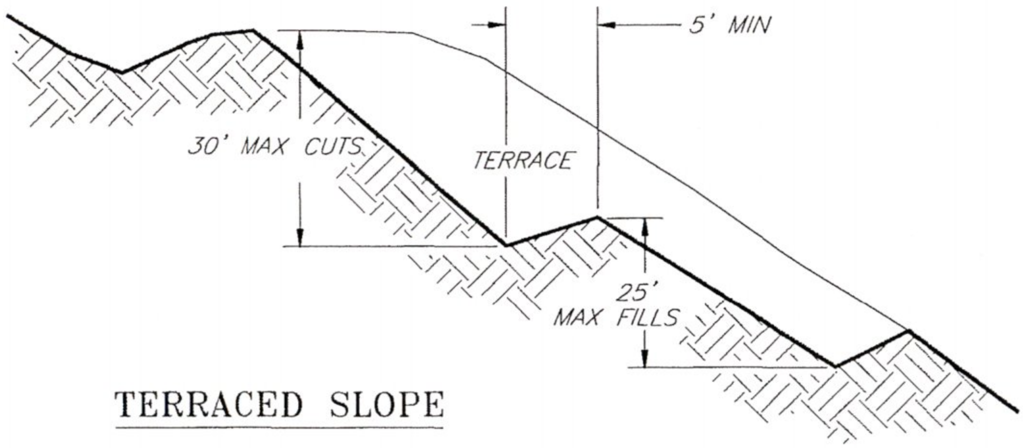
GROOVE BY CUTTING SERRATIONS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER, SEED, MULCH AND FERTILIZER.

FILE: SERSLOPE

SURFACE ROUGHENING AND TERRACING



STEPPED SLOPE



TERRACED SLOPE

NOT TO SCALE

NOTES:
1. VERTICAL CUT DISTANCE SHALL BE LESS THAN HORIZONTAL DISTANCE.
2. VERTICAL CUT SHALL NOT EXCEED 2 FT IN SOFT MATERIAL AND 3 FT IN ROCKY MATERIAL.

FILE: STPSLOPE

SURFACE ROUGHENING AND TERRACING

BMP AK-13
Compost Blankets

Purpose and Description

- A compost blanket is a layer of compost or composted material applied loosely to the surface of disturbed slopes or other erodible areas.
- It is used to control erosion and retain sediment resulting from sheet flow.[1]
- Can be used in place of mulch, rolled erosion control products, soil binders or other sediment and erosion control tools.[1]
- A compost blanket helps limit erosion by:
    - Promoting growth of vegetation.[1]
    - Filling in rills and ridges to eliminate channelized flow in the slope.[1]
    - Providing a permeable surface for infiltration of sheet flow.[1]
    - Protects slope from destructive and soil compacting forces of rainfall.

Applicability

- Compost blankets can be applied to any soil surface (rocky, frozen, flat, steep, etc…) and are therefore applicable to all regions of Alaska.[1]
- Not applicable in locations of concentrated flow.[1]
- Most effective when applied to slopes between 4:1 and 1:1.[1]
- On slopes greater than 2:1 other BMP's such as RECP's should be considered to be used in conjunction with compost blanket. [1]
- It is also necessary to establish vegetation on slopes greater than 2:1 as soon as possible. [1]
- Pedestrian and vehicular traffic must be eliminated on slopes greater than 2:1.[1]

Design and Installation

- Mature, sanitized compost that meets all local, state and federal regulations must be used.[1]
- Compost must be compatible with pH and nutrient requirements of the vegetation that will be used for stabilization.
- Compost must be applied to the surface in a uniform thickness of 1-4 inches depending on annual rainfall and presence of vegetation on the site (see table 2).[1]
- Compost may be spread using a pneumatic blower, spreader unit (bulldozer, manure spreader, etc), or by hand using a shovel.[1]
- Compost Blanket must extend at least 3 feet over the shoulder of the slope to ensure that storm water does not flow underneath the blanket.[1]
- Seed can be spread over the blanket after it is installed or incorporated into the compost before application (suggested).[1]
- Compost blankets may provide better sediment and erosion control when used in conjunction with other best management practices.

Table 2. Example Compost Blanket Depths for Various Rainfall Rates [1]

Annual Rainfall / Flow Rate	Total Precipitation (Rainfall Erosivity Index)	Compost Blanket Depth (Vegetated Surface)	Compost Blanket Depth (Unvegetated Surface)
Low	1 – 25 in. (20 – 90)	½ – ¾ in. (12.5 – 19 mm)	1 in. – 1½ in. (25 – 37.5 mm)
Average	26 – 50 in. (91 – 200)	¾ – 1 in. (19 – 25 mm)	1½ in – 2 in. (37 – 50 mm)
High	>51 in. (>201)	1 – 2 in. (25 – 50 mm)	2 – 4 in. (50 – 100 mm)

Maintenance and Inspection

- Compost Blanket should be inspected regularly and particularly following heavy rainfall or storm events.[1]
- Compost should be reapplied to areas where the compost has washed out.

References

1. [1] *USEPA (United States Environmental Protection Agency), October 2000, National Menu of Best Management Practices, Compost Blankets, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=118&minmeasure=4*

BMP AK-14
Rolled Erosion Control Products

Objectives and Applications

Rolled erosion control products (RECPs) are manufactured long sheets or coverings that can be unrolled onto unvegetated cut or fill slopes where erosion control or soil stabilization is needed. They are used where temporary seeding and mulching alone are inadequate, or where mulch must be anchored and other methods such as crimping or tackifying are unfeasible. There are many types of RECPs—and an ever-changing array of new products and manufacturers' claims. Applications range from coverings for temporarily inactive construction sites to long term protection of steep slopes.

Common RECP categories include:

Temporary RECP *designed for short term use--e.g. up to 1 year.*

Degradable (generally preferred and more prevalent) *made from naturally decomposing materials*. Different fibers yield different characteristics and breakdown patterns. RECPs are either:
photodegradable—broken down by sunlight exposure or
biodegradable—deteriorated by action of biological organisms.

Erosion control blanket(ECB): matrix of long-fibered mulch held by netting on one or both sides or sewn though the filler. Common ECB mulches are straw, wood shavings (excelsior), flax, coconut fiber (coir) and jute.
Jute matting: woven jute fiber mesh.
Netting: fixative mesh cover to keep mulch in place. Made of cotton, jute, coir or photodegradable plastics. Opening sizes vary by design purpose.

Non-degradable *does not decompose with exposure to the elements*

Plastic sheeting: occasionally used for urgent, short-term protective treatment or for overwintering disturbed slopes.

Semi-permanent RECP *lasts 4-8 years--commonly made from coir products*

Permanent RECP *does not decompose for 10 years or more*

Synthetic Turf Protection Mat: mechanically, structurally or chemically bound continuous mesh of processed or polymeric fibers. Mats are thick, heavy, long lasting. Some are designed to structurally support vegetation.

Common Failures - Generally due to faulty installation or maintenance.

- Seed washout/soil erosion due to water flow beneath poorly secured RECPs.
- Failed/inhibited growth of vegetative cover.
- Unintended RECP destruction by equipment, the elements, wildlife etc.

Other Considerations

- Expensive RECPs aren't necessarily more effective than lower cost RECPs.
- Installation requirements, surface features & preparation, installer experience.
- RECP features; suitability constraints, strength, durability, degradation rate.
- Vegetation viability practices including: soil, temperature, insulation and sunlight requirements for plant species; site suitability including topsoil adequacy; fertilizer/growth-enhancer needs; moisture and timing requirements for germination and plant growth; over-saturation; destructive moisture levels cause seed/plant mold/mildew/rot.
- RECP seasonal durability; e.g. overwintering plastic sheeting tears.
- Ease of RECP puncture (desirable for bio-remedial shoot penetrations).
- Slope length and steepness relative to vegetative support & blanket saturation, weight and durability.
- Runoff velocities, volumes, moisture infiltration rates.
- Compatibility and interaction with other on-site erosion measures. E.g. plastic netting and mattings don't retain moisture or heat useful for germination enhancement; plan means to disperse snow accumulations or high runoff volumes at the toe of plastic covered slopes.
- Visual impact, including public's perception of erosion protection needs and available

levels/sophistication of erosion technologies.

- Compatibility with land use (e.g. urban or well-populated sites).
- Interactions with wildlife: habitat, susceptibility to foraging, grazing, nesting

Relationship To Other ESC Measures

RECPs can complement seeding and revegetation. Byproducts of RECP decomposition add mulch benefits and soil enhancement. RECPs can be used in conjunction with benching or other runoff velocity slowing or redirecting measures. RECPs aid dust control.

Alternate Sediment Control Measures

Stabilization measures for vegetation preservation. Crimped, tracked or tackified mulches. Benching, terracing, diversions or other means to reduce slope steepness, length and runoff velocity and volume.

Other Names

Terms used interchangeably: e.g. matting, blanket, sheet. Specified names e.g. Erosion Control Geotextile, ECB, Straw blanket, Mulch Mat

Design

Consult product distributors for recommendations or use the Product Selection Tool on the Erosion Control Technology Council website (http://www.ectc.org) regarding RECP selection and performance criteria suitable for site-specific parameters. Evaluate:

- *Duration of need--Temporary (e.g. 2 mo., 6 mo., 1 yr.) vs. Permanent (2-10 yrs.)*
- *Slope length*
- *Slope gradient (e.g. less than 1:1, 2:1, 3:1 or steeper)*
- *Soil type & erodibility*
- *Seasonal temperature & weather patterns; regional precipitation distribution*
- *Vegetation needs, especially where germination conditions are not optimal*

Blankets: *on grades > 2:1 are subject to high stresses.*

Synthetic turf protection mat: *distribute loads across (saturated) fill slopes and reinforce root systems. Use where slope protection is needed at least 2 years. Use on highly erodible slopes (>3:1), for steep slide rehabilitation, for heavy/high velocity runoff, landfill or high elevation reclamations, drought areas, long cut/fill slopes, bridge abutments etc.*

Plastic sheeting: *6 mil or thicker. Not recommended as cover for seeded slopes.*

Wood fiber mat: *drawbacks: bulky, difficult to place, 10–20% less effective erosion control than other mat types. May need to replace soil nitrogens leached by degrading wood.*

Netting: *Plastic netting doesn't hold heat or moisture, may require increased thickness of netted straw mulch 25%. Plastic netting and wood fiber mulches alone should not be used where runoff water flow exceeds 7 ft./sec.*

Jute matting: *Apply alone for seed germination enhancement or dust control, but not where runoff is significant.*

Materials

Matting: Burlap, Jute Mesh Fabric, Woven Paper or Sisal Mesh Netting, Knitted Straw Mat, Woven/Curled Wood Blanket.

Anchors: U-shaped wire staples, triangular wooden stakes, willow stakes.

Staples: U-shaped steel wire (normally 8 in. long, 1 in. wide, 11 gage or heavier, a 12-in. length, 9 gage or heavier).

Installation

RECPs -Excavate a 6" X 6" check slot trench at a level area well behind the slope crest or slopetop berm. Backfill and tamp over RECP roll end, leaving no gaps to allow under-blanket runoff invasion. Unroll sheeting downslope, parallel to grade and runoff path. Midslope splicings overlap successive sheets in the direction of flow so that upslope ends extend past the trench 16" anchoring the next downslope section. Stagger adjacent splicings. Anchor RECP terminal ends in slope toe key trenches and repeat the entire process until the entire slope has continuous coverage.

Lay RECPs to follow ground contours closely but do not stretch taut across surface depressions. Staple RECPs to maintain firm contact with underlying surfaces. Staple patterns vary depending upon slope length, grade, soil type and runoff rates. Staple blanket perimeters at no less than 12 in. intervals across the top and 3 ft. spacings along RECP sides and bottom. Staple intervals should be sufficient to prevent runoff flows beneath the blanket. Staple through 5 in. adjacent overlaps strips and staple every 3 ft. down sheet centerlines. Adjacent staple lines should stagger.

Plastic Sheeting - Anchor in slopetop trench (as above) to seal from runoff flow beneath sheeting. Duct tape 18 in. overlap seams to seal against wind and rain. Cover the entire exposed area. Hold sheets close to slope by suspending weights (tires, sandbags etc.) from ropes affixed to uphill anchors set no more than 10 ft. apart. Secure so wind doesn't lift the cover, expose slopes or tear plastic.

Inspection

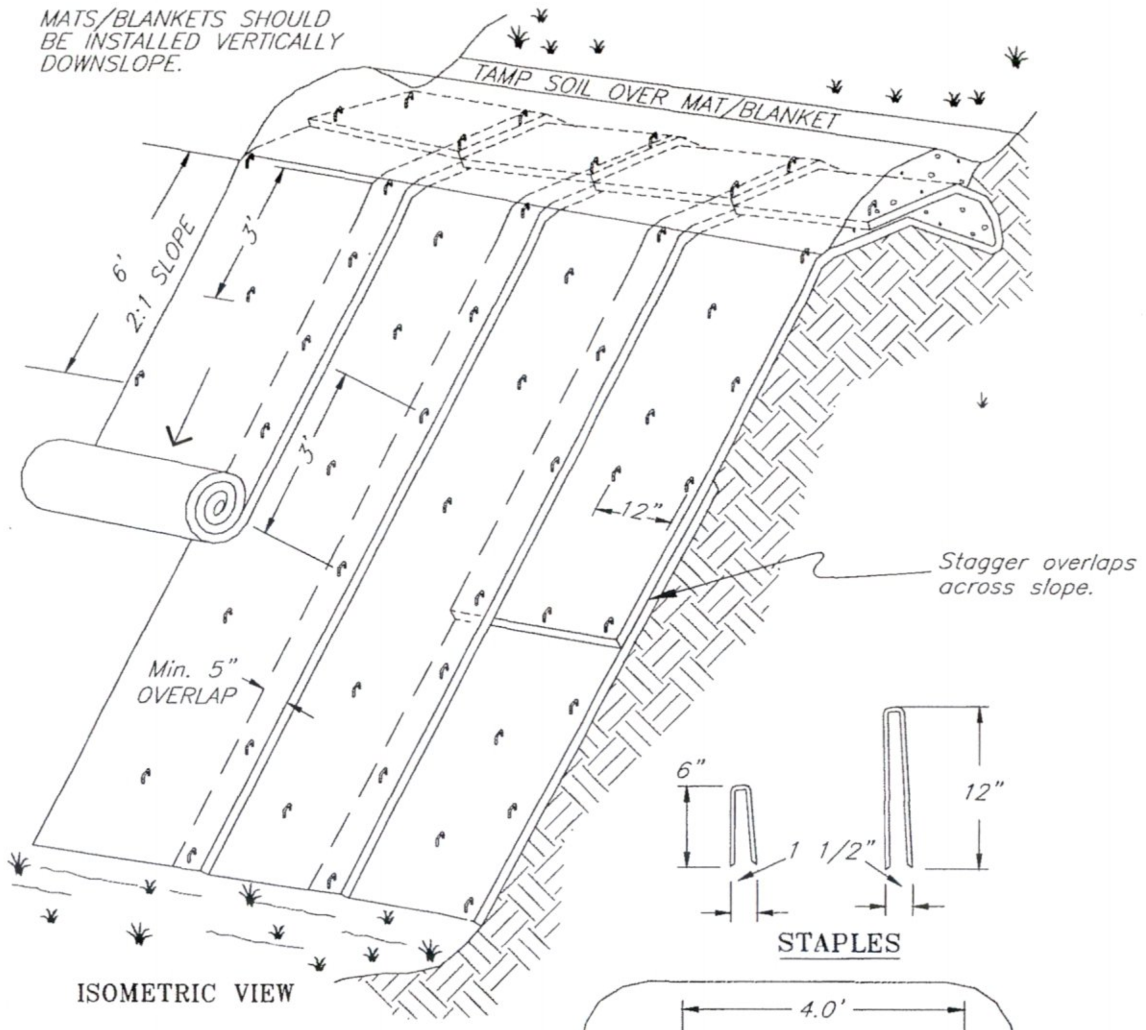
Check that surfaces adhere, fasteners remain secure and covering is in tight contact with soil surface beneath. Look for damaged areas and exposed soil surfaces. Pay special attention to seams and uphill edges.

Maintenance

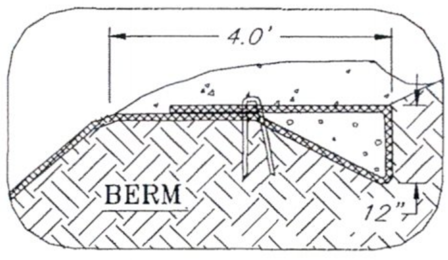
Repair, re-anchor, reinstall or replace matting. Re-seed where needed. It is especially important to protect overwintering plastic covered slopes, since the saturated soils may be easily erodible upon thaw.

Removal

Non-degradable RECPS must be removed manually when no longer useful and disposed at an offsite landfill or by other approved methods. Degradable RECPs naturally deteriorate over time and can add soil enrichment.



TYPICAL SLOPE SOIL STABLIZATION



NOT TO SCALE

NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.

2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.

3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

FILE: BLNKTSLP

ROLLED EROSION CONTROL PRODUCTS

BMP AK-15

Temporary Sediment Trap

Objectives and Applications

A temporary sediment trap is a small temporary ponding area, with a rock outlet, formed by excavating below grade and/or by constructing an earth embankment.

A sediment trap is a temporary structure that is used to detain runoff from small drainage areas so that sediment can settle out. Sediment traps generally are used for drainage areas less than five acres, and should be located in areas where access can be maintained for sediment removal and proper disposal. A sediment trap can be created by excavating a basin, utilizing an existing depression, or constructing a dam on a slight slope downward from a project area. Sediment laden runoff from the disturbed site is conveyed to the trap via ditches, slope drains, or diversion dikes. After being treated, the flow from the structure is controlled by a rock spillway. The trap is a temporary measure, with a design life of approximately six months, and is to be maintained until the site is permanently protected against erosion by vegetation and/or structures.

Common Failures - Generally due to faulty installation or maintenance

- Inadequate spillway size; this results in overtopping of dam, poor trap efficiency, and possible failure of the structure.
- Low point in embankment caused by inadequate compaction and settling; this can result in overtopping and possible failure.
- Outlet not extended to stable grade; this can result in erosion below the dam.
- Spillway stone size too small or backslope too steep; this may result in stone displacement.
- Inadequate storage capacity; the sediment is not removed from basin frequently enough.

Other Considerations

- The location of sediment traps should be determined based on the existing and proposed topography of the site.
- As a perimeter control, locate the trap where up to 5 disturbed acres drain to one location. Choose a location where maximum storage can be obtained from natural topography. This will minimize excavation.
- Locations should be selected where interference with construction activities will be minimized and will allow the trap to remain in service until the site is stabilized.
- The site must be accessible for future clean-out of the trap.
- Sediment traps are most effective at removing sand particles and are less effective at removing fine silt and clay particles. Longer retention times using engineered structures such as sediment basins or retention ponds may be necessary to remove these smaller particles.

Relationship to Other ESC Measures

Sediment traps are usually located at the outlets of diversions, channels, slope drains, or other runoff conveyances that discharge sediment laden water.

Alternate Sediment Control Measures

A sediment basin should be considered if the drainage area exceeds five acres. Sediment basins may be either temporary or permanent, and due to additional and more complex design and construction considerations, should be designed by a registered engineer.

Other Names

Catch Basin

Design

Design life: *1 season (6 months) or less*

Contributing flow drainage area: *not to exceed 5 acres*

Storage volume: *minimum 134 cubic yards per acre*

Wet storage area depth: *minimum 2 ft.- 3 ft., maximum 4 ft.*

Ideal shape: *rectangular and shallow trap, with a length to width ratio of 2:1 or greater*

Berm: *compacted earth, maximum height 5 ft.*
Slopes (cut and fill): *2:1 or flatter*

Outlet: *rock spillway, crest of spillway* 1.0 ft. below top of embankment.

Spillway weir length (minimum)	
Drainage area (Acres)	**Weir length (Feet)**
1 ac.	4 ft.
2 ac.	5 ft
3 ac.	6 ft.
4 ac.	10 ft.
5 ac.	12 ft.

Stone size: *construct outlet using well graded stones with a median stone size of 9 in. and a maximum stone size of 14 inches. A 12-in. thick layer of ½ to ¾ in. aggregate should be placed on the inside face to reduce seepage flow rate.*

Materials

Filter fabric, coarse aggregate or riprap 2 inches to 14 inches in diameter; washed gravel 1/2 inch to 3/4 inch in diameter, seed and mulch for stabilization.

Installation

Clear, grub, and strip the area under the berm of any vegetation and root mat. Clear the pool area to reduce debris buildup and facilitate cleanout. Excavate as required in the plan to obtain the necessary storage volume. Use fill material for the berm that is free of roots, other woody vegetation, organic materials, and large stones. Make all cut and fill slopes 2:1 or flatter. Compact the berm in 8 in. layers by traversing with construction equipment. Construct the rock spillway to the dimensions shown on the plan, placing filter fabric beneath the rock. Provide temporary or permanent stabilization (seed and mulch) on the berm immediately after the construction.

Inspection

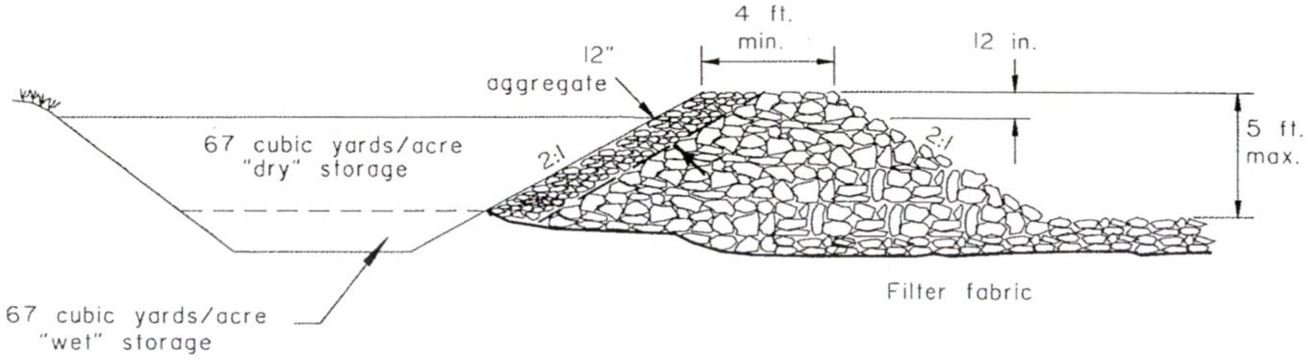
Inspect temporary sediment traps weekly and after each period of significant rainfall. Check the structure for damage from erosion, and check rocks in the outlet for clogging with sediment. Check the height of the stone outlet to ensure that the crest is at least 12 in. below the top of the berm.

Maintenance

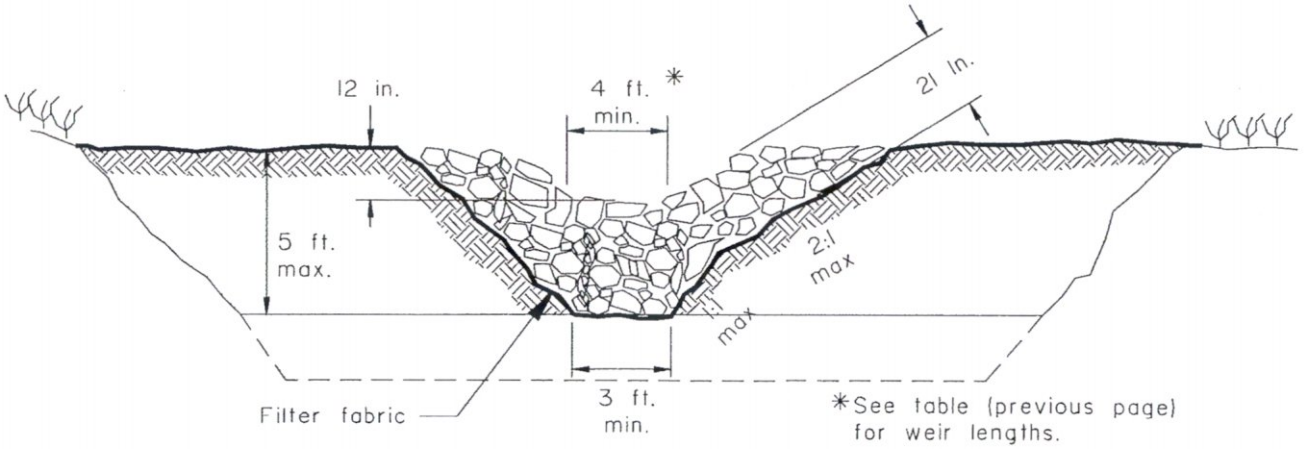
Remove sediment and restore trap to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Deposit sediment removed from the basin in a suitable area and in such a manner that it will not erode and cause sedimentation problems. Clean or replace the filter stone in the outlet structure if clogged with sediment. Adjust the height of the stone outlet if the crest is not at least 12 in. below the top of the berm.

Removal

Remove sediment traps after the contributing drainage area is stabilized. Grade and stabilize the site of the sediment trap after removal as shown in the plans.



CROSS SECTION



ELEVATION

TEMPORARY SEDIMENT TRAP

BMP AK-16
Vegetative Buffer Strip

Objectives and Applications

A vegetative buffer strip is an undisturbed area or strip of natural vegetation, or an established suitable planting that will provide a living filter to reduce soil erosion and runoff velocities.

Buffer strips act as living sediment filters that intercept and detain storm water runoff. They reduce the flow and velocity of surface runoff, promote infiltration, and reduce pollutant discharge by capturing and holding sediments and other pollutants in the runoff water. They may be natural, undeveloped land, or may be graded and planted with grass or other vegetation; and may be placed at many locations between the source of sediment (road surface, side slopes) and a natural or constructed waterway or other drainage area that could be impacted by deposits of sediment. Buffer strips may be used at any site that can support vegetation, but are best suited where soils are well drained and where the bedrock and water table are well below the surface. Buffer strips are particularly effective on flood plains, along stream banks, and at the top and bottom of a slope. Buffer strips may be either temporary or permanent.

Common Failures - Generally due to faulty installation or maintenance.

- Excessive sediment or oil and grease loads resulting in clogging.
- Introduction of storm water flows onto buffer strip before vegetation is established.

Other Considerations

- Not effective for filtering high velocity flows from large, paved areas, steep slopes, or hilly areas.
- May be more viable than silt fence where silt fence installation and removal will cause more harm than good.
- Avoid flow concentration
- Buffer strips generally only trap coarse sediments. Depending upon vegetative type, clay and fine silt particles will generally pass through a buffer strip during periods of heavy rain.
- Preserve natural vegetation in clumps, blocks or strips where possible, particularly in areas adjacent to waterways.
- Do not use planted or seeded ground as a buffer strip for sediment trapping until the vegetation is established.
- Extensive constructed buffers may increase development costs.

Relationship to Other ESC Measures

Buffer strips are used in conjunction with diversion measures such as earth dikes, diversions, and slope drains for slope protection. Silt fences placed upslope may prevent sediment overloading.

Alternate Sediment Control Measures

Diversion; Slope Drain

Other Names

Buffer Zone, Vegetated Filter Strip.

Design

Location: *Should be determined by considering slope, soil type, anticipated flow, and vegetation type.*

Capacity: *2 year peak runoff storm*

Width: *18 ft. - 60 ft., depending on type of vegetation and length of slope*

Grading: *smooth and uniform*

Permitting: *Wetland use as a vegetative buffer strip requires approval from the Corps of Engineers.*

Flow Distribution: *evenly distributed; avoid flow concentration*

Materials

Natural vegetation, seed or sod; fertilizer, mulch, water; fencing or flagging

Installation

Natural Vegetation

Delineate undisturbed natural areas of vegetation that have been identified on the plans with flagging prior to the start of construction activities. Ensure that other sediment control measures to be used in conjunction with the buffer strip are in place and functioning properly. Minimize construction activities and traffic in the buffer strip and immediate surrounding areas.

New Buffer Strip

Ensure that sediment control measures such as silt fence and diversions are in place to protect waterways or drainage areas until the buffer strip is established. Clear and grade the land according to the plans and specifications. Establish vegetation using specified seeding, mulching, watering, and fertilizer.

Inspection

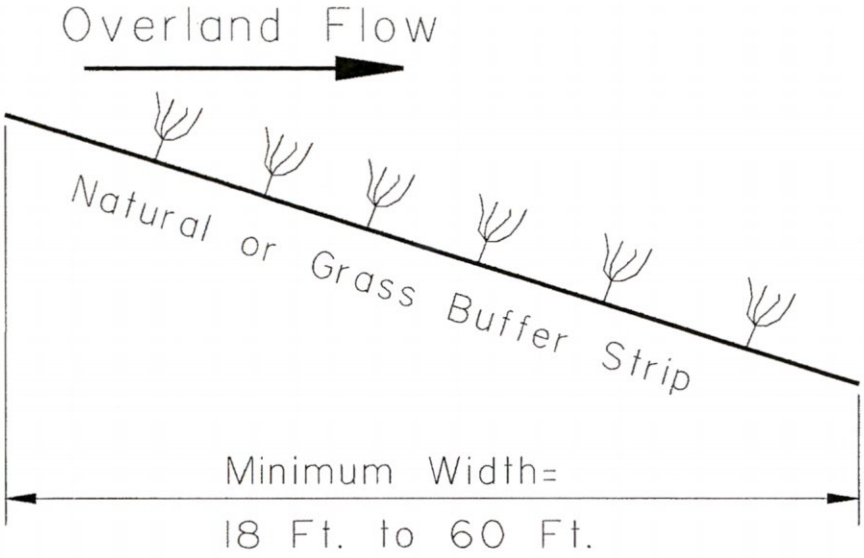
Inspect natural vegetation buffer strip areas at regular intervals to ensure that the fencing or flagging used to delineate non-disturbance areas are in place. Check for damage by equipment and vehicles. Inspect new buffer strip areas for the progress of germination and plant growth. Ensure that water flowing through the area is not forming ponds, rills, or gullies due to erosion within the buffer strip.

Maintenance

Replace or repair fencing or flagging as necessary. Repair any damage by equipment or vehicles. Provide additional seed, fertilizer, and water to ensure adequate establishment of vegetation. Repair and reseed areas damaged by erosion or ponding of water.

Removal

Temporary buffer strips - Provide and compact fill to existing or specified grade. Seed and mulch.



VEGETATIVE BUFFER STRIP

BMP AK-17
Filter Berm

Purpose and Description

- Can be made of loose gravel or crushed rock.[1]
- Designed to slow, filter sediment from, and divert flow of stormwater.[1]

Applicability

- When temporary measures are necessary to retain sediment on construction sites.

Design and Installation

- Use washed well-graded gravel or crushed rock ranging from about ¾in (~2cm) to 3in (~7.5cm) in diameter containing less than 6% fines.
- Berms must be at least 1ft in height.[2]
- Berms must have side-slopes of 3:1.[2]
- Space Berms:
  - Every 300ft on slopes less than 5%.[2]
  - Every 200ft on slopes between 5 and 10%.[2]
  - Every 100ft on slopes greater than 10%.[2]

Maintenance and Inspection

- Inspect berms regularly and after rainfall.
- It is important to make repairs to berms at the first sign of deterioration.[2]
- Remove and either dispose of or reincorporate into the project any sediment buildup and replace filter material when necessary.[1]

References

[1]USEPA (United States Environmental Protection Agency), October 2000, National Menu of Best Mangement Practices, Filter Berms http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=37&minmeasure=4

[2]Washington State Department of Ecology, February 2005, Storm Water Management Manual for Western Washington, Construction Storm Water Pollution Prevention, BMP C232: Gravel Filter Berm, http://www.ecy.wa.gov/pubs/0510030.pdf

BMP AK-18
Silt Fence

Objectives and Applications

A silt fence is a perimeter control geotextile fence to prevent sediment in silt-laden sheet flow from entering sensitive receiving waters.

Silt fencing downslope from erosion-susceptible terrain traps sheet flow runoff before the drainage exits the project site. Intercepted drainage pools along the uphill side of the fence and standing water promote sediment settling out of suspension. Drainage in contact with the fence is to some degree filtered by the geotextile—the fabric's small pores not only block larger-sized eroded particles but also severely restrict water exfiltration rates.

Barrier locations are informally chosen based on site features and conditions (e.g. soil types, climate, terrain features, sensitive areas, etc.), design plans, existing and anticipated drainage courses, and other available erosion and sediment controls. Typical barrier sites are catchpoints beyond the toe of fill or on sideslopes above waterways or drainage channels. Silt fences are not recommended for wide low-flow, low-velocity drainageways, for concentrated flows, in continuous flow streams, for flow diversion, or as check dams. Use at drop or curb inlets is not appropriate for high volumes of stormwater.

Common Failures - Generally due to faulty installation or maintenance.

- Posts installed on uphill side of trench (instead of downhill side) or fabric attached to downhill side of posts (rather than uphill side).
- Soil is not tamped next to fence after backfilling trench, allowing water to flow underneath.
  - Slope erosion occurs below the fenceline due to drainage that bypasses the barrier end or water build-up that "blows out" a poorly secured fence bottom.
- Fence function impairment due to sediment build-up, maintenance neglect etc.
- Fence topples due to poor installation and/or high levels of impounded back-up water or sediment.
- Inappropriate for intended function (e.g. used for check dam, flow diversion, etc.).
- Uneven distribution of pooled drainage along non-level fenceline ground reduces efficiency.
  - End of fence is not "J-hooked" upslope allowing water to run around the end.
- Poor support system (e.g. soil too rocky to secure posts, fabric stapled to trees, etc.).

Other Considerations

Use of sediment control measures and the level of effort should be commensurate to the potential problem. ***Silt fence is not to be used solely as a project delineator.*** *(Use barriers, flagging, etc. instead.)*

- Use of a silt fence sediment control measure is usually more complex, expensive and maintenance-prone than other slope stabilization measures.
- Slope stabilization should occur at the earliest possible time.
- Fenceline proximity to sensitive areas needing protection during fence installation, maintenance, removal, etc. (e.g. avoid equipment encroachment on wetlands).
- Undesirable effects of fence placement (e.g. a trench in ground that won't readily "heal" after fence removal; undesirable effects of water back-up, ditch overflow, etc.).
- Equipment access route/space required for fence installation, maintenance and removal.

Relationship to Other ESC Measures

Sediment control measures are secondary to erosion prevention or soil stabilizing measures. Silt fences may be used as part of a sequential system with other temporary or permanent measures such as vegetation, check dams, settling ponds, etc. Occasional flow velocity increases may be offset using corrective measures such as rock berms or other redirecting energy absorbers.

Alternate Sediment Control Measures

Fiber rolls. Brush bundles to filter small amounts of sediment in shallow gullies or ditches. Temporary settlement basin. Gravel berm. Triangular sediment filter dike (stand-alone wire mesh structure covered with filter fabric on uphill side [labor intensive to construct and maintain]).

Other Names

Geotextile for Sediment Control (sect 633 specifications), Filter Fence, Sediment Fence.

Design

Design life: *1 season (6 months) or less*

Contributing sheet flow drainage area: *not to exceed 0.25 acres/ 100 ft. of fence*

Maximum Slope Length for Silt Fence

Slope (%)	18 in. Fence	30 in. Fence
2 (or less)	250 ft.	500 ft.
5	100 ft.	250 ft.
10	50 ft.	150 ft.
15	35 ft.	100 ft.
20	25 ft.	70 ft.
25	20 ft.	55 ft.
30	15 ft.	45 ft.
35	15 ft.	40 ft.
40	15 ft.	35 ft.
45	10 ft.	30 ft.

Undisturbed buffer zone: *At least 3.5 ft. from fence to downstream sensitive area*

Support posts: *at least 18 in. in the ground. Minimum trench size (x-section): 6"x 6"*

Buried fabric: *18 in. (3 sides of trench, if fabric is not pre-attached to posts)*

Maximum spacing between posts: *6 ft.*

Maximum fence height: *3 ft. above ground*

Fabric joint overlap: *minimum 6 in. at post not allowed in pooled drainage areas*

Maximum height of ponding water: *18 in.*

Maximum allowable depth of sediment accumulation against fence: *50% of accumulation capacity*

Materials

Geotextile fabric sect 729-2.04 specification (AASHTO M 288 for Temporary Silt Fence except that minimum permittivity is .05/sec)

Support posts wood, steel or synthetic, adequate to support fence under field conditions, available attached to fabric in some products

Staples or other means to attach fabric to posts

Wire-backed (or polymeric backed) silt fence - for use where a longer duration of use is expected or where undermining forces, such as wind, are expected

Installation

Install fences before excavation/ fill work. Erect fenceline downslope along a level contour and perpendicular to anticipated sheet flow drainage path(s). Orient end sections uphill slightly and install sufficient length to keep drainage from spilling around barrier ends. Where ground surfaces are uneven, install shorter fences following contours (rather than install one long, contour-crossing fence that directs drainage to accumulate in low spots). Locate fence 3-10 ft. beyond toe of fill to leave room for a broad, shallow sedimentation pool and for equipment access during fence maintenance and removal. Leave buffers between fencing and sensitive receiving areas. Compacting the soil next to the fence is critical. If using the front wheel of a tractor or roller, it is best to compact the upstream side first, then each side twice (a total of four trips).

Installation can be completed using the trench method or the "slicing" method. The trench method is a manual, labor-intensive method. The "slicing" method is a mechanical method. Both methods are effective when correctly followed.

Trench method: Drive support posts into the ground, excavate a trench on the uphill side along the line of the stakes, attach geotextile, and bury fence bottom. Soil backfill trench and compact to secure fence bottom. (Compacted soil is preferred to gravel fill. Using sandbags or cement blocks to anchor the fence bottom is undesirable because of the tendency for undermining). Keep fence fabric taut. Do not field-sew seams. Overlap joints at support posts but do not place overlapped joints across pooled drainage areas.

Slicing method: This method requires the "Tommy" silt fence machine or equivalent. The machine utilizes a blade that plows or slices the fabric directly into the soil. Though this minimizes soil disturbance, soil crumbs created by the blade can be manually backfilled into the slice and the tractor can then be used to mechanically compact the soil. Check the installation prior to compaction and use a flat-bladed shovel, if necessary, to tuck fabric deeper into the ground. Support posts are then installed along the length of the fence following similar procedures for the trench method.

For wire-backed silt fence, extend the wire into the trench a minimum of three inches and post spacing may be lengthened to 8'.

Inspection

A properly installed fence intercepts sheet drainage, contains sediment on site and does not permit spillover or bypass. Inspect as needed daily, weekly, or during/ following major rainfall events.

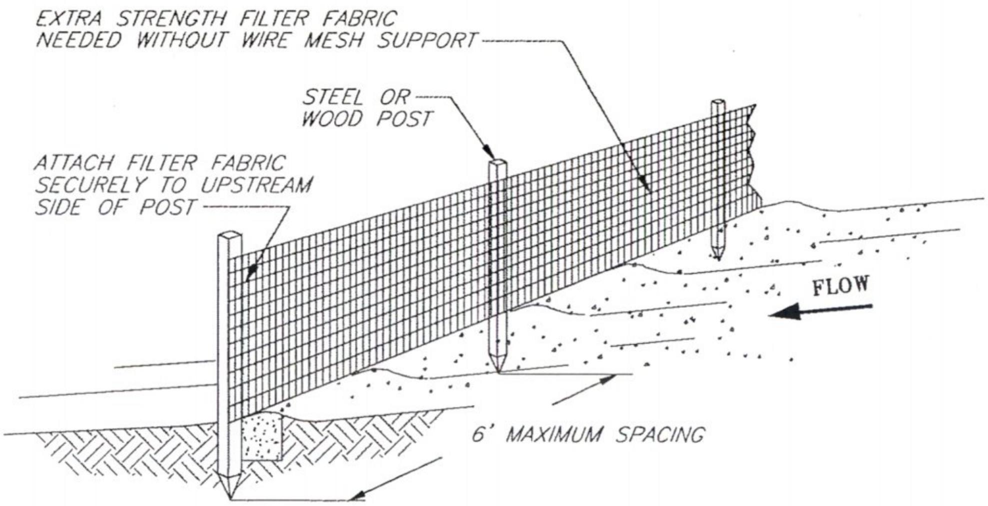
Observe for fenceline continuity. Inspect fences for collapse, damage, undermined areas, compromised integrity, or other installation or functional inadequacies. To ensure the fence is keyed in usually requires close inspection (not looking from a distance upslope). Look for evidence of sediment or erosion flow leading off the downhill edge of the fence. (This may be an indicator of drainage bypass or fence undermine.) Note depth of sediment build up at the fence. Look for signs of inadequate protection of off-site sensitive areas. Observe turbidity levels of protected waterways and determine sources of sediment/siltation.

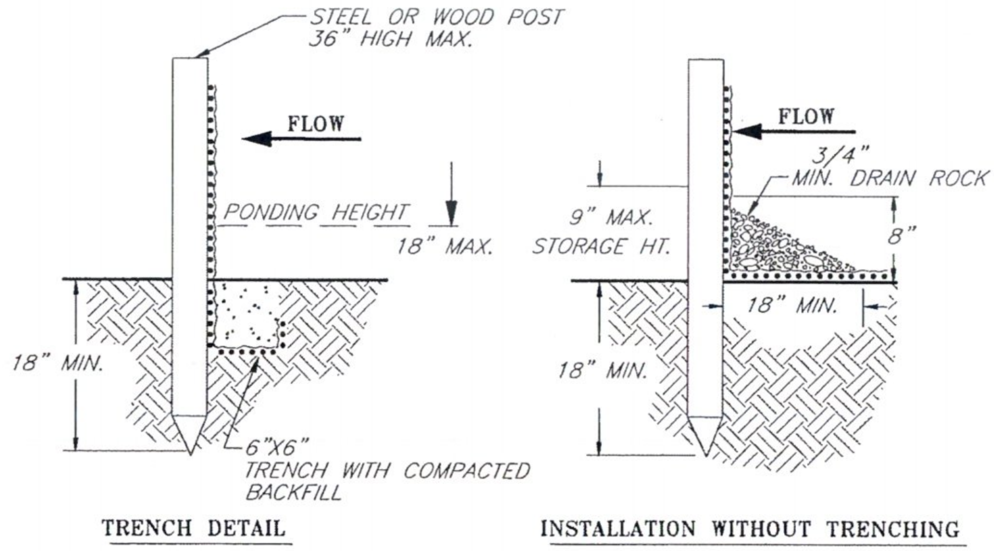
Maintenance

Repair functional deficiencies immediately. Reinforce fenceline as needed to prevent undesirable sedimentation of sensitive areas. Replace torn or punctured fabric. Remedy fence sags as needed. Periodically remove accumulated sediment and dispose of silt waste in approved manner/location (typically in a non-erosion area).

Removal

Do not remove until the disturbed area is permanently stabilized or sediment protection is no longer needed. Unless directed otherwise, cut fabric at ground level, remove supports and spread sediment. Seed bare ground immediately. Discard filter fence as directed. Avoid damage to sensitive (e.g. wetland or surface water) areas. Stabilize areas.





NOTES:

1. SILT FENCE FOLLOWS SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" MAXIMUM SEDIMENT ACCUMULATION.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT AND CAN BE PERMANENTLY STABILIZED.

NOT TO SCALE

FILE: SILTFENC

SILT FENCE

BMP AK-19
Inlet Protection

Objectives and Applications

Inlet protection is a temporary filtering measure placed around a drop inlet or curb inlet to trap sediment and prevent the sediment from entering the storm drain system.

This measure is employed where storm drain inlets are to be made operational before permanent stabilization of the disturbed area, where a permanent storm drain structure is being constructed on site and there is potential for sediment accumulating in an inlet, and where ponding of storm water around the inlet structure could be a problem to the traffic on site. There are several types of sediment filters applicable for different conditions keeping in mind whether traffic will be present;some of these are:

Catchbasin insert: a "sock" or "witches hat" that fits inside the structure and filters sediment

Triangular Silt Dike: may be used to protect a drop inlet

Sand bag barrier: can be used around a curb inlet, or at a minimum, upstream of a curb inlet where traffic won't drive on them

Filter fabric fence : applicable to drop inlets with flows 0.5 cfs or less, and flat grades (5 % or less).

Block and gravel filter : applicable to drop and curb inlets with flows 0.5 cfs or more, flat grades (5 % or less), where no construction traffic will cross over the inlet.

Gravel and wire mesh filter : applicable to drop and curb inlets with flows 0.5cfs or more, flat grades (5 % or less), where construction traffic will cross over the inlet.

Common Failures - Generally due to faulty installation or maintenance.

- Sediment accumulation – filtering capacity is reduced, resulting in ponding of water
- Improper installation, resulting in sediment bypassing filter and entering storm drain
- Tearing, undermining, or collapsing of filter fabric, resulting in sediment entering storm drain

Other Considerations

Inlet protection should be constructed in a manner that will facilitate cleanout and disposal of trapped sediment.

- Inlet protection should be constructed in a manner that will minimize ponding of storm water around the structure.
- Straw bale barriers should not be used for inlet protection because they are not effective.

Relationship to Other ESC Measures

Inlet protection is installed as a secondary measure to remove residual sediment that was not removed by other measures, such as check dams, grassed swales, and sediment traps. Erosion control must be in place to minimize the amount of sediment that must be treated at inlets.

Alternate Sediment Control Measures

Runoff from areas exceeding 1.0 acre or where grade is greater than 5% may require routing through a temporary sediment trap or sediment pond.

Other Names

Storm Drain Inlet Protection, Filter Inlet

Design

Drainage Area: *Not to exceed 1.0 acre*

Slope Gradient: *Not to exceed 5 %. For filter fabric fence designs, the area immediately surrounding the inlet should not exceed 1%. Gravel filters may be more appropriate for steeper slopes.*

Sediment Trapping Sump: *Where possible, a sump 12 in. – 20 in. measured from the crest of the inlet should be excavated. Side slopes should be 2:1. The recommended volume of excavation is 35 cubic yards/acre of disturbed ground.*

Orientation: *The longest dimension of the basin should be oriented toward the longest inflow area.*

Materials

Catch basin insert: should be designed by the manufacturer for use at construction sites

Triangular Silt Dike -- is a geotextile encased urethane foam, with an apron; use staples according to the manufacturer recommendations

Sand bag barrier – bags should be about 2/3 full

Filter fabric fence – filter fabric (extra strength, filtering capacity 75 % minimum, meeting AASHTO Specification M 288 For Temporary Silt Fence); wooden stakes 2 in. x 4 in. – minimum length 3 ft.; heavy duty wire staples 1/2 in. long; washed gravel 3/4 in. – 1 ¼ in., with less than 5% fines.

Gravel and wire mesh filter - hardware cloth or wire mesh with 1/2 in. openings; filter fabric (AASHTO M 288); washed gravel 3/4 in. – 4 in. in diameter.

Installation

Catch basin insert: the filter is inserted just below the grating; manufacturer's have different design details

Triangular silt dike -- can be used on soil with wire staples or on pavement with adhesive

Sand bag barrier – place the bags in a horseshoe shape around the curb inlet or in sets of two or more upstream in the flow line to result in ponding (bag must be lower than the top of the curb)

Filter fabric fence – Place a stake at each corner of the inlet no more than 3 ft. apart. Drive stakes into the ground a minimum of 12 inches. For stability, install a frame of 2 in. x 4 in. wood strips around the top of the overflow area. Excavate a trench 8 in. wide x-12 in. deep around the outside perimeter of the stakes. If a sediment trapping sump is being provided, then the excavation may be as deep as 20 inches. Staple the filter fabric to the wooden stakes with heavy duty staples; ensure that 32 in. of filter fabric extends at the bottom so it can be formed into the trench. Place the bottom of the fabric into the trench - backfill with washed gravel all the way around.

Block and gravel filter – Secure the inlet grate to prevent seepage. Place wire mesh over the inlet so that it extends 12 in. - 20 in. beyond the inlet structure. Place filter fabric (optional) over the mesh and extend it 20 in. beyond the inlet structure. Place concrete blocks over the wire mesh or filter fabric in a single row lengthwise on their sides, with the open ends of the blocks facing outward, not upward; ensure that adjacent ends of blocks abut. For curb inlet applications, cut a 2 in. x 4 in. wood stud the length of the curb inlet plus the width of the two end blocks and place the stud through the outer hole of the end blocks to keep the blocks in place. Place wire mesh over the outside of the vertical face (open end) of the blocks to prevent gravel from being washed through the blocks. Place gravel against the wire mesh to the top of the blocks.

Gravel and wire mesh filter – Secure the inlet grate. Place wire mesh over the inlet so that the mesh extends 12 in. beyond each side of the inlet structure. Place filter fabric over the mesh, extending it 20 in. beyond the inlet structure. Place washed gravel over the fabric/wire mesh to a depth of 12 inches.

Inspection

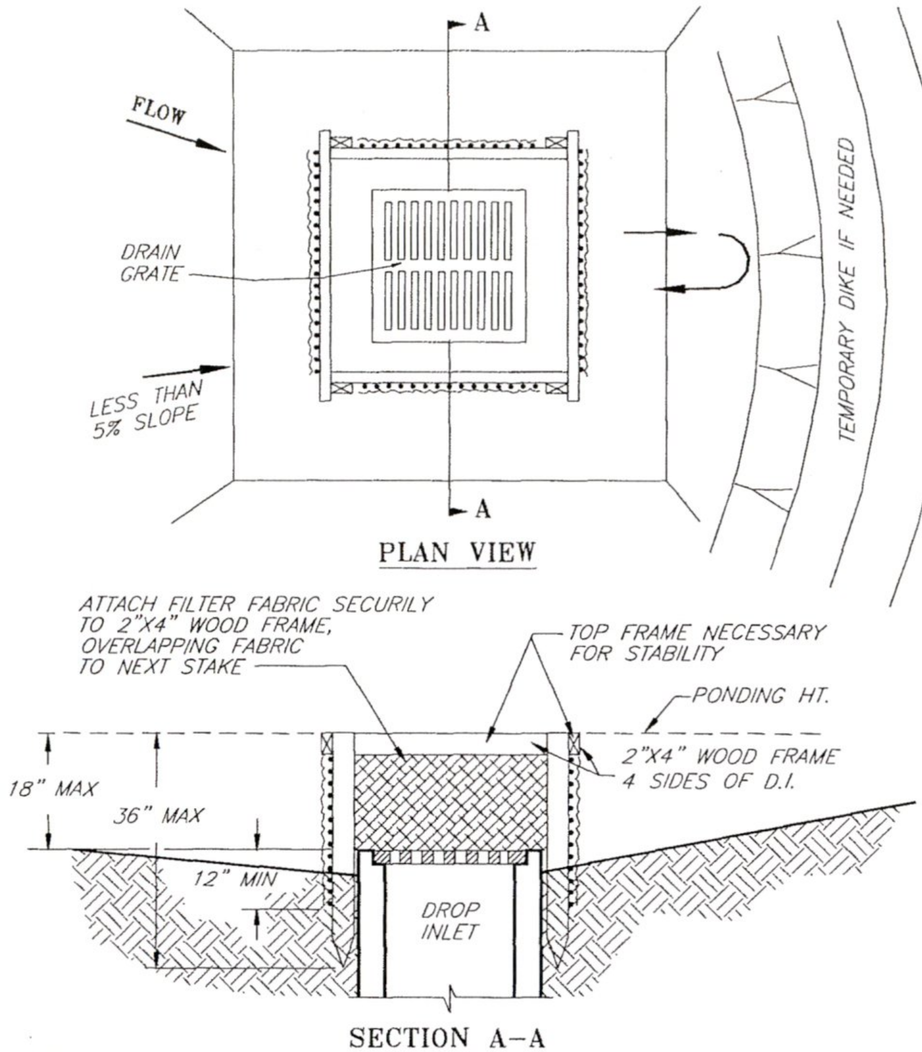
Inspect inlet protection regularly and after every storm to look for sediment accumulation and structural damage. All of the methods described are prone to plugging.

Maintenance

All of the methods described are maintenance-intensive. For inserts, carefully remove the insert to avoid spilling sediment, clean away from any drainages and replace it. For above-ground structures, remove sediment and restore structure to its original dimensions when sediment has accumulated to ½ the design depth. On gravel and mesh designs, clean (it is easier to remove and replace) the gravel filter or filter fabric if it becomes clogged. Repair any structural damage immediately.

Removal

Remove the filter material and support structures after the drainage areas have been completely stabilized. Remove or stabilize trapped sediment. Stabilize disturbed soil areas resulting from removal.



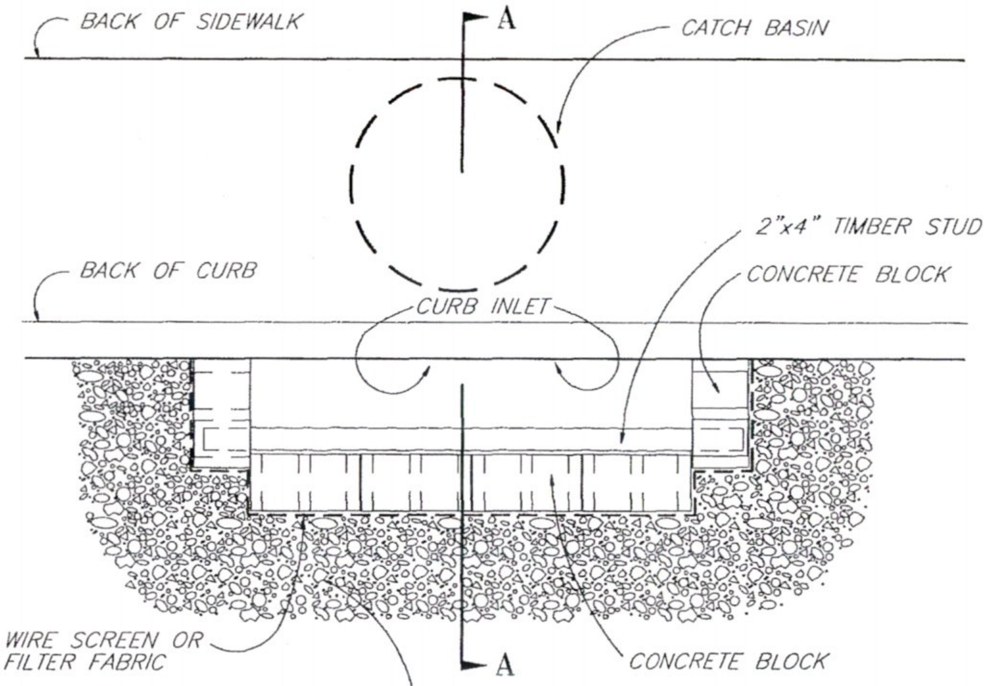
NOTES:

1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. USE 2"X4" WOOD OR EQUIVALENT METAL STAKES, 3' MINIMUM LENGTH.
3. INSTALL 2"X4" WOOD TOP FRAME TO INSURE STABILITY.
4. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

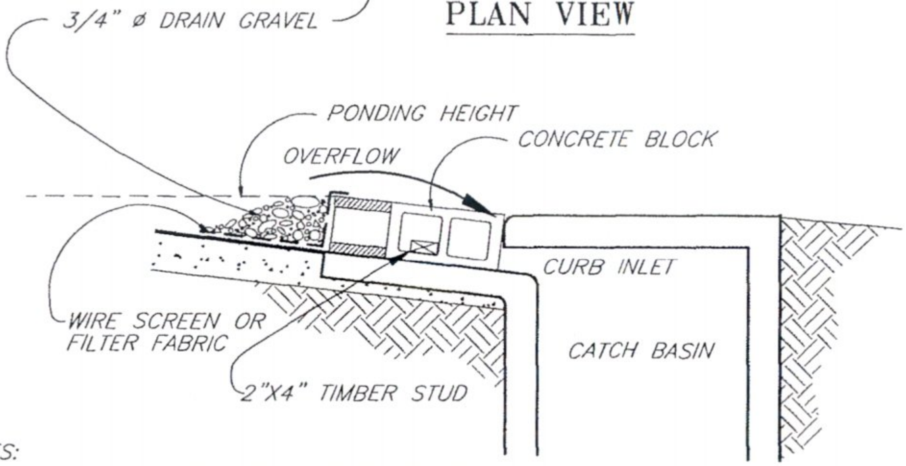
NOT TO SCALE

FILE: SILTFDIB

INLET PROTECTION



PLAN VIEW



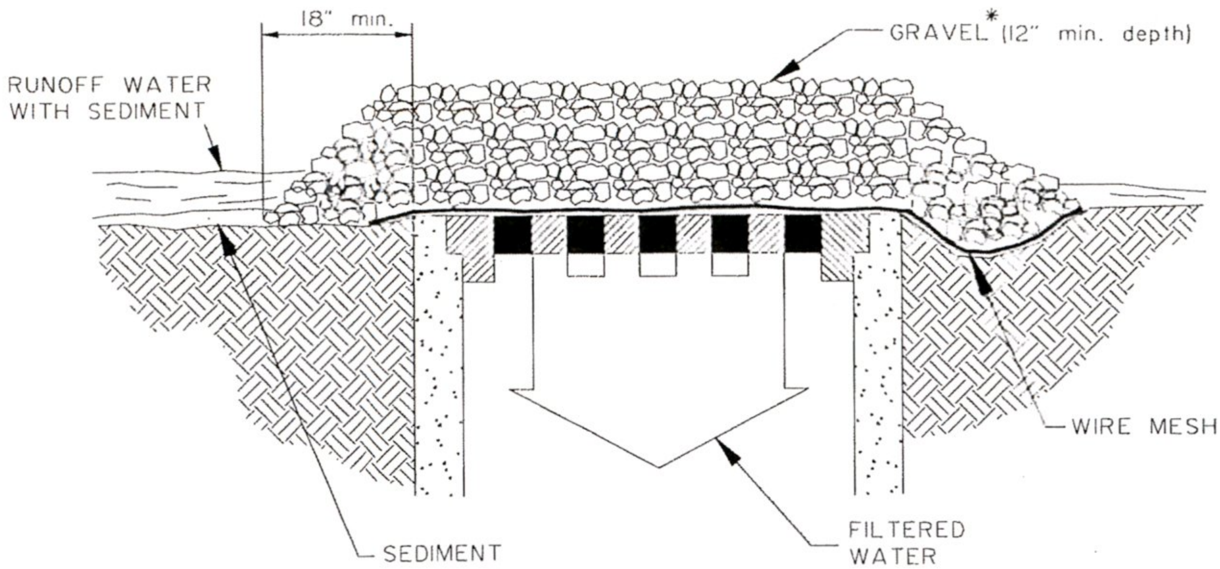
SECTION A – A

NOTES:

1. USE BLOCK AND GRAVEL TYPE SEDIMENT BARRIER WHEN CURB INLET IS LOCATED IN GENTLY SLOPING STREET SEGMENT, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. BARRIER SHALL ALLOW FOR OVERFLOW FROM SEVERE STORM EVENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

FILE: BLCKCURB

INLET PROTECTION



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

INLET PROTECTION

BMP AK-20
Brush Barrier

Objectives and Applications

A brush barrier is a temporary sediment barrier constructed at the perimeter of a disturbed site from the residual materials available from clearing and grubbing the site.

The purpose of a brush barrier is to intercept and retain sediment laden storm water runoff from disturbed areas of limited extent, preventing sediment from leaving the site. The barrier is constructed of tree limbs, weeds, vines, root mat, soil, rock, or other cleared materials piled together to form a berm, and located across or at the toe of a slope susceptible to sheet and rill erosion.

Common Failures - Generally due to faulty installation or maintenance.

- Materials that are too large are used, creating voids where sediment can easily pass through.
- Barrier constructed too loosely, allowing water and sediment to easily pass through.
- Sediment accumulation, resulting in loss of filtering capacity.

Other Considerations

- Enough residual material should be available on site for barrier construction.
- Material larger than 6 inches in diameter should not be used since it tends to create large voids.
- Barrier should be used only in areas of sheet or very low flow.
- Barrier should not be constructed where the maximum upslope gradient exceeds 2:1.
- Brush barriers should act as a filter, not a dam. If it is impermeable, then water will flow around it and outlet treatment will be required.

Relationship to Other ESC Measures

Brush barriers are utilized to retain sediment that would otherwise be deposited in other downslope sediment control measures, such as sediment traps and sediment ponds.

Alternate Sediment Control Measures

Silt Fence

Other Names

Brush Berm, Brush Bundle

Design

Design life: *1 season (6 months) or less*

Contributing flow drainage area: *not to exceed 0.25 acres*

Height: *3 ft. minimum to 5 ft. maximum*

Width: (at base) *5 ft. minimum to 15 ft. maximum*

Materials

Residual on site materials from clearing and grubbing activities – brush, tree limbs, root mat, weeds, vines, rock, or other cleared materials; nylon or polypropylene rope, rebar stakes; geotextile fabric (optional) meeting AASHTO specification M 288 for temporary silt fence.

Installation

Construct the barrier to the specified height and width by piling brush, stone, root mat and other material from the clearing and grubbing process into a mounded row on the contour. Ensure that barrier structure is uniform and that no significant voids are present. Cover with geotextile fabric (optional). Anchor into the ground using 1/4 in. polypropylene or nylon rope tied across the berm in a crisscross fashion and secured to 18 in. long x 3/8 in. diameter rebar stakes.

Inspection

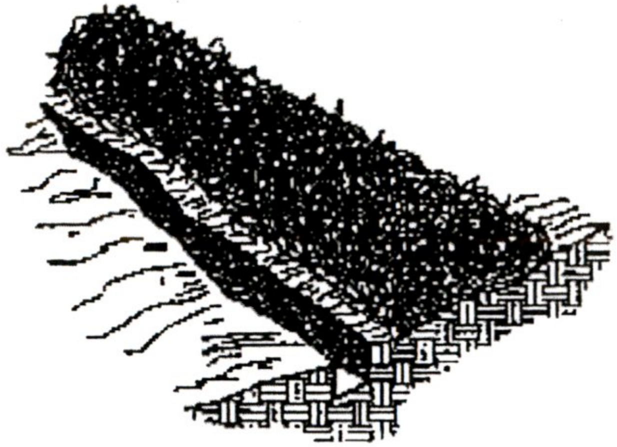
Inspect barrier weekly and after heavy rains to look for sediment accumulation.

Maintenance

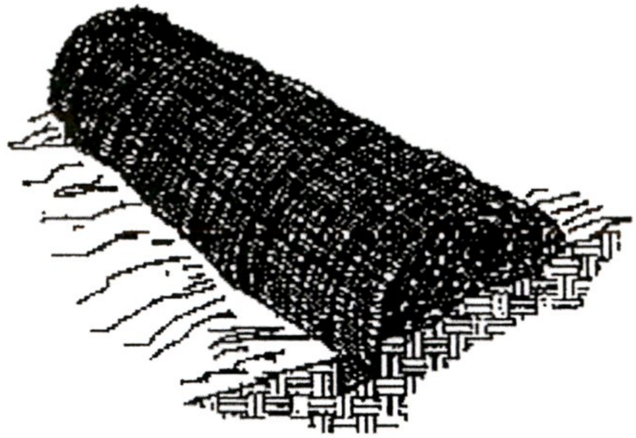
Sediment deposits should be removed when they reach approximately one-third the height of the uphill edge of the barrier.

Removal

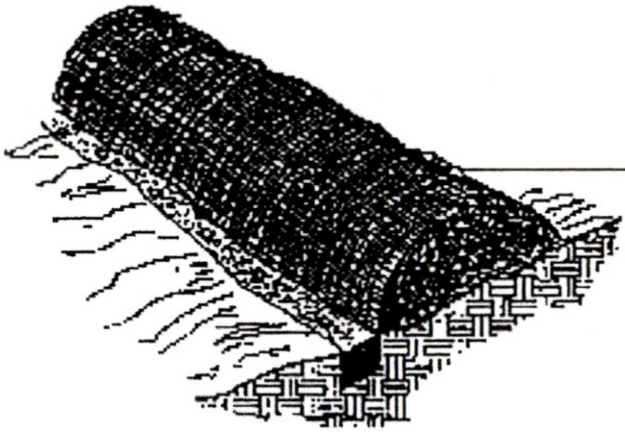
Brush barriers should be removed after they have served their usefulness, but not before the upslope areas have been permanently stabilized. Remove and stabilize trapped sediment. Stabilize disturbed soil areas resulting from removal. Brush barriers should only be left in-place if specifically allowed in the contract documents.



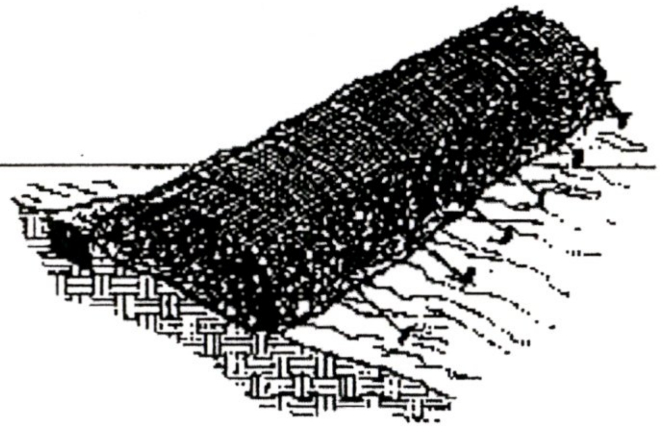
Excavate a 4" X 4" trench along the uphill edge of the Brush Barrier.



Drape a geotextile over the barrier and into the trench. The geotextile should be secured in the trench with stakes set approximately 36" on center.



Backfill and compact the excavated soil.



Set stakes along the downhill edge of the barrier, and anchor by tying twine from the geotextile to the stakes.

BRUSH BARRIER

BMP AK-21
Vehicle Tracking Entrance/Exit

Objectives and Applications

A vehicle tracking entrance/exit provides a stabilized gravel area or pad underlined with a geotextile and located where traffic enters or exits the construction site.

This measure establishes a buffer area for vehicles to deposit their mud and sediment, and minimize the amounts transported onto public roadways. Mud on a road can create a safety hazard as well as a sediment problem. This measure may be used with or without washdown, depending upon severity of problem.

Common Failures - Generally due to faulty installation or maintenance.

- Inadequate depth and length of gravel.
- Failure to periodically "top dress" (provide additional gravel) when sediment accumulates on the surface.
- Failure to repair and/or clean out any structures used to trap sediment.

Other Considerations

- Avoid entrances/exits which have steep grades or which are located where sight distance may be a problem.
- Provide drainage to carry water to sediment trap or other suitable outlet.

Design

Gravel Size: *2 in.-3 in.*

Pad Thickness: *minimum 6 in.*

Pad Width: *minimum 12 ft.*

Pad Length: *minimum 50 ft.*

Materials

Gravel, geotextile

Installation

Clear the entrance and exit area of all vegetation, roots, and other material and properly grade it. Place geotextile prior to placement of gravel. Place the gravel to the specific grade shown on the plans, and smooth it. Provide drainage to carry water to a sediment trap or other outlet.

Inspection

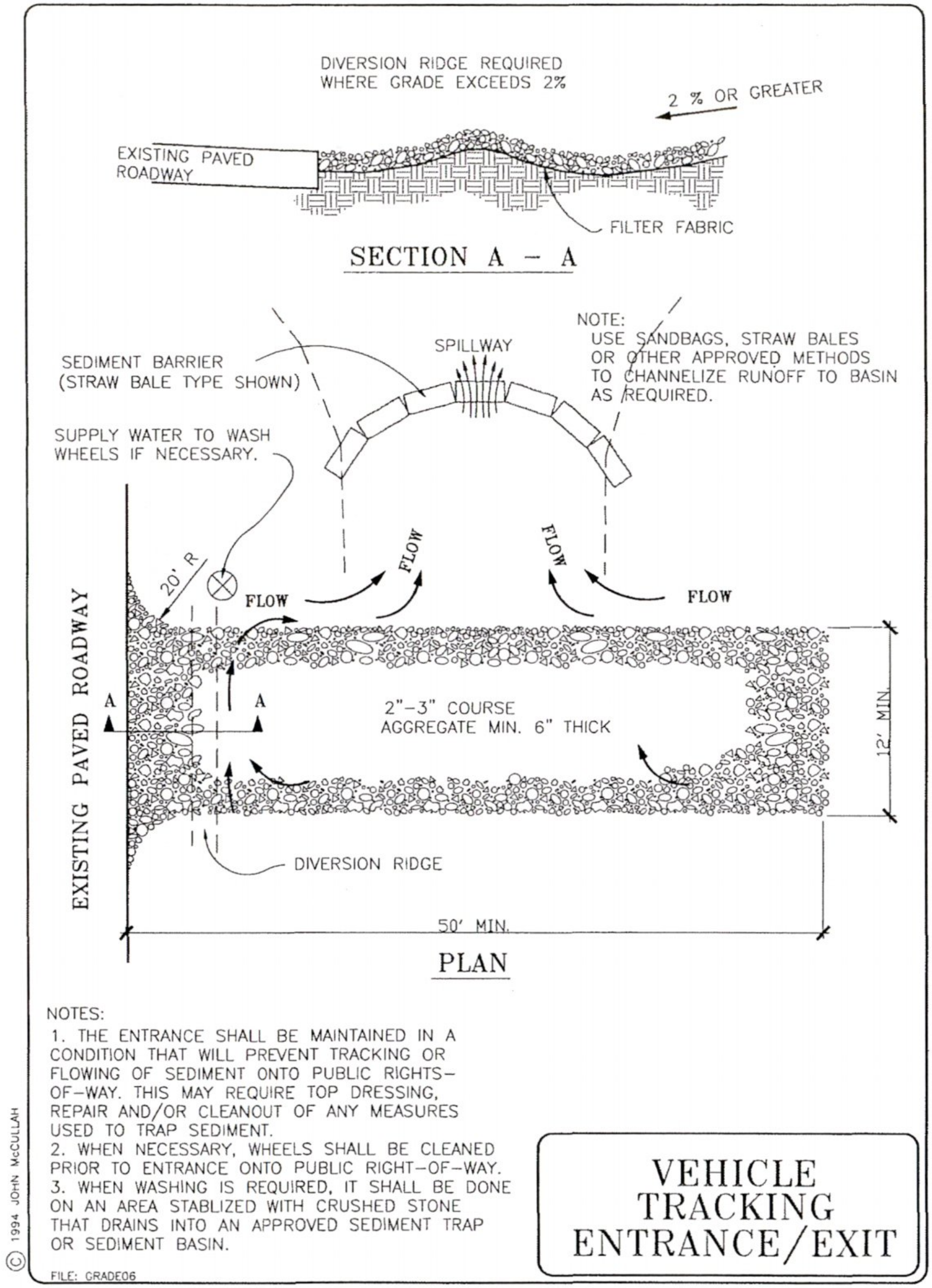
Inspect pads and sediment trapping structures daily for sediment accumulation and material displacement.

Maintenance

Maintain each entrance in a condition that will prevent tracking of mud or sediment onto public rights-of-way. Replace gravel material when surface voids are visible. Top dress with 2 in. gravel when pad becomes laden with sediment. Repair and/or clean out any structures used to trap sediment. Remove all mud and sediment deposited on paved roadways within 24 hours.

Removal

Remove pad and any sediment trapping structures after they are no longer needed, or within 30 days after final site stabilization. Remove and stabilize trapped sediment on site.



Vehicle Tracking Entrance/Exit

BMP AK-22
Tire Wash

Purpose and Description

- A tire wash (located at vehicle tracking entrance/exit) is designed to remove sediment from the tires and undercarriage of construction vehicles and equipment so that it is not tracked on to public roads or highways.

Applicability

- A tire wash must be used when a vehicle tracking entrance/exit is not preventing sediment from being tracked onto public roads or highways.[2]
- Requires a water supply.

Design and Installation

- Incorporated into vehicle tracking entrance/exit BMP.
- Construct on level ground when possible on a pad of coarse gravel that is about 2 to 3 inches in size
- Underline gravel with geotextile.
- Wash rack shall be designed and constructed/manufactured for anticipated traffic loads.[1]
- A drainage ditch must be constructed that will drain the runoff into a sediment trapping device.[1]
- Require all vehicles with mud or sediment on their tires to use tire wash when leaving the site.

Maintenance and Inspection

- Wash rack and sediment trapping device must be inspected routinely.
- Accumulated sediment must be removed to ensure quality performance.
- Repair Damage as needed.

References

[1]Caltrans Storm Water Quality Handbooks, March 2003, Construction Site Best Management Practices Manual, TC-3 Tire Wash, http://www.dot.ca.gov/hq/construc/stormwater/CSBMPM_303_Final.pdf

[2]Washington State Department of Ecology, February 2005, Storm Water Management Manual for Western Washington, Construction Storm Water Pollution Prevention, BMP C106: Wheel Wash, http://www.ecy.wa.gov/pubs/0510030.pdf

BMP AK-23
Vehicle and Equipment Maintenance

Purpose and Description

- Vehicle and equipment cleaning areas, procedures and practices are designed to minimize or prevent discharge of pollutants and hazardous wastes into water courses and/or storm drain systems.[1]

Applicability

- Procedures and practices are used everywhere that onsite maintenance and washing takes place.
- When practical, maintenance must be done offsite.

Design and Installation

- When vehicle and equipment maintenance cannot be done offsite or within a structure equipped with proper containment and disposal facilities[1] it must be done at an onsite maintenance area with the following characteristics:
    - Located at least 50ft from any downstream drainages or waterbodies.
    - Protected from storm water run-on and run-off by diversion dikes or berms which are configured to contain spills and pollutants.
    - Have drip pans, absorbent pads and spill kits on site.
    - Absorbent pads, contaminated soil, or any other waste product produced by vehicle or equipment maintenance operations must be disposed of properly.
    - Fuels and lubricants must not be dumped on the ground.[1]
    - Tires must not be buried.[1]
    - Batteries must be disposed up properly or recycled.[1]
    - No liquids (oil, fuel, anti-freeze, etc…) will be poured or otherwise go into a storm drain system. They must be disposed of per manufacturer's instructions.[2]
    - Secondary containment is required when storing oil, fuel and chemicals in drums onsite.[1]

Maintenance an Inspection

- Any vessel used to store waste fluids must be inspected regularly and maintained in a leak-proof condition.[1]
- Inspect construction vehicles and equipment daily and immediately fix any leaks or remove problem vehicle(s) and/or equipment from the site.[2]
- Maintenance area and secondary containment must be inspected regularly.

References

[1]Caltrans Storm Water Quality Handbooks, March 2003, Construction Site Best Management Practices Manual, NS-10 Vehicle and Equipment Maintenance, http://www.dot.ca.gov/hq/construc/stormwater/CSBMPM_303_Final.pdf

[2]USEPA (United States Environmental Protection Agency), October 2000, National Menu of Best Management Practices, Vehicle Maintenance and Washing Areas at Construction Sites, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=34&minmeasure=4

BMP AK-24

Concrete Washout

Objectives and Applications

The purpose of a concrete washout facility is to contain concrete and fluids from the chutes of concrete mixers and hoppers of concrete pumps when they are rinsed out after delivery. Washout facilities allow for easier disposal of consolidated solids and prevent pollution from run-off. Washout facility can consist of a pre-fabricated container or self-installed containment area, which can be above or below ground. Concrete washout facilities can be used on projects where concrete, stucco, mortar, grout, and cement are used as a construction material.

Common Failures - Generally due to faulty installation or maintenance.

- Overflow and discharge of waste when the facility is not covered prior to anticipated rainfall and/or when accumulated liquid wastes have not been removed.
- Leaking resulting from torn or damaged liners going unnoticed or not being replaced.
- Compromised structural integrity due to miscalculated capacity and installation, particularly for self-installed above-ground facilities.

Other Considerations

Operator education: Use of concrete washout areas as a BMP is only successful if concrete truck operators utilize them. Operators need to be made aware of the presence of these facilities. All concrete truck operators, including those of subcontractors, should be educated on the importance of managing concrete waste and washout procedures.

Spill response: Even with washout facilities present, there is still potential for accidental release of concrete materials including wash water and waste. It is important to have items in the spill kit that are capable of capturing, containing, or treating accidental discharge of concrete materials.

Pre-fabricated washout containers: A growing number of companies offer prefabricated containers specifically for concrete washout. However, prefabricated facilities can be any water tight unit that can contain all liquids and solid waste generated by washout operations. When available, prefabricated containers are delivered to the site and minimize installation efforts. They are also resistant to damage and protect against spills and leaks. Some companies will also offer complete service with their product that could include providing maintenance and regular disposal of waste materials. Such full-service options could relieve the superintendent of these responsibilities. However, when selecting a company that provides such an option, ensure that they are properly disposing of materials and give preference to companies that recycle collected materials.

Below-ground facilities: Use of below-ground containment area helps prevent breaches and reduces the likelihood of run-off. This option is recommended for projects expecting extensive concrete work. However, this option is not recommended for areas with high water tables or shallow groundwater such as near natural drainages, springs or wetlands.

Above-ground facilities: Above-ground containment areas must be sized and installed correctly, and diligently maintained in order to be effective. However, this option, particularly if a prefabricated container is unavailable, is better suited in areas with potentially high water tables to prevent leaching of wastewater into groundwater or in areas where excavation is not practical.

Design

Location: Do not place concrete washout facilities within 50 feet of storm drains, open ditches, or waterbodies. Concrete washout facilities should be placed in a location that provides convenient access for concrete trucks, preferably near the area where the concrete is being poured. Larger sites with extensive concrete work should have concrete washout facilities at multiple locations for ease of use.

Capacity: Concrete washout facilities should be in sufficient quantity and size to handle the expected volume of solids, wash water, and rainfall to prevent overflow. To estimate capacity, Concrete Washout Systems, Inc., (2006) estimates that 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump truck.

Containment area: The containment area of the washout facility can consist of a pre-fabricated container or a self-installed containment area. The prefabricated container selected should be of a sufficient size and capacity to contain the expected volume of generated waste from washout operations. Self-installed containment areas can either be installed above- or below-ground, and should be constructed to dimensions that provide sufficient capacity to contain the expected volume of generated waste from washout operations. For larger sites, it is recommended that self-installed containment (both above and below ground) areas be 10 feet wide by 10 feet long, with a depth to provide the sufficient capacity. However, above-ground self-installed containment areas shall not exceed a size and capacity in which the selected outside barrier becomes structurally unsound when filled with waste materials.

Cover: A temporary cover should be used as necessary to prevent rain or other precipitation from filling the facility and causing wash water to discharge into the environment. The cover should be secure, non-collapsing, non-water collecting cover.

Materials

Pre-fabricated washout containers: Prefabricated containers are usually made of sturdy materials such as plastic or metal.

Self-Installed facilities: Self-installed washout facilities can be made of a variety of materials depending on availability and site needs.

Barrier/Sidewalls: The sidewalls of an above-ground containment area can be made from staked straw bales, earthen berms, barrier walls and wood planks to name a few.

Liner: The liner should be an impermeable plastic sheeting of at least 10-mil thickness, and should be free of holes, tears, and other defects that may compromise the impermeability of the material. Because they are more prone to leaks, it is recommended that above-ground facilities use sheeting of at least 30-mil thickness or double or triple line the containment area if using the 10-mil thick sheeting.

Anchors: Anchors are used to secure the liner and certain sidewall materials for self-installed above ground containment areas. Types of anchors that may be used include, but are not limited to, sand bags, 6" wire staples, and wood or metal stakes.

Installation

Site considerations: The number and size of facilities provided should depend on the expected demand for storage capacity. Locate each facility at a location as described above.

Each facility on-site should have highly visible signage to indicate washout locations. It is recommended that signs be at least 48" by 24" and have 6" black letters on white background, and be placed at a height of 3 feet above ground level and within 30 feet of the facility.

If the washout facility is located on undeveloped property or off-pavement, stabilized access should be provided to prevent tracking (see Vehicle Tracking Entrance/Exit BMP).

Prefabricated washout containers: Installation of these containers is minimal. These containers are usually delivered to the site and would only need to be placed in the appropriate location. Some pre-fabricated models may involve assembly of the container and/or its accessories.

Self-Installed facilities:

Above-ground washout:
Construct the sidewalls to the desired size and capacity for the containment area. If not using an earthen berm for this purpose, ensure that the sidewall material is secure and each unit is butted tightly end to end. For use of straw bales in construction of the sidewall, it is required/recommended that the sidewall construction conform to the installation instructions provided below to ensure structural integrity. Line the entire area with the lining material, bringing the sheeting up over the sidewalls and securing the ends with sandbags, staples or other appropriate anchor.

Straw bales:
Excavate a trench the width of the bale and the length of the proposed barrier to a minimum depth of 4 in. Place the bales in a single row, lengthwise, with ends of the adjacent bales tightly abutting one another. Ensure that all bales are wire-bound or string tied. Install bales so that the bindings are oriented around the sides, rather than along the tops and the bottoms of the bales, in order to prevent deterioration of the bindings. Place and anchor each bale with at least two wood stakes, minimum dimensions, 2 in. x 2 in. x 36 in., or with # 4 reinforcing bars, driving the first stake toward the previously placed bale to force the bales together. Drive the stakes or reinforcing bars a minimum of 12 in. into the ground. Fill any gaps between bales with tightly wedged straw.

Below-ground washout:
Excavate a flat, subsurface pit to the desired size and capacity for the containment area. The resulting sidewall should not exceed 3:1 slopes. The base of the pit should be free of rocks and debris that may cause damage to the liner. It is recommended that the excavated material be used to create a berm along three sides of the pit, leaving the side providing access relatively flat. It is recommended that the berm be at least one foot high. Line the entire area with the lining material, bringing the sheeting up over the sidewalls and berm, and securing the ends with sandbags or other appropriate anchor.

Identify the washout pit with lath and flagging on three sides, leaving the approach unflagged.

Inspection
Check all concrete washout facilities frequently to determine if they have been filled to 70 percent capacity, which is when the materials need to be removed.

For any self-installed facility, inspect the plastic liner to ensure it's securely anchored and intact. Inspect the sidewalls for leaks and to ensure they have not been damaged by construction activities. For any prefabricated facility, inspect the unit for leaks and potential damage.

Check to ensure that each facility sign is still secure and visible.

Note whether facilities are being used regularly and whether operators have washed their chutes or hoppers in other locations. This helps to determine if additional facilities need to be placed, perhaps in more convenient locations, if additional signs or new signs need to be installed, or if operator education is needed.

Maintenance
Existing facilities must be cleaned once the washout is two-thirds full.

Concrete washouts are designed to promote evaporation where feasible. However, if stored liquids are not evaporating and are reaching capacity, vacuum and dispose of liquids in an approved manner (check with the local sanitary sewer authority to determine if there are special disposal requirements for concrete wash water).

Remove hardened solids whole or break them up first depending on the type of equipment available. Then re-use the solids on-site or haul them away for recycling or disposal. When removing materials from a self-installed washout, either construct another facility for use during cleaning or, if the existing structure is still intact, it can be re-used.

Before relining the structure, inspect it for signs of weakening or damage and make any necessary repairs. Then line the structure with new plastic sheeting, checking that it is free of holes, tears and other damage. It is important that new plastic be used after every cleaning as equipment can damage the existing liner.

Any damaged facilities should be repaired promptly. If necessary, a new facility may be required until the existing facility is operational. Contain any spill or discharge of concrete waste materials

Replace or display new signage as needed.

Removal

An operational concrete washout facility should remain in place until all concrete for the project (or phase of the project) is poured. When the concrete facility is no longer needed, the hardened concrete should be removed and properly disposed of. Materials used to construct any above-ground containment area should be removed from the site and properly disposed of.

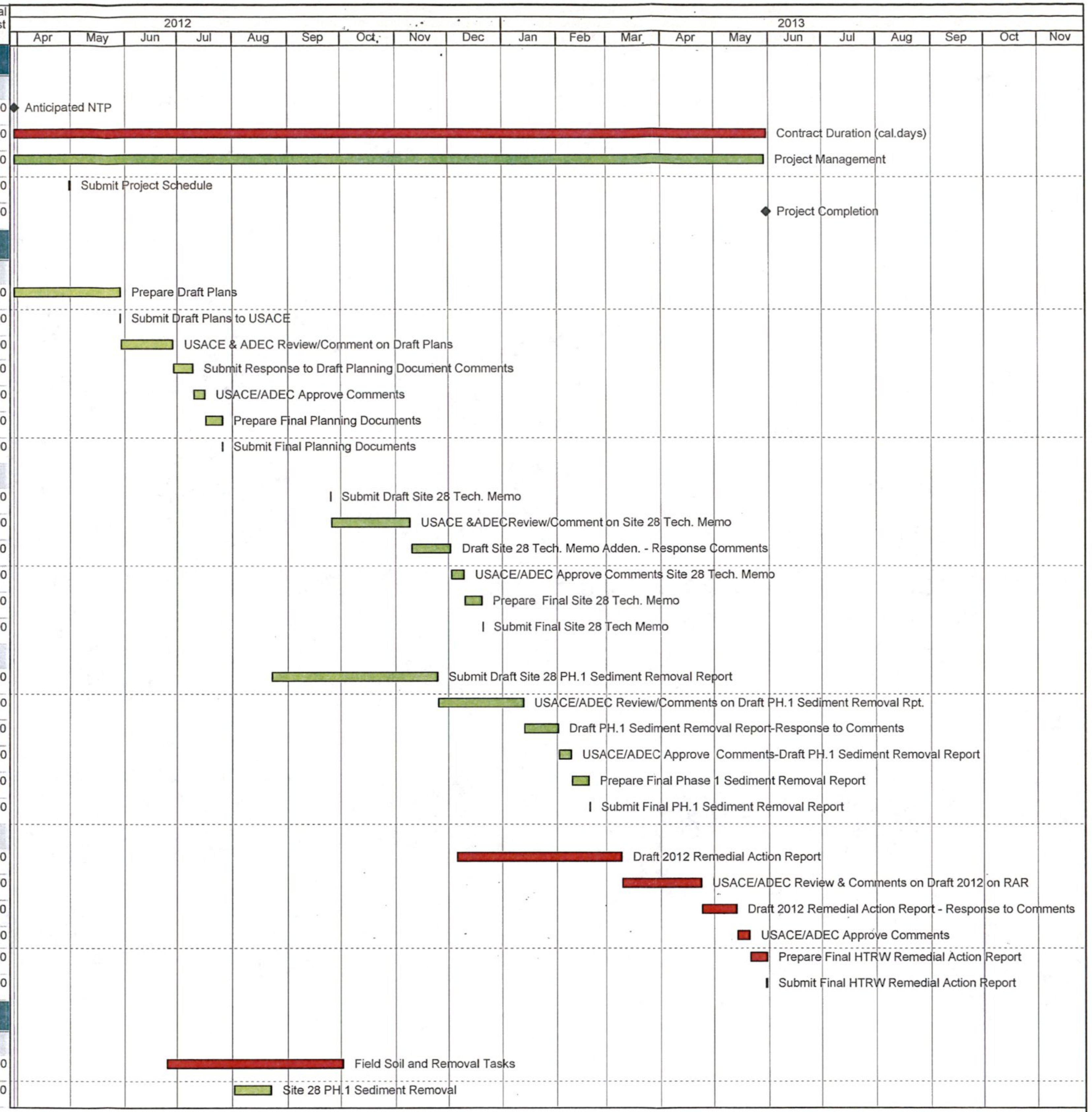
Holes, depressions or other ground disturbance caused by the creation or removal of the facility should be backfilled and stabilized with an approved stabilization BMP.

475.38.013

APPENDIX C

Project Schedule

Activity ID	Activity Name	OD	Early Start	Early Finish	TF	Budgeted Total Cost
General Conditions						
General Conditions						
GC01	Anticipated NTP	0	Mar-30-12		0	$0.00
GC03	Contract Duration (cal.days)	417	Mar-30-12	May-30-13	0	$0.00
GC05	Project Management	416	Mar-30-12	May-29-13	1	$143,705.00
GC06	Submit Project Schedule	1	Apr-30-12	Apr-30-12	72	$0.00
GC04	Project Completion	0		May-30-13	0	$0.00
Submittals						
Planning Doc's						
P01	Prepare Draft Plans	60	Mar-30-12	May-29-12	45	$72,345.00
P01-1	Submit Draft Plans to USACE	1	May-29-12	May-29-12	45	$0.00
P01-2	USACE & ADEC Review/Comment on Draft Plans	30	May-30-12	Jun-28-12	45	$0.00
P02	Submit Response to Draft Planning Document Comments	10	Jun-29-12	Jul-09-12	45	$5,000.00
P03	USACE/ADEC Approve Comments	7	Jul-10-12	Jul-16-12	45	$0.00
P04	Prepare Final Planning Documents	10	Jul-17-12	Jul-26-12	45	$32,268.00
P05	Submit Final Planning Documents	1	Jul-26-12	Jul-26-12	45	$0.00
Planning Doc's Site 28 Tech Memo Addendum						
P500	Submit Draft Site 28 Tech. Memo	1	Sep-25-12	Sep-25-12	75	$62,393.00
P501	USACE &ADECReview/Comment on Site 28 Tech. Memo	45	Sep-26-12	Nov-09-12	75	$0.00
P502	Draft Site 28 Tech. Memo Adden. - Response Comments	20	Nov-10-12	Dec-02-12	75	$5,000.00
P503	USACE/ADEC Approve Comments Site 28 Tech. Memo	7	Dec-03-12	Dec-09-12	75	$0.00
P505	Prepare Final Site 28 Tech. Memo	10	Dec-10-12	Dec-19-12	75	$10,000.00
P507	Submit Final Site 28 Tech Memo	1	Dec-20-12	Dec-20-12	75	$0.00
Site 28 Ph.1 Sediment Removal Report						
P200	Submit Draft Site 28 PH.1 Sediment Removal Report	90	Aug-23-12	Nov-24-12	18	$34,865.00
P201	USACE/ADEC Review/Comments on Draft PH.1 Sediment Removal Rpt.	45	Nov-25-12	Jan-12-13	18	$0.00
P202	Draft PH.1 Sediment Removal Report-Response to Comments	20	Jan-13-13	Feb-01-13	18	$5,000.00
P203	USACE/ADEC Approve Comments-Draft PH.1 Sediment Removal Report	7	Feb-02-13	Feb-08-13	18	$0.00
P205	Prepare Final Phase 1 Sediment Removal Report	10	Feb-09-13	Feb-18-13	18	$10,000.00
P206	Submit Final PH.1 Sediment Removal Report	1	Feb-19-13	Feb-19-13	18	$0.00
2012 HTRW Remedial Action Report						
P250	Draft 2012 Remedial Action Report	90	Dec-06-12	Mar-09-13	0	$99,925.00
P251	USACE/ADEC Review & Comments on Draft 2012 on RAR	45	Mar-10-13	Apr-23-13	0	$0.00
P252	Draft 2012 Remedial Action Report - Response to Comments	20	Apr-24-13	May-13-13	0	$5,000.00
P253	USACE/ADEC Approve Comments	7	May-14-13	May-20-13	0	$0.00
P255	Prepare Final HTRW Remedial Action Report	10	May-21-13	May-30-13	0	$28,921.00
P256	Submit Final HTRW Remedial Action Report	1	May-30-13	May-30-13	0	$0.00
Remedial Activities						
Remedial Activities						
1003	Field Soil and Removal Tasks	98	Jun-25-12	Oct-02-12	0	$5,135,424.00
1004	Site 28 PH.1 Sediment Removal	21	Aug-02-12	Aug-22-12	18	$349,454.00



Actual Work
Remaining Work
Critical Remaining Work
Milestone

2012CP00

NE Cape 2012 Remedial Action MW

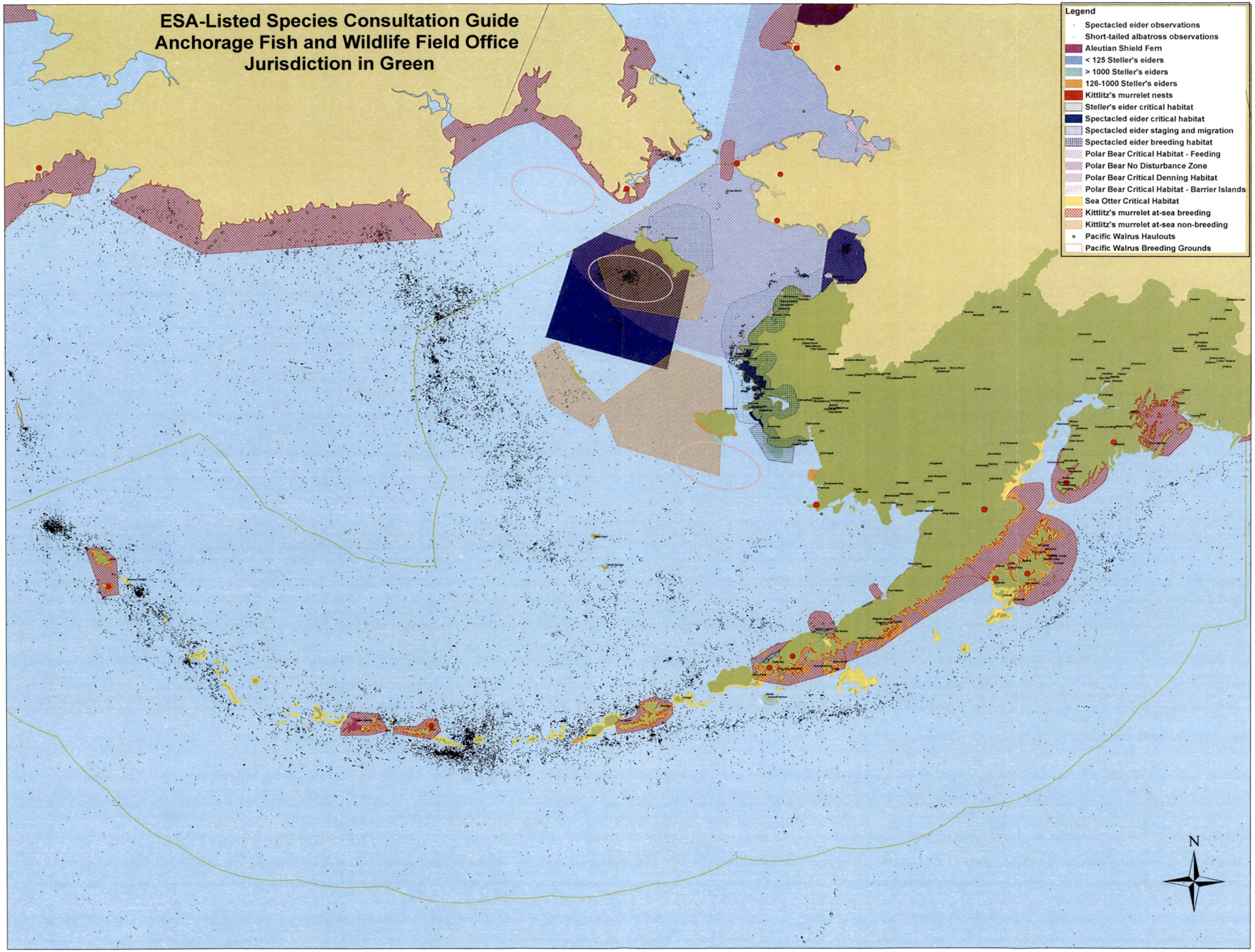
Page 1 of 1

Bristol ENVIRONMENTAL REMEDIATION SERVICES, LLC

Date	Revision	Checked	Approved
Apr-18-12	cost edits		

APPENDIX D

Supporting Documentation


ESA-Listed Species Consultation Guide
Anchorage Fish and Wildlife Field Office
Jurisdiction in Green
Legend
Spectacled eider observations
Short-tailed albatross observations
Aleutian Shield Fern
< 125 Steller's eiders
> 1000 Steller's eiders
126-1000 Steller's eiders
Kittlitz's murrelet nests
Steller's eider critical habitat
Spectacled eider critical habitat
Spectacled eider staging and migration
Spectacled eider breeding habitat
Polar Bear Critical Habitat - Feeding
Polar Bear No Disturbance Zone
Polar Bear Critical Denning Habitat
Polar Bear Critical Habitat - Barrier Islands
Sea Otter Critical Habitat
Kittlitz's murrelet at-sea breeding
Kittlitz's murrelet at-sea non-breeding
Pacific Walrus Haulouts
Pacific Walrus Breeding Grounds
N

Alaska Department of
Fish & Game

www.adfg.state.ak.us

Endangered Species in Alaska

The Alaska Department of Fish and Game received funds in 2007 to establish a unit to oversee state involvement in endangered and threatened species. This unit coordinates state participation under federal and state endangered species legislation. This includes coordinating state comments on proposed listings and on recovery of listed species. Two federal agencies are responsible for implementing the federal Endangered Species Act (ESA) legislation.

- The **National Marine Fisheries Service** is responsible for oversight of marine species
- The **U.S. Fish and Wildlife Service** is responsible for freshwater and land based species.

Listed as Endangered | Threatened | Under Consideration for Protection

---

Listed as Endangered under the ESA

In Alaska, 11 species have been listed as endangered under the ESA. These are:

- **Short-tailed albatross** - PDF file* (791KB) USFWS
- **Eskimo curlew**
- **Aleutian Shield fern** - USGS
- Steller's sea lion (western stock) - NOAA Fisheries & ADF&G
- **Whales** - NOAA Fisheries
    - **Bowhead whale**
    - **Fin Whale** - NOAA
    - **Humpback whale**
    - North Pacific right whale - NOAA Fisheries & ADF&G
    - **Blue whale**
    - **Sei whale** - NOAA
- **Leatherback turtle** - NOAA

Listed as Threatened under the ESA

Four species are currently listed as threatened under the ESA.

- Spectacled eider - USFWS & ADF&G
- Steller's eider - USFWS & ADF&G
- Northern sea otter (southwest Alaska DPS) - USFWS & ADF&G
- Steller's sea lion (eastern population) - NOAA Fisheries & ADF&G

One species (**Aleutian Canadian goose**) was listed, but has recovered to an extent that it has been delisted.

Top of Page

Under Consideration for Protection under the ESA

Seven species have been in various stages of consideration for protection under the ESA.

- **Polar bears** - USFWS

- Proposed Rule to List **Federal Register Notice** (1/1/07) - PDF file* (1.62 MB)
  - **State comments** (4/9/07) - PDF file (556 KB)
- USGS Reports **Federal Register Notice** (10/5/07) - PDF file (53 KB)
  - **State comments** (10/22/07)

- Black-footed **albatross**
  - 90-Day Finding to Initiate a Status Review: **Federal Register Notice** (10/9/07)
    - **State comments** (12/10/07)
- **Lynn Canal herring**
  - 90-day Finding to Initiate a Status Review: **Federal Register Notice** (9/10/07)
    - **State comments** (12/10/07)
  - DPS Finding to Initiate SE DPS Review: **Federal Register Notice** (4/11/08) - PDF file* (48 KB)
- Cook Inlet **beluga whales**
  - **Conservation Plan**
  - Proposed Rule to List **Federal Register Notice**
    - **State Comments to National Marine Fisheries Service** Assistant Director
    - **State comments Overview**
    - **State comments Chapter 1** Population (PDF dated 7/31/2007)
    - **State comments Chapter 2** Threats (PDF dated 7/31/2007)
    - **State comments Chapter 3** Conservation Plan (PDF dated 7/31/2007)
    - **State comments Chapter 4** Critical Habitat (PDF dated 7/31/2007)
    - **State comments Chapter 5** Economic Impact (PDF dated 7/31/2007)
  - **State letter requesting 6 month extension** (4/11/08) - PDF file* (48 KB)
  - **NOAA Decision to extend status review 6 months** (4/11/08) - PDF file* (48 KB)
- Northern Right whale, North Pacific DPS - **NOAA Fisheries** & **ADF&G**
  - Designation of Critical Habitat **Federal Register Notice** (10/29/07)
    - **State comments** (1/3/06) - PDF file (279 KB)
    - **State comments** (12/27/07) - PDF file (217 KB)
- Pacific Walrus
  - **Petition to list** - LARGE PDF file* (2.9 MB)
- Queen Charlotte goshawk - **USFWS** & **ADF&G**
- Ribbon Seal
  - **Petition to list** - LARGE PDF file* (2.4 MB)
  - **90-day Finding, Initiate Status Review of Ice Seals** (3/28/08) - PDF file* (53 KB)
- **Kittlitz's murrelet**
- Yellow-billed **loons**
  - **90-day Finding, Initiate Status Review** - PDF file* (79 KB)

Top of Page

For Additional Information

Please contact:

Doug Vincent-Lang
(907) 267-2339

Division of Water

Total Maximum Daily Load-TMDL

Approved TMDLs

Laura Eldred, Acting Section Manager NPS Restoration and Protection
(907) 376-1855

Total Maximum Daily Loads (TMDLs) are required actions for polluted waters found on the Alaska 's 303(d) List of Impaired Waters. DEC lists these waters in Category 5 of the Alaska Integrated Water Quality Monitoring and Assessment Report, which encompasses the 303(d) list. The waterbodies shown here have an approved TMDL in place.

A TMDL, or other approved management mechanism, are required for a polluted waterbody to be removed from the 303(d) list. A waterbody can also be removed if there are assurances that pollution controls are in place, or will be in place that result in attainment of water quality standards. These 'assurances' include other pollution recovery plans such as a waterbody recovery plan, Memorandum of Understanding (MOU), Record of Decision (ROD) or a similar type of hazardous substance clean-up approved by DEC's Contaminated Sites Program. These waters are shown in Category 4b of the Integrated Report. There are also instances where there is no true plan but general assurances that controls are being implemented and only require some follow-up implementation or effectiveness monitoring (as opposed to in-stream monitoring). These files are available for viewing and printing in PDF format.

TMDLs for Construction General Permits

Waterbody	Region	Click on TMDL to view	Author	Impairment
Akutan Harbor	Southwest	TMDL	EPA	Dissolved Oxygen
Akutan Harbor	Southwest	TMDL	EPA	Residues
Upper Birch Cr.	Interior	TMDL	EPA	Turbidity and Sediment
Chester Creek, University Lake, Westchester Lagoon	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Campbell Creek/Lake	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Duck Creek	Southeast	TMDL	EPA	Debris
Duck Creek	Southeast	TMDL	EPA	Fecal Coliform Bacteria
Duck Creek	Southeast	TMDL	EPA	Turbidity
Duck Creek	Southeast	TMDL	EPA	Dissolved Oxygen and Iron
Eagle River	Southcentral	TMDL	Anchorage Water Wastewater Utility	Ammonia,Copper, Lead, Silver, Chlorine
Fish Creek, Anchorage	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Furrow Creek	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Garrison Slough	Interior	TMDL	EPA	Poly-Chlorinated Biphenyls
Granite Creek	Southeast	TMDL	DEC	Turbidity

Herring Cove	Southeast	TMDL	DEC	Residues
Jewel Lake	Southcentral	TMDL	EPA	Fecal Coliform
Jordan Creek	Southeast	TMDL	DEC	Residues
King Cove	Southwest	TMDL	DEC	Residues
Lakes Hood and Spenard	Southcentral	TMDL	EPA	Fecal Coliform
Lake Lucille	Southcentral	TMDL	DEC	Dissolved Oxygen
Lemon Creek	Southeast	TMDL	DEC	Sediment and Turbidity
Little Campbell Creek	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Little Rabbit Creek	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Little Survival Creek	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Pederson Hill Creek	Southeast	TMDL	DEC	Fecal Coliform Bacteria
Ship Creek	Southcentral	TMDL	DEC	Fecal Coliform Bacteria
Silver Bay	Southeast	TMDL	DEC	Residue and Toxic Substances
South Unalaska Bay	Southwest	TMDL	EPA	Biochemical Oxygen Demand
South Unalaska Bay	Southwest	TMDL	EPA	Settleable Solid Residues
Swan Lake	Southeast	TMDL	DEC	Debris and Solid Waste
Thorne Bay	Southeast	TMDL	DEC	Wood Residues
Udagak Bay of Beaver Inlet	Southwest	TMDL	DEC	Residues
Vanderbilt Creek	Southeast	TMDL	DEC	Sediment and Turbidity
Ward Cove	Southeast	TMDL	DEC	Biochemical Oxygen Demand
Ward Cove	Southeast	TMDL	DEC	Residue and Dissolved Oxygen

APPENDIX E

Delegation of Authority and Subcontractor Certifications

Appendix E – Delegation of Authority Form

Delegation of Authority

I, Ben English, hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the EIE327 Arctic Survival FOP construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

Eric Barnhill, CESCL
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
Tel: (907) 563-0013
Fax: (907) 563-6713
ebarnhill@bristol-companies.com

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in APDES CGP 2011, and that the designee above meets the definition of a "duly authorized representative" as set forth in APDES CGP 2011.

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 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 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.

Name: **Steve Johnson**

Company: **Bristol Environmental Remediation Services, LLC**

Title: **CEO**

Signature: ______________________________

Date: ______________________________

APPENDIX F

Permit Conditions

ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

GENERAL PERMIT FOR DISCHARGES FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES

Permit Number: AKR100000

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

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA or the Act), as amended by the Water Quality Act of 1987, P.L. 100-4, this permit is issued under provisions of Alaska Statutes 46.03, the Alaska Administrative Code (AAC) as amended, and other State laws and regulations.

Operators of large and small construction activities described in Part 1.4 of this Alaska Pollutant Discharge Elimination System (APDES) general permit, except for those activities excluded from authorization to discharge in Part 1.4.3 of this permit are authorized to discharge storm water associated with construction activity to waters of the United States in accordance with the conditions and requirements set forth herein. Permit coverage is required from the "commencement of construction activities" until "final stabilization" as defined in Appendix C.

This permit shall become effective on July 1, 2011.

This permit and the authorization to discharge shall expire at midnight, January 31, 2016

Signed:

Sharon Morgan —
Signature

May 19, 2011
Date

Sharon Morgan

Program Manager

TABLE OF CONTENTS

Tables

SCHEDULE OF SUBMISSIONS

The Schedule of Submissions (Table 1) summarizes the submissions and activities required by this permit that the operator must complete and/or submit to the Alaska Department of Environmental Conservation (DEC or the Department) during the time that coverage is authorized by this permit. The operator is responsible for all submissions and activities even if they are not summarized below. For information on the submittal requirements, read the permit section identified or see additional information posted on DEC's storm water website at www.dec.state.ak.us/water/wnpspc/stormwater/index.htm.

Table 1: Schedule of Submissions

Permit Section	Submittal or Completion	Frequency	Due Date
1.4.3.7	The project will construct Permanent Storm Water Management Controls that discharge of storm water to the land or groundwater (in addition to a discharge to surface water)	Once	File Application with DEC
1.5	The project will use a waiver criteria for certain small construction activities	Once	At least seven (7) calendar days before proposed start of construction
2.1.1; 4.9	The project will construct Permanent Storm Water Management Controls	Once	At least thirty (30) days before proposed start of construction
2.1.2	The project will construct Permanent Storm Water Management Controls within an APDES permitted MS4	Once	Depends on requirements of MS4 operator
2.1.3	Storm Water Pollution Prevention Plan (SWPPP) if project disturbs >5 acres outside an MS4	Once	With NOI or within seven (7) business days of NOI submittal
2.1.4	SWPPP submittal	Once	Depends on requirements of MS4 operator
2.1.5	The project will be required to complete a Site-Specific Antidegradation Analysis because of its location	Once	At least fourteen (14) days before filing NOI
2.1.6; 4.5.4.3	The project will use an Active Treatment System	Once	At least fourteen (14) days before use of the system
2.3	Notice of Intent	Once	At least seven (7) calendar days, and maybe longer, to allow for processing prior to the start of construction

2.7	NOI Modification	As Needed	As needed
9.1	Annual Report	As needed for sites meeting Part 3.2	By December 31st or with NOT
9.2	Corrective Action Report	As necessary	Fourteen (14) days after receiving monitoring results
9.4	Request for Submittal of Records	As requested by DEC	Thirty (30) days after receipt of request
10.1	Notice of Termination (NOT)	Once	Within thirty (30) days of completion of the project

Table 2: Summary of Permit Required On-site Documentation

Permit Section	Document Name or Title	Frequency	Purpose of Document
2.3	NOI	Once at start of project	Applicant request for authorization to discharge under permit coverage
2.5	DEC NOI Reply Letter	Once at start of project	To provide permittee with DEC project tracking number indicating project is covered by ACGP
2.7	NOI Modification	As needed	To modify the original NOI if project conditions or personnel change.
Part 5.0	SWPPP	Developed prior to submitting the NOI. Updated as necessary.	To describe the project and the control measures to minimize the discharge of pollutants into waters of the U.S. Documents installation, maintenance, inspections, corrective actions, and reporting.
5.4; 6.7	Inspection Reports	Conducted at frequency specified in SWPPP	To monitor compliance with SWPPP and ACGP.
5.5; Part 7.0	Monitoring Plan (if required)	As needed	To describe monitoring of storm water discharge for those projects that disturb more than threshold requirement.
5.6	Permit Eligibility related to Total Maximum Daily Load	Once at start of project	To document compliance with TMDL requirements
5.7	Permit Eligibility related to Endangered Species	Once at start of project	To document compliance with ESA requirements
5.8.1	Copy of this permit	Once at start of project	To include in SWPPP
5.8.2	Additional Documentation in the SWPPP	Updated as necessary	To maintain summaries of various specific activities at the site to document they were accomplished.
8.3	Corrective Action Log (if necessary)	Updated as necessary	To list the corrective actions taken at a site.
8.4; 9.2	Corrective Action Report (if necessary)	As needed	To report exceeding the turbidity requirement and describe corrective actions being taken.
9.1	Annual Report (if required)	Annually or at NOT	To report result of discharge monitoring

Permit Section	Document Name or Title	Frequency	Purpose of Document
9.3	Retention of Records	As needed	To maintain project records
10.1	NOT	Once at completion of project	To notify DEC that the permittee is terminating permit coverage.

PART 1.0 COVERAGE UNDER THIS PERMIT

1.1 Introduction

The Alaska Construction General Permit (ACGP) authorizes storm water discharges from large and small construction activities that result in a total land disturbance of equal to or greater than one acre and where those discharges enter waters of the United States (U.S.) or a municipal separate storm sewer system (MS4) leading to waters of the U.S. subject to the conditions set forth in this permit. This permit also authorizes storm water discharges from any other construction activity designated by the Department where DEC makes that designation based on the potential for contribution to an excursion above a water quality standard or the potential for significant contribution of pollutants to waters of the U.S. The goal of this permit is to minimize the discharge of storm water pollutants from construction activities to waters of the U.S. This permit replaces the construction general permit issued by DEC in January 2010.

1.2 Person(s) Responsible for Obtaining Coverage under this Permit

This permit uses the term "operator" to identify the person(s) who owns or operates a "facility" or "activity" as defined in Appendix C and who must comply with the conditions of this permit.

1.3 Permit Area

This general permit covers the State of Alaska, except the Indian Reservation of Metlakatla and the Denali National Park and Preserve.

1.4 Eligibility

Permit eligibility is limited to discharges from "large" and "small" construction activities, as these terms are defined in Appendix C, or as otherwise designated by DEC. This general permit contains eligibility restrictions, as well as permit conditions and requirements. The permittee may have to take certain actions to be eligible for coverage under this permit. In such cases, the permittee must continue to satisfy those eligibility provisions to maintain permit authorization. If the permittee does not meet the requirements that are a pre-condition to eligibility, then resulting discharges constitute unpermitted discharges. By contrast, if the permittee is eligible for coverage under this permit and does not comply with the requirements of this general permit, the permittee may be in violation of this general permit for otherwise eligible discharges.

1.4.1 Allowable Storm Water Discharges

Subject to compliance with the terms and conditions of this permit, the permittee is authorized to discharge pollutants in:

1.4.1.1 Storm water discharges associated with large and small construction activities.

1.4.1.2 Storm water discharges designated by DEC as needing a storm water permit under 40 CFR §122.26(a)(1)(v) or §122.26(b)(15)(ii).

1.4.1.3 Storm water discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) (as defined in Appendix C), whether on-site, adjacent to, or off-site, provided:

1.4.1.3.1 The support activity is directly related to the construction site required to have permit coverage for discharges of stormwater associated with construction activity under this permit;

1.4.1.3.2 The support activity is not a commercial operation serving multiple unrelated construction projects by different permittees;

1.4.1.3.3 The support activity does not operate beyond the completion of the construction activity at the project it supports; and

1.4.1.3.4 Appropriate control measures are identified in the SWPPP documentation covering the discharges from the support activity areas, and pollutant discharges are minimized in compliance with Parts 3.0 and 4.0 of the permit.

1.4.1.4 Discharges composed of allowable discharges listed in Parts 1.4.1 and 1.4.2 commingled with a discharge authorized by a different APDES permit and/or a discharge that does not require APDES permit authorization.

1.4.2 Allowable Non-Storm Water Discharges

Subject to compliance with the terms and conditions of this permit, the following non-storm water discharges are authorized under this general permit, provided the non-storm water component of the discharge is in compliance with the SWPPP requirements in Part 5.3.9:

1.4.2.1 Discharges from fire-fighting activities;

1.4.2.2 Fire hydrant flushings;

1.4.2.3 Waters used to wash vehicles where detergents are not used;

1.4.2.4 Water used to control dust;

1.4.2.5 Potable water including uncontaminated water line flushings;

1.4.2.6 Routine external building wash down that does not use detergents;

1.4.2.7 Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;

1.4.2.8 Uncontaminated air conditioning or compressor condensate;

1.4.2.9 Uncontaminated, non-turbid discharges of ground water or spring water;

1.4.2.10 Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated groundwater;

1.4.2.11 Construction dewatering waters that are treated by an appropriate control measure in compliance with Part 4.3.2, or have been treated with treatment chemicals in compliance with Part 4.5; and

1.4.2.12 Landscape irrigation.

1.4.3 **Limitations on Coverage**

The following storm water discharges are not authorized under this permit:

1.4.3.1 Discharges that originate from the project after construction activities have been completed and a Notice of Termination (NOT) has been submitted, including any temporary support activity. Post-construction storm water discharges from industrial sites may need to have permanent storm water management controls installed (see Part 4.9). Discharges to surface waters may require a separate APDES permit (see Part 2.8). Discharges to the land or groundwater may require a separate DEC permit (see Part 1.4.3.7).

1.4.3.2 Discharges that DEC, prior to authorization under this permit, determine will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where such a determination is made prior to authorization, DEC may notify the applicant that an individual permit application is necessary in accordance with Part 2.8. However, DEC may authorize coverage under this permit after the applicant has included appropriate controls and implementation procedures designed to bring the discharge into compliance with water quality standards in accordance with Part 3.1.

1.4.3.3 Discharges into receiving waters that are listed as impaired waters in the report *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report* dated July 15, 2010 (or the most current version), or with an approved or established total maximum daily load analysis, unless the discharges are in accordance with Part 3.2.

1.4.3.4 Discharges that are mixed with sources of non-storm water, unless they are listed as allowable non-storm water discharges in Part 1.4.2.

1.4.3.5 Storm water discharges associated with construction activity that have been covered under an individual permit or required to obtain coverage under an alternative general permit in accordance with Part 2.8.

1.4.3.6 Discharges of dredged or fill material into waters of the U.S. requiring federal authorization in a U.S Army Corps of Engineers CWA section 404 permit.

1.4.3.7 Discharges of storm water to the land or groundwater from a nondomestic wastewater treatment works using permanent storm water management controls must meet the requirements of 18 AAC 72.600 and submit a separate application for discharge. (See http://dec.alaska.gov/water/wwdp/onsite/index.htm.) These discharges also have to comply with applicable requirements of EPA's Underground Injection Control regulations.

1.4.4 **Emergency Repairs or Reconstruction of a Facility**

Discharges from construction activities conducted in response to a disaster (as defined in Alaska Statute 26.23.900) are conditionally authorized, provided that a Notice of Intent for coverage under this permit is filed with the Department within thirty (30) calendar days following the commencement of construction activities. For discharges occurring during the initial thirty (30) day period, the permittee must demonstrate compliance with the terms and conditions of this permit to the extent practicable depending on the disaster.

1.5 Waivers for Certain Small Construction Activities

Three scenarios exist under which construction activities disturbing 1 acre or more, but less than 5 acres or activities disturbing less than 1 acre, but that are part of a common plan of development or sale that will disturb more than 1 acre, may be waived from the APDES permitting requirements detailed in this general permit. These exemptions are predicated on certain criteria being met and proper notification procedures being followed. Details of the waiver options and procedures for requesting a waiver are provided in Appendix D.

PART 2.0 AUTHORIZATION UNDER THIS GENERAL PERMIT

2.1 Submittal Requirements Prior to Construction

Depending on the type and location of the project, the operator may be required to submit information to the Department and/or an MS4 operator for review prior to filing the NOI and commencement of construction activities. The following is a summary of the information to be submitted to each agency by project type and area of jurisdiction.

2.1.1 An operator installing Permanent Storm Water Management Controls in accordance with Part 4.9 and where the project is located outside the area of an APDES permitted MS4 must submit information required by the Department at least thirty (30) calendar days prior to filing the NOI for the project and must receive the Department's written reply prior to the commencement of construction activities.

2.1.2 An operator installing Permanent Storm Water Management Controls in accordance with Part 4.9 and where the project is located inside the area of an APDES permitted MS4 must submit information required by the MS4 operator for the project and must receive the MS4 operator's approval prior to the commencement of construction activities. At issuance of this permit, the following are the municipalities that operate under an APDES MS4 permit. Check with the respective MS4 operator for their particular submittal requirements.

2.1.2.1 Operators of construction activity within the Municipality of Anchorage (with the exception of ADOT&PF, see 2.1.2.2) shall submit information to:

Municipality of Anchorage
Public Works Department
4700 South Elmore Rd.
P.O. Box 196650
Anchorage, AK 99519-6650

2.1.2.2 Alaska Department of Transportation &Public Facilities (ADO&PF) construction projects within the Municipality of Anchorage shall submit information to:

ADOT&PF
Construction and Operations
Central Region
4111 Aviation Ave.
PO Box 196900
Anchorage, AK 99519

2.1.2.3 Operators of construction activity within the Fairbanks North Star Borough shall submit information to:

Fairbanks North Star Borough
Department of Public Works
P.O. Box 71267
Fairbanks, AK 99707

2.1.2.4 Operators of construction activity within the City of Fairbanks shall submit information to:

City of Fairbanks
Engineering Division
800 Cushman St.
Fairbanks, AK 99701

2.1.2.5 Operators of construction activity within the City of North Pole shall submit information to:

City of North Pole
Department of Public Works
125 Snowman Lane
North Pole, AK 99705

2.1.3 An operator developing a project that disturbs five or more acres of land and where the project is located outside the area of an APDES permitted MS4 must submit a copy of the SWPPP to the Department at the address given in Part 2.3 at the time the NOI is filed (electronic attachments to the eNOI are preferred) or within seven (7) calendar days of filing the NOI paper form.

2.1.4 An operator developing a project that is located inside the area of an APDES permitted MS4 must submit a copy of the SWPPP to the respective MS4 operator. Check with the respective MS4 operator for their particular submittal requirements.

2.1.4.1 Within the Municipality of Anchorage

2.1.4.1.1 An operator of construction projects disturbing one or more acres of land shall submit a copy of the SWPPP to either DEC or the Municipality based on the project type and operator as shown in the following table

Project Type	Submit SWPPP to
Government (Federal, state or Port of Anchorage) road projects and other government transportation projects such as ports, railroads, or airports	DEC
Government (municipal) road projects and other government transportation projects such as airports	Municipality
Public or private utility projects for which the utility is initiating the work	Municipality
Work that requires a building permit	Municipality
Non-publicly funded transportation projects	Municipality

2.1.4.1.2 Submittal of the SWPPP to the Municipality shall be made according to the most recent Municipal requirements and be submitted to the address given in Part 2.1.2.1

2.1.4.1.3 Submittal of the SWPPP to the Department shall be to the address given in Part 2.3.

2.1.4.2 Within the road service areas of the Fairbanks North Star Borough check with the Borough for the latest SWPPP submittal requirements at the address given in Part 2.1.2.3. An operator of a publicly-funded project disturbing one or more acres of land shall submit a copy of the SWPPP to the Department for review at the address given in Part 2.3

2.1.4.3 Within the City of Fairbanks check with the City for the latest SWPPP submittal requirements at the address given in Part 2.1.2.4. An operator of a publicly-funded project disturbing one or more acres of land shall submit a copy of the SWPPP to the Department for review at the address given in Part 2.3.

2.1.4.4 Within the City of North Pole check with the City for the latest SWPPP submittal requirements at the address given in Part 2.1.2.5. An operator of a publicly-funded project disturbing one or more acres of land shall submit a copy of the SWPPP to the Department for review at the address given in Part 2.3

2.1.5 Starting January 1, 2012 and continuing thereafter an operator of a construction activity that may discharge to a high quality water that constitutes an outstanding national resource, such as a water of a national or state park or wildlife refuge or a water of "exceptional recreational or ecological significance" (as described in Appendix C), must contact the Department at the address in Part 2.3 thirty (30) calendar days prior to the planned start of construction activities to discuss additional submittal requirements. These additional submittal requirements may include the following:

2.1.5.1 Development of a site-specific antidegradation analysis using the DEC Policy *Interim Antidegradation Implementation Methods* dated July 14, 2010, or a subsequent version;

2.1.5.2 Submittal of the antidegradation analysis and the SWPPP to the Department at least fourteen (14) calendar days prior to filing the NOI for the project; and

2.1.5.3 Receipt of the Department's written reply according to Part 2.5 prior to commencement of construction.

2.1.6 A permittee proposing to use an active treatment system in accordance with Part 4.5.4.3 must submit information required by the Department (to the address given in Part 2.3) at least fourteen (14) calendar days prior to use of the active treatment system at the site.

2.2 How to Obtain Authorization

2.2.1 To obtain coverage under this permit, an operator must:

2.2.1.1 Meet the eligibility requirements of Part 1.4;

2.2.1.2 Develop a SWPPP according to the requirements in Part 5.0 prior to filing for an Notice of Intent (NOI);

2.2.1.3 Prepare and submit a complete and accurate NOI, as described in the instructions with the NOI form, prior to commencing construction activities;

2.2.1.4 Pay the general permit authorization fees in accordance with 18 AAC 72;

2.2.1.5 Meet the additional authorization requirements in Part 2.1(if applicable); and

2.2.1.6 Be granted authorization to discharge to be issued by the Department, and wait seven (7) calendar days thereafter before commencing construction activities, as described in Part 2.5).

2.2.2 Submission of the NOI demonstrates the operator's intent to be covered by this permit; it is not a determination by DEC that the operator has met the eligibility requirements for the permit. A discharge is not authorized if:

2.2.2.1 The operator's NOI is incomplete or inaccurate;

2.2.2.2 DEC notifies the operator that further evaluation is necessary or the operator must obtain coverage under an individual permit or an alternative general permit; or

2.2.2.3 The discharge is not eligible for coverage under this permit.

2.2.3 If the information on the NOI is incorrect or is missing, the NOI will be deemed incomplete and permit authorization will not be granted. A complete NOI shall include the following information:

2.2.3.1 The operator information includes: organization name, contact person, complete mailing address, telephone number and fax number and email address if available;

2.2.3.2 The billing contact information includes: organization name, contact person, complete mailing address, telephone number and fax number and email address if available. If the billing contact information is the same as the operator information, check the box on the NOI indicating that it is the same;

2.2.3.3 The project/site information includes: project/site name, a physical location, the nearest city and zip code, the borough, latitude and longitude, how the latitude and longitude were determined, and estimated project start date and completion date, and an estimate of the area to be disturbed;

2.2.3.4 The SWPPP information includes: acknowledgement of whether a SWPPP has been prepared in advance of filing the NOI, the location of the SWPPP- either with the operator, the project/site, or other location the name of SWPPP contact if different than the operator contact;

2.2.3.5 The discharge information includes: the name(s) of the waterbodies to which the project discharges, identification if the project/site discharges to a waterbody that is impaired or has a TMDL, if so, confirmation that the discharge is consistent with the assumptions and requirements of the TMDL;

2.2.3.6 The treatment chemical information for those projects that use treatment chemicals includes: the name(s) of the polymers, flocculants, or other treatment chemicals used; and

2.2.3.7 The signatory information in compliance with Appendix A, Part 1.12.

2.3 How to Submit an NOI

Each operator must submit an NOI to be authorized to discharge under this permit. The complete and accurate NOI can be submitted either:

2.3.1 Electronically (strongly encouraged) at www.dec.state.ak.us/water/wnpspc/stormwater/stormwater.htm. Operators who submit an eNOI must pay the general permit authorization fee during a step in the eNOI process where payment is required.

2.3.2 Through use of a paper form (available at the above web site) and then submit that paper form to:

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Program
Storm Water NOI
555 Cordova Street
Anchorage, AK 99501

2.3.3 Each operator submitting the NOI via paper form must submit a check payable to the "State of Alaska" for the amount of the General Permit Authorization Fee, in accordance with 18 AAC 72. Note: the electronic submittal will likely be processed more quickly and result in faster receipt of an authorization to discharge.

2.4 Submission Deadlines

2.4.1 New Projects

The operator must submit a complete and accurate NOI consistent with Parts 2.2.1 and 2.3 to obtain coverage under this permit for a new project prior to commencement of construction activities.

2.4.2 Permitted Ongoing Projects

An ongoing permitted project is one that commenced construction activities prior to the effective date of this permit and where the discharges from that project were authorized under the EPA 2003 CGP, the EPA 2008 CGP, or the DEC 2010 CGP (AKR100000). To continue coverage, a permittee must:

2.4.2.1 Continue to comply with the terms and conditions of the applicable EPA-issued CGP or DEC-issued CGP under which their original NOI was submitted until the permittee has been granted coverage under this permit or an alternative APDES permit, or submits a NOT consistent with the applicable EPA-issued CGP or DEC-issued CGP;

2.4.2.2 Update the existing SWPPP as necessary to comply with the requirements of Part 3.0, Part 4.0 and Part 5.0 before submitting a new NOI, as described in Part 2.4.2.3; and

2.4.2.3 Submit a complete and accurate new NOI within one hundred fifty (150) calendar days of the effective date of this permit according to Part 2.3.

2.4.2.4 Note: If the permittee is eligible to submit a NOT (e.g., construction is finished and final stabilization has been achieved) before the 150th day, a new NOI is not required to be submitted, provided a NOT is submitted within one hundred fifty (150) calendar days after the effective date of this permit.

2.4.3 Change of Permittee for a Permitted Ongoing Project

2.4.3.1 A permittee who submitted a complete and accurate new NOI consistent with Part 2.4.2 for a permitted project must file an NOI modification form consistent with Part 2.7 if there is a change in the permittee after filing the updated new NOI.

2.4.3.2 A permittee of an ongoing project transfers ownership of the project, or a portion thereof, to a different operator, that operator will be required to submit a complete and accurate new NOI for a new project in accordance with Part 2.3.1.

2.4.4 **Unpermitted Ongoing Project**

An operator who commenced construction activities prior to the effective date of this permit, did not receive authorization to discharge for that project, and now wishes to obtain coverage under this permit, must submit a complete and accurate NOI consistent with Part 2.3 within 14 calendar days of the effective date of this permit to minimize the time that discharges from the project will continue to be unauthorized. DEC reserves the right to take enforcement action for any unpermitted discharges or permit non-compliance that occurs between the commencement of construction and discharge authorization.

2.4.5 **Late Notification**

An operator is not prohibited from submitting an NOI after initiating clearing, grading, excavation activities, or other construction activities. When a late NOI is submitted, authorization for discharges occurs consistent with Part 2.5, and DEC reserves the right to take enforcement action for any unpermitted discharges or permit non-compliance that occurs between the commencement of construction and discharge authorization.

2.5 Date of Authorization to Begin Discharge

An operator is authorized to discharge storm water from construction activities under the terms and conditions of this permit seven (7) calendar days after DEC's acknowledgment of receipt of the operators complete and paid for NOI is posted on DEC's APDES website (http://www.dec.state.ak.us/water/wnpspc/stormwater/stormwater.htm), unless DEC notifies the operator that the authorization is delayed. Once the authorization is granted by the Department the applicant is then considered a permittee covered by this permit.

2.6 Continuation of Expired General Permit

If this permit is not reissued prior to the expiration date, it will be administratively continued in accordance with 18 AAC 83.155(c) and remain in force and effect so long as prior to the expiration date, the permittee complies with the requirements of 18 AAC 83.155(c)(1)(e.g., the permittee submits a timely application for a new permit (i.e., NOI) and DEC has determined that the application is complete). A permittee granted permit coverage prior to the expiration date will automatically be covered under the continued permit until the earliest of:

2.6.1 Reissuance or replacement of this permit, at which time the permittee must comply with the conditions of the new permit, as it applies to ongoing projects, to maintain authorization to discharge;

2.6.2 Submittal of a NOT;

2.6.3 Issuance of an individual permit for the project's discharges; or

2.6.4 A formal permit decision by DEC to not reissue this general permit, at which time the permittee must seek coverage under an alternative general permit or an individual permit.

2.7 Submittal of a Modification to Original NOI

2.7.1 A permittee must file an NOI modification form with DEC to update or correct information on the original NOI (e.g. start or end dates, small changes in number of acres to be disturbed, change in decision to use (or not use) treatment chemicals, or location of storm water pollution prevention plan (SWPPP)) using a paper form available on DEC's website http://dec.alaska.gov/water/wnpspc/stormwater/index.htm. No General permit authorization fee is required when submitting an NOI modification.

2.7.2 The permittee must submit a NOT and then a new NOI instead of an NOI modification form when the operator has changed, the original NOI indicated that the disturbed area was between one and five acres, and the project will now disturb more than five acres, or the original project disturbed more than five acres and the size of the project area has increased by more than 50%. No general permit authorization fee is required when submitting an NOI modification.

2.7.3 Submit the paper form to:

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Program
Storm Water NOI
555 Cordova Street
Anchorage, AK 99501

2.8 Requiring Coverage under an Individual Permit or an Alternative General Permit

2.8.1 DEC may terminate or revoke a permittee's coverage under this permit and may require the permittee to apply for and/or obtain either an APDES individual permit or coverage under an alternative APDES general permit. If DEC requires a permittee to apply for an APDES individual permit, DEC will notify the permittee in writing that an individual permit application is required. This notification will include a brief statement of the reasons for this decision and an application form. In addition, the notice will set a deadline to file the application, and will include a statement that on the effective date of issuance or denial of the APDES individual permit, or the effective date of coverage or denial of coverage under the alternative general permit as it applies to the permittee, coverage under this general permit will automatically terminate. An application must be submitted to DEC at the address in Part 2.3. DEC may grant additional time to submit the application upon a written request by the permittee that is received prior to expiration of the deadline. If the permittee is covered under this permit and fails to submit an APDES individual permit application in a timely manner as required by DEC, then the coverage under this permit is automatically terminated at the end of the day specified by DEC as the deadline for application submittal.

2.8.2 An operator of a large or small construction activity may request to be excluded from coverage under this general permit by applying for an individual permit. The operator must submit an individual permit application in accordance with 18 AAC 83.305 – 83.385 to DEC no later than ninety (90) days after publication of the general permit to the address in Part 2.3. DEC will grant the request by issuing an individual permit or coverage under an alternative general permit if DEC deems that the reasons cited are adequate to support the request.

2.8.3 When an APDES individual permit is issued to an operator of a large or small construction activity (as an entity that is otherwise subject to this permit) or is authorized to discharge under an alternative APDES general permit, the coverage under this permit is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. If the owner or operator of a large or small construction activity (as an entity that is otherwise subject to this permit) is denied an APDES individual permit or an alternative APDES general permit, the coverage under this permit is automatically terminated on the date of such denial, unless otherwise specified by DEC.

2.8.4 An operator of a metal mining project who had filed for and received coverage under a previous issuance of the CGP must now apply for permit coverage under Sector G of the APDES Multi-Sector General Permit AKR050000 (MSGP) within ninety (90) days of the effective date of this permit.

PART 3.0 COMPLIANCE WITH STANDARDS AND LIMITS

3.1 Requirements for all Projects

3.1.1 A permittee must select, install, implement and maintain control measures (described in Part 4.0) at the construction site that minimize pollutants in the discharge as necessary to meet water quality standards (18 AAC 70). A permittee must comply with all permit conditions with respect to installation and maintenance of control measures, inspections, monitoring (if necessary), corrective actions, reporting and recordkeeping.

3.1.2 In general, except in situations explained in Part 3.1.3, the storm water controls planned, developed, implemented, maintained, and updated by the permittee that are consistent with the provisions of Parts 3.0 through 9.0 are considered to meet the stringent requirements of this permit to ensure that the discharges do not cause or contribute to an excursion above any water quality standard (18 AAC 70).

3.1.3 At any time after authorization, DEC may determine that the permittee's storm water discharges will cause, have reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. If such a determination is made, DEC may require the permittee to:

3.1.3.1 Take corrective actions and modify storm water controls in accordance with Part 8.0 to adequately address the identified water quality concerns;

3.1.3.2 Submit valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or

3.1.3.3 Cease discharges of storm water from the construction project and submit an individual permit application in accordance with Part 2.8.

3.1.4 All written responses required under this part must include a signed certification consistent with Appendix A, Part 1.12.

3.2 Discharge to Impaired Water Body

If the permittee is discharging into a water body with an EPA-established or approved Total Maximum Daily Load (TMDL), the permittee must implement measures to ensure that the discharge of pollutants from the site is consistent with the assumptions and requirements of the EPA-established or approved TMDL, including ensuring that the discharge does not exceed specific wasteload or load allocation that has been established that would apply to the discharge. The permittee must also evaluate the recommendations in the Implementation Section of the TMDL and incorporate applicable measures into the operations.

3.2.1 **Discharging to a CWA §303(d)-Listed Water Body (Category 5) (e.g., Turbidity or Sediment)**

3.2.1.1 A permittee who disturbs more than twenty (20) acres of land at one time, including non-contiguous land disturbances that take place at the same time and are part of a larger common plan of development or sale, and discharges to a water body listed on the CWA §303(d) list for turbidity or sediment must conduct turbidity sampling at the following locations to evaluate compliance with the water quality standard for turbidity. A permittee must develop, implement, and modify as necessary a monitoring plan consistent with Part 7.0

that specifies the sampling frequency and location. The permittee must sample the:

3.2.1.1.1 Upstream turbidity in the §303(d)-listed receiving water body at a representative location (upgradient)) from the point of storm water discharge into the §303(d)-listed receiving water body or outside the area of influence of the storm water discharge; and

3.2.1.1.2 Downstream turbidity at a representative location downstream from the point of discharge into the §303(d)-listed receiving waterbody, inside the area of influence of the storm water discharge. Alternatively, the discharge turbidity may be measured at the point where the storm water discharge leaves the construction site, rather than when it is in the receiving water body.

3.2.1.2 Based on the sampling (as described in Part 3.2.1.1.1 and 3.2.1.1.2), the resulting water quality must meet the state water quality standard for turbidity, as follows: the downstream sample may not exceed 5 nephelometric turbidity units (NTU) above the upstream sample when the upstream turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the upstream turbidity is more than 50 NTU, not to exceed a maximum increase of 25 NTU.

3.2.1.3 If the difference between the upstream and downstream sample exceeds the water quality standard for turbidity, the permittee must:

3.2.1.3.1 Review the SWPPP and the control measures selected for the project and make appropriate improvements and corrections to the control measures within seven (7) calendar days of the date the discharge exceeds the water quality standard;

3.2.1.3.2 Update the SWPPP with the improvements and changes to the control measures;

3.2.1.3.3 Submit a corrective action report consistent with Part 9.2; and

3.2.1.3.4 Continue to sample daily until the discharged storm water is less than the water quality standard for turbidity for the receiving water.

3.2.2 Discharging into a Receiving Water Body with an Approved or Established TMDL (Category 4a or 4b) (e.g., Turbidity or Sediment)

3.2.2.1 A discharge of pollutants of concern (e.g., turbidity, sediment, debris, etc.) to waters for which there is an EPA-approved or established TMDL for turbidity or sediment is not eligible for coverage under this permit unless control measures are implemented applicable to discharges necessary for consistency with the assumptions and requirements of such TMDL. If a specific wasteload or load allocation has been established for turbidity or sediment that would apply to the discharge of storm water from the construction site, the permittee must implement necessary steps to meet that allocation. The permittee must also evaluate the implementation measures recommended in the TMDL and incorporate them as appropriate.

3.2.2.2 In a situation where an EPA-approved or established TMDL for turbidity or sediment has specified a general wasteload or load allocation for a pollutant of concern (e.g. turbidity, sediment, debris, etc.) that is applicable to construction storm water discharges, but no specific requirements for construction sites have been identified in the TMDL, the permittee should consult with DEC to confirm that meeting the standards in Parts 3.0 and 4.0 will be consistent with the approved TMDL. Where an EPA-approved or established TMDL has not specified a wasteload or load allocation applicable to construction storm water discharges, but has not specifically excluded these discharges, compliance with the requirements in Parts 3.0 and 4.0 of this permit will generally be assumed to be consistent with the approved TMDL. If the EPA-approved or established TMDL specifically precludes such discharges, the applicant is not eligible for coverage under this permit.

3.3 Protection of Endangered Species

A permittee must protect federally-listed endangered or threatened species, or federally-designated critical habitat.

3.3.1 Coverage under this permit is available only if the storm water discharges, allowable non-storm water discharges, and storm water discharge-related activities, as defined in Appendix C, are not likely to jeopardize the continued existence of any species that are federally-listed as endangered or threatened (listed) under the Endangered Species Act (ESA) or result in the adverse modification or destruction of habitat that is federally-designated as critical under the ESA critical habitat.

3.3.2 The permittee is not eligible to discharge if the storm water discharges, allowable non-storm water discharges, and storm water discharge-related activities, as defined in Appendix C, would cause a prohibited take of federally-listed endangered or threatened species (as defined under section 3 of the ESA and 50 CFR §17.3), unless such takes are authorized under sections 7 or 10 of the ESA.

PART 4.0 CONTROL MEASURES

A permittee covered under this permit must comply with the control measures in this Part, as determined by the site-specific conditions at the location of the construction activity (site). The specific control measures are based on the requirements of the national effluent limitation guidelines that apply to the construction and development industry (40 CFR Part 450). The Department developed the *Alaska Storm Water Guide* to assist permittees with selecting, installing and maintaining the majority of control measures that may be used for projects in Alaska. The selection, design, installation, maintenance, and removal of control measures must address site-specific conditions such as: precipitation - including the amount, frequency, and duration; the nature of resulting storm water runoff (e.g. does the runoff last for a few hours or several days); site topography - such as flat, sloped, hilly, or mountainous; soil characteristics - including the soil types, range of soil particle sizes, thermal conditions; and growing season - such as start, end, and length of growing season.

4.1 Erosion Control Measures

A permittee must comply with the erosion control measures in this Part to minimize soil exposure on the site during construction.

4.1.1 Delineation of Site

A permittee must generally delineate (e.g., with flags, stakes, signs, silt fence etc.) the location of any of the following that apply to the site:

4.1.1.1 All areas where land disturbing activities will occur, including clearing and grading; and

4.1.1.2 Specific areas that will be left undisturbed such as trees, boundaries of sensitive areas, or buffers established under Part 4.1.3.

4.1.2 Minimize the Amount of Soil Exposed during Construction Activity

A permittee must include the following considerations in the selection of control measures and the sequence of project construction as they apply to the project site:

4.1.2.1 Preserve areas of native topsoil on the site, unless infeasible; and

4.1.2.2 Sequence or phase construction activities to minimize the extent and duration of exposed soils.

4.1.3 Maintain Natural Buffer Areas

Starting January 1, 2012 and continuing thereafter a permittee must maintain natural buffer areas at stream crossings and around the edge of any waters of the U.S. that are located within or immediately adjacent to the property where the construction activity will take place in accordance with the following:

4.1.3.1 The buffer must be a minimum of twenty-five (25) feet wide, unless infeasible based on site dimensions, or the width as required by local ordinance.

4.1.3.2 Exceptions are allowed for water dependent activities, specific water access activities, or necessary water crossings.

4.1.3.3 A permittee should, to the extent practicable, use perimeter controls adjacent to buffers, and direct storm water sheet flow to buffer areas to increase sediment removal and maximize storm water infiltration, unless infeasible.

4.1.4 Control Storm Water Discharges and Flow Rates

A permittee must include the following control measures to handle storm water and total storm water volume discharges as they apply to the site:

4.1.4.1 Divert storm water around the site so that it does not flow onto the project site and cause erosion of exposed soils;

4.1.4.2 Slow down or contain storm water that may collect and concentrate within a site and cause erosion of exposed soils;

4.1.4.3 Avoid placement of structural control measures in active floodplains to the degree technologically and economically practicable and achievable;

4.1.4.4 Place velocity dissipation devices (e.g., check dams, sediment traps, or riprap) along the length of any conveyance channel to provide a non-erosive flow velocity. Also place velocity dissipation devices where discharges from the conveyance channel or structure join a water course to prevent erosion and to protect the channel embankment, outlet, adjacent stream bank slopes, and downstream waters; and

4.1.4.5 Install permanent storm water management controls, if present at a site and where practical, so that they must be functional prior to construction of site improvements (e.g., impervious surfaces).

4.1.5 Protect Steep Slopes

A permittee must include the following considerations in the selection of control measures as they apply to the project site:

4.1.5.1 Design and construct cut-and-fill slopes in a manner that will minimize erosion. Applicable practices include, but are not limited to, reducing continuous length of slope with terracing and diversions, reducing slope steepness, and roughening slope surfaces (e.g., track walking);

4.1.5.2 Divert concentrated flows of storm water away from and around the disturbed portion of the slope. Applicable practices include, but are not limited to interceptor dikes and swales, grass-lined channels, pipe slope drains, subsurface drains, check dams; and

4.1.5.3 Stabilize exposed areas of the slope in accordance with Part 4.4.

4.2 Sediment Control Measures

Sediment control measures (e.g. sediment ponds, traps, filters, etc.) must be constructed as one of the first steps in grading. These control measures must be functional before other land disturbing activities take place. A permittee must install, establish and use any of the following control measures that apply to the project site.

4.2.1 Storm Drain Inlet Protection Measures

A permittee must install appropriate protection measures (e.g. filter berms, perimeter controls, temporary diversion dikes, etc.) to minimize the discharge of sediment prior to entry into the inlet for storm drain inlets located on site or immediately downstream of the site. Inlet protection measures must be cleaned or removed and replaced when sediment has filled one-third of the available storage.

4.2.2 Water Body Protection Measures

A permittee must install appropriate protection measures (e.g. velocity dissipation devices in accordance with Part 4.1.4.4) to minimize the discharge of sediment prior to entry into the water body for water bodies located on site or immediately downstream of the site. Protection measures must be cleaned or removed and replaced when sediment has filled one-third of the available storage.

4.2.3 Down-Slope Sediment Controls

A permittee must establish and use down-slope sediment controls (e.g., silt fence or temporary diversion dike) for any portion of the down-slope and side-slope perimeter where storm water will be discharged from disturbed areas of the site.

4.2.4 Stabilized Construction Vehicle Access and Exit Points

A permittee must establish construction vehicle access and exit points which must be stabilized. Access and exit points should be limited to one route, if possible. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts.

4.2.5 Dust Generation and Track-Out from Vehicles

A permittee must minimize the generation of dust through the application of water or other dust suppression techniques and prior to vehicle exit. A permittee must provide an effective way of minimizing off-site vehicle tracking of sediment from wheels to prevent track-out onto paved surfaces.

4.2.6 **Soil Stockpiles**

A permittee must stabilize or cover soil stockpiles, protect with sediment trapping measures, and where possible, locate soil stockpiles away from storm drain inlets, water bodies, and conveyance channels.

4.2.7 **Authorized Non-Storm Water Discharges**

A permittee must minimize any non-storm water authorized by this permit.

4.2.8 **Sediment Basins**, where applicable:

4.2.8.1 For common drainage locations that serve an area with ten (10) or more acres disturbed at one time, a temporary (or permanent) sediment basin that provides storage for a calculated volume of runoff from the drainage area from a 2-year, 24-hour storm, or equivalent sediment control measures, must be installed, maintained, and used where practicable until final stabilization of the site. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent sediment control measures, must be installed and used where practicable until final stabilization of the site. When computing the number of acres draining into a common location, it is not necessary to include flows from offsite areas and flows from on-site areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. In determining whether installing a sediment basin is practicable, the permittee may consider factors such as site soils, slope, available area on-site, etc. In any event, the permittee must consider public safety, especially as it relates to children, as a design factor for the sediment basin, and alternative sediment control measures must be used where site limitations would preclude a safe design.

4.2.8.2 For drainage locations which serve ten (10) or more disturbed acres at one time and where a temporary sediment basin or equivalent controls is not practicable, smaller sediment basins and/or sediment traps should be used. Silt fences, vegetative buffer strips, or equivalent sediment control measures are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions).

4.2.8.3 For drainage locations serving less than ten (10) acres, smaller sediment basins and/or sediment traps should be used. Silt fences, vegetative buffer strips, or equivalent sediment control measures are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of runoff from a 2-

year, 24-hour storm event or 3,600 cubic feet of storage per acre drained is provided.

4.2.8.4 When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface where practicable.

4.2.8.5 Note: installing sediment basins in the presence of permafrost is challenging and might not be practicable in some instances because permafrost creates poor surface drainage that hinders the infiltration of runoff. Also, the excavation of permafrost in summer can trigger thawing and instability.

4.3 Dewatering

4.3.1 If a construction activity includes excavation dewatering and has a discharge that could adversely impact a local drinking water well, an DEC-identified contaminated site, or a waters of the U.S., the permittee must review the DEC Excavation Dewatering General Permit (2009DB003), or most current version, for specific requirements the permittee may have to comply with in addition to the conditions of this permit.

4.3.2 A discharge from eligible dewatering activities, including discharges from dewatering of trenches and excavations are prohibited unless treated by appropriate control measures. Appropriate control measures include, but are not limited to, sediment basins or traps, dewatering tanks, weir tanks, or filtration systems designed to remove sediment.

4.4 Soil Stabilization

4.4.1 **Minimum Requirements for Soil Stabilization**

A permittee must stabilize all disturbed areas of the site to minimize on-site erosion and sedimentation and the resulting discharge of pollutants according to the requirements of this Part. A permittee must ensure that existing vegetation is preserved wherever possible and that disturbed portions of the site are stabilized. Applicable stabilization control measures include, but are not limited to: temporary and permanent seeding, sodding, mulching, rolled erosion control product, compost blanket, soil application of PAM, the early application of gravel base on areas to be paved, and dust control. A permittee should avoid using impervious surfaces for stabilization. See the Alaska Plant Materials Center's *A Revegetation Manual for Alaska* at http://plants.alaska.gov for help in efforts to select appropriate seed mixes and some information on methods for revegetation. Also see the manual for coastal Alaska, *Coastal Revegetation & Erosion Control Guide* at http://plants.alaska.gov

4.4.2 Temporary Stabilization

A permittee must consider the selection and implementation of control measures and the sequence of project construction as they apply to the project site.

4.4.2.1 For any portion of the site where a permittee has established temporary grading in that portion of the site and for areas where clearing, grading, excavating or other earth disturbing activities have temporarily ceased the permittee must:

4.4.2.1.1 For those areas of the state with a mean annual precipitation greater than forty (40) inches initiate temporary stabilization measures as soon as practicable or within seven (7) calendar days; or

4.4.2.1.2 For those areas of the state with a mean annual precipitation less than or equal to forty (40) inches initiate temporary stabilization measures as soon as practicable or within fourteen (14) calendar days.

4.4.2.2 For those areas of the state with a mean annual precipitation less than or equal to fifteen (15) inches and where initiating perennial vegetative stabilization measures is not possible within fourteen (14) calendar days after construction activity has temporarily ceased, vegetative or non-vegetative stabilization measures must be initiated as soon as practicable.

4.4.2.3 The permittee must identify the anticipated dates of fall freeze-up and spring thaw (see Appendix C) for the site and use those dates to plan for winter shutdown. For the purpose of planning ahead frozen ground by itself is not considered an acceptable control measure for stabilization. Where temporary stabilization by the 7^{th} day or 14^{th} day (as applicable) is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable following the actual spring thaw.

4.4.3 Final Stabilization

A permittee must consider the selection and implementation of control measures and the sequence of project construction as they apply to the project site.

4.4.3.1 For any portion of the site where a permittee has established final grading in that portion of the site and for areas where clearing, grading, excavating or other earth disturbing activities have permanently ceased the permittee must:

4.4.3.1.1 For those areas of the state with a mean annual precipitation greater than forty (40) inches initiate final stabilization measures within seven (7) calendar days; or

4.4.3.1.2 For those areas of the state with a mean annual precipitation less than or equal to forty (40) inches initiate final stabilization measures within fourteen (14) calendar days.

4.4.3.2 Within seven (7) calendar days of initiating final stabilization (as defined in Appendix C), the permittee is required to complete or continue maintenance for:

4.4.3.2.1 All soil conditioning, seeding, watering, mulching, and any other required activities for the establishment of vegetative cover;

4.4.3.2.2 The installation or application of all such measures for vegetative cover; and/or

4.4.3.2.3 The placement of non vegetative permanent stabilization measures.

4.4.3.3 For those areas of the state with a mean annual precipitation less than or equal to forty (40) inches and where initiating perennial final vegetative stabilization measures is not possible within fourteen (14) calendar days after construction activity has finally ceased, vegetative or non-vegetative stabilization measures must be initiated as soon as practicable.

4.4.4 Stabilization Requirements for Terminating Permit Coverage

Final stabilization (as defined in Appendix C), as required to terminate this permit under Part 10.1.1, must be achieved on all portions of the site and all ground disturbing construction activity or use of related support activities must be completed.

4.5 Treatment Chemicals

The use of treatment chemicals to reduce erosion from the land or sediment in a storm water discharge is allowed provided that all of the requirements of this Part are met.

4.5.1 Treatment Chemicals

Documentation of treatment chemicals selected for use at a site must include, at a minimum, the following information:

4.5.1.1 Manufacturer and/or supplier provided Material Safety Data Sheets, specifications, and instructions for the transport, handling, storage, application, and disposal of the treatment chemical;

4.5.1.2 Approval by EPA for potable water use;

4.5.1.3 Approval by EPA or the states of California, Minnesota, Oregon, Washington, or Wisconsin for use in controlling erosion or sediment runoff from agricultural land or construction projects;

4.5.1.4 Manufacturer and/or supplier provided test results recognized by EPA or the states of California, Minnesota, Oregon, Washington, or Wisconsin that demonstrate that the treatment chemical is non-toxic to aquatic organisms when applied following the manufacturer or supplier recommended method of use and rate of application;

4.5.1.5 A permittee is prohibited from using cationic polymers, except for the use of chitosan as part of an Active Treatment System in compliance with Part 4.5.4.3; and

4.5.1.6 The names and titles of person(s) who handle and apply treatment chemicals at the construction site, the title of relevant training and date(s) the person(s) who apply the chemicals received training in the proper handling and application of treatment chemicals.

4.5.2 Treatment Chemical Use

4.5.2.1 A permittee must train employees who handle treatment chemicals to comply with the information required by 4.5.1; and

4.5.2.2 A permittee must handle, store and dispose of treatment chemicals, waste chemicals, or flocculants in appropriate leak proof containers under a storm-resistant cover or surrounded by secondary containment structures so as to prevent their discharge to the waters of the U.S.

4.5.3 Project Site Conditions

Treatment chemicals are typically developed, tested, and approved in regions of the country that may have soils, soil and water temperatures, and other site conditions significantly different from Alaska. These differences must be considered in the selection of the treatment chemicals for use at the Alaskan site.

4.5.3.1 A permittee must make certain the selected treatment chemical is appropriate for soils at the site through project-specific tests of the chemical with local soils or product use data on projects with similar soils; and

4.5.3.2 A permittee must ensure the selected treatment chemical is appropriate for the site topography, amount of precipitation expected at the site, and type of use.

4.5.4 Application of Treatment Chemicals

The application of treatment chemicals shall be in combination with appropriate physical control measures (e.g., rolled erosion control products, ditch check dams, sediment basins, sediment bags, filtration, etc.) to ensure effectiveness of the treatment chemical. The use of treatment chemicals is not considered a substitute for appropriate physical control measures and does not preclude any other requirement of this permit.

4.5.4.1 **Land Application**

4.5.4.1.1 A permittee shall comply with all Material Safety Data Sheet requirements and follow the manufacturer and/or suppliers written recommended application rate, including site-specific considerations;

4.5.4.1.2 A permittee shall use an application method that provides uniform coverage of the target area and avoids drift to non-target areas;

4.5.4.1.3 The application must always be a sufficient distance upgradient or upstream to allow adequate mixing and reaction prior to reaching a pre-constructed sediment trap, basin inflow structure, or filtering device of sufficient width to ensure adequate removal of sediments laden with treatment chemicals before discharges reach waters of the U.S.; and

4.5.4.2 **Water Application (including conveyance channel)**

4.5.4.2.1 A permittee shall follow the manufacturer and/or suppliers written recommended application rate, including site-specific considerations;

4.5.4.2.2 The application shall always be upstream from a pre-constructed sediment trap, basin inflow structure, vegetated swale, filtering device or a vegetated buffer of sufficient width to ensure adequate removal of sediments laden with treatment chemicals before discharges reach waters of the U.S.;

4.5.4.2.3 Treatment chemicals shall not be applied directly to a water of the U.S.; and

4.5.4.2.4 Application through the use of manufactured products (e.g. gel bars, gel logs, floc blocks, etc.) shall be used in combination with adequate ditch check dams, settling basins, or other physical control measures designed to settle out chemically treated soils and minimize the presence of treatment chemicals before discharges reach waters of the U.S.. At a minimum there must be at least 100 feet of ditch length downstream of the last manufactured product prior to reaching a water of the U.S. to provide a place for sedimentation to occur.

4.5.4.3 **Active Treatment Systems**

A permittee who uses an Active Treatment System as a control measure must submit information required by the Department for review at least fourteen (14) days prior to start of operation of the active treatment system at the project. At a minimum, the information must provide details on the following: relevant information required by Part 4.5.1, engineering plans, description of treatment process, site conditions (including soil types), treatment chemicals, dose rates, monitoring to be conducted, expected residual chemical, proper operator training, methods for storage, procedures for spill prevention and containment, operation and maintenance, and record keeping and reporting. Specific submittal requirements can be found at the DEC storm water website at http://www.dec.state.ak.us/water/wnpspc/stormwater/sw_construction.htm.

4.6 Prohibited Discharge

4.6.1 **A permittee is prohibited from discharging the following from the site:**

4.6.1.1 Wastewater from concrete washout, unless managed by an appropriate control measure;

4.6.1.2 Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

4.6.1.3 Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and

4.6.1.4 Soaps or solvents used in vehicle and equipment washing.

4.7 Good Housekeeping Measures

A permittee must design, install, implement, and maintain effective good housekeeping measures to prevent and/or minimize the discharge of pollutants. A permittee must include appropriate measures for any of the following activities that are used at the site.

4.7.1 **Washing of Equipment and Vehicles and Wheel Wash-Down**

If a permittee conducts washing of equipment or vehicles and/or wheel wash-down at the site the permittee must comply with the following requirements:

4.7.1.1 Designate areas to be used for washing of equipment and vehicles and/or wheel wash-down and conduct such activities only in these areas;

4.7.1.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm drain inlets, and waters of the U.S.;

4.7.1.3 Treat all wash water in a sediment basin or use alternative control measures that provide equivalent or better treatment prior to discharge; and

4.7.1.4 To comply with the prohibition in Part 4.6.1.4, the discharge of soaps and solvents used in equipment and vehicle washing and/or wheel wash-down is strictly prohibited.

4.7.2 Fueling and Maintenance Areas

If a permittee conducts fueling and/or maintenance activities for equipment and vehicles at the site the permittee must comply with the following requirements:

4.7.2.1 Designate areas to be used for fueling and/or maintenance of equipment and vehicles and conduct such activities only in these areas (the designated area may move from one location to another on linear projects);

4.7.2.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm drain inlets and waters of the U.S.;

4.7.2.3 Minimize the exposure to precipitation and storm water or use secondary containment structures designed to eliminate the potential for spills or leaked chemicals; and

4.7.2.4 To comply with the prohibition in Part 4.6.1.3, a permittee must:

4.7.2.4.1 Clean up spills or contaminated surfaces immediately;

4.7.2.4.2 Ensure adequate clean up supplies are available at all times to handle spills, leaks, and disposal of used liquids;

4.7.2.4.3 Use drip pans or absorbents under or around leaky equipment and vehicles; and

4.7.2.4.4 Dispose of liquid wastes or materials used for fueling and maintenance in accordance with Part 4.7.6.

4.7.3 Staging and Material Storage Areas

If a permittee maintains staging and material storage areas at the site the permittee must comply with the following requirements:

4.7.3.1 Designate areas to be used for staging and material storage areas;

4.7.3.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm drain inlets, and waters of the U.S; and

4.7.3.3 Minimize the exposure to precipitation and storm water and vandalism for all chemicals, treatment chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment.

4.7.4 Washout of Applicators/Containers used for Paint, Concrete, and Other Materials

If a permittee conducts washing of applicators and/or containers used for paint, concrete, and other materials at the site, the permittee must comply with the following requirements:

4.7.4.1 Designate areas to be used for washout;

4.7.4.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm drain inlets, and waters of the U.S.;

4.7.4.3 Direct all concrete, paint, and other material washout activities into a lined, water-tight container or pit to ensure there is no discharge into the underlying soil and onto the surrounding areas;

4.7.4.4 Dispose of liquid wastes in accordance with Part 4.7.6; and

4.7.4.5 For concrete washout areas, remove hardened concrete waste when it has reached ½ the height of the container or pit and dispose of in accordance with Part 4.7.6.

4.7.5 Fertilizer or Pesticide Use

If a permittee uses fertilizers or pesticides the permittee must comply with the following requirements:

4.7.5.1 Application of fertilizers and pesticides in a manner and at application rates that will minimize the loss of chemical to storm water runoff. Manufacturers' label requirements for application rates and disposal requirements must be followed; and

4.7.5.2 Use pesticides in compliance with federal, state and local requirements.

4.7.6 Storage, Handling, and Disposal of Construction Waste

If a permittee stores, handles and/or disposes of construction waste at the site, the permittee must comply with the following requirements:

4.7.6.1 Locate areas dedicated for management or disposal of construction waste, to the extent practicable, away from storm water conveyance channels, storm drain inlets, and waters of the U.S.;

4.7.6.2 Dispose of all collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other domestic wastes according to federal, state and local requirements;

4.7.6.3 Store hazardous or toxic waste in appropriate sealed containers and dispose of these wastes in accordance with manufactures recommended method of disposal or federal, state or local requirements; and

4.7.6.4 Provide containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the storm water drainage system or receiving water. Clean or replace sanitation facilities and inspect them regularly for leaks and spills.

4.8 Spill Notification

4.8.1 A permittee is prohibited from discharging hazardous substance or oil from a spill or other release.

4.8.2 Where a leak, spill, or release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under 40 CFR Part 110, 40 CFR Part 117 or 40 CFR Part 302 occurs during a 24-hour period, the permittee must provide notice to the National Response Center (NRC) (800) 424-8802 during normal business hours and call the nearest DEC Area Response Team Office-Southeast (Juneau) 465-5340; Central (Anchorage) 269-3063; or Northern (Fairbanks) 451-2121. Outside of normal business hours, the permittee must call (800) 478-9300 as soon as the permittee has knowledge of the discharge.

4.8.3 Within seven (7) calendar days of knowledge of the release, the permittee must provide a description of the release, the circumstances leading to the release, and the date of the release to the nearest DEC Area Response Team Office, in Part 4.5.2. The permittee must also implement measures to prevent the reoccurrence of such releases and to respond to such releases.

4.9 Permanent Storm Water Management Control

A permittee must comply with applicable APDES MS4 permit requirements and local requirements as well as the applicable requirements under 18 AAC 72.600 (e.g., DEC-approved engineering plans for nondomestic wastewater) regarding the design and installation of permanent storm water management controls. Structural measures should be placed on upland soils to the degree practicable and achievable.

4.9.1 A permittee who constructs, alters, installs, modifies, or operates any part of a permanent storm water management control at a site and is located outside a municipality operating under an APDES MS4 permit must submit a copy of the engineering plans in accordance with 18 AAC 72.600 to DEC for review at the address in Part 2.3 at least thirty (30) calendar days before the commencement of construction.

4.9.2 A permittee who constructs, alters, installs, modifies, or operates any part of a permanent storm water management control measure at a site and is located inside a municipality operating under an APDES MS4 permit must submit a copy of the required submittal information to the respective MS4 operator. See Part 2.1 for addresses of where to submit information.

4.10 Winter Considerations

4.10.1 Winter Shutdown

A permittee who temporarily ceases construction for the winter and plans to resume construction the next summer must plan for winter shutdown. The permittee must identify the anticipated dates of fall freeze-up and spring thaw (see Appendix C) for their site and use these dates to plan for winter shutdown. For the purpose of planning ahead frozen ground by itself is not considered an acceptable control measure for stabilization. A permittee must provide for the following prior to, during, and at the conclusion of winter shutdown:

4.10.1.1 Temporary or permanent stabilization for conveyance channels;

4.10.1.2 Temporary or permanent stabilization for disturbed slopes, disturbed soils, and soil stockpiles; and

4.10.1.3 Erosion and sediment control measures in anticipation of spring thaw.

4.10.2 Winter Construction

In several areas of Alaska, winter construction provides opportunities for construction not available during summer months. Permit coverage is not required for the construction of ice roads or the placement of sand or gravel on frozen tundra with no excavation or potential to pollute waters of the U.S. This permit does address those construction activities that have the potential for erosion or sediment runoff during spring thaw and summer rainfall. A permittee operating winter construction activities must plan for using appropriate control measures to minimize erosion or sediment runoff during spring thaw and summer rainfall. The *Alaska Storm Water Guide*, Chapters 3 and 4, provide guidance on the selection, design, and installation of winter construction practices and controls.

4.10.3 Late Winter Clearing

Cutting of trees and brush while the ground is frozen, without disturbing the vegetative mat, for the purpose of clearing in accordance with the U.S. Fish & Wildlife Service "Recommended Time Periods for Avoiding Vegetation Clearing" is allowed prior to the submittal of a project NOI. If the cutting occurs after the onset of spring thaw (as defined in Appendix C), conditions that consist of above freezing temperatures that cause melting of snow, then the permittee must develop a SWPPP and file an NOI, and receive authorization for coverage under this permit from DEC, and otherwise comply with the terms of this permit prior to such clearing.

4.11 Maintenance of Control Measures

4.11.1 A permittee must maintain all control measures, good housekeeping measures, and other protective measures in effective operating condition. If site inspections required by Part 6.0 identify control measures, good housekeeping measures, or other protective measures that are not operating effectively, the permittee must implement corrective actions in accordance with Part 8.0.

4.11.2 If existing control measures need to be modified or if additional control measures are necessary for any reason, the permittee must complete any corrective action in accordance with Part 8.2.

4.11.3 A permittee must remove sediment from silt fences, check dams, berms or other controls before the accumulated sediment reaches one-half (½) the distance up the above-ground height (or it reaches a lower height based on manufacturer's specifications) of the control measure. For sediment traps or sediment ponds, the permittee must remove accumulated sediment when the design capacity has been reduced by fifty (50%) percent.

4.12 Storm Water Lead and Training of Employees

A permittee must identify one "qualified person " (as defined in Appendix C) as the storm water lead to ensure the control measures described in the SWPPP are implemented as written, or modified as necessary, during construction. The qualifications and training for the storm water lead, SWPPP preparer, storm water inspector, and monitoring staff for a site varies with the size of the project (see definition for "qualified person" in Appendix C). A permittee must ensure that employees and subcontractors receive adequate training to ensure proper installation, maintenance, and removal of the control measures described in the SWPPP for the project.

4.13 Applicable Federal, State, Tribal, or Local Requirements

A permittee must ensure that the storm water control measures implemented at the site are consistent with all applicable federal, state, tribal, or local requirements for soil and erosion control and storm water management.

PART 5.0 STORM WATER POLLUTION PREVENTION PLAN

5.1 Storm Water Pollution Prevention Plan (SWPPP)

A SWPPP must be developed for each site covered by this permit, and the control measures implemented at the site must be documented in the SWPPP. The SWPPP is intended to document consideration of site-specific conditions in the selection, design, installation, and implementation of control measures that are being used to comply with the requirements set forth in Parts 3.0 and 4.0.

The SWPPP must, at a minimum:

5.1.1 Include the information described in Part 5.0.

5.1.2 Be implemented as written, including any modifications for changes in design or field conditions, until the submittal of the NOT.

5.1.3 Be developed by a “qualified person” (as defined in Appendix C).

5.1.4 Be signed and certified in accordance with Appendix A, Part 1.12.

5.2 Deadlines for SWPPP Preparation

5.2.1 An operator must prepare a SWPPP before submitting the NOI for coverage under this permit.

5.2.2 A permittee with an ongoing project with authorized coverage under a previous construction general permit and a SWPPP that was developed based on that permit must review and update the SWPPP prior to submitting the NOI for coverage under this permit (see Part 2.4.2.2).

5.2.3 A permittee must provide a copy of the applicable portions of the SWPPP, or site – specific training to each subcontractor who engages in soil-disturbing activities prior to the subcontractor conducting any soil-disturbing activity. Any significant revisions to the SWPPP that affect the subcontractor’s soil-disturbing activities must be provided to the subcontractor in a timely manner.

5.3 SWPPP Contents

At a minimum, the SWPPP must:

5.3.1 Permittee

Identify the permittee for the site and any subcontractors that may work on the site, including the areas where the subcontractors may be or are expected to conduct activities covered by this permit.

5.3.2 Storm Water Contact(s)

Identify the following qualified person(s) responsible for the following (Note: A small project may have all these responsibilities carried out by one person):

5.3.2.1 Storm Water Lead;

5.3.2.2 Updating the SWPPP according to Part 5.9;

5.3.2.3 Conducting inspections according to Part 6.0;

5.3.2.4 Conducting monitoring (if applicable) according to Part 7.0; and

5.3.2.5 Operating an Active Treatment System (if applicable) according to 4.5.4.3.

5.3.3 **Project Site-Specific Conditions**

Briefly describe the existing site-specific conditions, including:

5.3.3.1 The mean annual precipitation based on the nearest appropriate weather station;

5.3.3.2 Site conditions such as soils, topography, drainage patterns, approximate growing season, and vegetation; and

5.3.3.3 Receiving waters, such as impaired waters or waters listed in the Alaska Department of Fish &Game (ADF&G) Anadromous Waters Catalog.

5.3.4 **Nature of Construction Activity**

Briefly describe the nature of the construction activity, including:

5.3.4.1 The function of the project (e.g., low density residential, shopping mall, subdivision, airport, highway, etc.);

5.3.4.2 The intended sequence and timing of activities that disturb soils at the site;

5.3.4.3 Size of the property (in acres) and the total area expected to be disturbed by excavation, grading, or other construction activities (in acres), including support activities described in Part 1.4.1.3;

5.3.4.4 A general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the U.S. within one mile of the site; and

5.3.4.5 Identification of all potential sources of pollutants that may reasonably be expected to affect the quality of the storm water discharges from the site.

5.3.5 **Site Map(s)**

The SWPPP must contain a legible site map (or set of maps for large projects) showing the entire site and identifying the following site-specific information:

5.3.5.1 Boundaries of the property where construction activities will occur;

5.3.5.2 Locations where earth-disturbing activities will occur, noting any phasing of construction activities;

5.3.5.3 Location of areas that will not be disturbed and natural features to be preserved;

5.3.5.4 Direction(s) of storm water flow and approximate slopes anticipated after grading activities;

5.3.5.5 Locations where control measures will be or have been installed;

5.3.5.6 Locations where exposed soils will be stabilized or have been stabilized;

5.3.5.7 Locations where post-construction storm water controls will be or have been installed;

5.3.5.8 Locations of support activities described in Part 1.4.1.3;

5.3.5.9 Locations where authorized non-storm water will be used, including the types that will be used on-site;

5.3.5.10 Locations of all waters of the U.S. (including significant wetland areas e.g., 10,000 square feet in area or greater) on the site and those located within two thousand, five hundred (2,500) feet of the site boundary that may be affected by storm water discharges from the site;

5.3.5.11 Locations where storm water and/or authorized non-storm water discharges to waters of the U.S. (including wetlands) or an MS4; and

5.3.5.12 Sampling Point(s) (if applicable): A permittee subject to the requirements of Parts 3.2 must include the location(s) of the storm water discharge sampling point(s). For a linear project, indicate which sampling points are considered substantially identical, in accordance with Part 7.3.4; and

5.3.5.13 Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.

5.3.6 Control Measures

The SWPPP must describe all control measures that will be installed and maintained to meet the requirements in Parts 3.0 and 4.0. For each major activity identified in the project description, the SWPPP must clearly document the following.

5.3.6.1 The type of control measure to be installed and maintained and the location on the site for installation.

5.3.6.2 The general sequence during the construction process in which the control measures will be installed and made operational, as well as the manufacturer's specifications for installation.

5.3.6.3 The general sequence of the stabilization practices that will be used to achieve temporary or final stabilization on exposed portions of the site as required in Part 4.4.

5.3.6.4 The type of treatment chemicals (Part 4.5) used on the site and a description of the general location of their use at the site, if used at the site.

5.3.6.5 The information submitted to the Department for an active treatment system (part 4.5.4.3), if used at the site.

5.3.6.6 The good housekeeping measures (Part 4.7) that will be used at the site, if any.

5.3.6.7 A description of spill prevention and response measures (Part 4.8) that will be used at the site. The permittee may reference the existence of other plans for Spill Prevention and Control and Countermeasure (SPCC) for the project, provided that a copy of the other plan(s) is kept with the SWPPP.

5.3.6.8 A description of all permanent storm water management controls (Part 4.9) that will be installed at the site, including their location.

5.3.6.9 For projects that expect a winter shutdown, the SWPPP must provide a description of the following:

5.3.6.9.1 Anticipated dates of fall freeze-up and spring thaw (see definition in Appendix C); and

5.3.6.9.2 The methods the permittee will use to address winter considerations (Part 4.10).

5.3.6.10 A description of maintenance procedures for the control measures in accordance with Part 4.11.

5.3.6.11 A description of the training relevant to the construction activity and control measures used at the site (Part 4.12).

5.3.7 Construction and Waste Materials

The SWPPP must describe in general terms the type of construction and waste materials expected to be stored at the site with updates as appropriate and describe the measures for the handling and disposal of all wastes generated at the site, including clearing and demolition debris or other waste soils removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

5.3.8 Locations of Other Industrial Storm Water Discharges

The SWPPP must describe and identify the location of any storm water discharge associated with support activities described in Part 1.4.1.3. This includes storm water discharges from dedicated asphalt plants and dedicated concrete plants that are covered by this permit.

5.3.9 **Non-Storm Water Discharges**

The SWPPP must identify all authorized sources of non-storm water discharges listed in Part 1.4.2, of this permit, except for flows from fire-fighting activities that are combined with storm water discharges associated with construction activity at the site. The SWPPP must also describe the good housekeeping measures used to control or reduce non-storm water discharges.

5.4 Inspections

5.4.1 The SWPPP must document the procedures for performing site inspections specified by this permit, and where necessary, taking corrective actions, in accordance with Parts 6.0 and 8.0. At a minimum the SWPPP must document the following:

5.4.1.1 Person(s) or positions of person(s) responsible for conducting site inspections;

5.4.1.2 Schedules to be followed for conducting inspections;

5.4.1.3 Any inspection checklist or form that will be used; and

5.4.1.4 How conditions found that require corrective action will be addressed.

5.4.2 A record of each inspection and of any corrective actions taken in accordance with Part 8.0 must be retained with the SWPPP for at least three (3) years from the date that permit coverage expires or is terminated.

5.5 Monitoring Plan (if applicable)

5.5.1 A permittee subject to the monitoring requirements in Part 3.2 must include a copy of the monitoring plan that complies with Part 7.0. At a minimum the SWPPP must document the following:

5.5.1.1 Person(s) or positions of person(s) responsible for conducting monitoring;

5.5.1.2 Schedules to be followed for conducting the monitoring;

5.5.1.3 Any monitoring checklist or form that will be used to record monitoring results; and

5.5.1.4 How conditions found that require corrective action will be addressed.

5.5.2 A record of each monitoring event, any form used to collect and summarize data, the annual report submitted to DEC in accordance with Part 9.1, and of any corrective actions taken in accordance with Part 8.0 must be retained with the SWPPP for at least three (3) years from the date that permit coverage expires or is terminated.

5.6 Documentation of Permit Eligibility Related to a Total Maximum Daily Load

The SWPPP must include documentation supporting a determination of permit eligibility with regards to waters that have an EPA-established or approved TMDL. See Part 3.2 for additional information to determine eligibility related to a TMDL. The SWPPP must include the following:

5.6.1 Identification of whether the discharge is identified, either specifically or generally, in an EPA-established or approved TMDL and any associated allocations, requirements, and assumptions identified for the discharge;

5.6.2 Summaries of consultation with state or federal TMDL authorities on consistency of SWPPP conditions with the approved TMDL; and

5.6.3 Measures taken by the permittee to ensure that the discharge of pollutants from the site is consistent with the assumptions and requirements of the EPA-established or approved TMDL, including any specific wasteload or load allocation that has been established that would apply to the discharge.

5.7 Documentation of Permit Eligibility Related to Endangered Species

The SWPPP must include documentation supporting a determination of permit compliance with regard to the Endangered Species Act, including:

5.7.1 Information on whether federally-listed endangered or threatened species or federally-designated critical habitat may be in the project area;

5.7.2 Whether such species or critical habitat may be adversely affected by storm water discharges or storm water discharge-related activities from the project;

5.7.3 Results of the listed species and critical habitat screening determinations;

5.7.4 Any correspondence for any stage of project planning between the USFWS, EPA, National Marine Fisheries Service (NMFS), or others and the permittee regarding listed species and critical habitat, including any notification that delays the permittee's authorization to discharge under this permit; and

5.7.5 A summary description of measures necessary to protect federally-listed endangered or threatened species or federally-designated critical habitat.

5.8 Post-Authorization Records

5.8.1 Copy of Permit Requirements

The SWPPP must contain the following documents

5.8.1.1 A copy of this permit;

5.8.1.2 A copy of the signed and certified NOI form submitted to DEC;

5.8.1.3 Upon receipt, a copy of the letter from DEC authorizing permit coverage and providing the permit tracking number; and.

5.8.1.4 Confirmation of delivery of NOI to DEC or to DEC's electronic NOI system. This may include an overnight, express, or registered mail receipt acknowledgment or electronic acknowledgment from DEC's electronic NOI system.

5.8.2 Additional Documentation Requirements

Summaries of the following information, or copies of the reports, must be maintained with the SWPPP by the permittee following authorization under this permit:

5.8.2.1 Date(s) when grading activities occur;

5.8.2.2 Date(s) when construction activities temporarily or permanently cease on a portion of the site;

5.8.2.3 Date(s) when stabilization measures are initiated;

5.8.2.4 Date of beginning and ending period for winter shutdown;

5.8.2.5 Copies of inspection reports as required in Part 5.5.2;

5.8.2.6 Copies of monitoring reports or annual reports (if applicable)

5.8.2.7 Log of SWPPP modifications;

5.8.2.8 Documentation required in Part 4.5 (i.e. Material Safety Data Sheet, manufacturer and/or supplier test results, or employee training information)

5.8.2.9 Records of employee training, including the date(s) training was received;

5.8.2.10 Documentation of maintenance and repairs of control measures, including date(s) of regular maintenance, date(s) of discovery of areas in need of repair/maintenance, and date(s) that the control measure(s) returned to full function; and

5.8.2.11 Description of any corrective action taken at the site, including the event that caused the need for corrective action and dates when problems were discovered and modifications occurred, in accordance with Part 8.0.

5.9 Maintaining an Updated SWPPP

5.9.1 SWPPP Modifications

A permittee must modify the SWPPP, including site map(s) in response to any of the following:

5.9.1.1 Whenever changes are made to construction plans, control measures, good housekeeping measures, monitoring plan (if applicable), or other activities at the site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered under Part 8.0 and notifications by the permittee(s);

5.9.1.2 If inspections or investigations by site staff or by local, state, tribal or federal officials determine that SWPPP modifications are necessary for compliance with this permit; or

5.9.1.3 To reflect any revisions to applicable federal, state, tribal, or local law that affect the control measure implemented at the construction site.

5.9.2 Log of SWPPP Modifications

A permittee must keep a log showing dates, name of person authorizing the change, and a brief summary of changes for all significant SWPPP modifications (e.g., adding new control measures, changes in project design, or significant storm events that cause for the replacement of control measures).

5.9.3 Deadlines for SWPPP Modifications

Revisions to the SWPPP must be completed within seven (7) days of the inspection that identified the need for a SWPPP modification or within seven (7) days of substantial modifications to the construction plans or changes in site conditions.

5.10 Additional SWPPP Requirements

5.10.1 Retention of the SWPPP

A copy of the SWPPP (including a copy of the permit), NOI, and acknowledgement letter from DEC must be retained at the construction site (or other location easily accessible during normal business hours) and made available upon request to DEC; EPA; a state, tribal or local agency approving sediment and erosion plans, grading plans, or storm water management plans; local government officials; the operator of an MS4 receiving discharges from the site; and representatives of the ADF&G, USFWS or the NMFS from the date of commencement of construction activities to the date of final stabilization. If the permittee has day-to-day operational control over SWPPP implementation, the permittee must have a copy of the SWPPP available at a central location at the site for the use of all those identified as having responsibilities under the SWPPP whenever they are on the construction site. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance at the site.

5.10.2 **Main Entrance Signage**

A sign or other notice must be posted conspicuously near the main entrance of the site. If there is insufficient space near the main entrance to post a sign or notice, the notice can be posted in a local public building such as the town hall or public library. For linear projects (e.g. highways or utilities) the sign or other notice must be posted at a location near the main entrance of the construction project (such as where a pipeline project crosses a public road) where the public may read it during non-business hours. The sign or other notice must contain the following information:

5.10.2.1 A copy of the completed NOI as submitted to DEC; and

5.10.2.2 If the location of the SWPPP or the name and telephone number of the contact person for scheduling SWPPP viewing times has changed (i.e., is different than that submitted to DEC in the NOI), the current location of the SWPPP and name and telephone number of a contact person for scheduling viewing times.

5.10.3 **Availability of SWPPP**

5.10.3.1 A permittee is required to keep a current copy of the SWPPP at the site.

5.10.3.2 A permittee may move the location where the SWPPP is available during the winter shutdown for a site that is expected to have a winter shutdown provided that the winter SWPPP location conforms to the requirements of Part 5.10.2.

5.10.3.3 A permittee must ensure, as provided for elsewhere in this permit, that each subcontractor who engages in soil-disturbing activities is provided access to a copy of the SWPPP and is familiar with relevant portion(s) thereof that relate to the subcontractor's activities at the project.

5.10.3.4 The SWPPP must be made available upon request by DEC; EPA; a state, tribal or local agency approving sediment and erosion plans, grading plans, or storm water management plans; local government officials; the operator of a MS4 receiving discharges from the site; and representatives of the ADF&G, USFWS or the NMFS to the requestor. The copy of the SWPPP must be made available, in its entirety, to the DEC staff for review and copying at the time of an on-site inspection.

5.10.4 Signature and Certification

The SWPPP must be signed and certified in accordance with the requirements of Appendix A, Part 1.12

5.11 Requirements for Different Types of Operators

The permittee may meet one or both of the operational control components in the definition of operator found in Appendix C. Part 5.11.3 applies to all permittees having control over only a portion of a construction site.

5.11.1 If the permittee has operational control over construction plans and specifications, the permittee must ensure that:

5.11.1.1 The project specifications meet the minimum requirements of this Part and all other applicable permit conditions;

5.11.1.2 The SWPPP indicates the areas of the project where the permittee has operational control over project specifications, including the ability to make modifications in specifications;

5.11.1.3 All other permittees implementing portions of the SWPPP (or their own SWPPP) who may be impacted by a change to the construction plan are notified of such changes in a timely manner; and

5.11.1.4 The SWPPP indicates the name of the party(ies) with day-to-day operational control of those activities necessary to ensure compliance with the SWPPP or other permit conditions.

5.11.2 If the permittee has operational control over day-to-day activities, the permittee must ensure that:

5.11.2.1 The SWPPP meets the minimum requirements of this Part and identifies the parties responsible for implementation of control measures identified in the plan;

5.11.2.2 The SWPPP indicates areas of the project where the permittee has operational control over day-today activities; and

5.11.2.3 The SWPPP indicates the name of the party(ies) with operational control over project specifications (including the ability to make modifications in specifications).

5.11.3 If the permittee has operational control over only a portion of a larger project (e.g., one of four homebuilders in a subdivision), the permittee is responsible for compliance with all applicable control measures, terms, and conditions of this permit as it relates to the activities on the permittee's portion of the construction site, including protection of endangered species, critical habitat, and historic properties and implementation of control measures described in the SWPPP. The permittee must ensure, either directly or through coordination with other permittees, that activities do not render another party's pollutant discharge controls ineffective. The permittee must either implement a portion of a common SWPPP or develop and implement its own SWPPP.

For more effective coordination of BMPs and opportunities for cost sharing, a cooperative effort by the different operators at a site to prepare and participate in a comprehensive SWPPP is encouraged. Individual operators at a site may, but are not required to, develop separate SWPPPs that cover only their portion of the project provided reference is made to other operators at the site. In instances where there is more than one SWPPP for a site, cooperation between the permittees is encouraged to ensure the storm water discharge control measures are consistent with one another (e.g., provisions to protect listed species and critical habitat).

PART 6.0 INSPECTIONS

6.1 Inspection Frequency

A permittee must conduct inspections in accordance with one of the three schedules listed in this Part after the start of construction activities covered by this permit. A permittee must specify in the SWPPP which schedule will be followed.

6.1.1 For areas of the state where the mean annual precipitation is fifteen (15) inches or less, inspect at least once every fourteen (14) calendar days and within twenty-four (24) hours of the end of a storm event that resulted in a discharge from the site.

6.1.2 For areas of the state where the mean annual precipitation is greater than fifteen (15) inches and less than forty (40) inches:

6.1.2.1 Inspect at least once every seven (7) calendar days; or

6.1.2.2 Inspect at least once every fourteen (14) calendar days and within twenty-four (24) hours of the end of a storm event that resulted in a discharge from the site.

6.1.3 For areas of the state where the mean annual precipitation is forty (40) inches or greater, inspect at least once every seven (7) calendar days. For periods of relatively continuous precipitation or sequential storm events inspect at least twice every seven (7) calendar days.

6.2 Case-by-Case Reductions in Inspection Frequency

A permittee may reduce inspection frequency as follows:

6.2.1 If the entire site is temporarily stabilized in accordance with Part 4.4, a permittee may reduce the frequency of inspections to at least once every thirty (30) calendar days and within two business days of the end of a storm event at actively staffed sites that resulted in a discharge from the site;

6.2.2 If portions of the site have achieved final stabilization in accordance with Part 4.4 but construction activity remains on other portions of the site, a permittee may suspend inspections for those portions that have achieved final stabilization; however, the permittee may need to conduct subsequent inspections within two business days of the end of a storm event at actively staffed sites that results in erosion and causes a discharge from that portion of the site previously considered finally stabilized;

6.2.3 If the project is undergoing winter shutdown, as defined in Appendix C and documented in accordance with Part 5.3.6.9, a permittee may stop inspections fourteen (14) calendar days after the anticipated fall freeze-up and must resume inspections at least twenty-one (21) calendar days prior to the anticipated spring thaw ; or

6.2.4 If the entire site has been finally stabilized and a NOT has been submitted, no further inspection requirements apply to the site.

6.3 Qualified Person

An inspection must be conducted by a "qualified person" (as defined in the Appendix C) provided by a permittee.

6.4 Site Inspection

6.4.1 Location of Inspections

During a site inspection, a permittee must at a minimum inspect the following areas of the site:

6.4.1.1 Areas of the site disturbed by construction activity (e.g., areas cleared, graded, or excavated);

6.4.1.2 Areas used for storage of materials that are exposed to precipitation;

6.4.1.3 Areas where control measures are installed and maintained at the site;

6.4.1.4 Areas where sediment and other pollutants have accumulated or been deposited and may have the potential for or are entering the storm water conveyance system;

6.4.1.5 Locations where vehicles enter or exit the site;

6.4.1.6 Areas where storm water typically flows, including the storm water conveyance system;

6.4.1.7 Points of discharge from the site. Where such discharge locations are inaccessible, the nearest downstream location must be inspected to the extent that such inspections are practicable; and

6.4.1.8 Portions of the site where temporary or permanent stabilization measures have been initiated.

6.4.2 **Scope of Inspection**

At a minimum, the scope of the site inspection shall include the following:

6.4.2.1 Check whether all control measures are installed and operating as intended and determine if any control measures need to be replaced, repaired or maintained;

6.4.2.2 Check for the presence of accumulated sediment near the project area boundary that has a potential for being washed outside of the project boundary on locations such as roadways or parking lots, storm water conveyance systems, storm drain inlets, and discharge points,;

6.4.2.3 Check for the evidence of, or the potential for spills, leaks, or other accumulations of pollutants on the site entering the storm water conveyance system or waters of the U.S.;

6.4.2.4 Describe visible areas where erosion has occurred near the project area boundary that has a potential for being washed outside of the project boundary;

6.4.2.5 Identify any locations where new or modified control measures are necessary to meet the requirements in Part 4.0;

6.4.2.6 Identify all points where there is a discharge from the site and describe the conditions that are contributing to that discharge (e.g., recent storm event with failure of a control measure); and

6.4.2.7 Any incidents of noncompliance observed and corrective actions taken pursuant to Part 8.0.

6.5 Linear Project Inspections

Utility line installation, pipeline construction, road or highway construction, and other examples of long, narrow, linear construction activities may limit the access of inspection personnel to the areas described in Part 6.4. Inspection of these areas could require that vehicles used to conduct inspections may compromise temporarily or even permanently stabilized areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, control measures must be inspected on the same frequencies as other construction projects, but representative inspections may be performed. For representative inspections, a qualified person (as defined in Appendix C) must inspect control measures along the site 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the site and allows access to the areas described in Part 6.4. The conditions of the control measures along each inspected 0.25 mile segment may be considered as representative of the condition of control measures along that reach extending from the end of the 0.25 mile segment to either the end of the next 0.25 mile inspected segment, or to the end of the project, whichever occurs first. If treatment chemicals are used then inspections must be conducted of all areas using the treatment chemicals.

6.6 Inspections by DEC or Applicable Government Authority

A permittee must allow an authorized representative of DEC, EPA or the MS4 operator at any reasonable time to (1) enter onto the site where a regulated construction activity is conducted or where records are kept under the conditions of this permit; (2) access and copy any records that must be kept under the conditions of this permit; (3) inspect any portion of the site, including any off-site staging areas or material storage areas and the erosion and/or sediment control measures; and (4) sample or monitor for the purpose of ensuring compliance.

6.7 Inspection Report

For each inspection required by this Part, the permittee must complete an inspection report.

6.7.1 At a minimum, the inspection report must include:

- 6.7.1.1 The inspection date;
- 6.7.1.2 Names, titles, and qualifications of personnel conducting the inspection;
- 6.7.1.3 Weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a general estimate of the beginning day of each storm event, duration of each storm event, and whether any discharges occurred (information from the nearest National Weather Service Station may be adequate);
- 6.7.1.4 Weather information and a description of any discharges occurring at the time of the inspection;
- 6.7.1.5 Location(s) of discharges of sediment or other pollutants from the site;
- 6.7.1.6 Location(s) of control measures that need to be maintained;
- 6.7.1.7 Location(s) of control measures that failed to operate as designed or proved inadequate for a particular location;
- 6.7.1.8 Location(s) where additional control measures are needed that did not exist at the time of inspection; and
- 6.7.1.9 Corrective action required, if any, including complete-by dates.

6.7.2 The inspection report must be signed in accordance with Appendix A, Part 1.12.

PART 7.0 MONITORING

7.1 General Requirements

A permittee subject to the monitoring requirements in Part 3.2 is required to collect and analyze storm water discharge samples and document monitoring activities with the procedures described in Part 7.0. Linear projects subject to the monitoring requirements in Part 3.2 are also subject to the visual monitoring requirements in Part 7.4. The permittee must develop a written site-specific monitoring plan for analytical monitoring that includes all the requirements of Part 7.0 and follows the applicable DEC Quality Assurance Guidance for a Water Quality Monitoring Plan (see http://dec.alaska.gov/water/wqapp/wqapp_index.htm) Most all monitoring projects should fall under the Tier 2 Water Quality Monitoring Quality Assurance Project Plan criteria. A *Generic Tier 2 Quality Assurance Project Plan* (http://dec.alaska.gov/water/wqapp/Generic_Tier_2_WQ_QAPP_Rev_1.pdf) has been developed to assist applicants in developing a project specific QA Water Quality Monitoring QA Plan. Also see the DEC storm water website (http://dec.alaska.gov/water/wnpspc/stormwater/index.htm) for information to use in developing the monitoring plan. The monitoring plan must be included as a part of the SWPPP as either an appendix or separate SWPPP section. The monitoring plan must be updated, as necessary, during project construction to account for changes in site conditions.

7.2 Qualified Person

Monitoring must be conducted by a "qualified person" (as defined in Appendix C) provided by a permittee.

7.3 Discharge Monitoring Requirements

7.3.1 Sampling Parameter

A permittee must sample for turbidity if the construction activity meets the requirements of Part 3.2.

7.3.2 Sampling Frequency

7.3.2.1 Sampling must be conducted during any storm event (as defined in Appendix C) or snowmelt event that results in a discharge from the site.

7.3.2.2 A permittee must collect at least two representative samples of the discharge. In the monitoring plan the permittee must characterize the number and frequency of samples to be measured/collected per discharge so as to represent the water quality conditions in the discharge (at minimum two samples per day per storm event).

7.3.2.3 A permittee is only required to collect samples during normal business hours and when conditions are safe for sampling personnel. When unsafe conditions (i.e., those that are dangerous or create inaccessibility for personnel) prevent the collection of samples, the permittee must conduct sampling of the discharge from the site as soon as the conditions are safe for sampling.

7.3.2.4 If a permittee is unable to collect a sample of the discharge due to unsafe conditions, the reason must be documented and attached to all required reports and records of the sampling activity.

7.3.3 Sampling Discharge Point

7.3.3.1 A permittee is required to conduct sampling at all discharge points where storm water or authorized non-storm water is discharged offsite, except for an impaired water body which is subject to the requirements of Part 3.2 or linear project which is subject to the requirements in Part 7.3.4.

7.3.3.2 All sampling locations must be identified on the SWPPP site map and be clearly marked in the field with a flag, tape, stake, or other visible marker.

7.3.4 Representative Discharge Point for a Linear Project

If a linear project has two or more outfalls that discharge substantially identical effluents, based on similarities of the soil disturbance and construction activity occurring within the drainage areas of the discharge point, the permittee may collect a representative sample of the storm water discharge at one of the discharge points and report that the quantitative data also apply to the substantially identical discharge point(s). For this to be permissible, the permittee must describe the following in the monitoring plan:

7.3.4.1 Locations of the discharge points;

7.3.4.2 Why the discharge points are expected to discharge substantially identical pollutants; and

7.3.4.3 Estimates of the size of the drainage area (in square feet) for each of the discharge points.

7.3.5 Commingled Discharges

If, prior to discharging, storm water flow commingles with sources of storm water that originate outside of the construction site or on property that is not owned or operated by the permittee, the following applies:

7.3.5.1 A permittee is required to collect samples of discharges from the construction site that consist in part of storm water that originates outside of the construction site and discharges from the site; or

7.3.5.2 If storm water originates outside of the construction site then discharges from the permittee's property but does not come into contact with the site construction activities, the permittee is not required to sample this discharge.

7.3.6 Sample Type

All sampling performed by the permittee must be representative of the flow and characteristics of the discharge.

7.3.7 Sampling and Analysis Methods

7.3.7.1 Turbidity analysis must be performed with an EPA-approved field-calibrated nephelometer or turbidity meter (turbidimeter) for water quality measurements.

7.3.7.2 Samples required by this permit should be analyzed immediately. Dilution of samples is not required.

7.3.7.3 Automatic sampling may be used; however, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through automated analysis is used and analyzed consistent with Part 7.3.7.2.

7.3.7.4 If the permittee cannot conduct field turbidity measurements, then all laboratory analysis must be conducted according to test procedures specified in 40 CFR Part 136, unless other test procedures have been specified in this permit. Samples must be preserved as required by the appropriate EPA-approved method of analysis and analyzed within specified holding times.

7.3.8 Rainfall Monitoring

7.3.8.1 A permittee must use a rain gauge on site or utilize the nearest National Weather Service (NWS) precipitation gauge station to determine the amount of rainfall during a storm event if the NWS gauge used is located within twenty (20) miles of the site.

7.3.8.2 A permittee must maintain records of the rainfall amounts and dates of rainfall events as part of the SWPPP, pursuant to Part 9.3.

7.3.9 Recording Monitoring Data

A permittee must retain records of all sampling information and reports as part of the SWPPP, pursuant to Part 9.3. For each sample collected, the permittee must record the following:

7.3.9.1 The date, monitoring location, method, and time of sampling;

7.3.9.2 The name and title of the individual(s) who performed the sampling and analyses;

7.3.9.3 The date(s) analyses were performed;

7.3.9.4 The analytical techniques or methods used; and

7.3.9.5 The results of such analyses in nephelometric turbidity units (NTU) and all calibration and quality control information used to validate the measurement(s).

7.3.10 Reporting Monitoring Results

7.3.10.1 All monitoring data collected pursuant to Part 7.0 must be submitted to DEC, in accordance with Part 9.1, Annual Reports. (Note: The monitoring data collected under this Part does not need to conform to Appendix A Part 3.2.)

7.3.10.2 For each discharge point, a permittee must submit the following information:

7.3.10.2.1 Name of discharge point. If the discharge point is on a linear project and is representative of one or more substantially similar discharge points, include the names of the other discharge points;

7.3.10.2.2 Date sample(s) collected;

7.3.10.2.3 Result of each individual sample collected in NTUs, or, if no discharge occurred during the sampling period for that discharge point indicate no discharge;

7.3.10.2.4 The arithmetic mean of all samples collected for each day; and

7.3.10.2.5 If the sample result(s) are from a representative discharge point, indicate representative sample.

7.3.10.3 A permittee is required to report all sampling results, including those that reflect samples collected beyond the minimum frequency required in Part 7.3.2.

7.4 Visual Monitoring for a Linear Project

A permittee for a linear project subject to the monitoring requirements in Part 3.2 is required to visually monitor the discharges from the project that are not sampled as required by Part 7.3 and document monitoring activities with the procedures described in this Part.

7.4.1 Visual Monitoring Frequency

Visual monitoring must be conducted at least once every seven (7) calendar days, and the permittee may choose to do it more frequently.

7.4.2 Visual Monitoring Locations

The inspector must visually observe each drainage area associated with the linear project for the presence of current (and indications of prior) discharges and their sources.

7.4.3 Visual Monitoring Parameters

During conditions at the project in which a discharge is occurring, the permittee must:

7.4.3.1 Observe all discharge points not subject to Part 7.3 where there is a discharge;

7.4.3.2 Observe and document the visual quality and characteristics of the discharge, including color, odor, floating, settled, or suspended solids, foam, oil sheen, and other obvious indicators of storm water pollutants; and

7.4.3.3 Document whether control measures are operating effectively or are in need of maintenance.

7.4.4 Recording Visual Monitoring Data

A permittee must document the results of the visual monitoring and maintain this documentation with the SWPPP as required in Part 9.3. A permittee is not required to submit the visual monitoring findings to DEC, unless specifically requested to do so. At a minimum, the documentation of the visual monitoring must include:

7.4.4.1 The visual monitoring date;

7.4.4.2 Name and title of personnel conducting the visual monitoring;

7.4.4.3 Observations and documentation of the visual monitoring; and

7.4.4.4 Any conditions requiring corrective action and a description of the corrective action.

PART 8.0 CORRECTIVE ACTIONS

A permittee must take corrective actions as identified through the inspections conducted under Part 6.0 or as indicated by monitoring conducted under Part 7.0. This includes addressing the performance of control measures, including modifications to the selection, design, installation, and/or implementation of those control measures or to address permit violations.

8.1 Corrective Action Conditions

A permittee must take corrective actions whenever any of the following conditions are identified, discovered or made aware of at the site.

8.1.1 Control measures are not designed, installed and/or maintained as required in Part 4.0. Conditions triggering the need for corrective action under this Part include:

8.1.1.1 A required control measure was never installed, was installed incorrectly or not in accordance with Part 4.0;

8.1.1.2 A control measure is not operating as intended or has not been maintained in effective operation condition; or

8.1.1.3 The accumulation or tracking of sediment in or near any storm water conveyance channels, on roadways or parking lots outside the project area and adjacent to the site, in the immediate vicinity of control measures, at discharge points or entry points into the storm sewer system, or in other areas of the site.

8.1.2 Conditions triggering the need for corrective action under this Part include:

8.1.2.1 A prohibited discharge as specified in Part 4.6 is occurring or will occur if effective corrective actions are not taken.;

8.1.2.2 Control measures installed and maintained are not effective enough to meet requirements of Part 3.1.2; or

8.1.2.3 Pollutants (other than sediment such as trash or litter) have accumulated in or near any storm water conveyance channels, on roadways or parking lots within and adjacent to the site, in the immediate vicinity of control measures, at discharge points or entry points into the storm sewer system, or in other areas of the site.

8.1.3 A corrective action is not required on any day when there is a discharge that results from a storm event in that same day that is larger than the local 2-year, 24-hour storm. On days subsequent to the local 2-year, 24-hour storm, corrective actions do need to be carried out as described in Part 8.1.1 or Part 8.1.2.

8.2 Deadlines for Corrective Actions

8.2.1 A permittee must review the design, installation, and maintenance of control measures upon detecting either condition in Part 8.1.1 or Part 8.1.2 and document any corrective action(s) to be taken to eliminate or further investigate the deficiency and comply with the following:

8.2.1.1 For conditions that are easily remedied (i.e., removal of tracked sediment, maintenance of control measures, or spill clean-up), the permittee must initiate appropriate steps to correct the problem within twenty-four (24) hours and correct the problem as soon as possible; or

8.2.1.2 If installation of a new control measure is needed or an existing control measure requires significant redesign and reconstruction or replacement, the permittee must install the new or modified measure and make it operational within seven (7) calendar days from the time of discovery of the need for the corrective action, unless it is not practicable.

8.2.1.3 Monitoring must continue while corrective actions are being carried out.

8.2.2 Where a permittee takes corrective actions that could affect a subcontractor, the permittee must provide notification to the subcontractor within three (3) calendar days of taking the corrective action.

8.2.3 Subcontractors must notify the permittee within twenty-four (24) hours of becoming aware of any of conditions listed in Part 8.1.1 or Part 8.1.2.

8.3 Corrective Action Log

8.3.1 A permittee must document the following information in the corrective action log, within twenty-four (24) hours of discovery of any condition listed in Part 8.1 or upon notification from a sub-contractor:

8.3.1.1 Date the problem was identified;

8.3.1.2 Summary of corrective action taken or to be taken (or, for conditions triggering corrective actions identified in Part 8.1, where the determination is made that action is not necessary, the basis for this determination);

8.3.1.3 Notice of whether SWPPP modifications were required as a result of this discovery or corrective action; and

8.3.1.4 Date corrective action completed.

8.3.2 A permittee must retain a copy of the corrective action log on-site with the SWPPP as required in Part 9.3.

8.4 Corrective Action Report

If monitoring pursuant to Part 3.2 exceeds a water quality standard, except on a day when there is a discharge that results from a storm event in that same day that is larger than the local 2-year, 24-hour storm, the permittee must submit a corrective action report consistent with Part 9.2.

PART 9.0 REPORTING AND RECORDKEEPING

9.1 Annual Report

9.1.1 All water quality monitoring data collected by the permittee pursuant to Part 7.0 must be submitted to the Department in an annual report. The annual report form must be submitted to the appropriate address in Appendix A, Part 1.1.2 by December 31st of each year during construction and with the NOT upon submittal of the NOT (see Part 10.0). (Note: The monitoring data reported under this part does not need to conform to Appendix A Part 3.2.)

9.1.2 Monitoring results must be presented in a clearly legible format in tabular form. Upon written notification, DEC may require the permittee to submit the monitoring results on a more frequent basis. Monitoring and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to DEC.

9.1.3 A permittee must sign and certify all annual reports in accordance with the requirements of Appendix A, Part 1.12, Signatory Requirements and Penalties. All signed and certified legible original annual reports and all other reports and documents must be submitted to the Department's Compliance and Enforcement Program address in Appendix A, Part 1.1.2.

9.2 Corrective Action Report

If a corrective action report is required by Part 8.4, a permittee must submit a corrective action report to the Department's Compliance and Enforcement Program address in Appendix A, Part 1.1.2 no later than fourteen (14) calendar days after receiving the monitoring results. The report must include the following:

9.2.1 APDES Permit Tracking Number;

9.2.2 Project name, physical address and location;

9.2.3 Name of receiving water;

9.2.4 Monitoring data from the event that exceeded a water quality standard;

9.2.5 An explanation of the conditions that caused the exceedances; steps taken or planned (should corrective actions not yet be complete) to correct the violation; and

9.2.6 An appropriate contact name, telephone number and e-mail address.

9.3 Retention of Records

A permittee must retain the following records at the site or the records must be readily available at a designated alternate location during the life of the construction activity and for a minimum of three (3) years from the date that coverage under this permit expires or is terminated. This period may be extended by request of DEC at any time.

9.3.1 Records of all data used to complete the NOI to be covered by this permit;

9.3.2 A copy of the SWPPP (including any modifications made during the term of this permit);

9.3.3 A copy of all monitoring information (if applicable) and reports required by this permit;

9.3.4 A copy of all inspection reports generated in accordance with Part 6.0;

9.3.5 Documentation related to corrective actions taken pursuant to Part 8.0; and

9.3.6 Any other reports and certifications required by this permit.

9.4 Request for Submittal of Records

The Department may request copies of all or a portion of the information collected and maintained in the SWPPP. A permittee must provide a response to written requests for records to the Department within thirty (30) calendar days of receipt of a written request.

PART 10.0 TERMINATION OF COVERAGE

A permittee must submit a complete and accurate Notice of Termination (NOT) to DEC that certifies that one or more of the conditions in Part 10.1 have been met to terminate permit coverage. A permittee must comply with this permit until an NOT is submitted.

10.1 When to Submit a Notice of Termination

A permittee must submit an NOT within thirty (30) calendar days after one or more of the following conditions have been met:

10.1.1 Final stabilization has been achieved on all portions of the site, in accordance with Part 4.4.4, for which a permittee is responsible and all ground disturbing construction activity or use of support activities has been completed;

10.1.2 A new permittee has assumed control according to Appendix A, Part 2.3, over all areas of the site that have not been finally stabilized;

10.1.3 Coverage under an individual permit or alternative APDES general permit has been obtained, unless DEC has required that a permittee obtain such coverage under authority of Part 2.8, in which case coverage under this permit will automatically terminate;

10.1.4 For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner; or

10.1.5 The planned construction activity identified on the original NOI was never initiated (e.g., no grading or earthwork was ever started) and plans for the construction have been permanently abandoned or indefinitely postponed.

10.2 Submitting a Notice of Termination

10.2.1 A permittee must submit an NOT to terminate coverage under this permit. The complete and accurate NOT can be submitted either:

10.2.1.1 Electronically (strongly encouraged) at www.dec.state.ak.us/water/wnpspc/stormwater/stormwater.htm or

10.2.1.2 Submit a paper copy (available at the above Web site) to:

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Program
Storm Water NOI
555 Cordova Street
Anchorage, AK 99501

10.2.2 A permittee's authorization to discharge terminates at midnight of the day the NOT is signed.

10.2.3 If a permittee submits a NOT without meeting one or more of the conditions identified in Part 10.1, then the NOT is invalid and a permittee remains responsible for meeting the requirements of this permit until authorization is terminated pursuant to Part 10.2.2.

PART 11.0 PERMIT REOPENER CLAUSE

11.1 Procedures for Modification or Revocation

Permit modification or revocation will be conducted according 18 AAC 83.130, 18 AAC 83.135, 18 AAC 83.140, or 18 AAC 83.145.

11.2 Water Quality Protection

If there is evidence indicating that the storm water discharges authorized by this permit cause, have the reasonable potential to cause or contribute to an excursion above any applicable water quality standard, the permittee may be required to obtain an individual permit in accordance with Part 2.8 of this permit, or the permit may be modified to include different limitations and/or requirements.

11.3 Timing of Permit Modification

DEC may elect to modify the permit prior to its expiration (rather than waiting for the new permit cycle) to comply with any new statutory or regulatory requirements, such as for effluent limitation guidelines that may be promulgated in the course of the current permit cycle.

Appendix A
Standard Permit Conditions

TABLE OF CONTENTS

Appendix A, Standard Permit Conditions is an integral and enforceable part of the permit. Failure to comply with a Standard Permit Condition in this Appendix constitutes a violation of the permit and is subject to enforcement.

1.0 Standard Conditions Applicable to All Permits

1.1 Contact Information and Addresses

1.1.1 Permitting Program

Except as provided in Appendix A, Part 1.1.2 documents, reports, and plans required under the permit and Appendix A are to be sent to the following address:

Alaska Department of Environmental Conservation
Division of Water
WDAP – Storm Water Section
555 Cordova Street
Anchorage, Alaska 99501
Telephone (907) 269-6285
Fax (907) 269-7508
Email: DEC.Water.WQPermit@alaska.gov

1.1.2 Compliance and Enforcement Program

Documents and reports required under the permit and Appendix A relating to compliance are to be sent to the following address:

Alaska Department of Environmental Conservation
Division of Water
Compliance and Enforcement Program
555 Cordova Street
Anchorage, Alaska 99501
Telephone Nationwide (877) 569-4114
Anchorage Area / International (907) 269-4114
Fax (907) 269-4604
Email: dec-wqreporting@alaska.gov

1.2 Duty to Comply

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and applicable state law is grounds for enforcement action by ADEC including termination, revocation and reissuance, modification of a permit, or denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under 33 U.S.C. §1317(a) for toxic pollutants within the time provided in the regulations that establish those effluent standards or prohibitions even if the permit has not yet been modified to incorporate the requirement.

1.3 Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. In accordance with 18 AAC 83.105(b), the permittee with a currently effective permit shall reapply by submitting a new application at least 180 days before the existing permit expires, unless the Department has granted the permittee permission to submit an application on a later date. However, the Department will not grant permission for an application to be submitted after the expiration date of the existing permit.

1.4 Need to Halt or Reduce Activity Not a Defense

In an enforcement action, the permittee shall not assert as a defense that compliance with the conditions of the permit would have made it necessary for the permittee to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

1.5 Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

1.6 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which the permittee installs or uses to achieve compliance with the conditions of the permit. The permittee's duty to properly operate and maintain includes using adequate laboratory controls and appropriate quality assurance procedures. However, the permittee is not required to operate back up or auxiliary facilities or similar systems that the permittee installs unless operation of those facilities is necessary to achieve compliance with the conditions of this permit.

1.7 Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause as provided in 18 AAC 83.130. If the permittee files a request to modify, revoke and reissue, or terminate a permit, or gives notice of planned changes or anticipated noncompliance, the filing or notice does not stay any permit condition.

1.8 Property Rights

The permit does not convey any property rights or exclusive privilege.

1.9 Duty to Provide Information

The permittee shall, within a reasonable time, provide to the Department any information that the Department requests to determine whether a permittee is in compliance with the permit, or whether cause exists to modify, revoke and reissue, or terminate the permit. A permittee shall also provide to the Department, upon request, copies of any records the permittee is required to keep under the permit.

1.10 Inspection and Entry

A permittee shall allow the Department, or an authorized representative, including a contractor acting as a representative of the Department, at reasonable times and upon presentation of credentials and any other documents as may be required by law, to:

1.10.1 Enter the premises where the permittee's regulated facility or activity is located or conducted, or where permit conditions require records to be kept;

1.10.2 Have access to and copy any records that permit conditions require the permittee to keep;

1.10.3 Inspect any facilities, equipment, including monitoring and control equipment, practices, or operations regulated or required under this permit; and

1.10.4 Sample or monitor any substances or parameters at any location for the purpose of assuring permit compliance or as otherwise authorized by the Clean Water Act or applicable state law.

1.11 Monitoring and Records

The permittee must comply with the following monitoring and recordkeeping conditions:

1.11.1 Samples and measurements taken for the purpose of monitoring must be representative of the monitored activity.

1.11.2 The permittee shall retain records in Alaska of all monitoring information for at least three (3) years, or longer at the Department's request at any time, from the date of the sample, measurement, report, or application. Monitoring records required to be kept include:

1.11.2.1 All calibration and maintenance records;

1.11.2.2 All original strip chart recordings or other forms of data approved by the Department for continuous monitoring instrumentation;

1.11.2.3 All reports required by this permit;

1.11.2.4 Records of all data used to complete the application for this permit;

1.11.2.5 Field logbooks or visual monitoring logbooks;

1.11.2.6 Quality assurance chain of custody forms;

1.11.2.7 Copies of discharge monitoring reports; and

1.11.2.8 A copy of this permit.

1.11.3 Records of monitoring information must include:

1.11.3.1 The date, exact place, and time of any sampling or measurement;

1.11.3.2 The name(s) of any individual(s) who performed the sampling or measurements;

1.11.3.3 The date(s) and time any analysis was performed;

1.11.3.4 The name(s) of any individual(s) who performed any analysis;

1.11.3.5 Any analytical technique or method used; and

1.11.3.6 The results of the analyses.

1.11.4 Monitoring Procedures

Analyses of pollutants using test procedures approved under 40 CFR Part 136, adopted by reference at 18 AAC 83.010, for pollutants with approved test procedures, and using test procedures specified in the permit for pollutants without approved methods.

1.12 Signature Requirements and Penalties

1.12.1 Any application, report, or information submitted to the Department in compliance with requirement of this permit must be signed and certified in accordance with 18 AAC 83.385. Any person who knowingly makes any false material statement, representation, or certification in any application, record, report, or other document filed or required to be maintained under a permit, or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be subject to penalties under 33 U.S.C. §1319(c)(4) and

1.12.2 In accordance with 18 AAC 83.385, any application for coverage under this permit (e.g. NOI) must be signed as follows:

1.12.2.1 For a corporation, by a responsible corporate officer; in this subsection, a responsible corporate officer means

1.12.2.1.1 A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or

1.12.2.1.2 The manager of one or more manufacturing, production, or operating facilities, if

1.12.2.1.2.1 The manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental statutes and regulations;

1.12.2.1.2.2 The manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and

1.12.2.1.2.3 Authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

1.12.2.2 For a partnership or sole proprietorship, by the general partner or the proprietor, respectively; or

1.12.2.3 For a municipality, state, federal, or other public agency, by either a principal executive officer or ranking elected official; in this subsection, a principal executive officer of an agency means

1.12.2.3.1 The chief executive officer of the agency; or

1.12.2.3.2 A senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.

1.12.3 In accordance with 18 AAC 83.385, any report required by this permit, including the SWPPP, 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. A person is a duly authorized representative only if:

1.12.3.1 The authorization is made in writing by a person described in Appendix A, Part 1.12.2;

1.12.3.2 The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, including the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility; or an individual or position having overall responsibility for environmental matters for the company; and

1.12.3.3 The written authorization is submitted to the Department to the Permitting Program address in Appendix A, Part 1.1.1, or included in the SWPPP.

1.12.4 Changes to Authorization. If an authorization under Appendix A, Part 1.12.3 is no longer effective because a different individual or position has responsibility for the overall operation of the regulated facility or activity, a new NOI satisfying the requirements of Appendix A, Part 1.12.3 must be submitted to the Department, or included in the SWPPP, prior to or together with any report, information, or application to be signed by an authorized representative.

1.12.5 Any person signing a document under Appendix A, Part 1.12.2 or Part 1.12.3 shall certify as follows:

"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."

1.13 Proprietary or Confidential Information

1.13.1 A permit applicant or permittee may assert a claim of confidentiality for proprietary or confidential business information by stamping the words "confidential business information" on each page of a submission containing proprietary or confidential business information. The Department will treat the stamped submissions as confidential if the information satisfies the test in 40 CFR §2.208, adopted by reference in 18 AAC 83.010, and is not otherwise required to be made public by state law.

1.13.2 A claim of confidentiality under Appendix A, Part 1.13.1 may not be asserted for the name and address of any permit applicant or permittee, a permit application, a permit, effluent data, sewage sludge data, and information required by APDES or NPDES application forms provided by the Department, whether submitted on the forms themselves or in any attachments used to supply information required by the forms.

1.13.3 A permittee's claim of confidentiality authorized under Appendix A, Part 1.13.1 is not waived if the Department provides the proprietary or confidential business information to the EPA or to other agencies participating in the permitting process. The Department will supply any information obtained or used in the administration of the state APDES program to the EPA upon request under 40 CFR §123.41, as revised as of July 1, 2005. When providing information submitted to the Department with a claim of confidentiality to the EPA, the Department will notify the EPA of the confidentiality claim. If the Department provides the EPA information that is not claimed to be confidential, the EPA may make the information available to the public without further notice.

1.14 Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any action or relieve the permittee from any responsibilities, liabilities, damages, assessments, penalties, or any legal or equitable remedies to which the permittee is or may be subject to under any applicable state laws addressing oil and hazardous substances.

1.15 Cultural and Paleontological Resources

If cultural or paleontological resources are discovered after the initial commencement of construction activities, work that would disturb such resources is to be stopped, and the Office of History and Archaeology, a Division of Parks and Outdoor Recreation of the Alaska Department of Natural Resources (http://www.dnr.state.ak.us/parks/oha/), is to be notified immediately at (907) 269-8721.

1.16 Fee

The permittee must pay the appropriate permit fee described in 18 AAC 72.

1.17 Other Legal Obligations

To the extent not otherwise included in any of the other standard conditions covered under this subpart, any other permit conditions generally required to be included in an APDES permit under 18 AAC 83 are hereby incorporated by reference and applicable to this permit. This permit does not relieve the permittee from the duty to obtain any other necessary permits from the Department or from other local, state, or federal agencies and to comply with the requirements contained in any such permits. All activities conducted and all plan approvals implemented by the permittee pursuant to the terms of this permit shall comply with all applicable local, state, and federal laws and regulations.

2.0 Special Reporting Obligations

2.1 Planned Changes

2.1.1 The permittee shall give notice to the Department as soon as possible of any planned physical alteration or addition to the permitted facility if:

2.1.1.1 The alteration or addition may make the facility a "new source" under one or more of the criteria in 18 AAC 83.990(44); or

2.1.1.2 The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged if those pollutants are not subject to effluent limitations in the permit or to notification requirements under 18 AAC 83.610.

2.1.2 If the proposed changes are subject to plan review, then the plans must be submitted at least thirty (30) days before implementation of changes (see 18 AAC 15.020 and 18 AAC 72 for plan review requirements). Written approval is not required for an emergency repair or routine maintenance.

2.1.3 Written notice must be sent to the Permitting Program address in Appendix A, Part 1.1.1, or included in the SWPPP.

2.2 Anticipated Noncompliance

2.2.1 The permittee shall give seven (7) days' notice to the Department before commencing any planned change in the permitted facility or activity that may result in noncompliance with permit requirements.

2.2.2 Written notice must be sent to the Compliance and Enforcement Program address in Appendix A, Part 1.1.2.

2.3 Transfers

2.3.1 The permittee may not transfer a permit for a facility or activity to any person except after written notice to the Department in accordance with 18 AAC 83.150 and the Department's prior written approval. The Department may modify or revoke and reissue the permit to change the name of the permittee and incorporate such other requirements under the Clean Water Act or any applicable state law.

2.3.2 Written notice must be sent to the Permitting Program address in Appendix A, Part 1.1.1.

2.4 Compliance Schedules

2.4.1 The permittee must submit progress or compliance reports on interim and final requirements in any compliance schedule of this permit no later than fourteen (14) days following each schedule date.

2.4.2 Written notice must be sent to the Compliance and Enforcement Program address in Appendix A, Part 1.1.2.

2.5 Corrective Information

2.5.1 If the permittee becomes aware that it failed to submit a relevant fact in a permit application or submitted incorrect information in a permit application or in any report to the Department, the permittee shall promptly submit the relevant fact or the correct information.

2.5.2 Information must be sent to the Permitting Program address in Appendix A, Part 1.1.1.

2.6 Bypass

2.6.1 Prohibition of Bypass

Bypass is prohibited. The Department may take enforcement action against the permittee for any bypass, unless:

2.6.1.1 The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2.6.1.2 There were no feasible alternatives to the bypass, including use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. However, this condition is not satisfied if the permittee, in the exercise of reasonable engineering judgment, should have installed adequate back up equipment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

2.6.1.3 The permittee provides notice to the Department of a bypass event in the manner, as appropriate, under Appendix A, Part 2.6.2.

2.6.2 Notice of bypass

2.6.2.1 For an anticipated bypass, the permittee submits written notice at least ten (10) days before the date of the bypass. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the conditions of Appendix A, Parts 2.6.1.1 and 2.6.1.2.

2.6.2.2 For an unanticipated bypass, the permittee submits 24-hour notice, as required in 18 AAC 83.410(f) and Appendix A, Part 3.4, Twenty four Hour Reporting.

2.6.2.3 Written notice must be sent to the Compliance and Enforcement Program address in Appendix A, Part 1.1.2.

2.6.3 Notwithstanding Appendix A, Part 2.6.1, a permittee may allow a bypass that:

2.6.3.1 Does not cause an effluent limitation to be exceeded, and

2.6.3.2 Is for essential maintenance to assure efficient operation.

2.7 Upset

2.7.1 In any enforcement action for noncompliance with technology-based permit effluent limitations, the permittee may claim upset as an affirmative defense. A permittee seeking to establish upset as an affirmative defense has the burden of proof to show that the requirements of Appendix A, Part 2.7.2 are met.

2.7.2 To establish the affirmative defense of upset, the permittee must demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that:

2.7.2.1 An upset occurred and the permittee can identify the cause or causes of the upset;

2.7.2.2 The permitted facility was at the time being properly operated;

2.7.2.3 The permittee submitted a 24-hour notice of the upset, as required in 18 AAC 83.410(f) and Appendix A, Part 3.4, Twenty-four Hour Reporting; and

2.7.2.4 The permittee complied with any mitigation measures required under 18 AAC 83.405(e) and Appendix A, Part 1.5, Duty to Mitigate.

2.7.3 Any determination made in administrative review of a claim that noncompliance was caused by an upset, before an action for noncompliance is commenced, is not the final administrative action subject to judicial review.

3.0 Monitoring, Recording, and Reporting Requirements

3.1 Representative Sampling

If the permittee is required to collect effluent samples by this permit, the permittee must collect effluent samples from the effluent stream after the last treatment unit before discharge into the receiving waters. Samples and measurements must be representative of the volume and nature of the monitored activity or discharge.

3.2 Reporting of Monitoring Results

At intervals specified in the permit, monitoring results must be reported on the EPA discharge monitoring report (DMR) form, as revised as of March 1999, adopted by reference.

3.2.1 Monitoring results shall be summarized each month on the DMR form or an approved equivalent report. The permittee must submit the DMR form or equivalent report on a monthly basis postmarked by the 15th day of the following month.

3.2.2 The permittee must sign and certify all DMRs and all other reports in accordance with the requirements of Appendix A, Part 1.12, Signatory Requirements and Penalties. All signed and certified legible original DMRs and all other reports and documents must be submitted to the Department at the Compliance and Enforcement Program address in Appendix A, Part 1.1.2.

3.2.3 If, during the period when this permit is effective, the Department makes available electronic reporting, the permittee may, as an alternative to the requirements of Appendix A, Part 2.2.2, submit monthly DMRs electronically by the 15th day of the following month in accordance with guidance provided by the Department. The permittee must certify all DMRs and other reports, in accordance with the requirements of Appendix A, Part 1.12. The permittee must retain the legible originals of these documents and make them available to the Department upon request.

3.3 Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than the permit requires using test procedures approved in 40 CFR Part 136, adopted by reference in 18 AAC 83.010, or as specified in this permit, the results of that additional monitoring must be included in the calculation and reporting of the data submitted in the DMR required by Appendix A, Part 3.2. All limitations that require averaging of measurements must be calculated using an arithmetic means unless the Department specifies another method in the permit. Upon request by the Department, the permittee must submit the results of any other sampling and monitoring regardless of the test method used.

3.4 Twenty-four Hour Reporting

The permittee shall report any noncompliance event that may endanger health or the environment as follows:

3.4.1 A report must be made:

3.4.1.1 Orally within 24 hours after the permittee becomes aware of the circumstances, and

3.4.1.2 In writing within five (5) days after the permittee becomes aware of the circumstances.

3.4.2 A report must include the following information:

3.4.2.1 A description of the noncompliance and its causes, including the specific details of the noncompliance;

3.4.2.2 The period of noncompliance, including exact dates and times;

3.4.2.3 If the noncompliance has not been corrected, a statement regarding the anticipated time the noncompliance is expected to continue; and

3.4.2.4 Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3.4.3 An event that must be reported within 24 hours includes:

3.4.3.1 An unanticipated bypass that exceeds any effluent limitation in the permit (see Appendix A, Part 2.6, Bypass).

3.4.3.2 An upset that exceeds any effluent limitation in the permit (see Appendix A, Part 2.7, Upset).

3.4.3.3 A violation of a maximum daily discharge limitation for any of the pollutants listed in the permit as requiring 24-hour reporting.

3.4.4 The Department may waive the written report on a case-by-case basis for reports under Appendix A, Part 3.4 if the oral report has been received within 24 hours of the permittee becoming aware of the noncompliance event.

3.4.5 The permittee may satisfy the written reporting submission requirements of Appendix A, Part 3.4.1.2 by submitting the written report via e-mail, if the following conditions are met:

3.4.5.1 written report includes all the information required under Appendix A, Part 3.4.2;

3.4.5.2 The written report is properly certified and signed in accordance with 18 AAC 83.385 and 18 AAC 83.405(l);

3.4.5.3 The written report is scanned as a PDF (portable document format) document and transmitted to the Department as an attachment to the e-mail; and

3.4.5.4 The permittee retains in the SWPPP the original signed and certified written report.

3.4.6 The e-mail and PDF written report will satisfy the written report submission requirements of this permit provided the e-mail is received by the Department within five (5) days after the time the permittee becomes aware of the noncompliance event and the e-mail and written report satisfy the criteria of Part 3.4.5. The e-mail address to report noncompliance to ADEC is at: dec-wqreporting@alaska.gov

3.5 Other Noncompliance Reporting

The permittee shall report all instances of noncompliance not required to be reported under Appendix A, Parts 2.4 (Compliance Schedules), 3.3 (Additional Monitoring by Permittee), and 3.4 (Twenty-four Hour Reporting) at the time the permittee submits monitoring reports under Appendix A, Part 3.2 (Reporting of Monitoring Results). A report of noncompliance under this part must contain the information listed in Appendix A, Part 3.4.2 and be sent to the Compliance and Enforcement Program address in Appendix A, Part 1.1.2.

4.0 Penalties for Violations of Permit Conditions

Alaska laws allow the State to pursue both civil and criminal actions concurrently for violations of the conditions of this permit.

4.1 Civil Action

AS 46.03.760(e), provides in pertinent part that a person who violates or causes or permits to be violated a regulation, a lawful order of the Department, or a permit, approval, or acceptance, or term or condition of a permit, approval or acceptance issued under the program authorized by AS 46.03.020 (12) is liable, in a civil action, to the state for a sum to be assessed by the court of not less than $500 nor more than $100,000 for the initial violation, nor more than $10,000 for each day after that on which the violation continues, and that shall reflect, when applicable:

4.1.1 Reasonable compensation in the nature of liquated damages for any adverse environmental effects caused by the violation, that shall be determined by the court according to the toxicity, degradability, and dispersal characteristics of the substance discharged, the sensitivity of the receiving environment, and the degree to which the discharge degrades existing environmental quality;

4.1.2 Reasonable costs incurred by the state in detection, investigation, and attempted correction of the violation;

4.1.3 The economic savings realized by the person in not complying with the requirements for which a violation is charged; and

4.1.4 The need for an enhanced civil penalty to deter future noncompliance.

4.2 Civil Injunctive Relief

4.2.1 Under AS 46.03.820, if the Department finds, after investigation, that a person is causing, engaging, or maintaining a condition or activity which in the judgment of the Department presents an imminent or present danger to the health or welfare of the people of the State of Alaska or would be likely to result in irreversible or irreparable damage to the natural resources or environment, and it appears to be prejudicial to the interests of the people of the state to delay action until an opportunity for a hearing can be provided, the Department may, without prior hearing, order that person to immediately discontinue, abate, or alleviate the condition or activity. Upon receipt of notice of such an order, the proscribed condition or activity shall be immediately discontinued, abated, or alleviated.

4.2.2 Under AS 46.03.765, the Department can bring an action in Alaska Superior Court seeking to enjoin ongoing or threatened violations for Department-issued permits and Department statutes and regulations.

4.3 Criminal Action

Under AS 46.03.790(h), a person is guilty of a Class A misdemeanor if the person negligently:

4.3.1 Violates a regulation adopted by the Department under AS 46.03.020(12);

4.3.2 Violates a permit issued under the program authorized by AS 46.03.020(12);

4.3.3 Fails to provide information or provides false information required by a regulation adopted under AS 46.03.020(12);

4.3.4 Makes a false statement, representation, or certification in an application, notice, record, report, permit, or other document filed, maintained, or used for purposes of compliance with a permit issued under or a regulation adopted under AS 46.03.020(12); or

4.3.5 Renders inaccurate a monitoring device or method required to be maintained by a permit issued or under a regulation adopted under AS 46.03.020(12).

4.4 Other Fines

Upon conviction of a violation of a regulation adopted under AS 46.03.020(12), AS 46.03.790(g) provides that a defendant who is not an organization may be sentenced to pay a fine of not more than $10,000 for each separate violation.

Appendix B

Acronyms

Appendix B. Acronyms (for the purposes of this permit)

Abbreviations	
ACGP	Alaska Construction General Permit
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish & Game
AK-CESCL	Alaska Certified Erosion and Sediment Control Lead
APDES	Alaska Pollutant Discharge Elimination System
BMP	Best Management Practice
CGP	Construction General Permit
CESSWI	Certified Erosion, Sediment and Storm Water Inspector
CFR	Code of Federal Regulations
CISEC	Certified Inspector of Sediment and Erosion Control
CPESC	Certified Professional in Erosion and Sediment Control
CPSWQ	Certified Professional in Storm Water Quality
CWA	Clean Water Act
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FWS	United States Fish and Wildlife Service
MS4	Municipal Separate Storm Sewer System
MSGP	Multi-Sector General Permit
NHPA	National Historic Preservation Act
NMFS	United States National Marine Fisheries Service
NOI	Notice of Intent
NOT	Notice of Termination
PAM	Polyacrylamides
POTW	Publicly Owned Treatment Works
SHPO	State Historic Preservation Office
SWPPP	Storm Water Pollution Prevention Plan
THPO	Tribal Historic Preservation Officer
TMDL	Total Maximum Daily Load
WQS	Water Quality Standard

Appendix C

Definitions

Definitions

2-yr, 24-hr storm event	Means the maximum 24-hour precipitation event with a probable recurrence interval of once in two (2) years, respectively.
Active Treatment System (ATS)	For the purposes of this permit, means a treatment system comprised of automated chemical dispensing, mechanical aeration, pumps, and/or mechanical filtration that employs chemical coagulation, chemical flocculation, or electrocoagulation in order to reduce turbidity caused by fine suspended sediment. The system may also use gravity separation, inert media filtration and absorptive media. It does not include the passive application of treatment chemicals through the use of pre-manufactured products (e.g. floc logs, floc blocks, etc).
Activity	Any "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the APDES program.
Alaska Climatic Regions	For the purposes of this permit, means the climatic region (Coastal, South-central, Western, Interior, and Arctic) that the construction activity is located.
Anionic Polyacrylamide	Means a negatively charged chemical agent that binds soil particles together, which promotes coagulation and rapid settling.
Arid Areas	Areas with an average total precipitation of 0 to 10 inches. See www.wrcc.dri.edu for precipitation data from the weather station closet to the construction project.
Best Management Practices (BMPs)	Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States (U.S.). BMPs also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
Buffer	For the purposes of this permit, means a setback that establishes a no-disturbance vegetated zone along and around waters of the U.S. The buffer consists of a dense turf or vegetation judiciously placed across the path of surface runoff in a way that promotes sheet flow that can reduce the velocity of flow, increase the likelihood of infiltration, and promote the trapping and settling of suspended matter. It may be used in combination with other control measures in a treatment train approach to promote erosion and sediment control.
Cationic Polyacrylamide	For the purposes of this permit, means a positively charged chemical agent that is prohibited from use by this general permit.
Clean Water Act (CWA)	Means the Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. section 1251 et seq.

Clearing	For the purposes of this permit, means the cutting down and removal of trees and brush without the disturbance of soils and the root mass.
Coagulants	Are substances that cause clumping of particles in a discharge to settle out impurities, often induced by chemicals such as lime, alum, and iron salts.
Commencement of Construction Activities	For the purposes of this permit, means the initial disturbance of soils associated with clearing, grubbing, grading, or excavating activities or other construction-related activities (e.g., stockpiling of fill material, establishment of staging areas, or development of project-specific material sources). This does not include any late winter clearing (part 4.10.3).
Common Plan of Development or Sale	For the purposes of this permit, means a site where multiple separate and distinct construction activities may be taking place at different times on different schedules, but still under a single plan. Examples include: 1) phased projects and projects with multiple filings or lots, even if the separate phases or filings/lots will be constructed under separate contract or by separate owners (e.g., a development where lots are sold to separate builders); 2) a development plan for a rural infrastructure project that may be phased over multiple years and is under a consistent plan for long-term development (e.g., a project that is designed to be built over several years, however funding is available for those phases on a year-to-year basis). Projects that have multiple year development plans but have year-to-year funding shall file NOI and NOT at the beginning and end of each funded phase of the project; and 3) projects in a contiguous area that may be unrelated but still under the same contract, such as construction of a building extension and a new parking lot at the same facility. If the project is part of a common plan of development or sale, the disturbed area of the entire plan shall be used in determining permit requirements. For land subdivided for residential lots, see the definition of 'Residential Subdivision' for further discussion of the requirements. Where discrete construction projects within a larger common plan of development or sale are located one-quarter mile or more apart and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not being disturbed. If a utility company is constructing new trunk lines off an existing transmission line to serve separate residential subdivisions located more than one-quarter mile apart, the two trunk line projects could be considered to be separate projects.

Control Measure	For the purposes of this permit, refers to any BMP or other method used to prevent or reduce the discharge of pollutants to waters of the United States.
Construction and Development Rule (C&D Rule)	As published in 40 CFR Part 450 is the regulation requiring effluent limitations guidelines (ELG's) and new source performance standards (NSPS) for controlling the discharge of pollutants from construction sites.
Disaster	Has the meaning in AS 26.23.900. As defined in AS 26.23.900 the term include, but are not limited to, the occurrence or imminent threat of widespread or serve damage, injury, loss of life or property, or shortage of food, water, or fuel resulting from an incident such as storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, avalanche, snowstorm, prolonged extreme cold, drought, fire, flood, epidemic, explosion, or riot; the release of oil or a hazardous substance if the release requires prompt action to avert environmental danger or mitigate environmental damage; and equipment failure if the failure is not a predictably frequent or recurring event or preventable by adequate equipment maintenance or operation.
Disaster Emergency	For the purposes of this permit, means the condition declared by proclamation of the governor or declared by the principal executive officer of a political subdivision to designate the imminence or occurrence of a disaster.
Department	Refers to the Alaska Department of Environmental Conservation
Discharge	When used without qualification means the "discharge of a pollutant
Discharge of Storm Water Associated with Construction Activity	For the purposes of this permit, refers to a discharge of pollutants in storm water from areas where soil disturbing activities (e.g., clearing, grading, or excavation), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck chute washdown, fueling), or other industrial storm water directly related to the construction process (e.g., concrete or asphalt batch plants) are located.
Discharge Point	Means the location where collected and concentrated storm water flows are discharged from the construction site.
Disturbed Area	Is a portion of any site that has been altered from pre-existing conditions, including but not limited to the following: providing access to a site, grubbing and clearing of vegetation (including the roots), grading, earth moving, altering land forms, and other construction-related activities (such as placement of project related stockpiles).

Effluent	For the purposes of this permit, means any discharge of storm water and allowable non-storm water by a permittee either to the receiving water or beyond the property boundary controlled by the permittee.
Electronic Notice of Intent (eNOI)	For the purposes of this permit, means the ADEC online system for submitting electronic Construction General Permit forms.
Eligible	Qualified for authorization to discharge storm water under this general permit.
Equivalent Analysis Waiver	Means a waiver, available only to small construction activities which discharge to non-impaired waters only, based on the permittee performance of an equivalent analysis using existing instream concentrations, expected growth in pollutant concentrations from all sources, and a margin of safety
Erosion	Is the process of wearing away of the land surface by water, wind, ice, gravity, or other geologic agents.
Erosion Control Measures	Are control measures intended to minimize dislodging and mobilizing of sediment particles
Exceptional Recreational or Ecological Significance	For the purposes of this permit, means a waterbody that is important, unique or sensitive ecologically and has been designated as a Tier 3 waters by the Department.
Fall Freeze-up	For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the fall that air temperatures will be predominately below freezing. It is the date in the fall that has an 80% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date. This date can be found by looking up the "Fall 'Freeze' Probabilities" for the weather station closest to the site on the website www.wrcc.dri.edu/summary/Climsmak.html. NOTE: this estimation of "Fall Freeze-up" is for planning purposes only. During construction the permittee will need to maintain control measures based on actual conditions.
Facility	See "activity."
Federal Facility	Any buildings, installations, structures, land, public works, equipment, aircraft, vessels, and other vehicles and property, owned by, or constructed or manufactured for the purpose of leasing to, the Federal government.
Field Measurements	Are testing procedures performed in the field with portable field-testing kits or meters.

Fill-only projects — For the purposes of this permit, means projects where the road prism or gravel pad is constructed using fill material placed over an undisturbed vegetative mat. Typically there is not soil disturbance that may be subject to erosion.

Final Stabilization — For the purposes of this permit, means that:

1. All soil disturbing activities at the site have been completed and either of the two following criteria shall be met:
   a. a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or
   b. equivalent non vegetative permanent stabilization measures have been employed (such as the use of riprap, gabions, porous backfill (ADOT&PF Specification 703-2.10), railroad ballast or subballast, ditch lining (ADOT&PF Specification 610-2.01 with <3% smaller than #200 sieve), geotextiles, or fill material with low erodibility as determined by an engineer familiar with the site and documented in the SWPPP).
2. When background native vegetation will cover less than 100 percent of the ground (e.g., arid areas, beaches), the 70 percent coverage criteria is adjusted as follows: if the native vegetation covers 50 percent of the ground, then 70 percent of 50 percent ($0.70 \times 0.50 = 0.35$) would require 35 percent total cover for final stabilization. On a beach with no natural vegetation, no stabilization is required.
3. In arid and semi-arid areas only, all soil disturbing activities at the site have been completed and both of the following criteria have been met:
   a. Temporary erosion control measures (e.g., degradable rolled erosion control product) are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years without active maintenance by the permittee;
   b. The temporary erosion control measures are selected, designed, and installed to achieve 70 percent vegetative coverage within three years.
4. For individual lots in residential construction, final stabilization means that either:
   a. The homebuilder has completed final stabilization as specified

above, or

b. The homebuilder has established temporary stabilization including perimeter controls for an individual lot prior to occupation of the home by the homeowner and informing the homeowner of the need for, and benefits of, final stabilization.

5. For construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land, staging areas for highway construction, etc.), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to ''water of the United States,'' and areas which are not being returned to their preconstruction agricultural use must meet the final stabilization criteria (1) or (2) or (3) above.

Flocculants — Are substances that interact with suspended particles and bind them together to form flocs. These flocs more readily settle out compared to individual particles.

Frozen Ground — For the purposes of this permit, is characterized by soil temperature below freezing. Frozen ground by itself is not considered an acceptable stabilization control measure. If may be used in combination with control measures (e.g. track walking, downgradient control measures, etc.)

Good Housekeeping Measures — For the purposes of this permit, means storm water controls designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling and/or disposal practices, employee education, and other actions.

Grubbing — For the purposes of this permit, means the stripping and removal of the root mass on or near the ground surface. This is considered soil disturbance activity and requires coverage under this permit.

Impaired Water — (or "Water Quality Impaired Water" or "Water Quality Limited Segment") is defined as a water that is impaired for purposes of this permit if it has been identified by the State of Alaska or EPA pursuant to Section 303(d) of the Clean Water Act as not meeting applicable State water quality standards (These waters are called "water quality limited segments" under 40 CFR 30.2(j)). Impaired waters include both waters with approved or established TMDLs, and those for which a TMDL has not yet been approved or established.

Indian Country — Defined at 40 CFR §122.2 to mean:

1. All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the

issuance of any patent, and including rights-of-way running through the reservation;

2. All dependent Indian communities with the borders of the United States whether within the originally or subsequently acquired territory thereof and whether within or without the limits of a state; and

3. All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-ways running through the same.

Large Construction Activity	Defined at 40 CFR §122.26(b)(14)(x) and incorporated here by reference. A large construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than five acres of land or will disturb less than five acres of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than five acres. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity of conveyance channels, or original purpose of the site.
Linear Project	Is a land disturbing activity as conducted by an underground/overhead utility or highway department, including but not limited to any cable line or wire for the transmission of electrical energy; any conveyance pipeline for transportation of gaseous or liquid substance; any cable line for communications; or any other energy resource transmission right-of-way or utility infrastructure (e.g., roads and highways) along a long narrow area.
Maintenance Only Projects	For the purposes of this permit, means projects that repair existing roads or ditches or similar maintenance projects
Master Plan	For the purposes of this permit, means if the permittee has a long-range master plan of development (e.g. a rural infrastructure improvement project or military base construction) where some portions of the master plan are a conceptual rather than a specific plan of future development and the future construction activities would, if they occur at all, happen over an extended time period, the permittee may consider the "conceptual" phases of a master plan to be separate "common plans" provided the periods of construction for the physically interconnected phases do not overlap.
Mean Annual Precipitation	This is the average total precipitation based on weather records. This data is available on the website for the Western Regional Climate Center www.wrcc.dri.edu/summary/Climsmak.html.
Minimize	To reduce and/or eliminate to the extent achievable using control measures and good housekeeping measures that are technologically available and economically practicable and achievable in light of best

	industry practices.
Minimize Pollutant Discharge	See 'Minimize'
Municipality	A home rule municipality is a municipal corporation and political subdivision. It is a city or a borough that has adopted a home rule charter, or it is a unified municipality. A home rule municipality has all legislative powers not prohibited by law or charter. (§ 3 ch 74 SLA 1985) A general law municipality is a municipal corporation and political subdivision and is an unchartered borough or city. It has legislative powers conferred by law. (§ 3 ch 74 SLA 1985)
Municipal Separate Storm Sewer System (MS4)	Defined at 40 CFR §122.26(b)(8) to mean a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains): 1. Owned and operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to waters of the United States; 2. Designed or used for collecting or conveying storm water; 3. Which is not a combined sewer; and 4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.
Nephelometric Turbidity Unit (NTU)	Is an expression of the optical property that causes light to be scattered and absorbed rather than transmitted in a straight line through the water.
New Project	The "commencement of construction" occurs after the effective date of this permit.
New Source	For the purpose of this permit, is any source whose discharges are defined in 40 CFR §122.26(b)(14)(x) and (b)(15), that commences construction activity after the effective date of the new Construction &Development rule.
New Source Performance Standards (NSPS)	Are technology-based standards for a construction site that qualifies as new source under 40 CFR §450.24.

Non-Storm Water Discharges	Are discharges that do not originate from storm events. They can include, but are not limited to, discharges of process water, air conditioner condensate, non-contact cooling water, vehicle wash water, sanitary wastes, concrete washout water, paint wash water, irrigation water, or pipe testing water.
Notice of Intent (NOI)	Is the form required to be submitted by an applicant to the Department to obtain authorization of coverage under the Alaska Construction General Permit.
Notice of Termination (NOT)	Is the form required for terminating coverage under the Alaska Construction General Permit.
Ongoing Project	The "commencement of construction" occurs before the effective date of this permit.
Operator	For the purpose of this permit, and in the context of storm water associated with construction activity, means any person associated with a construction project that meets either of the following two criteria: 1. The person has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or 2. The person has day-to-day operational control of those activities at a site which are necessary to ensure compliance with a SWPPP for the site or other permit conditions (e.g., the person is authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions). This definition is provided to inform permittees of the Department's interpretation of how the regulatory definitions of "owner or operator" and "facility or activity" are applied to discharges of storm water associated with construction activity.
Owner or Operator	For the purposes of this permit, means the owner or operator of any "facility or activity" subject to regulation under the APDES program.
Outfall	See 'Discharge Point.'
Permanent Storm Water Management Controls	For the purposes of this permit, refers to "Nondomestic wastewater treatment works" as described in 18 AAC 72.990. These controls include: dry extended detention ponds, constructed wetlands, wet ponds, sand filters, oil/grit separator, rotational flow separators, etc.
Permitted Ongoing Project	Is a construction project that commenced prior to the effective date of this permit, which has been covered by a prior general permit for storm water discharges.

Permittee	Is a person who is authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements of this permit.
Person	For the purposes of this permit, means any public or private entity including but not limited to an individual, trust, firm, joint stock company, corporation (including government corporation), partnership, association, federal agency, state agency, city, borough, municipality, commission, political subdivision of the State, any interstate body or tribe.
Point Source	Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.
Pollutant	Defined at 40 CFR §122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.
Pollution Prevention Measures	See "Good Housekeeping Measures."
Polyacrylamide (PAM)	For the purposes of this permit, is a long-chain organic polymer developed to clarify drinking water that has many other beneficial uses including erosion control, enhanced infiltration, and nutrient removal. Some forms of PAM can be used to stabilize soils and remove fine suspended sediments from storm water runoff. In powder form PAM is easy to store, easy to transport, and is not a health concern when used as directed. PAM dissolved in nonaqueous emulsions are not recommended for use in this permit.
Polymers	For the purposes of this permit, are coagulants and flocculants used to control erosion on soil or to enhance the sediment removal capabilities of sediment traps or basins. Common construction site polymers include polyacyrlamide (PAM), chitosan, alum, polyaluminum chloride, and gypsum. A permittee using polymers should carefully consider the appropriateness of usage of these materials where there are sensitive or protected aquatic organisms in the receiving waters, including threatened or endangered species and their critical habitat.
Post-Construction Discharges	For the purposes of this permit, means the storm water discharges occurring after construction has been completed and final stabilization has been attained.

Practicable	For the purposes of this permit, means capable of being done after taking into consideration costs, existing technology, standards of construction practice, impacts to water quality, site conditions, and logistics in light of the overall project purpose.

Project Area

For the puroposes of this permit , meant that

1. The areas on the construction site where storm water discharges originate and flow toward the point of discharge into the receiving waters (including areas where excavation, site development, or other ground disturbance activities occur) and the immediate vicinity. (Example: 1. Where bald eagles nest in a tree that is on or bordering a construction site and could be disturbed by the construction activity. 2. Where grading causes storm water to flow into a small wetland or other habitat that is on the site that contains listed species.)
2. The areas where storm water discharges flow from the construction site to the point of discharge into receiving waters. (Example: Where storm water flows into a ditch, swale, or gully that leads to receiving waters and where listed species (such as amphibians) are found in the ditch, swale, or gully.)
3. The areas where storm water from construction activities discharge into receiving waters and the areas in the immediate vicinity of the point of discharge. (Example: Where storm water from construction activities discharges into a stream segment that is known to harbor listed aquatic species.)
4. The areas where storm water BMPs will be constructed and operated, including any areas where storm water flows to and from BMPs. (Example: Where a storm water retention pond would be built.)
5. The areas upstream and /or downstream from construction activity that discharges into a stream segment that may be affected by the discharges. (Example: Where sediment discharged to a receiving stream settles downstream and impacts a breeding area of a listed aquatic species.)

Qualified Person

Given the range in size and types of projects in Alaska the following is a description of the experience and skills of a "qualified person" for the different roles typically required at a site to ensure compliance with this permit. The recommended experience or educational requirements for each of these "roles" is described below. The required training is described in Table C-1. For projects that disturb 1 to less than 5acres, all the roles described below will or may be carried out by one person. For the larger projects there will or maybe the need to have one person for each role (that is a project-specific choice by the permittee).

Storm Water Lead

A. A person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharges from the construction activity.

B. Such person shall have the authority to prepare the SWPPP, stop and/or modify construction activities as necessary to comply with the SWPPP and the terms and conditions of the permit, and modify the SWPPP.

C. Such a person shall be responsible for inspections and recordkeeping.

D. Such a person shall have the authority to supervise or initiate corrective actions identified by inspections, monitoring, or observation to fix control measures and minimize the discharge of pollutants.

SWPPP Preparer

A person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality, the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharges from the construction activity, and is familiar with Part 5 as a means to implement this permit.

Storm Water Inspector

A person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality, the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharges from the construction activity, and is familiar with Part 6 as a means to ensure compliance with this permit. The person is familiar with the project specific inspection forms and how to fill them out, responsible for conducting and signing inspection reports, and responsible for reporting the need for follow-up corrective action to the Storm Water Lead or site supervisor.

Monitoring Person

A person knowledgeable in the principles and practices of water quality monitoring who is familiar with Part 7 and the monitoring plan for the site and how to conduct water quality sampling, testing, and reporting.

Active Treatment System Operator

A person knowledgeable in the principles and practices of treatment systems that employs chemical coagulation, chemical flocculation, or electrocoagulation to aid in the treatment of storm water runoff who is familiar with Part 4.5 as a means to implement and comply with this permit.

TABLE C-1. Recommended Experience or Required Training for Specific Roles for Projects Covered by this Permit.

Storm Water Role	**Total Project Disturbed Acreage**		
	1 to < 5 acres	**5 acres to <20 Acres**	**> 20 Acres**
Storm Water Lead	Recommend AK-CESCL training but not required	Be AK-CESCL trained by May 1, 2013	Be AK-CECSL trained by May 1, 2012
SWPPP Preparer	Be familiar with permit.	Recommend taking a course in SWPPP preparation.	Visited the site prior to writing the SWPPP or soon after project start and revised the SWPPP based on site conditions. Taken a course in SWPPP preparation.
Storm Water Inspector	Be familiar with permit and SWPPP.	Be AK-CESCL trained by May 1, 2013	Be AK-CECSL trained by May 1, 2012
Monitoring	Not Required	Not Required	Be AK-CECSL trained by May 1, 2012

Active Treatment System Operator	Be AK-CECSL trained by May 1, 2012 and have general experience and knowledge of storm water control measures. Operational experience with the specific equipment used on-site.	Be AK-CECSL trained by May 1, 2012 and have general experience and knowledge of storm water control measures. Operational experience with the specific equipment used on-site.	Be AK-CECSL trained by May 1, 2012 and have general experience and knowledge of storm water control measures. Operational experience with the specific equipment used on-site.

Note: The following courses may substitute for AK-CESCL training: CPESC, CESSWI, CISEC, or CPSWQ.

Rain Gauge	For the purposes of this permit, means a type of instrument to gather and measure the amount of liquid precipitation occurring during a storm event for a set period of time.
Rainfall Erosivity Factor or R Factor	Means a measure of the erosive force and intensity of rain in a normal year. Two components of the factor are total energy and the maximum 30-minute intensity of storms. The R-Factor is the sum of the product of these two components for all major storms in the area during an average year.
Rainfall Erosivity Waiver	Means a waiver, available only to small construction activities, that is based on the rainfall erosivity factor for the project.
Reasonable	For purposes of this permit, means the permittee has selected, designed, installed, implemented and maintained control measures in light of manufacture's specifications and good engineering practices at the project to meet the control measures and good housekeeping measures established in Part 4.0 of the permit.
Reasonable Time(s)	For inspections it is time when inspections may occur, typically during normal business hours of 8:00 am to 5:00 pm Monday through Friday, except for those construction sites that are operational outside of these times. For information requests it is thirty (30) calendar days from the date of the receipt of a written request for information from the department, unless specified otherwise in this permit.

Receiving water	The "Water of the United States" as defined in 40 CFR §122.2 into which the regulated storm water discharges
Residential Subdivision	For the purposes of this permit, means any parcel of land that is divided into smaller parcels with the intent of selling the smaller parcels for the development of residential homes for individual ownership.
Rural Infrastructure Improvement Project	For the purposes of this permit, means a project that is a rural water, wastewater, solid waste, or energy project that is funded, designed, or built by a third party such as the Alaska Native Tribal Health Consortium, DEC Village Safe Water Program, or the Alaska Energy Authority for a 2nd class city, Tribe, Community Association, or statutory improvement district.
Rural Infrastructure Improvement Project Operators	For the purposes of this permit, means the agency or entity with "design control over plans and specifications" that acts as the operator rather than the ultimate owner of the rural infrastructure improvement project.
Sampling Point	For the purposes of this permit, means that point at which storm water samples are collected where the storm water or authorized non-storm water is discharged from the site.
Sediment	Is solid particulate matter, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.
Sedimentation	Is the process of deposition of suspended matter carried by water, wastewater, or other liquids by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material.
Sediment Control Measures	Are control measures that serve to capture sediment particles that have mobilized and are entrained in storm water with the objective of removing sediment and other pollutants from the storm water discharge
Semi-Arid Areas	Areas with an average total precipitation of 10 to 20 inches. See www.wrcc.dri.edu for precipitation data from the weather station closest to the project.
Sensitive Area	For the purposes of this permit, means any lakes, ponds, perennial and intermittent streams, vernal pools, wetlands, floodplains, floodways and areas with highly erodible soils, which need special protection.
Sheet Flow	Is slow-velocity runoff that flows or is directed to flow across an overland area where there are no defined channels and the water spreads out over a large area at a uniform depth. Sometimes referred

	to as "sheetwash."
Site	The land or water area where any "facility or activity" is physically located or conducted, including adjacent and off-site land used in connection with the facility or activity, including related areas for support activities.
Small Construction Activity	Defined at 40 CFR §122.26(b)(15) and incorporated here by reference. A small construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than one (1) acre and less than five (5) acres of land or will disturb less than one (1) acre of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity of conveyance channels, or original purpose of the site.
Snowmelt	Is the conversion of snow into water runoff that may infiltrate into the ground with the onset of warmer temperatures.
Spring Thaw	For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the spring that air temperatures will be predominately above freezing. It is the date in the spring that has a 20% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date. This date can be found by looking up the "Spring 'Freeze' Probabilities" for the weather station closest to the project on the website www.wrcc.dri.edu/summary/Climsmak.html. NOTE: this estimation of "Spring Thaw" is for planning purposes only. During construction the permittee will need to maintain control measures based on actual conditions.
Steep Slope	For the purposes of this permit, mean any slope occurring on the construction site that is 20 percent or greater in grade for a length of the slope that exceeds 25 feet.
Storm Event	For the purposes of this permit, means a rainfall event that produces more than 0.5 inch of precipitation in 24 hours and that is separated from the previous storm event by at least 3 days of dry weather.
Storm Water	Storm water runoff, snow melt runoff, and surface runoff and drainage.
Storm Water Controls	See 'Control Measure'

Storm Water Discharge-Related Activities	Activities that cause, contribute to, or result in storm water point source pollutant discharges, including but not limited to: excavation, site development; grading and other surface disturbance activities; and measures to control storm water including the sitting, construction and operation of BMPs to control, reduce or prevent storm water pollution.
Storm Water Pollution Prevention Plan (SWPPP)	Means a site-specific, written document that: (1) identifies potential sources of storm water pollution at the construction site; (2) describes practices to reduce or eliminate pollutants in storm water discharges from the construction site; and (3) identifies procedures the permittee will implement to comply with the terms and conditions of this general permit.
Support Activities	For the purposes of this permit, means any concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas provided:

1. The support activity is directly related to the construction project that is covered under this general permit,
2. The support activity is not a commercial operation serving multiple unrelated construction projects by different permittees,
3. The support activity does not operate beyond the completion of the construction activity at the project it supports, and
4. Appropriate control measures are identified in the SWPPP covering the discharges from the support activity areas.

Material borrow areas that are developed specific for the projects and are non-contiguous to the project site (e.g. the material is barged in from another area not nearby the project area) are considered "support activities" however, they would not need to be routinely inspected as part of the project. These areas would need to comply with other conditions of the permit to control storm water discharge as described in the SWPPP. The permit provides an exception for concrete or asphalt plants used for highway paving projects that may also, incidental to the main project contract, pave residential driveways. This additional paving is allowed under this permit provided those activities are covered under the SWPPP.

For communities where equipment or materials are barged in, flown in, or shipped by Alaska Marine Highway, the support activities may serve more than one project if: (1) each project that qualifies for coverage under this permit files a project-specific NOI and includes an acknowledgement of the shared support activities; (2) identifies the operator responsible for maintaining those support activities in compliance with permit requirements; and (3) identifies the operator responsible for the support activities until an NOT is filed at the

	conclusion of use of the support activity.
Temporary Stabilization	For the purposes of this permit, means protecting soils from erosion by rainfall, snow melt, runoff, or wind, with surface roughening or a surface cover, including, but not limited to, establishment of ground vegetation, application of mulch, surface tackifers, rolled erosion control products, gravel or paving.
Total Maximum Daily Load (TMDL)	The sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. If receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure.
TMDL Waiver	Means a waiver, available only to small construction activities, based on an EPA established or approved TMDL.
Treatment Chemicals	For the purposes of this permit, means chemicals specifically used for chemical coagulation, chemical flocculation, erosion control or sediment control.
Turbidmeter	For the purposes of this permit, means an instrument that measures the amount of light scattered at right angles to an incident light beam by particles present in a storm water sample.
Turbidity	Means a condition of water quality characterized by the presence of suspended solids and/or organic material.
Water Quality Impaired	See 'Impaired Water.'
Water Quality Standard	For the purposes of this permit, means the Alaska Water Quality Standards (18 AAC 70) as approved by U.S. EPA. As defined in 40 CFR § 131.3 water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act.
Waters of the United States	Has the meaning given in 40 CFR §122.2.
Wetland	Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally

include swamps, marshes, bogs, and similar areas.

Winter Construction	For the purposes of this permit, means the commencement of construction specifically during frozen conditions to aid in construction. Typically, this period is from December to March and is approximately from after fall freeze-up to before spring thaw.
Winter Shutdown	For the purposes of this permit, means the cessation of soil disturbing or soil stabilizing construction activity for the winter. Typically this period is from October/November to April/May and is approximately from fall freeze-up to spring thaw.

Appendix D

Small Construction Waivers and Instructions

Appendix D - Small Construction Waivers and Instructions

These waivers are only available to storm water discharges associated with small construction activities (i.e., 1-5 acres). As the operator of a small construction activity, the operator may be able to qualify for a waiver in lieu of needing to obtain coverage under this general permit based on: (A) a low rainfall erosivity factor, (B) a TMDL analysis, or (C) an equivalent analysis that determines allocations for small construction sites are not needed. Each applicant, otherwise needing permit coverage, must notify DEC of its intention for a waiver. It is the responsibility of that person wishing to obtain a waiver from coverage under this general permit to submit a complete and accurate waiver certification as described below. Where the operator changes or another is added during the construction project, the new operator must also submit a waiver certification to be waived.

A. **Rainfall Erosivity Waiver**

Under this scenario the small construction project's rainfall erosivity factor calculation ("R" in the Revised Universal Soil Loss Equation) is less than 5 during the period of construction activity. The operator must certify to the Department that construction activity will occur only when the rainfall erosivity factor is less than 5. The period of construction activity begins at initial earth disturbance and ends with final stabilization. Where vegetation will be used for final stabilization, the date of installation of a stabilization practice that will provide temporary non-vegetative stabilization can be used for the end of the construction period, provided the operator commits (as a condition of waiver eligibility) to periodically inspect and properly maintain the area until the criteria for final stabilization as defined in the construction general permit have been met. If use of this temporary stabilization eligibility condition was relied on to qualify for the waiver, signature on the waiver with its certification statement constitutes acceptance of and commitment to complete the final stabilization process. The applicant must submit a waiver certification to the Department prior to commencing construction activities.

Note: The basis of the rainfall erosivity factor "R" was determined in accordance with Chapter 2 of Agriculture Handbook Number 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE), pages 21–64, dated January 1997; United States Department of Agriculture (USDA), Agricultural Research Service. R factor information for Alaska can be found in the Fact Sheet and were obtained from RUSLE2 Version 1.26.6.4 http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm. *(Database last modified on Feb, 28, 2008).*

If the operator is eligible for a waiver based on low erosivity potential, the operator may submit a rainfall erosivity waiver to the address listed in Part 2.3 and provide the following information on the waiver certification form in order to be waived from permitting requirements:

1. Name, address and telephone number of the operator;
2. Name (or other identifier), address, county or similar governmental subdivision, and latitude/longitude of the construction project or site;
3. Estimated construction start and completion (i.e., final stabilization) dates, and total acreage (to the nearest quarter acre) to be disturbed;
4. The rainfall erosivity factor calculation that applies to the active construction phase at your project site; and
5. A statement, signed and dated by an authorized representative as provided in Appendix A, Part 1.12, which certifies that the construction activity will take place during a period when the value of the rainfall erosivity factor is less than five.

An applicant can access the waiver certification form from ADEC's website at: (www.dec.state.ak.us/water/wnpspc/stormwater/index.htm). The form must be sent to the addresses listed in Part 2.3 of this permit.

Note: If the R factor is 5 or greater, you cannot apply for the rainfall erosivity waiver, and must apply for permit coverage as per Part 2.2 of the construction general permit, unless you qualify for the Water Quality Waiver as described below.

If the small construction project continues beyond the projected completion date given on the waiver certification, the applicant must recalculate the rainfall erosivity factor for the new project duration. If the R factor is below five (5), the owner or operator must update all applicable information on the waiver certification and retain a copy of the revised waiver as part of the site SWPPP. The new waiver certification must be submitted prior to the projected completion date listed on the original waiver form to assure exemption from permitting requirements is uninterrupted. If the new R factor is five (5) or above, the applicant must submit an NOI, in accordance with Part 2 of the permit.

B. **TMDL Waiver**

This waiver is available if DEC or EPA has established or approved a TMDL that addresses the pollutant(s) of concern and has determined that controls on stormwater discharges from small construction activity are not needed to protect water quality. The pollutant(s) of concern include sediment (such as total suspended solids, turbidity or siltation) and any other pollutant that has been identified as a cause of impairment of any water body that will receive a discharge from the construction activity. Information on TMDLs that have been established or approved by EPA is available from EPA online at http://www.epa.gov/owow/tmdl/ and from DEC online at http://www.dec.state.ak.us/water/tmdl/approvedtmdls.htm.

If an applicant of the construction activity is eligible for a waiver based on compliance with a DEC or EPA established or approved TMDL, the operator must provide the following information on the Waiver Certification form in order to be waived from permitting requirements:

1. Name, address and telephone number of the operator;
2. Name (or other identifier), address, county or similar governmental subdivision, and latitude/longitude of the construction project or site;
3. Estimated construction start and completion (i.e., final stabilization) dates, and total acreage (to the nearest quarter acre) to be disturbed;
4. The name of the water body(s) that would be receiving storm water discharges from your construction project;
5. The name and approval date of the TMDL;
6. A statement, signed and dated by an authorized representative as provided in Appendix A, Part 1.12 that certifies that the construction activity will take place and that the storm water discharges will occur, within the drainage area addressed by the TMDL.

C. **Equivalent Analysis Waiver**

This waiver is available for non-impaired waters only (see http://www.dec.state.ak.us/water/wqsar/waterbody/integratedreport.htm for list of impaired waters). The operator can develop an equivalent analysis that determines allocations for the small construction site for the pollutant(s) of concern or determines that such allocations are not needed to protect water quality. This waiver requires a small construction site to develop an equivalent analysis based on existing in-stream concentrations, expected growth in pollutant concentrations from all sources, and a margin of safety.

If an operator wants to use this waiver, the operator must develop an equivalent analysis and provide the following information to be waived from permitting requirements:

1. Name, address and telephone number of the operator;
2. Name (or other identifier), address, county or similar governmental subdivision, and latitude/longitude of the construction project or site;
3. Estimated construction start and completion (i.e., final stabilization) dates, and total acreage (to the nearest quarter acre) to be disturbed;
4. The name of the water bodies that would be receiving storm water discharges from your construction project;
5. The equivalent analysis;
6. A statement, signed and dated by an authorized representative as provided in Appendix A, Part 1.12, that certifies that the construction activity will take place and that the storm

water discharges will occur, within the drainage area addressed by the equivalent analysis.

D. **Waiver Deadlines and Submissions**

1. Waiver certifications must be submitted prior to commencement of construction activities.
2. If an operator submits a TMDL or equivalent analysis waiver request, the operators request is not waived until the Department approves the request. As such, the operator may not commence construction activities until receipt of approval from the Department.
3. Late Notifications: operators are not prohibited from submitting waiver certifications after initiating clearing, grading, excavation activities, or other construction activities. The Department reserves the right to take enforcement for any unpermitted discharges that occur between the time construction commenced and waiver authorization is granted.

Submittal of a waiver certification is an optional alternative to obtaining permit coverage for discharges of storm water associated with small construction activity, provided the operator qualifies for the waiver. Any discharge of storm water associated with small construction activity not covered by either a permit or a waiver may be considered an unpermitted discharge under the Clean Water Act. As mentioned above, the Department reserves the right to take enforcement for any unpermitted discharges that occur between the time construction commenced and either discharge authorization is granted or a complete and accurate waiver certification is submitted. The Department may notify any operator covered by a waiver that they must apply for a permit. The Department may notify any construction project that has been in non-compliance with a waiver that they may no longer use the waiver for future projects. Any member of the public may petition the Department to take action under this provision by submitting written notice along with supporting justification.

Appendix E

Notice of Intent (NOI) Form

Appendix E – Notice of Intent (NOI) Form

To obtain coverage under this permit, an operator must submit a Notice of Intent (NOI). The operator must submit an NOI using either (1)ADEC's Electronic Notice of Intent (eNOI) system, available at http://www.dec.state.ak.us/water/wnpspc/stormwater/APDESeNOI.html, or (2) file a paper copy of the NOI, a copy of which is available at the above web site and send to the address given in Part 2.3 of this permit.

Appendix F

Notice of Termination (NOT) Form

Appendix F – Notice of Termination (NOT) Form

To terminate coverage under this permit, the permittee must submit a Notice of Termination (NOT). The permittee must either (1) terminate coverage using ADEC's electronic NOI system, available at http://www.dec.state.ak.us/water/wnpspc/stormwater/APDESeNOI.html, or (2) file a paper copy of the NOT, a copy of which is available at the above web site and send to the address given in Part 2.3 of this permit.

Appendix G

Annual Report Form

Appendix G – Annual Report Form

The permittee must submit an Annual Report that contains all the water quality monitoring data collected by the permittee. The permittee must use the form available at http://www.dec.state.ak.us/water/wnpspc/stormwater/Forms.htm, or (2) file a paper copy of the annual report, a copy of which is available at the above web site and send to the address given in Part 2.3 of this permit.

Appendix G

Grading and Stabilization Records

Appendix G – Grading and Stabilization Activities Log

Project Name:
SWPPP Contact:

Date Grading Activity Initiated	Description of Grading Activity	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures are Initiated	Description of Stabilization Measure and Location

APPENDIX H

Additional Information

Bristol

DESIGN BUILD SERVICES, LLC

SWPPP CONTACT INFORMATION

EI327 ARCTIC SURVIVAL FORWARD OPERATING FACILITY

Robbie Lynn, AK CESCL

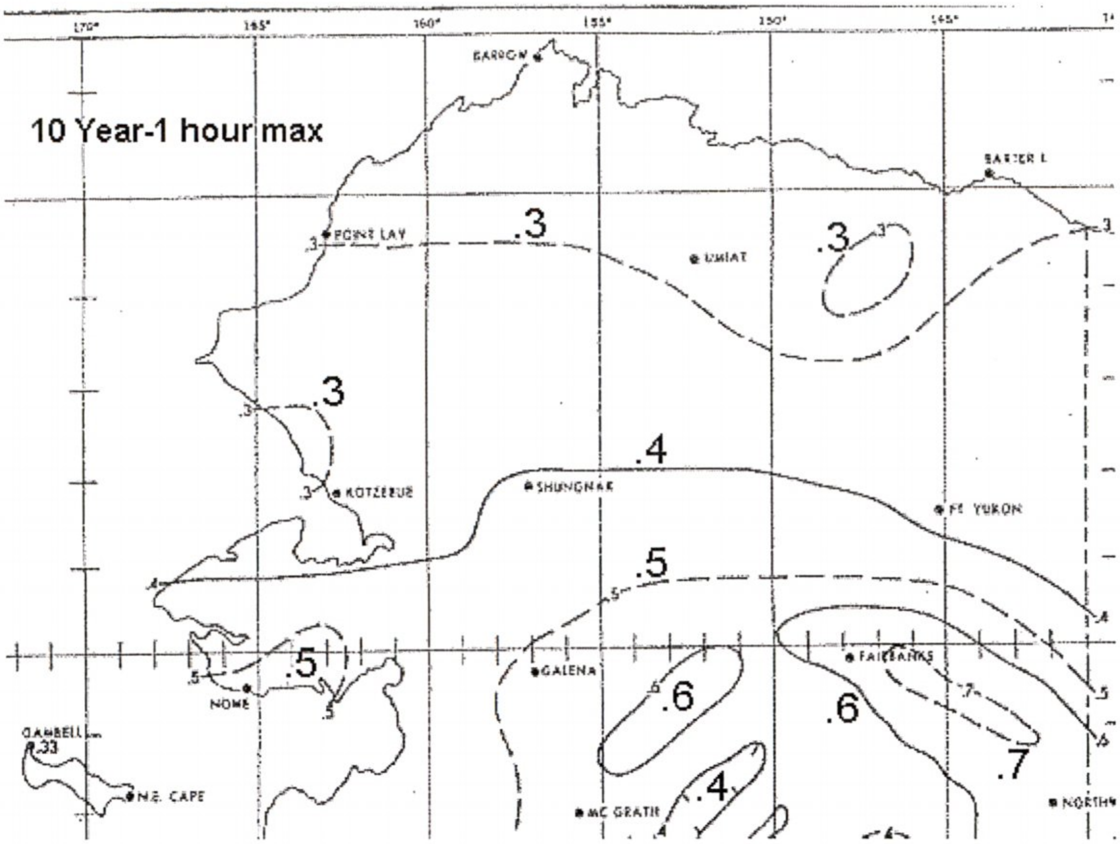
Stormwater Lead

1040 Riley Court

Fairbanks, AK 99701

Tel: (907) 378-3763 – 24 Hour (cell)

SWPPP PLANS LOCATED IN JOB TRAILER ON SITE



10 Year-1 hour max
170°
165°
160°
155°
150°
145°
BARROW
BARTER I.
POINT LAY
UMIAT
KOTZEBUE
SHUNGNAK
FT. YUKON
GALENA
FAIRBANKS
NOME
GAMBELL
N.E. CAPE
MC GRATH
.3
.4
.5
.6
.7
.33

GAMBELL, ALASKA (503226)

Period of Record Monthly Climate Summary

Period of Record : 9/ 1/1949 to 8/31/1997

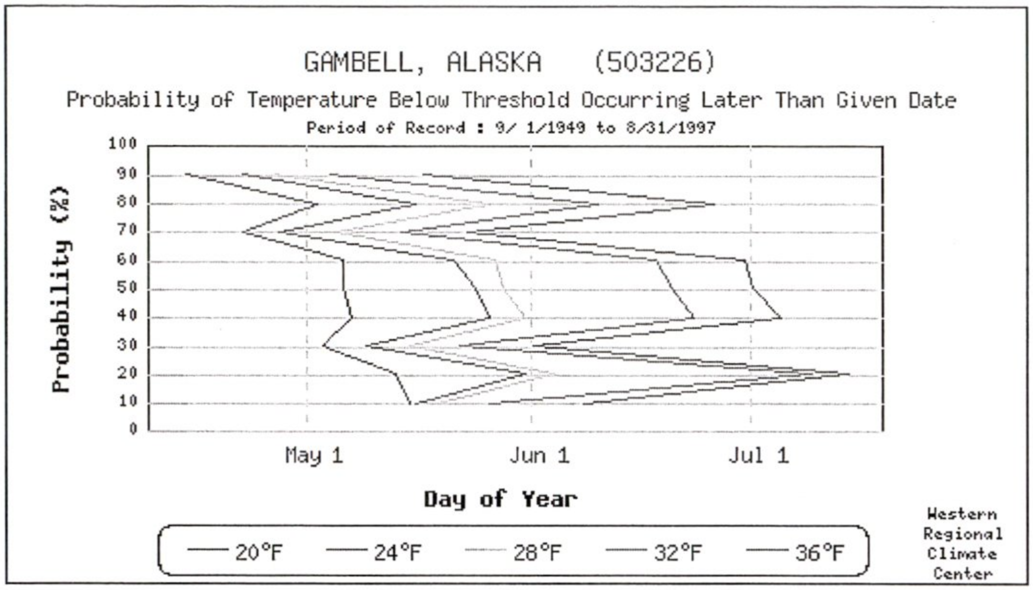
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	12.1	6.0	9.9	19.8	33.0	43.2	49.9	49.5	43.5	34.4	27.4	20.0	29.1
Average Min. Temperature (F)	3.0	-2.5	0.2	9.7	25.6	34.0	41.3	42.3	37.0	29.2	21.4	11.9	21.1
Average Total Precipitation (in.)	1.07	1.23	1.57	1.53	0.92	0.61	1.08	2.49	1.66	1.55	1.88	1.98	17.56
Average Total SnowFall (in.)	7.7	9.9	10.0	13.0	3.9	0.2	0.0	0.0	0.2	3.6	10.3	11.8	70.5
Average Snow Depth (in.)	7	8	11	18	7	0	0	0	0	0	2	4	5

Percent of possible observations for period of record.
Max. Temp.: 22.2% Min. Temp.: 22.2% Precipitation: 22.1% Snowfall: 22.5% Snow Depth: 22.4%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

GAMBELL, ALASKA

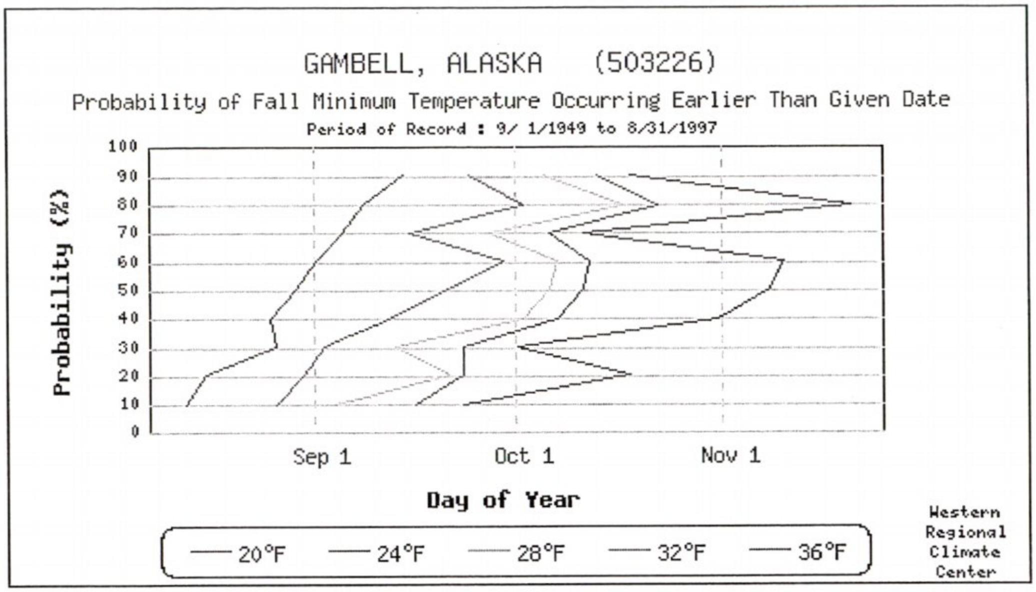
Spring 'Freeze' Probabilities (Jan. 1 - Jul. 31)



Tabular Output

GAMBELL, ALASKA

Fall 'Freeze' Probabilities (Jul. 31 - Dec. 31)



Tabular Output

APPENDIX I

Training Records

Appendix I – SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: ______________________________ Date: ________________

Course Length (hours): ____________________________

Stormwater Training Topic: *(check as appropriate)*

- ❑ **Erosion Control BMPs**
- ❑ **Emergency Procedures**
- ❑ **Sediment Control BMPs**
- ❑ **Good Housekeeping BMPs**
- ❑ **Non-Stormwater BMPs**

Specific Training Objective: ____

____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

APPENDIX J

Corrective Action Log

Appendix J – Corrective Action Log

Project Name:
SWPPP Contact:

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

APPENDIX K

Inspection Records

SWPPP Construction Site Inspection Report

General Information			
Project Name			
NPDES Tracking No.		**Location**	
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
Describe present phase of construction			

Type of Inspection:
❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event

Weather Information

Has there been a storm event since the last inspection? ❑Yes ❑No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds
❑ Other: Temperature:

Have any discharges occurred since the last inspection? ❑Yes ❑No
If yes, describe:

Are there any discharges at the time of inspection? ❑Yes ❑No
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		❑Yes ❑No	❑Yes ❑No	
2		❑Yes ❑No	❑Yes ❑No	
3		❑Yes ❑No	❑Yes ❑No	
4		❑Yes ❑No	❑Yes ❑No	
5		❑Yes ❑No	❑Yes ❑No	
6		❑Yes ❑No	❑Yes ❑No	
7		❑Yes ❑No	❑Yes ❑No	
8		❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	
10		❑Yes ❑No	❑Yes ❑No	
11		❑Yes ❑No	❑Yes ❑No	
12		❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
13		❑Yes ❑No	❑Yes ❑No	
14		❑Yes ❑No	❑Yes ❑No	
15		❑Yes ❑No	❑Yes ❑No	
16		❑Yes ❑No	❑Yes ❑No	
17		❑Yes ❑No	❑Yes ❑No	
18		❑Yes ❑No	❑Yes ❑No	
19		❑Yes ❑No	❑Yes ❑No	
20		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No	
4	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
5	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
6	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
12	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"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 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 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."

Print name and title: ______________________________

Signature:______________________________ **Date:**____________________

APPENDIX L

Oil and Hazardous Material Reporting Requirements

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

OIL & HAZARDOUS SUBSTANCES SPILL NOTIFICATION

ADEC SPILL #	ADEC FILE #		ADEC LC
PERSON REPORTING	PHONE NUMBER		REPORTED HOW? Troopers phone fax
DATE/ TIME OF SPILL	DATE/TIME DISCOVERED		DATE/TIME REPORTED
LOCATION/ADDRESS	LAT. / LONG.	**SUBSTANCE TYPE A) CR EHS HS NC PW UNK B) CR EHS HS NC PW UNK	**PRODUCT A) B)
QUANTITY SPILLED ☐ gallons ☐ pounds	QUANTITY CONTAINED ☐ gallons ☐ pounds	QUANTITY RECOVERED ☐ gallons ☐ pounds	QUANTITY DISPOSED ☐ gallons ☐ pounds
POTENTIAL RESPONSIBLE PARTY C-Plan Holder? YES ☐ NO ☐		**FACILITY TYPE	
**SOURCE OF SPILL			☐ 400 GT Vessel?
**CAUSE OF SPILL (List Primary Cause first)			☐ Accident ☐ Human Factors ☐ Structural/Mechanical ☐ Other
**CLEANUP ACTIONS			
**DISPOSAL METHODS AND LOCATION			
RESOURCES AFFECTED/THREATENED (Water sources, wildlife, wells, etc.)	AIR ☐ LAND ☐ MARINE ☐ FRESH ☐	SURF. AREA AFFECTED	SURF. TYPE
COMMENTS:			

DEC USE ONLY

SPILL NAME, IF ANY	NAMES OF DEC STAFF RESPONDING	C-PLAN MGR NOTIFIED YES ☐ NO ☐ ________
DEC RESPONSE ☐ phone follow-up ☐ field visit ☐ took report	CASELOAD CODE ☐ First and Final ☐ Open/No LC ☐ LC assigned	CLEANUP CLOSURE ACTION ☐ NFA ☐ Monitoring ☐ Transferred to CS or STP
STATUS OF CASE (circle) OPEN CLOSED	**DATE CASE CLOSED ________**	
COMMENTS:		
REPORT PREPARED BY	DATE	

revised April 19, 2002

Appendix L. Oil and Hazardous Materials Reporting Requirements

Reporting Timeline

Oil/Petroleum Releases:

To water: any release of oil to water must be reported as soon as the person has knowledge of the discharge

To land:

- Any release of oil in ***excess of 55 gallons*** must be reported as soon as the person has knowledge of the discharge.

- Any release of oil in ***excess of 10 gallons but less than 55 gallons*** must be reported within 48 hours after the person has knowledge of the discharge.

- A person in charge of a facility or operation shall maintain, and provide to the Department on a monthly basis, a written record of any releases of oil ***from 1 to 10 gallons***.

To impermeable secondary containment areas: Any release of oil in ***excess of 55 gallons*** must be reported within 48 hours after the person has knowledge of the discharge.

Hazardous Substance Release: Any release of a hazardous substance must be reported as soon as the person has knowledge of the discharge.

Either Oil or Hazardous Substance, when the release endangers health or the environment:
Must be orally reported to DEC and EPA as required by the CGP Standard Permit Conditions and the consent decree, respectively, within 24 hours of discovery. A written report must follow within 5 days. See the contract and the CGP for details on what must be included in each of the reports and how the DEC report must be certified.

DEC Noncompliance Reporting
(877) 569-4114
dec-wqreporting@alaska.gov

EPA Noncompliance Reporting
(206) 553-0290
karlson.kristine@epa.gov

Reporting and Documentation Procedure

In the event of a release of oil that reaches any surface waters, or a release on land of certain hazardous substances (listed on the following pages) exceeding the Reportable Quantity (RQ) level, the Contractor must take the following steps:

1. Notify the Project Engineer
2. Notify the Alaska Department of Environmental Conservation (ADEC) at one of the following telephone numbers, depending on project location:
    - Central (Anchorage) 907-269-3063
    - Northern (Fairbanks) 907-451-2121
    - Southeast (Juneau) 907-465-5340
    - Outside normal business hours, call:1-800-478-9300

During telephone notification to ADEC, they will assist you in completing an Oil and Hazardous Substances Spill Notification Form. Submit it to ADEC after telephone notification (A copy of the form appears after the list of hazardous substances below.)

3. Notify the National Response Center in Washington, D.C., immediately at (800) 424-8802 or 202-267-2675 if you do not have 800 access. There is also an online reporting tool available at http://www.nrc.uscg.mil/nrchp.html
4. Update the SWPPP describing the release, all actions taken and any revisions made to the SWPPP (additions or deletions).
5. Within 14 days, submit a written description of the release to the Environmental Protection Agency (EPA) regional office providing the date and circumstances of the release and the steps to be taken to prevent another release
   U.S. Environmental Protection Agency
   1200 Sixth Avenue
   Seattle, WA 98101

In the event of a release of any amount of certain hazardous substances (listed on the following pages), or a spill of 1 gallon or more of oil on land the Contractor must:

Take steps 1, 2 and 4 above

Note: "oil" means oil of any kind and in any form, whether crude, refined, or a petroleum by-product, including but not limited to petroleum, fuel oil, gasoline, lubricating oils, oily sludge, oil refuse, oil mixed with other wastes, crude oils, liquefied natural gas, propane, butane, or other liquid hydrocarbons regardless of specific gravity.

Table 117.3
Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act

Material	Category	RQ in pounds (kilograms)
Acetaldehyde	C	1,000 (454)
Acetic acid	D	5,000 (2,270)
Acetic anhydride	D	5,000 (2,270)
Acetone cyanohydrin	A	10 (4.54)
Acetyl bromide	D	5,000 (2,270)
Acetyl chloride	D	5,000 (2,270)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Adipic acid	D	5,000 (2,270)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Allyl chloride	C	1,000 (454)
Aluminum sulfate	D	5,000 (2,270)
Ammonia	B	100 (45.4)
Ammonium acetate	D	5,000 (2,270)
Ammonium benzoate	D	5,000 (2,270)
Ammonium bicarbonate	D	5,000 (2,270)
Ammonium bichromate	A	10 (4.54)
Ammonium bifluoride	B	100 (45.4)
Ammonium bisulfite	D	5,000 (2,270)
Ammonium carbamate	D	5,000 (2,270)
Ammonium carbonate	D	5,000 (2,270)
Ammonium chloride	D	5,000 (2,270)
Ammonium chromate	A	10 (4.54)
Ammonium citrate dibasic	D	5,000 (2,270)
Ammonium fluoborate	D	5,000 (2,270)
Ammonium fluoride	B	100 (45.4)
Ammonium hydroxide	C	1,000 (454)
Ammonium oxalate	D	5,000 (2,270)
Ammonium silicofluoride	C	1,000 (454)
Ammonium sulfamate	D	5,000 (2,270)
Ammonium sulfide	B	100 (45.4)
Ammonium sulfite	D	5,000 (2,270)
Ammonium tartrate	D	5,000 (2,270)
Ammonium thiocyanate	D	5,000 (2,270)
Amyl acetate	D	5,000 (2,270)
Aniline	D	5,000 (2,270)
Antimony pentachloride	C	1,000 (454)
Antimony potassium tartrate	B	100 (45.4)
Antimony tribromide	C	1,000 (454)
Antimony trichloride	C	1,000 (454)
Antimony trifluoride	C	1,000 (454)
Antimony trioxide	C	1,000 (454)
Arsenic disulfide	X	1 (0.454)
Arsenic pentoxide	X	1 (0.454)
Arsenic trichloride	X	1 (0.454)

Material	Category	RQ in pounds (kilograms)
Arsenic trioxide	X	1 (0.454)
Arsenic trisulfide	X	1 (0.454)
Barium cyanide	A	10 (4.54)
Benzene	A	10 (4.54)
Benzoic acid	D	5,000 (2,270)
Benzonitrile	D	5,000 (2,270)
Benzoyl chloride	C	1,000 (454)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	X	1 (0.454)
Beryllium fluoride	X	1 (0.454)
Beryllium nitrate	X	1 (0.454)
Butyl acetate	D	5,000 (2,270)
Butylamine	C	1,000 (454)
n-Butyl phthalate	A	10 (4.54)
Butyric acid	D	5,000 (2,270)
Cadmium acetate	A	10 (4.54)
Cadmium bromide	A	10 (4.54)
Cadmium chloride	A	10 (4.54)
Calcium arsenate	X	1 (0.454)
Calcium arsenite	X	1 (0.454)
Calcium carbide	A	10 (4.54)
Calcium chromate	A	10 (4.54)
Calcium cyanide	A	10 (4.54)
Calcium dodecylbenzenesulfonate	C	1,000 (454)
Calcium hypochlorite	A	10 (4.54)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	B	100 (45.4)
Carbon tetrachloride	A	10 (4.54)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	A	10 (4.54)
Chlorosulfonic acid	C	1,000 (454)
Chlorpyrifos	X	1 (0.454)
Chromic acetate	C	1,000 (454)
Chromic acid	A	10 (4.54)
Chromic sulfate	C	1,000 (454)
Chromous chloride	C	1,000 (454)
Cobaltous bromide	C	1,000 (454)
Cobaltous formate	C	1,000 (454)
Cobaltous sulfamate	C	1,000 (454)
Coumaphos	A	10 (4.54)
Cresol	B	100 (45.4)
Crotonaldehyde	B	100 (45.4)
Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	X	1 (0.454)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)

Material	Category	RQ in pounds (kilograms)
Cupric sulfate	A	10 (4.54)
Cupric sulfate, ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
Cyclohexane	C	1,000 (454)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dicamba	C	1,000 (454)
Dichlobenil	B	100 (45.4)
Dichlone	X	1 (0.454)
Dichlorobenzene	B	100 (45.4)
Dichloropropane	C	1,000 (454)
Dichloropropene	B	100 (45.4)
Dichloropropene-Dichloropropane (mixture)	B	100 (45.4)
2,2-Dichloropropionic acid	D	5,000 (2,270)
Dichlorvos	A	10 (4.54)
Dicofol	A	10 (4.54)
Dieldrin	X	1 (0.454)
Diethylamine	B	100 (45.4)
Dimethylamine	C	1,000 (454)
Dinitrobenzene (mixed)	B	100 (45.4)
Dinitrophenol	A	10 (45.4)
Dinitrotoluene	A	10 (4.54)
Diquat	C	1,000 (454)
Disulfoton	X	1 (0.454)
Diuron	B	100 (45.4)
Dodecylbenzenesulfonic acid	C	1,000 (454)
Endosulfan	X	1 (0.454)
Endrin	X	1 (0.454)
Epichlorohydrin	B	100 (45.4)
Ethion	A	10 (4.54)
Ethylbenzene	C	1,000 (454)
Ethylenediamine	D	5,000 (2,270)
Ethylenediamine-tetraacetic acid (EDTA)	D	5,000 (2,270)
Ethylene dibromide	X	1 (0.454)
Ethylene dichloride	B	100 (45.4)
Ferric ammonium citrate	C	1,000 (454)
Ferric ammonium oxalate	C	1,000 (454)
Ferric chloride	C	1,000 (454)
Ferric fluoride	B	100 (45.4)
Ferric nitrate	C	1,000 (454)
Ferric sulfate	C	1,000 (454)
Ferrous ammonium sulfate	C	1,000 (454)
Ferrous chloride	B	100 (45.4)
Ferrous sulfate	C	1,000 (454)
Formaldehyde	B	100 (45.4)

Material	Category	RQ in pounds (kilograms)
Formic acid	D	5,000 (2,270)
Fumaric acid	D	5,000 (2,270)
Furfural	D	5,000 (2,270)
Guthion	X	1 (0.454)
Heptachlor	X	1 (0.454)
Hexachlorocyclopentadiene	A	10 (4.54)
Hydrochloric acid	D	5,000 (2,270)
Hydrofluoric acid	B	100 (45.4)
Hydrogen cyanide	A	10 (4.54)
Hydrogen sulfide	B	100 (45.4)
Isoprene	B	100 (45.4)
Isopropanolamine dodecylbenzenesulfonate	C	1,000 (454)
Kepone	X	1 (0.454)
Lead acetate	A	10 (4.54)
Lead arsenate	X	1 (0.454)
Lead chloride	A	10 (4.54)
Lead fluoborate	A	10 (4.54)
Lead fluoride	A	10 (4.54)
Lead iodide	A	10 (4.54)
Lead nitrate	A	10 (4.54)
Lead stearate	A	10 (4.54)
Lead sulfate	A	10 (4.54)
Lead sulfide	A	10 (4.54)
Lead thiocyanate	A	10 (4.54)
Lindane	X	1 (0.454)
Lithium chromate	A	10 (4.54)
Malathion	B	100 (45.4)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethur	A	10 (4.54)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl methacrylate	C	1,000 (454)
Methyl parathion	B	100 (45.4)
Mevinphos	A	10 (4.54)
Mexacarbate	C	1,000 (454)
Monoethylamine	B	100 (45.4)
Monomethylamine	B	100 (45.4)
Naled	A	10 (4.54)
Naphthalene	B	100 (45.4)
Naphthenic acid	B	100 (45.4)

Material	Category	RQ in pounds (kilograms)
Nickel ammonium sulfate	B	100 (45.4)
Nickel chloride	B	100 (45.4)
Nickel hydroxide	A	10 (4.54)
Nickel nitrate	B	100 (45.4)
Nickel sulfate	B	100 (45.4)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)
Nitrogen dioxide	A	10 (4.54)
Nitrophenol (mixed)	B	100 (45.4)
Nitrotoluene	C	1,000 (454)
Paraformaldehyde	C	1,000 (454)
Parathion	A	10 (4.54)
Pentachlorophenol	A	10 (4.54)
Phenol	C	1,000 (454)
Phosgene	A	10 (4.54)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0.454)
Phosphorus oxychloride	C	1,000 (454)
Phosphorus pentasulfide	B	100 (45.4)
Phosphorus trichloride	C	1,000 (454)
Polychlorinated biphenyls	X	1 (0.454)
Potassium arsenate	X	1 (0.454)
Potassium arsenite	X	1 (0.454)
Potassium bichromate	A	10 (4.54)
Potassium chromate	A	10 (4.54)
Potassium cyanide	A	10 (4.54)
Potassium hydroxide	C	1,000 (454)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propionic Acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	B	100 (45.4)
Pyrethrins	X	1 (0.454)
Quinoline	D	5,000 (2,270)
Resorcinol	D	5,000 (2,270)
Selenium oxide	A	10 (4.54)
Silver nitrate	X	1 (0.454)
Sodium	A	10 (4.54)
Sodium arsenate	X	1 (0.454)
Sodium arsenite	X	1 (0.454)
Sodium bichromate	A	10 (4.54)
Sodium bifluoride	B	100 (45.4)
Sodium bisulfite	D	5,000 (2,270)
Sodium chromate	A	10 (4.54)
Sodium cyanide	A	10 (4.54)
Sodium dodecylbenzenesulfonate	C	1,000 (454)
Sodium fluoride	C	1,000 (454)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)

Material	Category	RQ in pounds (kilograms)
Sodium hypochlorite	B	100 (45.4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45.4)
Sodium phosphate, dibasic	D	5,000 (2,270)
Sodium phosphate, tribasic	D	5,000 (2,270)
Sodium selenite	B	100 (45.4)
Strontium chromate	A	10 (4.54)
Strychnine	A	10 (4.54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	C	1,000 (454)
2,4,5-T amines	D	5,000 (2,270)
2,4,5-T esters	C	1,000 (454)
2,4,5-T salts	C	1,000 (454)
TDE	X	1 (0.454)
2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)
Tetraethyl lead	A	10 (4.54)
Tetraethyl pyrophosphate	A	10 (4.54)
Thallium sulfate	B	100 (45.4)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0.454)
Trichlorfon	B	100 (45.4)
Trichloroethylene	B	100 (45.4)
Trichlorophenol	A	10 (4.54)
Triethanolamine dodecylbenzenesulfonate	C	1,000 (454)
Triethylamine	D	5,000 (2,270)
Trimethylamine	B	100 (45.4)
Uranyl acetate	B	100 (45.4)
Uranyl nitrate	B	100 (45.4)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	D	5,000 (2,270)
Vinylidene chloride	B	100 (45.4)
Xylene (mixed)	B	100 (45.4)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	C	1,000 (454)
Zinc borate	C	1,000 (454)
Zinc bromide	C	1,000 (454)
Zinc carbonate	C	1,000 (454)
Zinc chloride	C	1,000 (454)
Zinc cyanide	A	10 (4.54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	C	1,000 (454)

Material	Category	RQ in pounds (kilograms)
Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	B	100 (45.4)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	C	1,000 (454)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	D	5,000 (2,270)

[50 FR 13513, Apr. 4, 1985, as amended at 51 FR 34547, Sept. 29, 1986; 54 FR 33482, Aug. 14, 1989; 58 FR 35327, June 30, 1993; 60 FR 30937, June 12, 1995]

Appendix M

Rainfall Record

State of Alaska
Department of Natural Resources
Division of Parks and Outdoor Recreation

SWPPP DAILY RECORD OF RAINFALL PAGE ____

Project Name:

Date	Precipitation, inches	Comments	Initials

Appendix N

CESCL Certifications and Resumes

ERIC BARNHILL

Environmental Scientist

Years Experience
Total: 10; Bristol: 4

Areas of Expertise

Biology

Fisheries Research

Research Development

Remedial Investigation Sampling

Groundwater Sampling

Training and Certifications

OSHA 30-hour Construction Safety and Health

HAZWOPER 40-hour Training

Hazardous Materials Transportation Refresher IATA

AK Certified Erosion and Sediment Control Lead

Wetland Training Institute Wetland Delineation Certification Program

CPR and First Aid for Adults

Defensive Driving Training

Boating Safety

Education

B.S., Biology, Eastern Washington University, 1999

Mr. Barnhill has used his environmental science capabilities for contaminated site projects since 2007. Project types include site assessments and groundwater monitoring investigations. Mr. Barnhill has an extensive background in fisheries science, including both the research and the development sides of numerous fisheries projects. Additionally, he has been responsible for developing contracts and research plans for fisheries research. His end goal has been support of continued sustainability of Alaska's fisheries resource and the areas in which they inhabit. Among his many attributes, he is proficient in public speaking.

Project Experience

- **Environmental Scientist/Lead Environmental Sampler, Northeast Cape HTRW, USACE, Alaska District, St. Lawrence, Island, Alaska (07/2011 – 10/2011).** Sampling responsibilities included coordinating sampling efforts for several sites within the project area, soil sampling, water sampling and tar sampling and packing/shipping of sampling. The project consisted of removal and containerization of POL and PCB contaminated soil and removal of tar and tar-contaminated soil.
- **Environmental Scientist, Choggiung Limited Spill, Choggiung Limited, Dillingham, Alaska (10/2010).** Sampling responsibilities included excavating soil from beneath an above ground storage tank with a fuel leak; and taking several samples from the excavation to determine possible closure. The project consisted of direction of soil excavation and collection of analytical samples.
- **Environmental Scientist, Northeast Cape HTRW, USACE, St. Lawrence, Island, Alaska (07/2010 - 09/2010).** Sampling responsibilities included coordinating sampling efforts for several sites within the project area, soil sampling and water sampling and packing/shipping of sampling. The project consisted of a landfill cap and removal of POL and PCB contaminated soil.

- **Technical Lead, Site Inspections and Removal Response Actions at Former Army Air Field, Fort Sumner, New Mexico (02/2010).** Responsibilities included functioning as liaison between Bristol and the subcontractor performing sampling duties, MIS Sampling, tank removal and soil sampling beneath tanks and assisting Contractor Quality Control Manager (CQCSM) in daily paperwork duties.
- **Environmental Scientist, Soil Sampling, FAA, Selawik, Alaska (09/2009).** Responsibilities included taking samples in frozen soil, packing and shipping of samples, and swing tying. The project consisted of collecting confirmation samples of soil from underneath an aboveground storage tank (AST) where an overfill of two gallons of diesel fuel occurred years earlier.
- **Field Environmental Scientist, Data Collection Project, Fairbanks Environmental Services, Fort Wainwright Operating Unit 3, Alaska (04/2009).** Responsibilities included collecting well information and taking groundwater parameters for DRO, GRO, VOC, EDB, PAH, iron (II), lead, and sulfate analysis using low-flow groundwater sampling techniques.
- **Environmental Scientist, Well Inventory Project, U, Fort Richardson, Alaska (05/2009 - 09/2009).** Responsibilities included researching information on well locations, physically finding wells using Trimble GPS unit, and taking well field parameters, including well casing size, depth of well, depth to water and taking GPS positions for inclusion in a GIS database. The project consisted of a team of environmental scientists locating wells on the Fort Richardson Post, and noting metrics such as well damage, water level, casing type, etc. for inclusion in a military wells database.
- **Lead Environmental Sampler, Northeast Cape In-Situ Chemical Oxidation (ISCO) Study and Intrusive Drum Removal/Landfill Cap, USACE, Alaska District (07 - 09/2009).** Sampling responsibilities included coordinating sampling efforts for several sites within the project area, soil sampling, water sampling, petroleum, oil and lubricant (POL) sampling and packing/shipping of sampling. Tasks included report writing and gathering field supplies. This project consisted of excavation of an historic landfill with removal of drums of oil, transformers and other contaminated items; also a in-situ study to determine if chemical oxidation was a viable method for remediation of a petroleum contaminated area.
- **Environmental Scientist, Former Skelly Site Assessment, EPA 1004, Winnebago, Nebraska (10/2008).** Tasks included writing the Site Health and Safety Plan, installing soil borings, monitoring wells and collecting soil and groundwater samples. The project consisted of conducting a site assessment at a potential LUST site on the Winnebago Reservation in Nebraska, following NDEQ guidelines for a Tier 1 Site Assessment.
- **Environmental Scientist, Choggiung East Creek Hatchery Post Treatment Sampling and Assessment Report, Choggiung Limited, Dillingham, Alaska (10/2008).** Duties included developing sampling grid, soil sampling, collecting field-screening headspace samples, using a photoionization detector (PID), and packing and shipping of samples. Wrote a report summarizing field activities, presenting analytical data, and providing recommendations for future site remediation. Project consisted of soil sampling for assessment of a land farm being used to remediate petroleum contaminated soil.

- **Environmental Scientist, Private Residence Heating Fuel Investigation, Dillingham, Alaska (10/2008).** Developed a sampling protocol and performed soil sampling of an excavation at a private residence in Dillingham, Alaska. Duties included developing sampling grid, soil sampling, and packing and shipping of samples.
- **Environmental Scientist, Project Support for Elmendorf Treatability Study, Parsons Infrastructure & Technology Group Inc., Elmendorf Air Force Base, Alaska (06/2008).** Provided assistance for installation of bladder pump and set up of micro purge system for groundwater sampling from monitoring wells. Calibrated YSI brand water quality meter and logging system for groundwater monitoring. Performed seep sampling using a peristaltic pump. Assisted in labeling, packing and shipping of samples.
- **Environmental Scientist, Cape Yakataga Landfill Removal Project, Phase III, FAA, Cape Yakataga, Alaska (04/2008 - 06/2008).** Collection of waste characterization and confirmation soil samples for the decommissioning of a landfill and Biocell. Manifested barge shipments of contaminated soil to a disposal facility.
- **Environmental Scientist, Annette Island Phase I Environmental Due Diligence Audit (EDDA), Federal Aviation Administration, Annette Island, Alaska (04/2008).** Project responsibilities included conducting site visits to check for environmental contamination, interviews, database searches, and preparation of report and figures. Project consisted of site assessment of a former FAA site.
- **Environmental Scientist, BERS, Private Housing Development Project, Totem Trailer Park, Anchorage Alaska (04/2008).** Performed on-site assistance for well placement for groundwater contamination study. Project consisted of well installation in a residential mobile home park to assess soil and groundwater contamination.
- **Environmental Scientist, Wetland Delineation, Alaska Natural Gas Development Authority (ANGDA), Various Locations, Alaska (06/2008 - 09/2008).** Performed wetland delineation on sections of an approximately 470-mile proposed natural gas pipeline corridor. The effort was initiated by ANGDA to prepare primary requirements for a U.S. Army Corps of Engineers (USACE) National Environmental Policy Act (NEPA) ecological evaluation. Duties included traversing through developed and undeveloped Alaska wilderness, navigation and data entry using ArcPad software on several models of Trimble GPS units, making determinations of whether areas along the route were wetlands or uplands, participating in all aspects of wetland delineation, including digging pits, identifying soil types using Munsell soil charts, and identifying local plant types. Training included wildlife health and safety, wildlife interaction, rare plant Identification, wetland procedures, and using Geographical Information Systems to prepare a Wetland Delineation Report, which included: Wetland and Waterways Report, Preliminary Project Description, Support Data (Field forms, JD Forms, Photographs) and Mapping.
- **Environmental Scientist, BCS, Beaufort Sea Project, USACE, Alaska District, North Slope, Alaska (09/2007).** Performed remedial investigation sampling at Kogru, Collinson Point, and Nuvagapak DEW Line sites. Assisted in following work plan, sampling soil, sediment and surface water samples, sample packing, and shipping. Project consisted of soil sampling of former DEW line sites.

Professional Experience

- **Staff Biologist, Bering Sea Fishermen's Association, Anchorage, Alaska (2003 - 03/2007).** Developed fisheries research project in rural western Alaska and interior Alaska. Aided in the facilitation of these fisheries projects, as well as provided on-site guidance and hands-on research. Developed and maintained strong relationships with State fish and game entities. Developed contracts and research plans for fisheries research. Conducted data collection and storage. Acted as support staff of the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative. Planned data sharing symposiums and meetings. Provided oversight for many aspects of several fisheries projects. Maintained frequent contact with state, federal, and non-governmental employees for field projects. Performed grant writing and contract development. Responsible for maintaining ongoing compliance with grant criteria. Participated in watershed council meetings, resource advisory committees, Alaska Board of Fisheries Meetings, North Pacific Fisheries Management Council meetings, and various other fisheries-related meetings. Assisted Executive Director and Program Director with fisheries issues as they arose. Performed operations in remote areas, including field camp setup and maintenance, weir installation, and project preparation, setup, and maintenance. Traveled extensively to projects across the state of Alaska.
- **Fisheries Technician II, Alaska Department of Fish and Game (2001 - 2003).** Worked on the Yukon River, Kuskokwim River, and several other Western Alaska and Interior Alaska rivers, as well as Bristol Bay. Traveled to and lived in remote areas and performed camp setup. Performed radio tagging salmonids. Used gill netting as a capture method. Performed scale taking, scale reading, tissue sampling, and otolith extraction on herring. Performed Age-Sex-Length (ASL) sampling. Performed river navigation and utilized Global Positioning System. Maintained fish wheels as a means of data collection and used data loggers. Identified salmon and resident species.
- **Lab Aide, Eastern Washington University, Cheney, Washington (1998 - 1999).** Collected walleye ASL information. Read walleye scales. Assisted in separating out juvenile preserved fish by species. Performed backpack and boat electrofishing and collected samples from an electrofishing boat. Assisted in collecting individual and population statistics.

CERTIFICATE OF ACHIEVEMENT

This certifies that

Eric Barnhill

has successfully completed

Alaska Certified Erosion & Sediment Control Lead (AK-CESCL) Storm Water Training Program

Continuing Education Credits Earned:
12 Continuing Competency Credits Residential Endorsement Holders
Course approved by Alaska State Home Builders Association
16 Professional Development Hours for Architects, Engineers and Landscape Architects

AGC of Alaska
8005 Schoon Street

	February 2, 2011	**Anchorage, Alaska**
Alex Zimmerman , Instructor	Course Date	Location
Juanita Kardell	**February 2, 2011**	**February 1, 2014**
Juanita Kardell, CEF Training	Certification Date	Expiration Date

Eric Barnhill

Has successfully completed the training for
Alaska Certified Erosion & Sediment Control Lead

ID # AGC-11-0066 Expires February 01, 2014

Juanita Kardell

Juanita Kardell, CEF Training

CHARLES "CHUCK" CROLEY

Site Superintendent / Site Safety & Health Officer

Mr. Croley has worked on remote site projects throughout Alaska for over 35 years. From 1968 to 1979, he worked for a variety of construction and drilling contractors that conducted soils investigation and mining exploration work. The soils investigations included work for geotechnical studies for the Trans-Alaska oil pipeline. Projects in mining fields included mineral exploration and hydrological studies for dam foundations. Mr. Croley is an experienced Site Superintendent, Health and Safety Officer, and Contractor Quality Control Systems Manager (CQCSM) for projects encompassing construction, aboveground and belowground fuel tank installations and removals, monitoring well drilling, sampling for a variety of media, reserve pit closures, demolition projects, and oil field investigations.

Years Experience

Total: >35; Bristol: 6

Areas of Expertise

Quality Control

Site Superintendent

Safety and Health Management

Fuel Storage Tank (FST) Installation and Removal

Well Drilling and Sampling

Mobilization and Demobilization to Remote Sites

Training and Certifications

Certified UST Worker, State of AK No. 172 (Installation/Retrofitting and Decommissioning)

Certified Safety Instructor-ATV Safety Institute-ID No. 120099

U.S. EPA/ AHERA-Asbestos Abatement Worker - AK No. 5249

30-Hour OSHA Construction Safety and Health

40-hour EPA/AHERA Asbestos Supervisor/Worker / plus 8-hour Refresher

40-hour HAZWOPER / 8-hour Supervisor / 8-hour Refresher

8-hour Entry to Confined Spaces

24-hour Excavation, Trenching, and Soil Mechanics

USACE Construction Quality Management for Contractors

Hazardous Materials Transportation (DOT/IATA)

Certified Erosion & Sediment Control Lead

Education

Laramie High School, Laramie, Wyoming, 1963

Professional Experience

- **Site Supervisor/SSHO, N.E. Cape Debris Removal, Landfill Cap, and Soil Removal, USACE, Alaska District, St. Lawrence Island, Alaska (05/2010 – 10/2010; $7.8M).** Directed mobilization / demobilization activities for a 40-man camp and all related equipment, supplies, and personnel to conduct debris removal from a landfill and construct a legal landfill cap; locate and remove in excess of 800 tons of PCB-contaminated soil; locate, remove, screen, and ship off-site 2500 tons of POL contaminated soil; conduct water and soil studies; set up a portable chemical analysis laboratory; and conduct debris removal activities from tundra / wetlands. Responsible for the supervision and safety of staff. Conducted three separate tours of the project for visiting dignitaries, ranging from one to 26 participants.
- **Site Supervisor/SSHO, FUDS, Tierra Amarilla Air Force Station, USACE, Albuquerque District, Tierra Amarilla, New Mexico (04/2010; $223K).** Directed a subcontractor for the excavation, removal, and shipment offsite of 360 tons of debris and the demolishment of physical hazards, such as open manways and a deteriorating sewage system with several large septic tanks.

- **Site Supervisor/SSHO, N.E. Cape In-situ Chemical Oxidation (ISCO) and Intrusive Drum Removal/Landfill Cap, USACE, Alaska District, St. Lawrence Island, Alaska, (05/2009 – 10/2009; $6.2M).** Directed the mobilization of a 30-man-camp and related heavy construction materials and equipment, via barge and landing craft, from Anchorage, Alaska to St. Lawrence Island, Alaska, which is located roughly 130 miles offshore west of the western coast of Alaska. Responsible for the supervision and safety of all Professional staff, equipment operators, laborers, surveyors, subcontractor personnel, and camp staff. The project included an In-situ Chemical Oxidation study on a subsurface hydrocarbon plume in arctic terrain and conditions. The project also included an intrusive removal of old drums containing waste oil that had been placed in a landfill, where the oil was recovered and the drums cleaned and reburied as inert debris in the landfill. The project included mining, hauling, and placing 28,000 cubic yards of cap material for the landfill and then re-vegetation of the landfill cap area. At the end of the project, all waste material, equipment, and camp were loaded on barges and demobilized.
- **Site Supervisor/SSHO, Clean and Inspect Diesel Fuel Tanks, FAA, Biorka Island and Level Island, Alaska (2008; $93K).** Supervised cleaning and inspection of diesel tanks and other activities. The scope of work included preparing planning documents and reports; mobilizing and demobilizing to and from Biorka Island; cleaning and inspecting five 20,000-gallon ASTs on Biorka Island; inspecting the secondary containment of the 20,000-gallon tanks; mobilizing and demobilizing to and from Level Island; and cleaning and inspecting two 10,000-gallon ASTs on Level Island.
- **Site Supervisor/SSHO, Phase II and Phase III, Landfill Remedial Action, FAA, Cape Yakataga, Alaska (Summers of 2007 and 2008; total project for two years: $14.3M).** Supervised remedial action activities for Bristol Construction, LLC on FAA project. Phase II and Phase III. Project included the excavation, containerization, and transportation of dioxin affected soil from an old landfill. During Phase II soil was placed in 8' X 20' containers, trucked 40 miles and then loaded on Landing Craft and barges for transportation to the disposal site in Oregon. Phase III of the project involved loading the soil into 9 cubic yard supersacks, trucking the 40 miles and loading the supersacks onto Landing Craft and barges for transportation to the final disposal site in Oregon. Both phase of the project involved waste characterization and confirmation sampling for chemical analysis. Monitoring wells were installed for monitoring. Final site restoration included the establishment of a borrow source, hauling the backfill 8 miles, regarding the site, site restoration that included grass seeding, tree planting, and stream bank restoration to ADEC guidelines.
- **Site Supervisor/SSHO, Kodiak Air Traffic Control Tower (ATCT) AST Upgrades, FAA, Kodiak, Alaska (2007; $98K).** Supervised the removal of a 2,000-gallon AST and replaced with a newly designed 1,000-gallon AST. Installation included new fuel piping. Outside piping was secondarily contained and interior piping upgraded to include new fuel filtration and valve system. A new VeederRoot monitor and inventory control system was installed.

- **Site Supervisor/SSHO, Cold Bay AST Upgrades, FAA, Alaska (2007; $93K).** Supervised AST upgrade activities for Bristol Construction Services, LLC. Site activities included the removal of an old 500 gallon, single wall AST and associated piping with a newly designed 500 gallon double walled AST and new associated piping and the installation of a VeederRoot monitoring and inventory control system.
- **Site Supervisor/SSH, Biorka Island Groundwater Investigation, FAA, Alaska (2006; $99K).** Supervised the emergency removal of a 1000 gallon AST, the survey of a previously removed pipeline, the location of 5 historical POL release areas and the soil sampling of these areas for contaminants, and the air monitoring and sampling of a area underneath an occupied building to determine the presence of any contaminants.
- **Site Supervisor/SSHO, ATCT UST Upgrades, FAA, Anchorage, Alaska (2006; $45K).** Supervised UST upgrade activities for Bristol Construction that involved with the reconditioning of manway protective coating and pulling all of the fuel and return lines and replacing with new lines and valves. The project also called for the installation of new piping that would allow a newly installed emergency generator to use the UST as a primary fuel source.
- **Site Superintendent/SSHO and Equipment Operator, Airport Tower Installation, FAA, Adak, Alaska (2005; $500K).** Directed a project that involved the upgrades of navigation aids at a Critical Navigation Site without the disruption of services. The scope of work included resealing two radomes by re-caulking and re-bolting (in excess of six thousand bolts and gaskets), demolition of two remote communication air/ground (RCAG) antennas and construction of two new RCAG antennas inside the radomes; the installation and burial of electrical and communications cables in over 300 lineal feet of trenches; the installation of two uninterruptible power supply systems (UPS); the construction of three new antennas (C-3, Glideslope, and Localizer); the repair of the main power supply box; and the installation of a new LCD lighting system on the NDB towers. The project also included installation of a new monitoring system, new piping, and the repair of an aboveground storage tank (AST) that furnishes fuel to the site emergency generator.
- **CQCSM, N.E. Cape Debris and Tram Demolition, U.S. Army Corps of Engineers (USACE), Alaska District, St. Lawrence Island, Alaska (2005; $5.2M).** Set up the Project Quality Control and Site Safety Management System at the start of the fieldwork. Conducted all beginning of field project orientations and Preparatory inspections. Conducted five safety classes for all-terrain vehicles per EM 385-1-1.
- **CQCSM/Alternate SSHO, Landfill Project, CH2M Hill Constructors, Inc. (CCI), U.S. Air Force, Shemya, Alaska (2005; $2.1M).** Project involved capping an old landfill and constructing a new landfill with an adjoining asbestos cell. The project involved the excavation, placement, and grading of 112,000 cubic yards of three different soils types for the designed capping of the old landfill and excavation of 80,000 cubic yards in the construction of the new landfill and asbestos cell.

Professional Experience

- **Harding Lawson Associates, Anchorage, Alaska (01/1979 – 10/2004).**
  - Site Superintendent/ SSHO, and CQCSM for the Bureau of Land Management, and Equipment Operator for R & R Lodge Fuel Spill Cleanup, Alaska Range (2004; $100K). This project entailed excavation and sampling activities for a fuel spill from a fuel bladder and containment area at a remote hunting lodge in the Alaska Range. The project included the excavation of 55 cubic yards of fuel-contaminated soil over bedrock, alongside a short (1,600-foot) active airstrip, to a depth of 9 feet. Excavation was accomplished with small equipment. Five cubic yards of soil were removed from the site by small aircraft (Cessna 206) and 50 cubic yards were stockpiled on a liner for land-farming activities.
  - Contract Site Supervisor, Closure Activities at an Inactive Reserve Pit, Chevron/Texaco, West Kavik, Alaska's North Slope (2004; $750K). The first phase consisted of mobilization, construction, and demobilization of a remote site camp with Rolligons. The camp included power generation, freshwater treatment, grey water treatment, and cooking facilities, as well as living accommodations for 20 persons. The second phase consisted of mobilization and demobilization of equipment capable of mining approximately 8,500 cubic yards of gravel from an old airstrip and placing the gravel on top of an inactive reserve pit. Acted as SSHO while he was on site.
  - Site Superintendent/SSHO, Restoration at Red Devil Mine, BLM, Alaska (2003; $450K). Project consisted of demolition activities, a site investigation, and a historical site sampling activity for restoration at Red Devil Mine, a remote Alaska site where all equipment and personnel were mobilized by aircraft. The project included the demolition of six ASTs ranging from 200- to 350-barrel tanks and an ore hopper and ore-crushing facility. Project included the on-site burial of materials from demolition activities (including metal, wood, and concrete). Demolition activities took place in supplied air because of the presence of lead and mercury contaminants. A site investigation was conducted using a probe-pounding rig. A successful Historical Site Investigation was conducted for an ore house that had been destroyed more than 50 years prior and the site had been built over. The investigation was conducted using present-day air photos, old maps and field books, and a backhoe.
  - Contract Field Operations Manager, Closure Activities at Inactive Reserve Pits, Glenn Springs Holdings, Inc., a subsidiary of Occidental Petroleum, North Slope, Alaska (2002-2003; $1.25M). This project involved closure activities at three inactive reserve pits sites on the North Slope, Alaska. The first phase was the planning and mobilization of drilling equipment mounted on Rolligons to complete a subsurface investigation, and estimate drilling wastes and volumes of clean drill pad gravel. The second phase included the route selection and building and maintenance of eight miles of ice roads over tundra and river bottoms. The second phase also included the excavation and transport of 9,500 cubic yards of drilling wastes to the grind-and-inject facility at Prudhoe Bay from the reserve pit, and the hauling and placement of clean gravel, via Rolligon, at a third reserve pit. The work involved coordination among three oil companies and their contractors.

- CQCSM/Alternate SSHO, Demolition and Site Restoration, USACE, Alaska District (2001-2003; $5M). Managed demolition and site restoration of the Tok Fuel Terminal, Alaska. Site tasks included researching historical photographs; asbestos, polychlorinated biphenyls (PCBs), and lead-based paint (LBP) sampling; conducting a landfill investigation; construction of a solid waste landfill that included an asbestos cell; the removal and packaging of hazardous wastes; the removal of petroleum, oils, and lubricants (POL)-contaminated soil; site-wide abatement and disposal of asbestos and LBP; demolition and burial of 23 buildings; demolition and burial of four 1,000-gallon FSTs, one 1,000-barrel water storage tank, and one 5,000-barrel FST; and demolition and removal of one 1,000-barrel FST, two 5,000-barrel FSTs, nine 30,000-barrel FSTs, and 30,000 lineal feet of tank-farm-related fuel and fire retardant pipelines.
- CQCSM/Alternate SSHO, School Demolition Project, USACE, Alaska District, Eielson Air Force Base (2001; $1.2M). Managed the demolition of the Ben Eielson Taylor Elementary School, Eielson AFB, and the construction of an Olympic-sized soccer field, a softball field, bleachers and fencing of the entire sports complex. Complicated demolition and disposal activities were involved, including security concerns with off-site disposal of debris, asbestos removal prior to demolition, and suspected mercury releases. Construction included leveling and placement of several types of soils, installation of an underground water hydrant system, concrete, asphalt, grass seeding, and fencing activities. Supervised quality control for contractor and subcontractor activities.
- CQCSM/Alternate SSHO, Demolition of Long-Range Radar Station, USACE, Alaska District, Fort Yukon, Alaska (1999-2002; $5M). Managed multifaceted demolition of a long-range radar station. Directed removal and long-term storage of more than 650 cubic yards of POL-contaminated soils. Supervised asbestos removal and asbestos storage of materials from 13 buildings, four radar towers, and utility facilities; demolition of two 60-foot by 60-foot and two 120-foot by 120-foot radar towers; demolition and debris removal of 12 buildings; decommissioning and demolition of 26 ASTs; construction of a solid waste landfill; placement of various types of demolition debris in the landfill, including use of an asbestos cell; and capping of the landfill to State of Alaska criteria. Conducted soils exploration program and water sampling; constructed new fuel storage and monitoring system. Installed biovent system.
- CQCSM/SSHO, FST Upgrades, USACE, Alaska District/FAA, Various Locations, Alaska (1998). Responsibilities included on-site construction management and health and safety, developing reporting documents, and assisting in planning and submittal of documents Managed FST upgrades at Port Heiden, Wrangell, Metlakatla, Sand Point, and Dillingham, Alaska. Project entailed removal of seven regulated underground storage tanks (USTs) and one AST, and installation of five ASTs for prime fuel sources at remote navigation aid sites. Fuel systems included lead detection, inventory control, and remote site monitoring systems.
- CQCSM/SSHO, Tank Removal and Soil Remediation, USACE. Alaska District, Galena Air Force Station (AFS), Alaska (1997). Responsibilities included on-site construction management and assisting with completing planning and reporting documents, managing submittals, performing network analysis, and submitting pay requests. Managed cleaning of three bulk fuel ASTs; decommissioning of three USTs; and construction, operation, and maintenance of a 5,100-cubic-yard bioremediation cell. The project included demolition, asbestos abatement and waste management.

- CQCSM/SSHO, UST Removal at the Galena AF Power Plant, USACE, Alaska District, Galena, Alaska (1996-1997). Responsibilities included on-site construction management, site safety, and assisting with completing planning and reporting documents, managing submittals, performing network analysis, and submitting pay requests. The project included removal of two 12,000-gallon and two 25,000-gallon fuel USTs and five 55- to 1,000-gallon USTs that contained fuel and oil/water separator waste; removal and stockpiling of 700 cubic yards of contaminated soil; installation of two 30,000-gallon ASTs at a remote site off the road system.
- Contract Site Superintendent, Reserve Pit Closeout, Exxon Mobil, Flaxam Island, Alaska (2000-2001; $7.5M). Provided construction and safety oversight and permit compliance for closeout of two inactive reserve pits on Alaska's North Slope. Winter 2001 activities included drilling a new 2,500-foot disposal well for grinding and injecting reserve pit wastes; excavation of two inactive reserve pits and two flare pits; confirmation sampling and on-site laboratory analyses; slurrying and injecting cuttings; and reviewing and verifying quantities and pay items. Winter 2002 activities included construction of a 68-mile offshore ice road on the Arctic Ocean; excavation of contaminated soil from reserve pits, and the excavation and hauling of 20,000 cubic yards of drilling wastes to the Prudhoe Bay grind and injection facility. Project considerations included sensitive wildlife habitats, construction in arctic conditions, and North Slope safety requirements. Job range: $7.5 million.
- Contract Site Quality Control Manager, Quality Assurance Monitoring, Alaska Department of Natural Resources, Joint Pipeline Office (JPO) for the Northstar Development Project, Point McIntyre/Point Storkerson, North Slope, Alaska ($3M). Provided in-field quality assurance monitoring during construction of two 10-inch pipelines running from Seal Island, offshore, to Point McIntyre, onshore, and then onshore and terminating at BP's Gathering Center 1. The offshore underwater pipeline portion was approximately 6 miles long and depths to 50 feet.
- Site Superintendent, Cleanup at Fuel Site, Exxon Company, USA, Flaxman Island, Alaska Cleanup project at a former fuel storage area at the Alaska State A-1 drill site on remote Flaxman Island in the Beaufort Sea. The project involved the use of a field laboratory to field screen and segregate 1,000 cubic yards of soil during the winter. The excavated contaminated soil was then transported, via Roligon, back to the Prudhoe Bay area for treatment.
- Site Superintendent, Inactive Reserve Pit Investigations, for Exxon Company, USA, Flaxman Island, Alaska. The project consisted of winter investigations of two inactive reserve pits at Alaska State A-1 and G-2 drill sites on Flaxman Island, Alaska, a remote Island in the Beaufort Sea. The investigations included relocation of the reserve pits, soil drilling with a drill rig transported via Roligon, excavation of trenches (in permafrost materials) for drill mud sampling and investigating the use of liners.
- Contract Site Quality Control Manager, Quality Assurance Monitoring, Alaska Department of Natural Resources, JPO for the Alpine Development Project, Colville River, North Slope, Alaska. Provided in-field quality assurance monitoring during horizontal directional drilling and installation of four pipelines beneath the Colville River. The crossing was approximately 4,100 feet long.

- Construction Manager/SSHO, Development of Soil Gas Recovery System, USACE, Alaska District, Fort Wainwright, Alaska. Provided construction management of an experimental soil gas recovery system that included the installation of two horizontally drilled wells, a 1,000-foot-long air-injection well, and a 750-foot-long vapor-extraction well. The experimental system included the installation of a variety of monitoring wells and nuclear density probe wells, as well as the compressor plant for the air injection. Also implemented site safety plan.
- Construction Superintendent/SSHO, FST Improvements, FAA, McGrath, Alaska.
- Supervised project to decommission eight FSTs and install seven FSTs. Also responsible for site safety.
- Construction Superintendent/SSHO, FST Improvements, FAA, Bethel, Alaska. Supervised the decommissioning of 14 FSTs and installation of 9 FSTs. Also responsible for site safety.
- Construction Superintendent/SSHO, UST Decommissioning, FAA, Cordova, Alaska. Supervised the decommissioning of 19 FSTs and installation of nine FSTs. Responsible for site safety.
- Construction Superintendent/SSHO, UST Decommissioning, Municipality of Anchorage, Alaska. Directed field operations for decommissioning of three USTs at a power-generating facility.
- Construction Superintendent/SSHO, FST Replacement, FAA, Statewide Alaska (1990-1998). Directed field operations for the FAA for Alaska (statewide) FST replacement project to decommission USTs and ASTs, construct new fuel systems, and clean up fuel-affected soil. Responsible for site safety. Completed projects at four Anchorage and 16 rural locations, involving 190 USTs and ASTs, 122 decommissionings, 79 installations, and 11 upgrades.
- Senior Technician, Hunters Point Annex Restoration, USACE, San Francisco, California. Logged borings, field-screened soil samples for radiation, installed and sampled monitoring wells, located drill borings for future projects, and mapped dump sites suspected of containing radiation-affected waste.
- Drilling Superintendent/Senior Technician, Groundwater Investigations, FAA, Bettles, Alaska. Performed groundwater investigations. Supervised drilling and environmental soil and water sampling program to trace the limits of a contaminant plume. Responsible for site safety.
- Drilling Superintendent/Senior Technician, Reserve Pit Monitoring, Confidential Client, Kenai, Alaska. Supervised a reserve pit monitoring project over a two-year period. Supervised field operations including drilling, environmental soil sampling, and groundwater testing for possible groundwater contamination.
- Drilling Superintendent, Milne Point Gravel Study, for Conoco, Inc., North Slope, Alaska. Directed a drilling and soil sampling program for gravel mine site exploration.

- Drilling Superintendent, Drilling and Soil Sampling Program at the Point McIntyre Development, ARCO Alaska, Inc., North Slope, Alaska. Supervised a drilling and soil sampling program for a foundation study for a drill pad design and pipeline construction. Installed a ground temperature monitoring system. Drilling activities included onshore and over-ice operations.
- Drilling Superintendent, Field Investigation, Sohio Petroleum Company, Beaufort Sea, Alaska. Supervised field investigation for the Endicott Geotechnical Investigation, which involved drilling onshore and offshore soil borings, and performing in-situ testing to establish design criteria for the development of Endicott oil field facilities. Coordinated field crews, maintained all equipment, and troubleshot drilling problems.
- Superintendent/Senior Technician, U5-A Slab Investigation, ARCO Alaska, Inc., North Slope, Alaska. Supervised drilling for an environmental soil sampling and geotechnical drilling program inside a warehouse in a permafrost area. The purpose of the project was to investigate a foundation failure and related chemical release.
- Drilling Superintendent, Support for FST Decommissioning, USACE, Alaska District, Various Sites throughout Alaska. Served as drilling superintendent for FST decommissionings and installations, soil and water investigations and studies, and remedial action and construction projects.
- Senior Technician, Remedial Investigation, USACE, Sacramento District, at Fort Ord, California. Performed remedial investigation for the installation and sampling of monitoring wells, and collection of inventory and control samples.
- Senior Technician, Heavy Metal Sampling, ARCO Alaska, Inc, Prudhoe Bay, Alaska . Developed a system to sample for heavy metals in high-pressure natural gas at Prudhoe Bay, Alaska.
- Senior Technician, Soil Sampling, Exxon Company, U.S.A, Seward and Valdez, Alaska. Conducted environmental soil sampling programs on and around contaminated soil stockpiles
- Senior Technician, Soil Sampling, Confidential Client, Beluga, Alaska. Conducted environmental soil sampling programs on a soil bioremediation project near Beluga, Alaska. The sampling took place at several remote gravel pads in southcentral Alaska. Directed the initial construction of two bioremediation cells.
- Senior Technician Tatitlek Soil Remediation Project, Exxon Company U.S.A., So
- Senior Technician, Sampling and Monitoring System, Chevron U.S.A., Inc. Directed drilling operations for sampling the core of a man-made ice island and constructing a monitoring system in the Beaufort Sea, Alaska. Conducted over-ice sampling for future ice or gravel island drilling locations.
- Senior Technician, Groundwater Investigation, State of Alaska, Minto, Alaska. Responsible for overseeing groundwater investigation and permanent abandonment of a freshwater production well.
- Senior Technician, Seismic Monitoring System Development, ARCO Alaska, Inc. Directed drilling operations and recovery of seismic equipment, and construction of a seismic monitoring system for a production well test (UGNU tiltmeters) on the North Slope, Alaska.
- Senior Technician, Reserve Pit Closeout, ARCO Alaska, Inc., and Conoco, Inc, North

Slope, Alaska. Directed drilling and environmental soil sampling for reserve pit closeout permit requirements on the North Slope of Alaska, using hollow-stem auger and coring systems. Installed permanent ground temperature monitoring systems. Collected and field tested surface-water samples to monitor closeout permit compliance.

- Senior Technician, Drilling and Sampling Programs, Exxon Company, U.S.A, Alaska. Conducted drilling and sampling programs at a remote arctic exploration site (Point Thomson Units 1 and 4, North Slope, Alaska) during summer and winter. Directed bioremediation activities at the same site, including mobilization and demobilization of workers, equipment, camp facilities, and bioremediation work, using marine and overland transportation.
- Senior Technician, UST Removal at the Alaska Aviation Heritage Museum, Municipality of Anchorage, Alaska. Responsible for overseeing the removal of three USTs in a shallow groundwater area.
- Senior Technician, Site Investigation, Confidential Client, Anchorage, Alaska. Performed service station site investigation and directed drilling operations for soil testing around buried facilities and utilities.
- Senior Technician, Support Causeway, Municipality of Anchorage, Alaska. Drilled five offshore borings and performed cone penetrometer tests for a causeway linking Anchorage and Fire Island.
- Senior Technician, Third Avenue Shelter Project, Municipality of Anchorage, Alaska. Drilled three borings in an earthquake slide area in which cone penetrometer testing was conducted to a depth of 120 feet.

♦ **Senior Technician, Municipality of Anchorage Projects, Alaska.** Participated in the following area projects:

- Peters Creek Watershed Improvement District (W.I.D.)
- Nancy Local Improvement District 174 and W.I.D.
- Chester Creek Oil and Gas Separators
- West 42nd Avenue
- West High Culvert
- 56th Street Walls
- Girdwood Anchorage Telephone Utility Site
- 39th and 40th Streets, Anchorage Telephone Utility Site
- Southeast Interceptor Project
- Bear Valley Anchorage Telephone Utility Site
- Chugiak Fire Station
- Hiland Drive Slope Stabilization
- Diamond Trunk Storm Drainage Study

- Senior Field Technician/Drilling Superintendent, Geotechnical Investigation, ARCO Alaska, Inc. Performed geotechnical investigation for Prudhoe Bay Unit reserve pits on the North Slope of Alaska. Work consisted of drilling and logging test borings via 3-inch frozen cores. Project objective was to measure the depth of chemical contamination beneath the reserve pit. Collected soil samples for chemical analyses.
- Senior Field Technician/Drilling Superintendent, Groundwater Investigation, Union Oil Company of California. Performed groundwater investigation on the Kenai Peninsula, Alaska. Drilled borings and sampling soil and groundwater for geochemical analyses to evaluate impacts on groundwater resources and potential contaminant transfer.
- Senior Field Technician/Drilling Superintendent, Site Investigation, Butler Aviation, Anchorage, Alaska. Performed site background investigation. Drilled borings and sampled soil and groundwater for geochemical laboratory analyses.
- Senior Field Technician/Drilling Superintendent, Sampling Program, ARCO Alaska, Inc. Performed work on an environmental project on the North Slope of Alaska, to explore possible effects of dispersion and biological accumulation of chemical contaminants in tundra. Duties included sampling surface water, soil, and vegetation at 250 sampling points for geochemical analyses. Assisted in field measurements of pH, electrical conductivity, and dissolved oxygen content of water.
- Senior Field Technician/Drilling Superintendent, Groundwater Investigation, ARCO Alaska, Inc. Performed an investigation to examine the potential for reserve pit water to seep through gravel containment berms on the North Slope, Alaska. Assisted in installing and monitoring instrumentation to identify groundwater characteristics in saturated and unsaturated zones, and to profile ground temperatures. Collected groundwater, soil, reserve pit water, and drilling reserve samples for geochemical analyses.
- Senior Field Technician/Drilling Superintendent, Multiphase Groundwater Investigation, Confidential client, Alaska. Performed multiphase investigation of impacts of plant discharges on groundwater in a multi-aquifer system for the Bernice Lake Power Plant in Alaska. During the initial phase, performed geochemical sampling of groundwater to evaluate potential problems. In Phase II, assisted in installing and monitoring groundwater and ground temperature instrumentation.
- Senior Field Technician/Drilling Superintendent, Soil and Groundwater Investigations, Tesoro Alaska Petroleum, Alaska. Performed soil and groundwater contamination investigation for an underground hydrocarbon spill at an industrial facility. Participated in drilling test borings and sampling soil and groundwater.
- Senior Field Technician/Drilling Superintendent, Preliminary Site Investigation, Pacific Gas and Electric's Hinkley Compressor Station in Hinkley, California. Performed preliminary site appraisal and participated in collecting groundwater samples from approximately 100 wells including domestic, agricultural, public water supply, and industrial wells in an investigation of chromium-contaminated groundwater.
- Senior Field Technician/Drilling Superintendent, Geotechnical Investigation, ARCO Alaska, Inc. Performed geotechnical investigation project, sampled soil, performed resistivity testing, and installed thermistors as part of freeze-thaw studies to redesign a flare pit on the North Slope, Alaska.

- Senior Field Technician/Drilling Superintendent, Boring and Sampling Program, America North, Inc./Alaska Gold Nome, Alaska. Drilled borings for the Steadman Field Site Investigation, and sampled soil contaminated with mercury and arsenic in Nome, Alaska. Project included investigating a waste disposal area.
  - Other related project experience includes the following:
    - Duck Island Development Area, Beaufort Sea, Alaska
    - Port of Nome Over-Ice Investigation, Nome, Alaska
    - Soil Boring Programs, Trans-Alaska Pipeline Route
    - Mukluk Island Site, Beaufort Sea, Alaska
    - Offshore Drilling, Beaufort Sea, Alaska
    - Drilling of Five Island Sites, Beaufort Sea, Alaska
    - Wharf and Docking Facilities, Afognak Island, Alaska
    - Rotary Drilling and Wireline Coring, Remote Island in Indian Ocean
    - Alpine Permafrost Institute, Pikes Peak, Colorado

- **Driller, Senior Technician, Drill Superintendent, Construction Superintendent, and Field Operations Manager, MACTEC Engineering and Consulting Inc., and its predecessors (Harding ESE and Harding Lawson Associates) (1979 to 10/2004).** Performed the role of CQCSM and alternate SSHO on many USACE Projects throughout Alaska. Description of duties in the various positions are as follows:
  - As senior technician, responsibilities included installing monitoring wells; sampling water and soil; handling oil and hazardous substances; performing field measurements on water samples; installing soil-gas wells; and installing thermistors, manometers, and piezometers. Conducted freeze-thaw studies, cone penetrometer tests, permafrost investigations, and percolation tests.
  - As general drilling superintendent, operated and maintained drilling equipment, supervised drill crews, and was responsible for site safety. Experienced with permafrost drilling, refrigerated coring, mineral exploration, dam foundation drilling and testing, over-water and over-ice operations, and helicopter drilling.
  - As construction superintendent, mobilized and demobilized construction crews and materials to various remote Alaska sites via air, land, and water transportation. Provided oversight for removal and storage of contaminated soil, decommissioning of USTs and ASTs, and installation of new FSTs and distribution systems, and was responsible for site safety.

Additional Training and Certifications

Certified in UST Installation/Retrofitting, International Code Council No. 1057168-U1

Certified in UST Decommissioning, International Code Council-No. 1057168-U2

Certified in the Use of Nuclear Testing Equipment – Alaska No. 16619

40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER), plus 8-hour Supervisor and 8-hour Refresher, Bristol Industries

CPR and First Aid for Adults, MEDIC FIRST AID® International

24-hour Construction Project Administration

Hydrogen Sulfide Safety Training

Radiation Protection Training

10-hour Construction Safety

Defensive Driving Training

CERTIFICATE OF ACHIEVEMENT

This certifies that

Chuck Croley

has successfully completed

Alaska Certified Erosion & Sediment Control Lead (AK-CESCL) Storm Water Training Program

Continuing Education Credits Earned:
16 Continuing Competency Credits Residential Endorsement Holders
Course approved by Alaska State Home Builders Association
16 Professional Development Hours for Architects, Engineers and Landscape Architects
AGC of Alaska
Construction Education Foundation
8005 Schoon Street
Anchorage, Alaska 99518

Michael O. Travis	March 26 & 27, 2009	Anchorage, Alaska
Instructor	Course Date	Location
Robert Cress	March 27, 2009	March 26, 2012
Robert Cress, AGC Training Director	Certification Date	Expiration Date

TRAVIS M. WOODS, P.E.

CEO / Senior Civil Engineer

Years Experience
Total: 16; Bristol: 15

Areas of Expertise
Project/Construction Management
General Civil Engineering
Road Design
Site Design

Registrations
P.E. Alaska, 2000 (CE 10178)
P.E., Washington, 2006 (42958)
P.E., South Carolina, 2008 (26258)
P.E., North Carolina, 2009 (34925)

Affiliations
American Society of Civil Engineers
The Society of American Military Engineers
Alaska Ground Water Association

Education
MBA, Business Administration, Alaska Pacific University, 2011
M.S., Civil Engineering, University of Alaska Anchorage, 2007
B.S., Environmental Engineering, Montana Tech of the University of Montana, 1995

Mr. Woods has been involved in civil and environmental engineering design and project management since 1995. His experience encompasses civil design projects from design through construction, including field engineering for civil construction projects, and feasibility studies for a variety of civil projects. Mr. Woods has also been lead civil design engineer on design-build projects for the U.S. Army Corps of Engineers (USACE). He has performed rural road designs and geotechnical investigations, prepared engineering specifications and cost estimates, and assisted in selection of borrow sites. Mr. Woods was the former in-house program manager for all BIA road design and construction projects. Mr. Woods supports acquisition of BIA clearances for development projects on Native allotments, including subdivisions, roads, rights-of-way, land sales, leases, timber harvests, utility corridors, and gravel pits. Familiar with BIA Native allotment requirements for National Environmental Policy Act (NEPA) environmental assessments, Phase I Environmental Site Assessments, gravel permits, mining plans, and easement and deed acquisition

As Chief Executive Officer of Bristol Engineering Services Corporation (BESC), Mr. Woods is responsible for the day-to-day operations of the company and the strategic planning and marketing of the firm. As a senior civil engineer, Mr. Woods is responsible for site designs, design/build projects, rural road design, geotechnical investigations, and sewer and water designs.

Project Experience

Civil Site Design

- **Lead Civil Design Engineer, Madigan Medical Center Parking Lot, Department of Public Works, Joint Base Lewis-McChord, Washington (2010 - Present; $2.6M).** Responsibilities included project management and lead civil designer providing engineering support for the site design and on-site storm water management. The parking lot expands the existing parking area for the medical center. The project includes an asphalt parking lot, sidewalks, storm drain utilities, and curb and gutter. Type of Construction: General Civil

- **Lead Civil Design Engineer, Madigan Medical Center Parking Lot, Department of Public Works, Joint Base Lewis-McChord, Washington (2010 - Present; $2.6M).** Responsibilities included project management and lead civil designer providing engineering support for the site design and on-site storm water management. The parking lot expands the existing parking area for the medical center. The project includes an asphalt parking lot, sidewalks, storm drain utilities, and curb and gutter. Type of Construction: General Civil.
- **Lead Civil Design Engineer, D Gate Renovation, Department of Public Works, Joint Base Lewis-McChord, Washington (2010 - Present; $2.6M).** Responsibilities included providing engineering support for the site design and utility adjustments. The project expands D Gate's access on East Drive by adding a new lane and renovating the existing asphalt areas and intersection. Type of Construction: General Civil.
- **Lead Civil Design Engineer, THAAD Battery Company Operations Facility (COF), USACE, Albuquerque District, Fort Bliss, Texas (2010 - Present; $4.0M).** Responsibilities included designing the site utilities up to the building. The site is designed to provide administrative and supply facilities for unit personnel functions and storage of their equipment. Bristol provided utility designs, including sewer, water, fire protection, gas, and storm water, from predesigned points to the new building while coordinating with other engineering disciplines in order to create a seamless design. Type of Construction: General Civil.
- **Civil Design Engineer, POL Trucking Company Operations Facility (COF), USACE, Albuquerque District, Fort Bliss, Texas (2010 - Present; $8.1M).** Responsibilities included designing the site utilities up to the building. The site is designed to provide administrative and supply facilities for unit personnel functions and storage of their equipment. Bristol provided utility designs, including sewer, water, fire protection, gas, and storm water, from predesigned points to the new building while coordinating with other engineering disciplines in order to create a seamless design. Type of Construction: General Civil.
- **Lead Civil Design Engineer, 864th EB Tactical Equipment Maintenance Facility (TEMF) Project, USACE, Seattle District, Joint Base Lewis-McChord, Washington (2010 - Present; $8.2M).** Responsibilities included the site design, utilities design up to the building, on-site storm water management, and construction assistance with Bristol Design Build. The facility is designed to host and repair Army vehicles, such as a Stryker. The Civil Design was part of a fast track design. The project consisted of designing the site for the new TEMF including utilities, concrete hardstand, a parking area, retention ponds, and all associated site features. Type of Construction: General Civil.
- **Lead Civil Design Engineer, ADA Tactical Equipment Maintenance Facility (TEMF) Project, USACE, Seattle District, Joint Base Lewis-McChord, Washington (2009 - Present; $13.5M).** Responsibilities included the site design, utilities design up to the building, storm water management, and construction assistance with Bristol Design Build. The facility is designed to host and repair Army vehicles, such as a Stryker. The Civil Design was part of

a fast track design. The project consisted of designing the site for the new TEMF including utilities, concrete hardstand, a parking area, and all associated site features. Type of Construction: General Civil.

- **Lead Civil Design Engineer, New Child Development Center, USACE, Alaska District, Fort Richardson, Alaska (2009 - 2011).** Provided site layout, site drainage design, and design of all civil utilities. The civil design work included; all civil utilities, site planning, site grading and construction management. Type of Construction: General civil and utility.
  - Lead Civil Design Engineer, "Grow the Force" Tactical Equipment Maintenance Facility (TEMF), USACE, Seattle District, Joint Base Lewis-McChord, Washington (2008 - 2010; $12.6M). Responsibilities included the site design, utilities design up to the building, storm water management, and construction assistance with Bristol Design Build. The facility is designed to host and repair Army vehicles, such as Strykers. The project consisted of designing the site for the new TEMF, including utilities, 20,640 square yards of concrete hardstand, a parking area, and on-site stormwater treatment. Type of Construction: General Civil.
- **Lead Civil Design Engineer, F-22A Corrosion/Low Observable (LO) Maintenance Facility and Utility Infrastructure Design-Build Project, USACE, Alaska District, Elmendorf, AFB, Alaska (08/2006 – 11/008; $29M).** Designed a new taxiway, apron, unreinforced concrete hangar slab, sewer system, storm drainage collection system, and site access for personally owned and emergency vehicles The design-build team's contract is to design and construct an approximately 38,000-square-meter aircraft maintenance hangar. The hangar is intended to house primarily the F22-A aircraft. Type of Construction: Design/Build.
- **Lead Civil Design Engineer, Design-Build Maintenance Hangar Project, USACE, Alaska District, Fort Wainwright, Alaska (10/2005 – 10/2008; $28M).** Lead Civil Design Engineer. The design-build team's contract is to design and construct an approximately 52,500-square-foot aircraft maintenance hangar with ancillary facilities. The hangar is intended to house primarily Black Hawk and Chinook helicopters. Civil design features include a new, unreinforced concrete apron and hangar slab, storm drainage collection system, circulating fire water system (fire loop), site access for personally owned and emergency vehicles, and exterior helicopter wash pad. Type of Construction: Design/Build.
- **Lead Civil Design Engineer, Design-Build Eielson Chapel Replacement Center Project, USACE, Alaska District, Eielson AFB, Alaska (04/2007 – 10/2008: $11.5).** Provided design direction and oversight of design staff. The project included water, sewer, and other utility connections. Design included on-site storm water detention system. Type of Construction: Design/Build.
- **Lead Civil Design Engineer, New F-22 Flight Simulator Facility, USACE, Alaska District, Elmendorf AFB, Alaska (2006 - 2007).** Duties included site design, grading plan and design, utility plan and design, drafting, and development of specifications. This project was to design the civil infrastructure and parking appurtenances for an addition to an existing C-17 flight simulator building. Type of Construction: General civil and utility

- **Design Engineer, Design-Build Project at Gray Army Airfield, USACE, Seattle District, Fort Lewis, Washington (06/2006 – 10/2006).** Assisted in the design of a 10-acre, concrete, helicopter apron that included a subsurface drainage system, stormwater collection system, taxiway lights, and aircraft anchor points. Responsibilities included site drainage design, concrete design using PCASE, and construction admin. The project was designed and constructed in less than 150 calendar days. Type of Construction: Design/Build.
- **Lead Design Engineer, Boundary Fence Project, USACE, Alaska District, Fort Wainwright, Alaska (near Fairbanks) (2006 - 2006).** Designed 16.1 miles of boundary fencing with three different types of fence material, including moose gates and vehicle crash gates. Worked with geotechnical subcontractor in designing adequate fencing foundation that would minimize frost jacking in arctic conditions. All aspects of the design were required to meet new force protection guidelines. Type of Construction: Design/Build.
- **Lead Design Engineer/Construction Manager, Design-Build Project, Air National Guard, Kulis Air National Guard Base, Anchorage, Alaska (2000 - 2002; $1.5M).** Designed a reconfigured entrance and access roads at the Main Gate. Responsible for assuring that the project met force protection guidelines. Was also responsible for all site design activities, which included sidewalks surrounding the guard shack, site drainage, and water and sewer utilities. Performed construction management tasks and coordinated work of subcontractors. Type of Construction: Design/Build.
- **Lead Design Engineer, Design-Build Project at the Donnelly Training Area, U.S. Army Corps of Engineers, Alaska District, Fort Wainwright, Alaska (2004 - 2005).** Prepared plans and specifications for a pad and access road for a new maintenance support facility for unmanned aerial vehicles. Coordinated design with all other design disciplines. Type of Construction: Design/Build.

Sewer and Water Design

- **Project Manager/Lead Civil Design Engineer, Force Main, City of Dillingham, Dillingham, Alaska (2011 – Present; $4M).** Responsibilities include project management and lead designer for the 3,900-foot force main. Project consisted of the abandonment and replacement of an existing force main line and installation of new pumps. Type of Construction: General Civil.
- **Project Manager/Lead Civil Design Engineer, Replace Raw Water Line, City of Dillingham, Alaska (2009, $400K).** Responsibilities included project management and design oversight. The project consisted of replacement 895 feet of existing 4-inch PVC raw water line from new WTP to well #2 tie-in, with 4-inch HDPE, design well houses for existing Class A city wells. Engineering details included, typical trench section, connections to existing transmission line, well house floor plans, sections, and associated piping. Type of Construction: General Civil.
- **Project Manager/Lead Civil Design Engineer, New Class "A" Well, City of Dillingham, Alaska (2008, $400K).** Designed new well and transmission line. The project consisted of a 97' deep well installed adjacent to high school property, with 430 feet of 4-inch HDPE raw

water main connecting to existing transmission line. Engineering Details consisted of a typical trench section, well detail, and tie-in connection to existing raw water. Type of Construction: General Civil.

- **Lead Civil Design Engineer, Sewer Main Replacement, Department of Public Works, Fort Lewis, Washington, (2008; $4.7M).** Designed 5,400 feet of 36-inch HDPE pipe, 190 feet of ductile iron pipe, and 17 new manholes. The project location was on Fort Lewis Army Base, beginning at an existing manhole, spanning a drainage canal, traversed four firing ranges, ending with a tie-in to another existing manhole. A sewer bypass was also setup in order to keep the active sewer line operable during tie-ins. A notable item included in the scope of work for this project was the replacement of 14 manholes base-wide due to Inflow and Infiltration (I&I) concerns. All 14 manholes were determined to be structurally sound. Rather than replacing them, the team value-engineered a coating process to solve the I&I issues. This saved the government hundreds of thousands of dollars with this efficient and effective solution. Type of construction: Civil.
  - **Lead Civil Design Engineer, Broadmoor Subdivision Sewer Line Repairs, Department of Public Works, Fort Lewis, Washington ($750K).** Designed the repair of sanitary sewer lines and the replacement of existing lateral sewer pipe. There was also associated roadwork, sidewalk repair, and landscaping. Sewer line specifics included replacement of existing sewer pipe with 12-inch PVC pipe, replacement of four manholes and the addition of a manhole to the existing 24-inch main. The project was located in a dense neighborhood with considerable pedestrian and vehicular traffic. Type of construction: Civil.
- **Lead Civil Design Engineer, Manokotak Heights Subdivision Sewer Project, Manokotak Village Council, Alaska (2005; $250,000).** Designed sewer lines for two single-family homes and a duplex. Provided inspection during the construction stage of the project. Type of Construction: General Civil.

Road Design

- **Project Manager/Lead Civil Design Engineer, Emmonak Landfill Road Project, ADOT&PF, Emmonak, Alaska (2010 - 2011; $6.5M).** Responsibilities included road design, preparing specifications, developing a cost estimate, obtaining permits, and providing bidding assistance to ADOT. The project consisted of 1 mile of new road design and involved permitting and developing a material source that is located on a river island. Type of Construction: Civil Transportation.
- **Project Mana Lead Civil Design Engineer, Manokotak Heights Subdivision Sewer Project, Manokotak Village Council, Alaska (2005; $250,000).** Designed sewer lines for two single-family homes and a duplex. Provided inspection during the construction stage of the project. Type of Construction: General Civil.
- **Project Manager/Lead Civil Design Engineer, Emmonak Community Roads, ADOT&PF, Emmonak, Alaska (2010 - 2011; $4.5M).** Responsibilities included road design, preparing specifications, developing a cost estimate, and providing bidding assistance to ADOT. The project consisted of 1.3 miles of road improvements. Drainage and safety improvements were also a major part of the project. Type of Construction: Civil Transportation.

- **Project Manager/Senior QC, Diamond M Road Design Project, South Naknek, Alaska (2008 - Present; $1.5M).** Responsibilities included design oversight and reviewing design documents to verify scope, budget, and design compliance. Provided civil engineering and design support to prepare plans, specifications, estimates, and permits that were in compliance with Bureau of Indian Affairs (BIA) standards.. Type of Construction: Civil Transportation.

- **Project Manager/Senior QC, Tower Road Design Project, City of Dillingham/Curyung Tribal Council, Dillingham, Alaska (2010 - 2011; $2M).** Responsibilities included design oversight and reviewing design documents to verify scope, budget, and design compliance. The project consists of realigning 575 feet of road and rehabilitating 2,925 feet of road. The project upgrades a gravel road to a paved road that provides access to residences and public facilities. A sound barrier wall was also designed to minimize traffic noise in a residential area. Project involved right-of-way acquisition involving native allotment and private lots. Type of Construction: Civil Transportation.

- **Project Manager/Lead Civil Design Engineer and Quality Control, Shtax'heen Roadway Improvement Project, All Nations Tribal Transportation Consortium, Wrangell, Alaska (2009 - 2011; $1.7M).** Responsibilities included design oversight and design approval for the road plans, engineer's estimate, and permits. The project consisted of 0.5 miles of resurfacing the existing roads with concrete and improving the safety of the neighborhood by adding sidewalks and lighting. The design corrected a dangerous corner by widening the curve and improving sight distance. Type of Construction: Civil Transportation..

- **Project Manager, Lead Civil Design Engineer, A Street Roundabout, Department of Public Works, Joint Base Lewis-McChord, Washington (2010 - Present; $2.6M).** Responsibilities included project management and lead civil designer for the design phase of the project. Project consisted of road, site, and utility design/adjustments. The roundabout was designed to improve traffic congestion at the intersection of A Street and 17th Street. It will help improve safety at the intersection and decrease traffic accidents. Type of Construction: General Civil.

- **Project Manager/Senior QC, Roadway Improvements, Kawerak Transportation, Saint Michael, Alaska (2008 - 2009: $8.5M).** Responsibilities included design oversight and reviewing design documents to verify scope, budget, and design compliance. The project consisted of utility relocations, road realignments, improvements of the structural sections, and pedestrian boardwalks. The final surface treatment was asphalt. Special design considerations were taken into account with the existence of ice-rich soils. The design encompassed approximately 4.3 miles of new and existing roads. Final deliverables consisted of plans, specifications, permits, and other environmental documents and clearances. Type of Construction: Civil Transportation.

- **Project Manager/Senior QC, Roadway Improvements, Kawerak Transportation, Stebbins, Alaska (2009 - 2010: $5.5M).** Responsibilities included design oversight and reviewing design documents to verify scope, budget, and design compliance. The design encompassed approximately 3.1 miles of new and existing roads. The design elements ranged from road realignments, and improvements of the structural sections. The final deliverables consisted of plans, specifications, permits, and other environmental documents and clearances he final surface treatment was asphalt.

- **Project Manager/Lead Design Engineer, Barge Road Design, Iliamna Development Corporation, Iliamna, Alaska (2009; $1.7M).** Performed design work for a new road to serve the community of Iliamna by giving barge access to the Northeast Bay of Iliamna Lake. The design encompassed approximately 1.3 miles of new road that included culvert placement, embankment placement, ditch work, and application of a surface course layer. Final deliverables consisted of plans, specifications, permits, and other environmental documents and clearance. Type of Construction: Civil Transportation

- **Project Manager/Lead Design Engineer, Andreafski Road Design, Andreafski Traditional Council, Alaska (2004 - 2005; $2.1M).** Designed 1.5 miles of in-town road improvements. Performed the design and geotechnical investigation in an ice-rich permafrost area, prepared engineering specifications and a cost estimate, and provided subcontractor oversight. Also assisted in the selection of the borrow sites and preparation of the hydrology study. Assisted the community in selection of a dust control product. Type of Construction: Civil Transportation

- **Project Manager/Lead Design Engineer, Toksook Bay Road Design, BIA for the Nunakauyak Traditional Council, Alaska (2006; $2M).** Responsibilities included a geotechnical investigation, preparing plans and specifications, and a cost estimate. Other project deliverables were a preliminary engineering report, utilities report, and hydrology reportt. The project consisted of the design of 1.9 miles of in-town road improvements. Type of Construction: Civil Transportation

- **Project Manager/Lead Design Engineer, Projects in the Bering Straits Region, Kawerak, Inc., Fort Davis, Solomon, and Nuuk, Alaska (2003 - 2004; $250K).** Worked on road design and dust control projects located on or along the Nome Council Highway. Responsible for preparing plans, specifications, and estimates, along with coordinating the geotechnical investigation. Also assisted with construction management tasks. Worked with Kawerak and local residents in selecting a dust control product for each of the road projects that was cost effective, new technology, maintainable by standard equipment, and nontoxic for environmentally sensitive areas. Type of Construction: General Civil.

- **Lead Design Engineer, New Stuyahok Road Design Project, BIA for the New Stuyahok Village Council, Alaska (2001 - 2002; $2.6M).** Designed 2.5 miles of in-town road improvements. Performed the design and geotechnical investigation, prepared engineering specifications and a cost estimate, and provided subcontractor oversight. Also assisted in the selection of the borrow sites and preparation of the hydrology study. Performed a road feasibility study that involved selecting roadway alignments, working with the Council to prioritize the roads, and recommending which roads could be constructed within the project budget. Type of Construction: Civil Transportation

- **Project Manage, Fiscal Year 2000 Indian Reservation Roads (IRR) Inventory Update Project, BIA for 17 Rural Alaska Villages (2000 – 2001).** Coordinated the following work items that were accomplished by the project team: Drafted a survey questionnaire; conducted public meetings; researched village history and current and past infrastructure projects; compiled road inventory data; drafted narratives to input community roads into the BIA IRR inventory system; and drafted a final Long Range Transportation Plan for each village, which was submitted to the respective village and the BIA. Updated inventories for several Bristol Bay villages including Naknek and South Naknek.

- **Project Manager/Senior QC, Perryville Road Design, BIA, for the Native Village of Perryville Council, Alaska (2002 – 2004; $2.9M).** Provided subcontractor oversight and managed the project team that prepared design plans for 2.3 miles of road; performed a site investigation for the feasibility phase, a geotechnical investigation, and preliminary road design; Reviewed engineering specifications and conducted several public meetings to obtain direction from the community and the Village Council. Type of Construction: Civil Transportation.
- **Project Manager/Lead Civil Design Engineer, Koliganek Road Design, BIA for the Koliganek Village Council, Alaska (2001 – 2003; $2.5M).** Provided subcontractor oversight and managed the project team that prepared design plans for 2.5 miles of road; performed a site investigation for the feasibility phase, a preliminary geotechnical investigation, and preliminary road design; prepared engineering specifications and a cost estimate; and conducted several public meetings to obtain direction from the community and the Village Council. Designed an improvement to the overall storm drainage plan for the community. Type of Construction: Civil Transportation.
- **Staff Engineer, Igiugig Landfill Access Road Design, BIA for the Igiugig Village Council, Alaska (1998 - 1999; $2.5M).** Designed the 2.7-kilometer road and provided design upgrade services for reconstruction of additional roads. Provided the design, performed a geotechnical investigation, prepared engineering specifications and a cost estimate, and provided subcontractor oversight. Also assisted in the selection of the borrow sites. Type of Construction: Civil Transportation.
- **Design Engineer, Igiugig Sanitation Road Design and Construction, ADOT&PF, Igiugig, Alaska (2001; $1M).** Assisted with the preparation of the engineering specifications and a cost estimate. Type of Construction: Civil Transportation.
- **Staff Engineer, Egegik Road Design, BIA for the Egegik Village Council, Alaska (1998 - 1999; $7M).** Designed a new 2.6-mile landfill road and provided design upgrade services for reconstruction of additional 1.5 miles of road. Provided the design, performed a geotechnical investigation, prepared engineering specifications and a cost estimate, and provided subcontractor oversight. Also assisted in the selection of the borrow sites. Type of Construction: Civil Transportation.
- **Project Engineer, Ugashik River Road Project, Pilot Point Village Council, Alaska (1999; $6M).** Performed a road feasibility study for a road that would lead from near the landfill to the Ugashik River. The project involved recommending a road alignment and preparing a construction cost estimate. Type of Construction: Civil Transportation.

Construction Management

- **Construction Manager, Tower Road Project, City of Dillingham/Curyung Tribal Council, Dillingham, Alaska (2010 - Current; $2M).** Prepared bid documents and recommended contract award. Reviewed submittals, pay applications, negotiated contract modifications, and managed field engineers providing on-site inspections. Project involves ARRA, IRR, and Denali funds. Type of Construction: Civil Transportation.
- **Project Manager, Diamond M Road Construction Project, South Naknek Village Council, Alaska (2010 - Present; $1.5M).** Prepared construction work plans (Safety Plan, Quality Control Plan, Traffic Control Plan, and Stormwater Pollution Prevention Plan). Assisted in preparing pay applications for the Village Council and managed field engineers providing on-site inspections. Type of Construction: Civil Transportation.
- **Project Manager, Chenega Road Project, Chenega Bay, Alaska (2007, $2.7M).** Prepared bid documents for drilling blasting and surveying. Reviewed submittals, pay applications, and managed field engineers providing on-site inspections. The final surface course was Recycled Asphalt Paving (RAP). Type of Construction: Civil Transportation.
- **Project Manager, Road Rehabilitation, Kawerak Transportation, Woolley Lagoon, Alaska (2009; $0.6M).** Prepared Managed field engineers providing on-site inspections. The project included culvert placement, road reconditioning, embankment placement, ditch work, and application of a surface course layer. Type of Construction: Civil Transportation
- **Project Manager, New Stuyahok Airport Access Road, New Stuyahok Traditional Council/ADOT&PF, New Stuyahok, Alaska (2003 - 2004; $2M).** Tracked project costs and progress and reported directly to the Village Council and to ADOT&PF. Performed quality control, managed the soil testing, and provided subcontractor oversight. Type of Construction: Civil Transportation.
- **Construction Manager/Project Engineer, New Stuyahok Road Construction Project, BIA for the New Stuyahok Village Council, Alaska (2002; $2.6M).** Tracked project costs and progress and reported directly to the Village Council and to the BIA. Performed quality control, managed the soil testing, and provided subcontractor oversight. Type of Construction: Civil Transportation.
- **Field Engineer, Igiugig Landfill Access Road Construction, BIA for the Igiugig Village Council, Alaska (2000; $2.5M).** Prepared construction work plans (Safety Plan, Quality Control Plan, Traffic Control Plan, and Stormwater Pollution Prevention Plan). Interpreted plans and specifications and managed the soil testing and in-field quality control for the Village Council. Type of Construction: Civil Transportation.
- **Field Engineer, Egegik Road Construction, BIA for the Egegik Village Council, Alaska (1999 - 2000; $7M).** Prepared a SWPPP and Quality Assurance Plans for construction. Managed soil testing and quality assurance, interpreted plans and specifications, and provided subcontractor oversight. Type of Construction: Civil construction.

General Civil

- **Project Manager/Lead Civil Engineer, Design of Solid Waste Landfill, City of Emmonak, Alaska (2010; $2.7M).** Lead civil designer for the development of the PS&E package on a solid waste landfill project. The project consisted of the design of a new solid waste landfill which incorporated geo-textile pillows for the cell walls. The landfill encompassed a material salvage area and a burn box. Type of construction: general civil
- **Project Manager/Lead Civil Design Engineer, Northeast Cape Landfill Cap, USACE, Alaska District, St. Lawrence Island, Alaska (2009 - 2010).** Responsibilities included designing the landfill cap and developing a storm water pollution prevention plan for two different sites. The projects consisted of removing hazardous material from the existing landfill sites, and then creating a vegetative cap to seal the site. Type of Construction: General Civil.
- **Project Manager/Lead Design Engineer, Boat Ramp Project, City of Dillingham, Alaska (2006 - 2007; $0.25M).** Designed two concrete boat ramps in the small boat harbor. One ramp is a replacement project and the other ramp is a new facility with site design features including parking and shore protection. Type of Construction: General civil.
- **Lead Civil Design Engineer, New Landfill Design, City of Dillingham, Alaska, (2005; $0.7M).** Responsibilities included the site layout, grading, and permitting of the new landfill cell and a closure plan for the existing cell. Prepared bid documents, recommended contract award, and provide periodic site inspections. Project Type of Construction: General civil.

Professional Experience

- **Staff Engineer, Woodward-Clyde Consultants, Anchorage, Alaska (1995 - 1996).** Staff Engineer that provided both office and field support for environmental investigation/assessment projects.
  - **Performed a Site Assessment of an Early Defense Warning Site in a Remote Part of AK.** Assisted in performing Phase II Environmental Site Assessments. Collected water and soil samples within U.S. Army Corps of Engineers guidelines. Supervised the construction of long-term contaminated soil storage cells. Monitored and supervised excavations of petroleum-contaminated soil and performed field-testing to determine contaminant levels. Assisted in determining bluff erosion for a proposed drilling pad. Assisted with the cost and scheduling of equipment and materials for various projects.

No. 10178
Effective: 11/05/2007
Expires: 12/31/2009

STATE OF ALASKA

DEPARTMENT OF COMMERCE, COMMUNITY, & ECONOMIC DEVELOPMENT
Division of Corporations, Business and Professional Licensing

BOARD OF ARCHITECTS, ENGINEERS and LAND SURVEYORS

Certifies that

TRAVIS M. WOODS

IS A REGISTERED

PROFESSIONAL CIVIL ENGINEER

Commissioner: Emil Notti